

SELF-EFFICACY AND DRUG ADHERENCE AMONG DIABETIC UNIVERSITY STUDENTS

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Abstract

Background: Nurses play vital role to incorporate the self-efficacy concept in assisting university students to develop their own strategies for long-term disease medication adherence. **Aim of the study:** To assess self-efficacy and medication adherence among diabetic university students. **Subjects and methods:** descriptive design was applied in Assiut university student's hospital on (80) university students. **Tools:** (I): The Diabetes Management Self-Efficacy Scale (DMSES) which contained demographic and medical and Diabetes Management Self-Efficacy Scale (DMSES). (II): Morisky Medication Adherence Scale (MMAS – 8). **Results:** Majority of the studied university students were males, from rural areas, their mean SD of ages was 15.6±1.9 years old. The diabetic duration was 6.7 ±3.2 years, with glucose level 276.0 ± 71.7 mg/dl and HbA1c was 8.6 ± 1.8%. There was a statistically significant difference between medication adherence and their gender but there was no statistical difference between Self-efficacy for diabetes and their gender. **Conclusion:** development of chronic complications. The present study found the majority of the studied patients had a low self-efficacy score and medication adherence. There was a positive correlation between perceived self-efficacy and medication. **Recommendations:** Provision of integrated better application of guidelines intervention for diabetic University students to improve health efficacy and medication adherence.

Keywords: Self-Efficacy, Drug Adherence, Diabetic, University Students

INTRODUCTION

Patients with diabetes are at risk for a range of adverse health outcomes, including heart attacks, strokes, amputations, blindness, and end-stage renal disease. Although longer duration of diabetes, poor control of intermediate risk factors (eg, blood pressure, cholesterol levels, glycemic control), and genetic susceptibility are clearly associated with increased risk of adverse outcomes in patients with diabetes, nonclinical factors such as patients' socioeconomic and psychosocial characteristics play a key role in determining risk⁽¹⁾.

Diabetes disproportionately affects low income and racial/ethnic minorities and there is an urgent need to improve quality of care and lower rates of avoidable complications for these populations. Patients with diabetes are expected to perform daily self-management activities to help avoid diabetes-related morbidity and mortality. Self-management is a cornerstone of diabetes care, and it is believed that improving patient self-efficacy is a critical pathway to improved self management⁽²⁾.

The concept of self-efficacy is based on social cognitive theory, which describes the interaction between behavioral, personal, and environmental factors in health and

chronic disease. The theory of self-efficacy proposes that patients' confidence in their ability to perform health behaviors influences which behaviors ⁽³⁾.

Because diabetes self-management incorporates behavioral, personal, and environmental factors into daily performance of recommended activities, the concept of self efficacy is relevant for improving self management. Among highly selected patients, self-efficacy has been shown to be important for appropriate self management for many chronic health conditions, and, in diabetes, the research demonstrates mixed results for interventions that attempt to improve self-management behavior through improved self-efficacy ⁽⁴⁾.

Achieving near-normal blood glucose levels requires comprehensive education in self management. Intensive treatment programs include the following components according to individual patient need: appropriate frequency of self monitoring of blood glucose, medical nutrition therapy, regular exercise, physiologically based insulin regimens, periodic assessment of treatment goals, and continuing education and reinforcement. Self-efficacy is defined as one's belief in his or her ability to be successful in specific situations or accomplish a task in order to deal with life's challenges ⁽⁵⁾.

The term compliance is used to describe the patient's adherence to the therapeutic regimen. Adherence to the therapeutic regimen requires that the patients make one or more changes in their life style. The patient may need to take medications, adhere to a diet, restrict their activities, promoting rest and seeks periodic evaluation of their health status. The role of the nurse in teaching and directing the patient towards adherence behavior is a significant one. It is the responsibility of the nurse to assess all variables that may have an effect on the patient's adherence and to use this information when developing and implementing the patient teaching plan ⁽⁶⁾.

Significance of the study:

Diabetes was the seventh leading cause of death listed ⁽⁷⁾. Poor disease control leads to significant morbidity and mortality because of its short-term and long-term complications. The most frequent acute complications include hypoglycemia, hyperglycemia, and diabetic ketoacidosis (DKA), with a trend towards increased hospitalization rate in the past two decades. The life expectancy of a youth with diabetes at the age of 10 is 44 years ⁽¹⁾.The researchers concluded that behavioral problems in adolescence were important in influencing their adherence to medication and later glycemetic control.

Operational definitions:

Self-efficacy: is one's belief in his or her ability to be successful in specific situations or accomplish a task in order to deal with life's challenges

Perceived self-efficacy - conceptual: judgements of one's own capability to monitor, plan, and implement activities of daily living related to diabetes

Adherence: It refers to the compliance of patients to the health education provided by the health care personnel's in the hospital.

METHODS

Design:

Descriptive research design was utilized in this study

Setting: The study was conducted at Assiut university student's hospital.

Subject:

The sample was selected from two locations: (a) the inpatient/outpatient registry of DM students from Assiut students hospital, Through purposive sampling technique, (80 students) certain individuals with pre-specified characteristics were selected.

students were eligible for inclusion if they met the following criteria: (a) diagnosed with DM. (b) no other existing health problems, (c) diagnosis made at least one year, (d) no recent severe hypoglycemic events or DKA within past 3 months, (e) in a university-grade and (f) not pregnant.

Aim of the study:

This study aimed to assess self-efficacy and medication adherence among diabetic university students

Research questions:

What is the self-efficacy among diabetic university students?

What is the medication adherence among diabetic university students?

Methods:

Technique for data collection:

A review of current and past, local and international related literatures in the various aspects of the problem was reviewed using books, articles, and periodicals.

Content validity:

The content validity and reliability of the tools, was established by panel of five expertise (2 teaching staff of Medical Surgical Nursing, Faculty of Nursing, Assiut University and 3 doctors in Medical Department in Assiut University Student's Hospital) who reviewed the tools for clarity, relevance, comprehensiveness, understanding, applicability and feasibility for administrative minor modifications.

Pilot study:

A Pilot study was carried out in October 2020 on 10% (8 patients) of sample in the selected setting to evaluate the applicability and clarity of the tools. Those patients were added to the study later. It provided an estimate of time needed to fill out the tools. The purpose of the pilot study was to:

- Ensure the clarity of the designated study tools.
- Examine the utility of the designed tools. and
- Identify any difficulties or problems needed to be handled before applying it.

Ethical consideration: the researcher followed all the ethical issues in conducting the research. Consent was secured orally from the participants who were willing to participate in the study. The participants were informed that participation in this study

is voluntary; they can withdraw at any time during the study without giving reasons. The researcher has explained the aim of the study to all patients in the study sample. They reassured that any obtained information would be strictly confidential.

Procedure:

Once permission was obtained to proceed with the proposed study, the researcher initiated data collection.

- At initial interview: the researcher introduced herself to initiate communication, explained the nature and purpose of the study for patients.
- The researcher collected the needed data from patients by applying tool (I&II)
- Each patient involved in the study was assessed for his or her self –efficacy. The study was carried out at morning shifts.

Tools:

Two tools will utilize:

Tool I: The Diabetes Management Self-Efficacy Scale (DMSES):

This tool will consist of the following parts:

Part (one): Demographic data for the patient as (name, age, gender, occupation, marital status, residence and level of education, etc..).

Part (two): Medical data including: Medical diagnosis, present and past health history, essential medication data, and laboratory investigations.

Part (three): Diabetes Management Self-Efficacy Scale (DMSES)

Developed by (Crabtree, (1986) ⁽⁸⁾.

It used to assess patient's judgment of his or her ability to perform a recommended self care routine.

Self-efficacy for diabetes scale (SED) was constructed to evaluate youngsters' perceptions of their personal ability or power in diabetes and related situations.

The scale consists of 35 items in three subscales: diabetes-specific self-efficacy (24 items), medical situations self-efficacy (5 items), and general situations (6 items). Each item consists of a statement of a diabetes activity and circumstance.

Degree of capability is recorded on a five-point Likert scale. 1, very sure I cannot do it; 2, somewhat sure I cannot do it; 3, not sure I cannot do it; 4, somewhat sure I can do it; and 5, very sure I can do it.

This five-point fully semantically anchored scale is appropriate for Higher scores indicate greater self-efficacy.

Self-efficacy for diabetes scale (SED)

On all instruments, there was evidence of moderate to strong internal consistency with reliabilities of .70 or greater

Tool II: Morisky Medication Adherence Scale (MMAS – 8)

The MMAS-8 is a self- reported scale developed by **Morisky et al.**, (9).

- ◀ It consists of 7 items answered with (yes) or (No) and 1 item with a 5-point Likert scale.
- ◀ Each “no” response is rated as “1” and each “yes” is rated as “0” except for item 5, in which each response “yes” is rated as “1” and each “no” is rated as “0”.
- ◀ For item 8, if a patient chooses response “0”, the score is “1” and if they choose response “4”, the score is “0”. Responses “1, 2, 3” are respectively rated as “0.25, 0.75, 0.75”.
- ◀ The scores of the MMAS-8 range from 0 to 8.
 - A score below 6 indicates low adherence.
 - A score between 6 < 8 indicates medium adherence.
 - A score of 8 high indicates adherence.

Statistical design:

Data entry was done using compatible personal computer by researcher. The statistical analysis was done using computer program SPSS (Version, 22). Statistical software package Excel for figures. The content of each tool was analyzed, categorized and then coded by the researcher. The collected data were tabulated and analyzed by using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. P-value considered statistically significant when $p \leq 0.05$

RESULTS

Table (1): Demographic and medical data of the studied patients (N=80).

Demographic data		N=80	%
Gender	Male	48	60.0
	Female	32	40.0
Residence	Rural	64	80.0
	Urban	16	20.0
Age	15.6±1.9 years old		
DM duration	6.7 ±3.2 years		
Blood glucose level	276.0 ± 71.7 mg/dl		
Hb A1c	8.6 ± 1.8%		

Table (1): revealed that majority of the studied university students were males, from rural areas, their mean SD of ages was 15.6±1.9 years old. The diabetic duration was 6.7 ±3.2 years, with glucose level 276.0 ± 71.7 mg/dl and Hb A1c was 8.6 ± 1.8%.

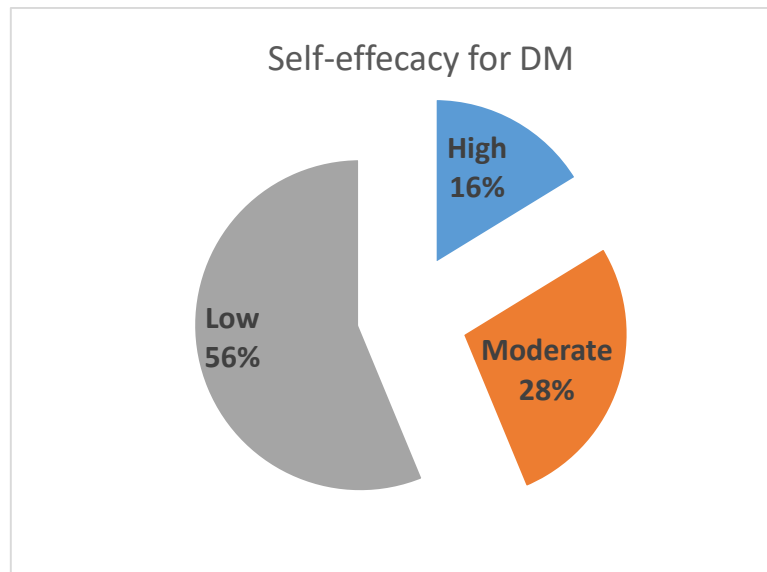


Figure (1): Distribution of the studied patients' Self-efficacy for diabetes scale (SED). (N.= 80)

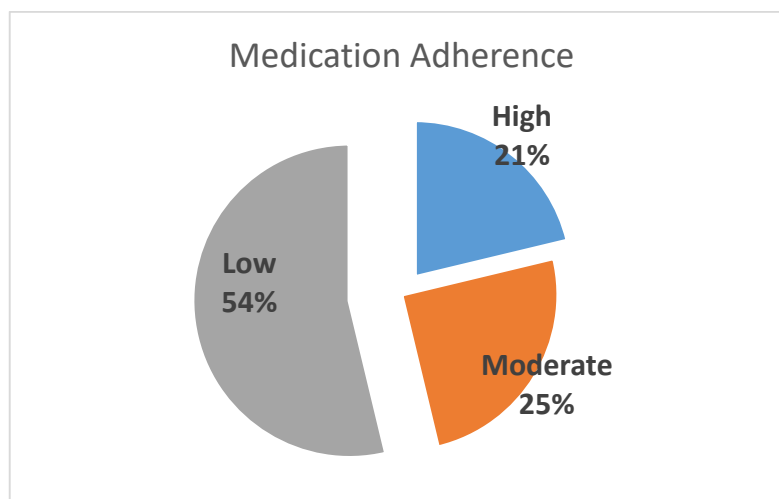


Figure (2): Distribution of the studied patients' total medication adherence. (N.= 80)

Table (2): Relation between the self-efficacy and medication adherence of the studied patients with their sex and residence

	Male (n. 48) (%)	Female (n. 32) (%)
Medication Adherence		
High	5 (10.4%)	12 (37.5%)
Moderate	9 (18.75%)	11 (34.4%)
Low	34 (70.8%)	9 (28.1%)
P. value	0.005*	
Self-efficacy for diabetes scale (SED)		
High	6 (12.5%)	7 (21.9%)
Moderate	14 (29.2%)	8 (25.0%)
Low	28(58.3%)	17 (53.1%)
P. value	0.534	

Table (2): illustrated that there was a statistically significant difference between medication adherence and their gender but there was no statistical difference between Self-efficacy for diabetes and their gender.

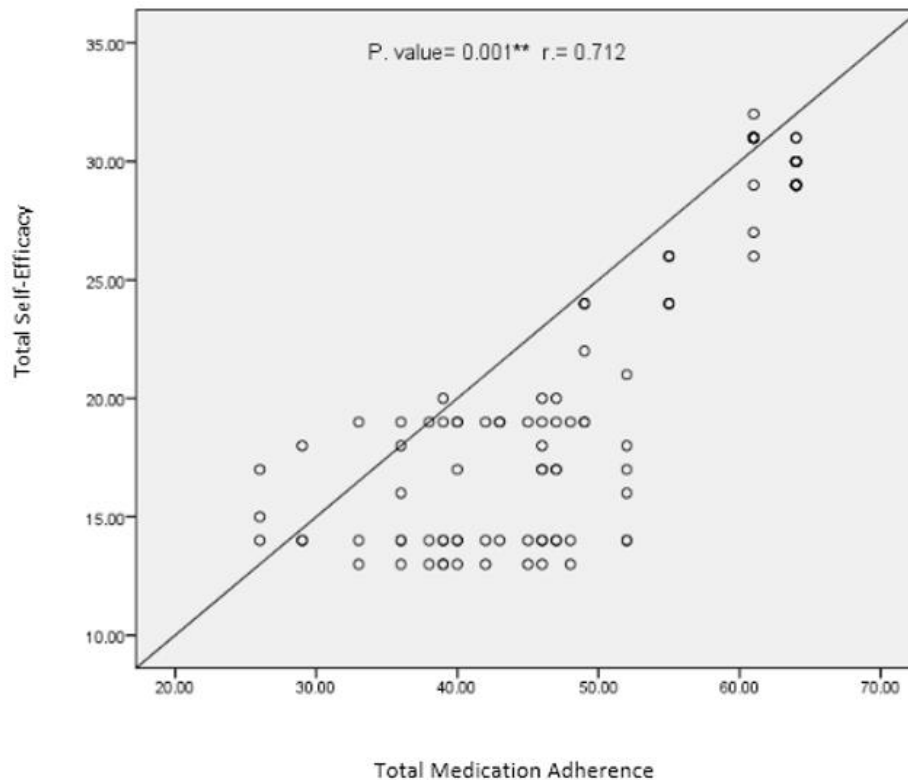


Figure (3): Correlation between total self-efficacy of the studied patients and their total medication adherence (N= 80).

DISCUSSION

Diabetic patients are at risk for developing diabetic problems as infection, ulcer and gangrene which are the most common cause of hospitalization among diabetics. Proper medication adherence is very necessary for preventing these problems and improving quality of life of these patients ⁽¹⁰⁾.

Regarding the demographic characteristics of the studied sample, it was found that the studied group with mean age was 15.6 ± 1.9 years old, this was in agreement with **Abdelsalam et al.**, ⁽¹¹⁾ who found that most the studied sample were in the age 26-70 years with mean age 55.0 ± 10.1 . Within the context of university students' developmentally appropriate push for independence, teens with diabetes often seek increased freedom in managing their therapeutic regimen ⁽¹²⁾.

One study found that metabolic control and psychological adjustment not only worsened with movement into adolescence, but that age was associated with the manner in which youths coped with their illness ⁽¹³⁾.

Regarding gender, it was illustrated that three fifths of the study group were males, this may be due to women put their health of low priority due to increased daily duties. this agree with **Siti et al.**, ⁽¹⁴⁾ who found that more than half of the studied sample were males, this disagree with **Abdelsalam et al.**, ⁽¹¹⁾ who reported that most of the studied sample were females.

Concerning the residence, it was observed that the majority of the studied sample was from rural areas, this is similar to **Litwak et al.**,⁽¹⁵⁾ who founded that the majority of respondents were from rural places.

This may be due to the longer the period of living with the diabetes disease, the more aware the patient becomes. This similar to **Seyyedrasooli et al.**,⁽¹⁶⁾ who found that statistically significant difference between age of the study group with the medication adherence $P < 0.000$.

The present study found the majority of the studied patients had a low self efficacy score and medication adherence. In this concern the physiological changes, adolescence is marked by behavioral and emotional issues related to establishing independence, increasing experimentation, and conforming with peers⁽¹⁷⁾. These developmental tasks may interfere with adherence to the treatment regimen.

In sum, the researcher point of view that university students with a complex treatment regimen cannot be considered as a unitary concept because of the multifaceted nature of diabetes management. Behavioral, developmental, and family factors are embedded in the concept of adherence. It is, therefore, not surprising that there have been considerable methodological difficulties in measuring adherence and in linking adherence behaviors to indices of metabolic control.

These University students have developed self-efficacy and proficiency regarding the daily tasks of disease management So, **Lawton et al.**,⁽¹⁸⁾ explained that self-appraisal may not be necessary when performing routine behaviors because of past experiences with these familiar tasks. Performance of routine behaviors may be better explained by incentives to perform rather than levels of self-efficacy⁽¹⁹⁾. Assessing self-efficacy may be more appropriate in the initial stages of the disease, that is, in newly diagnosed adolescent diabetics.

The current study explained that there is a highly statistically significant difference between gender and self-efficacy among the studied patients. These findings are in contrast with the results of the study conducted in Zagazig university hospitals, Egypt which reported that medication adherence was significantly better among females and residents of urban areas at baseline. Also, the current findings founded that there was no statistically significant difference between sex and residence and self-efficacy among the studied patients. These findings are in agreement with the findings of the study of **Abdelsalam et al.**,⁽¹¹⁾ which reported that sex and residence had no significant effect on foot self-efficacy.

This study reflected that there are a positive statistically significant correlation between self-efficacy of the studied patients and their adherence to medication. In the same line, the study done by **Lael-Monfared, E., et al.**⁽²⁰⁾ which revealed that the (perceived sensitivity, perceived severity, response efficacy, self-efficacy), and medication adherence were significantly related to self-care behaviours ($p < 0.05$). Other study was conducted in Indonesia by **Sari et al.**,⁽²¹⁾ who confirmed that the self-efficacy level is the one of the predictors of medication adherence.

For university students to engage in effective diabetes management adherence, an understanding of its value must be emphasized. Perhaps because many of the activities associated with diabetes self-efficacy do not produce clear and immediate positive consequences, nurses must focus on finding immediate rewards for

adherence. Identifying factors that affect adherence behavior in university students offers the opportunity to improve their health across the lifespan.

CONCLUSION

Optimal glycemic control in university students with DM is necessary to avert the development of chronic complications. The present study found the majority of the studied patients had a low self efficacy score and medication adherence. There was a positive correlation between perceived self efficacy and medication.

Recommendations: Provision of integrated better application of guidelines intervention for diabetic University students to prevent complication as a routine nursing role. The healthcare provider needs to understand the importance of the preventive strategies to reduce complications which regularly includes health efficacy and medication adherence. Finally, policy

should be focused on expanding the reach of diabetes self-management interventions to include racial/ethnically diverse populations across the spectrum of health efficacy to enhance their compliance to medication.

Declaration of conflicting interests

The authors declare that there is no conflict of interest.

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