

Assessment of Self-Care Activities for Patients' with Diabetes Mellitus Type II

Bashar R. Mohammed-Ali, M.Sc. *, RajhaA. Hamza, Ph.D.**

*M.Sc.Adults Nursing, Faculty of Nursing, University of Kufa.

**Professor, Adult Nursing department, Faculty of Nursing, University of Kufa.

Abstract- Objective: this study aimed to assess of self-care activities among diabetic patients' type II and to find out the relationship between self-care activities and their demographic and clinical data. **Methodology:** Descriptive Cross-Sectional Design was adopted in the current study in order to assess of self-care activities among diabetic patient type II. A Non-Probability (Purposive Sample) of (200) Diabetes Mellitus patients with type II. Data collected through using of a well-designed questionnaire consist of three parts, **part I** consists of demographic data , **part II** consists of clinical data , and **part III** consists of self-care activities , Data collected by direct interview method with diabetic patients'. Data was analyzed by using descriptive and Inferential Data Analysis . **Results:** The findings indicate that the patients' responses are high at medications domain. Poor at the exercise and monitoring domains. In addition, moderate at the remaining domains. also there is a highly significant relationship between the patients (self-care activities) and their (levels of education, treatment, health education, sources of health education, complications). while there is a non-significant relationship with remaining demographic and clinical data. **Conclusion:** The study conclude that moderate self-care activities is the main level for most of the patients. Also study concludes that large number of the patient with TIIDM have cardiovascular diseases as a complication that can affect their self-care activities. **Recommendation:** The study recommends an education program should be designed and implemented to increase patient's information about self-care regimen for diabetes mellitus in order to reduce or prevent complications.

Index Terms- assessment, self-care, patient, type II diabetes mellitus.

I. INTRODUCTION

Diabetes is one of the world's biggest health problems. Around 4.6% about 285 millions of diabetic patients in 2010 in the world, and the expectation will move higher in 2030 to 7.7% about 439 million⁽¹⁾. Regardless the improvement in treating, diabetes in these days is considered a major reason for morbidity and mortality. It has important effect on life value of the patient, their ability to work, and high costs for the health care provided to the patients⁽²⁾⁽³⁾. It has predicted that in 2025 will be doubling the number of people who suffer from diabetes and 76% of them in low-income countries⁽⁴⁾.

Unhealthy practices and perception for diabetic patients can lead to increase the effect of the disease and complications which can be prevented. The diabetic complications such as

nephropathy and retinopathy and neuropathy can affect the quality of life of the patients, and can lead to a significant effect on patient's quality of life and productivity^(4,1).

Self-care act a main task in the management of DM these activities may include healthy eating habits, practicing exercises, self-controlling blood sugar by monitoring, and using prescribed drugs. Any dereliction about these activity leads to worsen the disease problems, while following those activities can reduce cardiovascular problems which can be responsible for 70-80% of the mortality in diabetic patients. Thus, self-care activities are considered the most important factors in controlling chronic diseases like diabetes⁽⁵⁾. Self-care activities can be so hard to followed, and often requires necessary changes in lifestyle that most of the patients neglected as a doctor's advice, which result in increasing the problems⁽⁶⁾. Following self-care activities by diabetic patients plays a complete role in achieving eligible outcomes. Therefore, identifying knowledge deficits and inadequacies in self-care practices among patients with type II diabetes may facilitate interventions that are specific to the patients' needs⁽⁷⁾.

In Iraq, a study was conducted in 2008 and found a that large rate of people living with diabetes mellitus type II, out of Iraqi population (27) million, the prevalence of the disease is attain epidemic extent, affecting around two millions of citizens (7.43%) of the total Iraqi people⁽⁸⁾. In 2011, the distribution of cases of diabetes among the Iraqi population about (3,527,354) million, compared with the incidence of Najaf province, about one (144,591) thousand⁽⁹⁾. While in 2015 the statistic shows that new cases were (2335) in Al- Najaf Province⁽¹⁰⁾. Moreover, Diabetes has an effect on the patient function which leads to physical impairment. However, diabetes complications such as retinopathy, nephropathy, neuropathy and diabetic foot which makes the patient incapable for movement and lead to high risk for disability of diabetic patient, also these complications reduced life expectancy and increase many health care costs to the community.

It is a demanding disease and has significant personal and public health issues, so it can affect people life in many ways. Therefore, common worries about those complications might develop and makes burden on dealing with them⁽¹¹⁾. Being stick the recommendations lifestyle modifications can reduce the burden of disease and reduce the morbidity and mortality associated with type II diabetes complications. Less commitment to self-care like diet and exercise then diabetes can become more prevalent than before, that will make more load and worsen the results of diabetes with rehospitalization and more care needed with more payment⁽¹²⁾.

Objectives of the study:

this study aimed to assess of self-care activities among diabetic patients’ type II and to find out the relationship between self-care activities and their demographic and clinical data such as age, gender, level of education and socioeconomic status.

II. METHODOLOGY

Design of the Study:

Descriptive Cross-Sectional Design was adopted in the current study in order to assess of self-care activities among diabetic patient type II. The study started from November 1st , 2015 until June, 6th, 2016. A Non-Probability (Purposive Sample) of (200) Diabetes Mellitus patients, those who visit Al-Sadder Medical City / Al-Najaf Center for Diabetes and Endocrine, are included in the study sample.

An assessment tool is adopted and developed by the researcher to assess of self-care activities for patients’ with diabetes mellitus type II . The final study instrument consists of three parts :

Part I: Demographic Data: consists of (7) items, which included age, gender, level of education, monthly income, residency, marital status and occupational status.

Part II: Clinical Data :The second part of the questionnaire is comprised of (7) items, which include duration of disease since diagnosis, treatment, whether the patients received health education regarding self-care activities or not, sources of received health education, past history of disease from father or mother, complications, smoking if answer yes gives duration and numbers of cigarettes and alcohol consumption.

Part III: self-care activities :This part of the questionnaire is comprised of (8) domains, including the healthy eating domain, which measures through (16) items, reflects evidence that those patients follow the proper dieting behaviors that help them to maintain the management of their diabetes ; exercise domain is comprised of (5) items which measure performing exercise or doing any activities related physical fitness. the monitoring domain, which consists of (10) items. which can help in detecting them from developing more complications due to their illness, medications domain, consists of (8) items; the stress management domains is comprised of (8) items .the general hygiene domains is include personal hygiene is comprised of (6)

items and foot care is comprised of (11) items, weight control domains is comprised of (4) items and the body safety domains is comprised of (4) items . All the studied domains are adopted and developed with the aid of many scientific studies and guidelines. One of these studied conducted by Abbas,(2013) ⁽¹³⁾.

The data collection was done by applying of the developed questionnaire with aid of structured interview technique with the subjects as they were individually interviewed. The study subjects are interviewed in a similar way. The interview technique spend about 20-25 minutes for each subject.

Statistical Analysis

In this study the data were analyzed by using of (SPSS) program V 19 (Statistical Package for Science Service), and the statistical package (Excel 2010). Below are the statistical data analysis methods to evaluate the study result: **Descriptive Data Analysis:** This approach include the following measurements: A- Frequencies and Percentages. B- Measures of central tendency: Mean, Mean of scores (MS) And the assessment by cutoff point (0.66) due to the three points likert scales with three levels of assessment, poor (1-1.66), moderate (1.67-2.33), and high (2.34-3) for self-care activities and attitudes domains. C- Pearson's Correlation Coefficients to determine the reliability of questionnaire (Internal consistency) through using Split Half and Alpha Cronbach. D- Figures using (Bar charts, Pie Charts and Histogram). And **inferential data analysis:** include Chi-Square test (X²) to test independency distribution of observed frequencies, and for measuring the association between the studies variables according to its type.

Ethical consideration:

This is one of the most basic principles before gathering the data, to keep the patient's values and self-respect. The researcher achieved this agreement from the Ethical committee at the Faculty of Nursing / University of Kufa. The researcher promised to keep the patient's information confidential, and use these data for this study only then he explained the purpose of this study to each participant without affecting the routine visiting and care. In addition to above the researcher told each participant that this is an involuntary work, and they can leave any time even the interview process is not completed.

III. RESULTS

Table (1):The Study Sample Distribution according to their Demographic Data

| Demographic Data | Rating And Intervals | Frequency | Percent |
|---------------------|-------------------------------|-----------|---------|
| Age / years | 31- 39 | 5 | 2.5 |
| | 40- 48 | 38 | 19.0 |
| | 49- 57 | 70 | 35.0 |
| | 58 and above | 87 | 43.5 |
| Gender | Male | 105 | 52.5 |
| | Female | 95 | 47.5 |
| Levels of education | Illiterate | 66 | 33.0 |
| | Able to read and write | 19 | 9.5 |
| | Primary school graduated | 55 | 27.5 |
| | Intermediate school graduated | 26 | 13.0 |
| | Secondary school graduated | 16 | 8.0 |

| | | | |
|----------------|---------------------------|-----|------|
| | Institute graduated | 10 | 5.0 |
| | College graduated | 7 | 3.5 |
| | Post graduate | 1 | 0.5 |
| Monthly income | Sufficient | 13 | 6.5 |
| | Sufficient to some extent | 15 | 7.5 |
| | Insufficient | 172 | 86.0 |
| Residency | Rural | 44 | 22.0 |
| | Urban | 156 | 78.0 |
| Marital status | Married | 169 | 84.5 |
| | Divorced | 2 | 1.0 |
| | Widowed | 29 | 14.5 |
| Occupation | Retired | 27 | 13.5 |
| | Housewives | 87 | 43.5 |
| | Employee | 28 | 14.0 |
| | Jobless | 28 | 14.0 |
| | Free job | 30 | 15.0 |

N: 200

This table shows that the highest percent of the study sample (43.5%) were within (58 and above) years old. Regarding gender, the study results revealed that the majority (52.5%) were males. In addition, the study results present that (33%) of the sample were illiterates. additionally, the study results reveals that

(86%) of the sample were present without enough monthly income. Also (78%) are living in urban residential area. Concerning the subjects marital status, (84.5%) of the study sample were married. In regards to occupational status (43.5%) were housewives

Table (2): The Study Sample Distribution according to their Clinical Data

| Clinical Data | Rating And Intervals | Frequency | Percent |
|---|-------------------------|-----------|---------|
| Duration of disease / years | <= 5 | 55 | 27.5 |
| | 6- 13 | 77 | 38.5 |
| | 14- 21 | 53 | 26.5 |
| | 22- 29 | 7 | 3.5 |
| | 30 and above | 8 | 4.0 |
| Treatment | Orally | 92 | 46.0 |
| | Injection | 84 | 42.0 |
| | Diet | 2 | 1.0 |
| | All of the above | 22 | 11.0 |
| Are you receive a health education? | Yes | 26 | 13.0 |
| | No | 174 | 87.0 |
| If yes, what are the sources of the received health education | No health education | 174 | 87.0 |
| | Nurse | 13 | 6.5 |
| | Physician | 4 | 2.0 |
| | Internet | 1 | .5 |
| | Friends | 1 | .5 |
| | Journals | 7 | 3.5 |
| Past history of disease from father side | Yes | 28 | 14.0 |
| | No | 172 | 86.0 |
| Past history of disease from mother side | Yes | 56 | 28.0 |
| | No | 144 | 72.0 |
| Complications | No complications | 80 | 40.0 |
| | Cardiovascular diseases | 67 | 33.5 |
| | Renal diseases | 2 | 1.0 |
| | Diabetic foot | 3 | 1.5 |
| | Visual problems | 14 | 7.0 |
| | Others | 1 | .5 |

| | | | |
|-----------------------------|--|-----|-------|
| | Cardiovascular diseases & Renal diseases | 2 | 1.0 |
| | Cardiovascular diseases & diabetic foot | 8 | 4.0 |
| | Cardiovascular diseases & visual problems | 14 | 7.0 |
| | Visual problems and other health problems | 1 | .5 |
| | Cardiovascular diseases, diabetic foot, & visual problems | 2 | 1.0 |
| | Diabetic foot, Visual problems, & Others | 1 | .5 |
| | Diabetic foot, and Visual problems | 2 | 1.0 |
| | Cardiovascular diseases & other | 2 | 1.0 |
| | Cardiovascular diseases, renal diseases, and diabetic foot | 1 | .5 |
| Do you smoke? | Yes | 26 | 13.0 |
| | No | 174 | 87.0 |
| Type of smoking | No smoking | 174 | 86.5 |
| | Pipe smoking | 2 | 1 |
| | Cigarettes | 24 | 12.0 |
| Duration of smoking / years | No smoking | 174 | 87.0 |
| | 10-14 | 7 | 3.5 |
| | 15-19 | 1 | .5 |
| | 20 and more | 18 | 9.0 |
| How much did you smoke? | No smoking | 174 | 87.0 |
| | One packet | 9 | 4.5 |
| | Two packet | 11 | 5.5 |
| | Three packet | 4 | 2.0 |
| | Four packet | 2 | 1.0 |
| Alcohol consumption | No | 200 | 100.0 |

This table shows that the duration of disease, the highest percentage(38.5%) is between (6-13)years. Relative to the treatment, (46%) of the study subjects are treated orally and about (42%) their treatment by injection. Concerning receiving of health education about the self-care activity, the study results show that (87%) of the study sample were not receiving education, while (6.5%) of the patients receive their health education from the nurse. Concerning the past diabetes family

history, the study results indicate that 14% and 28% of the study sample have a positive family history from father and mother sides respectively. Relative to the complication, the highest percentage (40%) were not suffering from complication. the study results reveal that more than half of the study sample were nonsmoker (87%). Finally this table shows that all the study sample were nonalcoholic.

Table (3): The Study Sample Distribution according to their overall Responses to the studied domains

| Main domains | Rating | Frequency | Percentage | m.s. | Assessment |
|-------------------|----------|-----------|------------|------|------------|
| Healthy Eating | Poor | 4 | 2 | 1.80 | Moderate |
| | Moderate | 142 | 71 | | |
| | High | 54 | 27 | | |
| Exercises | Poor | 4 | 2 | 1.61 | Poor |
| | Moderate | 68 | 34 | | |
| | High | 128 | 64 | | |
| Monitoring | Moderate | 27 | 13.5 | 1.42 | Poor |
| | Poor | 173 | 86.5 | | |
| Medication | Poor | 6 | 3 | 2.73 | High |
| | Moderate | 44 | 22 | | |
| | High | 150 | 75 | | |
| Stress Management | Poor | 24 | 12 | 2.04 | Moderate |
| | Moderate | 163 | 81.5 | | |
| | High | 13 | 6.5 | | |
| Personal Hygiene | Poor | 49 | 24.5 | 2.13 | Moderate |
| | Moderate | 92 | 46 | | |

| | | | | | |
|----------------|----------|-----|------|------|----------|
| | High | 59 | 29.5 | | |
| Foot Care | Poor | 4 | 2 | 1.90 | Moderate |
| | Moderate | 179 | 89.5 | | |
| | High | 17 | 8.5 | | |
| Weight Control | Poor | 3 | 1.5 | 1.67 | Moderate |
| | Moderate | 93 | 46.5 | | |
| | High | 104 | 52 | | |
| Body Safety | Poor | 19 | 9.5 | 2.22 | Moderate |
| | Moderate | 90 | 45 | | |
| | High | 91 | 45.5 | | |

M.s: Mean of score : Poor (mean of scores 1-1.66), moderate (mean of scores (1.67-2.33), high (mean of scores more than 2.33)

The results of this table shows that the patients' responses were high at medications domain. Poor at the exercise and monitoring domains. In addition, moderate at the remaining domains.

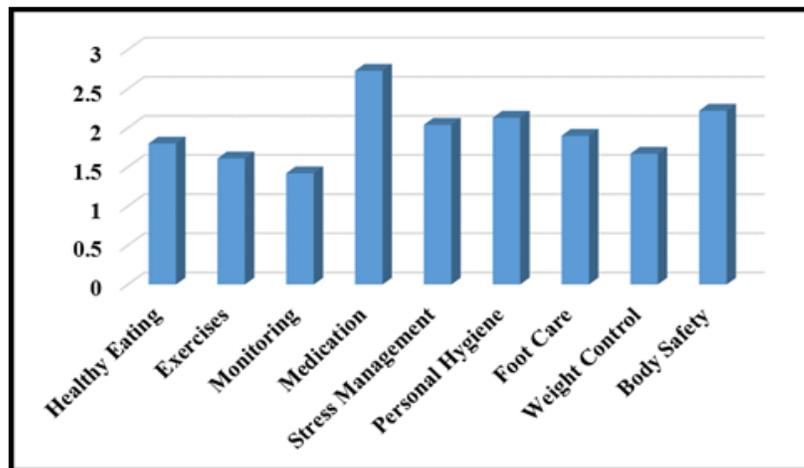


Figure (1): The Study Sample Distribution according to their overall Responses to the studied domains

Table (4): Overall assessment for the patients' self-care activities

| Main domain | Rating | Frequency | Percentage | m.s | Assessment |
|--|----------|-----------|------------|------|------------|
| Overall patients' self-care activities | high | 1 | 0.5 | 1.92 | Moderate |
| | moderate | 179 | 89.5 | | |
| | low | 20 | 10 | | |

M.s: Mean of score: Poor (mean of scores 1-1.66), moderate (mean of scores 1.67-2.33), high (mean of scores more than 2.33)

This table shows that overall patients' self-care activities were moderate.

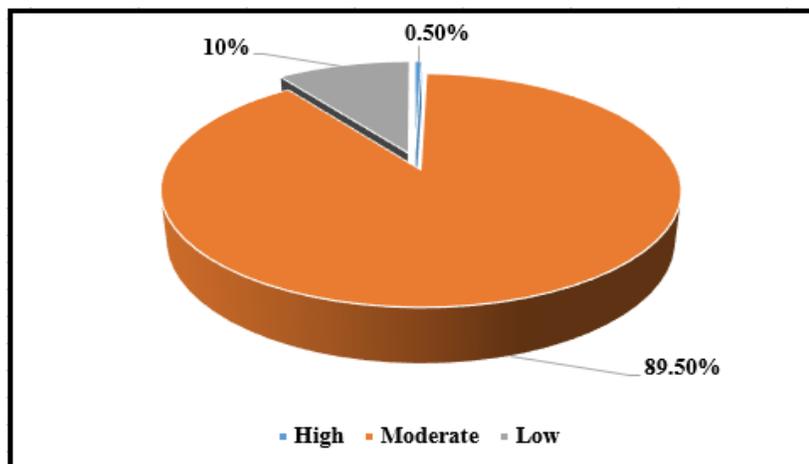


Figure (2): Overall assessment for the patients' self-care activities

Table (5): Relationship between the Patients' Self-Care Activities and their Demographic and Clinical Data

| Demographic Data | Chi-Square Value | D.F. | P-Value |
|-----------------------------|------------------|------|-------------|
| Age / Years | 3.504 | 6 | 0.744 NS |
| Gender | 1.578 | 2 | 0.454 NS |
| Levels of education | 32.820 | 14 | 0.003 HS |
| Monthly income | 2.141 | 4 | 0.71 NS |
| Residency | 0.939 | 2 | 0.625 NS |
| Marital status | 0.811 | 4 | 0.937 NS |
| Occupation | 9.259 | 8 | 0.321 NS |
| Clinical Data | | | |
| Duration of the disease | 35.286 | 4 | 0.977 NS |
| Treatment | 30.277 | 4 | 0.001 HS |
| Health education | 12.703 | 1 | 0.002 HS |
| Sources of health education | 66.867 | 5 | 0.001 HS |
| Heredity from father side | 0.470 | 1 | 0.791 NS |
| Heredity from mother side | 0.429 | 1 | 0.807 NS |
| Complications | 70.058 | 14 | 0.001 HS |
| Smoking | 0.224 | 1 | 0.894 NS |
| Type of smoking | 9.232 | 2 | 0.056 NS |
| Duration of smoking | 9.963 | 3 | 0.126 NS |

| | | | |
|---------------------|--------|---|------------|
| Quantity of smoking | 19.621 | 4 | 0.012 S |
|---------------------|--------|---|------------|

P -Value: probability value; D.f: degree of freedom; NS: non-significant;HS: high- significant; S: significant.

The table reveals that there is a highly significant association between the patients (self-care activities) and their (educational levels, treatment, health education, sources of health education, complications), at p-value < 0.01. and significant in relation with (quantity of smoking) at p-value <0.05. while there is a non-significant relationship with remaining demographic and clinical data.

DISCUSSION

According to (Table 1) in the results, Shows that there were (43.5%) among diabetic patients the sample were within (58 years and above). This outcome is reinforced by a study done by Ayeleet *al.*, (2012) who concluded in their results that the dominant age of the study sample were 55 years old and more⁽⁴⁾. The danger for DM increases with the increase of age of the patients which will contribute in raising the occurrence of diabetes mellitus in those individuals when age is advanced. Regarding gender, the results reveal, that the majority are (52.5%) of subjects were males. Both studies Padma *et al.*, (2012) and Kuehet *al.*, (2014) mentioned that males are the dominant gender for patients with diabetes mellitus. This will lead to the fact that the diabetes mellitus are more common in men than in women^(1,14).

Concerning educational levels, the higher percentage (33%) are illiterates. This result was in agreement with other studies Oleiwi and AL Ani, (2012) and Chaurasiaet *al.* (2015) in their studies found that the majority of the study subjects are illiterates^(15,16).

Most of the sample results indicates that (86%) of the study sample are without enough monthly income. This come is consistent with another study of Oleiwi and AL Ani, (2013) and Rajasekharanet *al.* (2015) reveals in their studies that most of the study sample haven't enough monthly income^(17,18).

Regarding residency, the current study results show that most of the sample (78%) was live who at urban area. This result in agreement with Elyasiet *al.* (2015) they indicated that the majority (75.5%) of the diabetic patients is living in urban area and the remaining is living in the countryside⁽¹⁹⁾. These results might come because of the diabetes mellitus that refer to a modern scourge of industrialized society. Therefore, the diabetes mellitus incidence increases in people who live in urban area, than those in rural Also those individuals in rural residential area often practice physical exercises daily when compared with urban patients which lead to include them as less dangerous to have diabetes mellitus, while individuals in rural residential areas, are less prone to get diabetes mellitus because of the danger reasons that are common in town than countryside areas e.g. psychological stress⁽²⁰⁾.

Concerning to marital status, majority of subjects (84.5%) are married. Several studies were in agreement with the results of the present study Hailuet *al.*, (2012); Albikawi and Abuadas (2015) and Shrivastavaet *al.*, (2015) in their studies they found

that the highest result of their studies samples were married patients^(2,21,22).

Regarding occupational status, the highest percentage was housewives. This result is in agreement with the results which are obtained from Raithathaet *al.*, (2014) who shows that most of the females whom their aged was advanced prefer to have their occupation at home due to the changes that affect their bodies⁽²³⁾.

According to (Table 2) in the results, show that duration of disease, the higher percentage (38.5%) is for those who are suffering from the disease for period from 6-13 year. The finding is consistent with results of Gesareet *al.*, (2014) while Rajasekharanet *al.*, (2015) they claimed that the duration of disease for majority of their samples were from 1-10 years^(7,18).

The present study shows that in regards to the type of treatment, the higher percentage (46%) are for those who take medication orally and (42%) to the sample who use medication by injection., this result was in agreement with a previous study which shows that the study sample of it was (37.8%) who took medication orally, and about (28.9%) of sample use injection medication⁽²⁴⁾.

Concerning the result of the item which involve they receive health education regarding the self-care activities, the results shows that most of the sample (87%) did not received any education. And for the remaining sample (13%), about (6.5%) of them have health education from nurses. This mean the patients need a specific unit in the hospitals with specific nursing personnel to be responsible for the information and education needed about the disease and their management.

Concerning family history, the study results indicate that (14% and 28%) of the study sample have a positive family history from father and mother sides respectively. This result comes along with the findings of other studies which are carried out by Merriam, *et al.*, (2009) and (Svartholm and Nylander, 2010) in their studies^(25,26).

Around (60%) of the sample suffers from complications in relation with the disease. And (40%) only have no complications. This finding agrees with the result Al-Maskari, *et al.*, (2013) they concluded that (64.4%) of the study sample presents a chronic conditions⁽²⁷⁾.

The present study results show that most of the sample with complication has cardiovascular diseases. This result was supported by data released in (2005) by (CDC) and (NIDDDSK) which declared that a large number of people with diabetes suffer from complications specifically Micro-and Macro vascular.

The study shows that most of the patients (87%) are non-smokers and few of them (13%) smoke (30-60) cigarettes per day which is considered unhealthy behavior for diabetic patients. In study done by Raithatha, *et al.* (2014) who found that the majority of the study subjects (70.9%) was non-smoker. (Abass, 2013) emphasized tobaccos can rise blood glucose level and causes insulin resistance. Heavy smokers increase their danger of developing DM when they are compared with non-smokers. Furthermore, the use of tobacco can speed up the damage of

blood vessels in uncontrolled Diabetes Mellitus, lead to heart diseases and increase albumin urea that causes nephropathy (13,23,28).

With regard to alcohol consumption, all of the sample (100%) don't use alcohol. This result reflects the reality of Al-Najaf Al-Ashraf society as a religious one with a conservatory traditions and culture.

According to (Table 3 and 4) in the results, emphasized on self-care activities, the overall assessment for the patients' self-care activities are moderate. It shows that the patient's responses is high at (medications domains) While the patient's responses are moderate at (the healthy eating, stress management, personal hygiene, foot care, weight control and body safety domains) which means that there is a deficient in the patients' adherence to self-care activities. And poor response was showing for the sample in (the exercise and monitoring domains)

Relative to the healthy eating as self-care activities, evaluation of such domain indicates that is moderate among the study sample. It seems that these patients are consuming white bread rather than brown bread; they don't consume nuts as a snack meal and do not drink one cup of low-fat milk. This provides evidence that these patients ignore the proper dieting behaviors that help them to maintain the management of their diabetes. This result comes inconsistent with the findings of another study (Roxas and Nicodemus, 2013)⁽²⁹⁾.

Concerning the domain of exercise, the findings have depicted that diabetics have poor one which is very obvious in their desire of performing self-care activities related to simple physical exercise (i.e., walking). This result is found to be consistent with the study of Shazwan *et al.* (2010) in which they found that diabetic patients type II are not performing exercise or doing any activities related physical fitness⁽³⁰⁾.

Concerning the domain of monitoring self-care activities, the findings depict that this domain is poor. As a result, these patients lack to follow up their health, they are not visiting the dentist or examine their blood cholesterol every six months; not visiting the ophthalmic physician or the ENT physician; not checking the kidney function once in a year. Such follow up can help in protecting them from developing more complications due to their illness. This result is found to be consistent with the study done by (Raithatha, *et al* 2014)⁽²³⁾.

Concerning medication domain, the findings depict that study sample have high self-care activities in relation to this domain. The outcome is consistent with Gesare, *et al.*, 2014 study results which emphasized that patient (60.2%) have good adherence to medications⁽⁷⁾.

Regarding remaining of the domains of stress management, Personal Hygiene, Foot Care, Body Safety and Weight Control, the results reveal that the patients have moderate Self-care activities.

Regarding overall patients' self-care activities. The finding shows that patients have are moderate self-care activities. This was in agreement with the result obtained by (Roxas and Nicodemus, 2013)⁽²⁹⁾.

WHO reports present those patients adherence to curative recommendations is a main and essential subject global, and problems of non-adherence between patients with another prolonged illnesses is an essential object that medical and nursing personnel should emphasize on it.

The WHO reported that (50%) is the rate of patients' adherence to treatment recommendations in industrial countries like in USA. While in some countries in Asia like China, and in Africa like in Gambia, only 43%, and 27% respectively, of patients commitment to their therapeutic schedule. And without adherence to treatment in these nations were accompanying to the influences e.g. the individual features, socio economic influences⁽³¹⁾.

According to (Table 5) in the results, show that there is a high-significant relationship between the patients self-care activities and their (levels of education, treatment, health education, sources of health education, complications, and quantity of smoking), while there is a non-significant relationship with other demographic and clinical data.

These study results are supported by the Berhe, *et al.*, (2013); Viji and Singh (2014); and Freitas, *et al.*, (2014) they indicated that there is a high significant effect of education level of the patients on their self-care activities^(32,33,34), in addition, Freitas and other specifying that there is a non-significant relationship between the patients monthly income and their self-care activities. Present study was in agreement with the following previous studies Mohebi, *et al.*, (2014) and Freitas, *et al.*, (2014), founds that there is a non-significant effect of the patients' age on their self-care activities^(6,34). Also Arulmozhi and Mahalakshmy (2014) and Kueh, *et al.* (2014), founds that there is a non-significant effect of the patients gender on their self-care activities^(5,14). In addition to that Albikawi and Abuadas (2015) and Berhe, *et al.*, (2013) founds that there is a non-significant effect of the patients' a, marital status on their self-care activities^(21,32). Rajasekharan, *et al.*, (2015) and Mohebi, *et al.*, (2014) founds that there is a non-significant effect of the patients duration of disease on their self-care activities^(6,18). They also found that there is a non-significant effect of the family history and smoking on their self-care activities. While for the effect of the residency and occupation on the self-care activities, the researcher does not found an suitable studies to support. In addition, these results might be due to the study sample are homogenous in regarding to their knowledge because they visits the same center for follow up and management, so they receive the same health education and they receive answers about their health conditions from the same center. Therefore the adherence to the self-care activities was not affected by their residency and their cultural diversities, also their adherence was not affected by their occupation due to the same reason.

Most of the patients in the study sample (87%) did not receive health education while only (13%) receive it. High-significant relationship between diabetic patients self-care activities and health education because nurses were considered as a major source of health education for half of patients (6.5%) when compared with other educational sources.

The patients adherence to the self-care activities will decrease the incidence of complications, so the study results reveal that there is a significant relationship between self-care activities and complications. Furthermore, the study results reveal that there is a non-significant relationship between the patients' self-care activities and (duration of disease, heredity). These results might show because the study sample were including patients who have duration of disease more than one year and the study did not include those who have less than one

year in the sample, also patients will be more stable after one year due to adherence to the self-care activities during that year, and their activities toward control of their disease is still relatively constant.

IV. CONCLUSIONS

There is strong response of patients with TIIDM in relation with self-care activities regarding medication domain, while there is poor response from these patient for exercises and monitoring of activities domains. And there are insufficient self-care activities among TIIDM as they have moderate responses to many domains such as healthy eating, stress management, personal hygiene, foot care, weight control, and body safety. Also there are higher number of patient with TIIDM who have cardiovascular diseases and it affect self-care activities.

V. RECOMMENDATIONS

Based on the study conclusion, the study recommends the following:

1. Patients with TIIDM need instruction with means of education, such as published materials with regard to self-care activity.
2. An educational program should be designed and implemented to increase people's information about self-care regimen for diabetes mellitus in order to reduce or prevent complications.
3. A booklet should be used by the center for facilitating patients with TIIDM as guidance for self-care activities.
4. Create a unit to provide health care services like educating patients with diabetes in the center for providing instruction about self-care activities

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AUTHORS

First Author – Bashar R. Mohammed-Ali, M.Sc, M.Sc.Adults Nursing, Faculty of Nursing, University of Kufa
Second Author – RajhaA. Hamza, Ph.D., Professor, Adult Nursingdepartment, Faculty of Nursing, University of Kufa