Patients' Awareness Regarding Diabetes Mellitus During Hospitalization -Cross Sectional Study

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Abstract

Background: Diabetes Mellitus (DM) is a global chronic health problem with devastating, yet manageable complications. The prevalence and complications of Diabetes Mellitus have alarmingly worsened therefore aggressive promotion of continuous patients' awareness, continued screening and early intervention are pivotal to boosting a positive response in controlling diabetes and its complications. **So the study was aimed to** evaluate patients' awareness regarding Diabetes Mellitus (DM) during hospitalization in the general hospitals at Port-Said City. **Design:** A cross-sectional descriptive research design. **Setting:** The study was applied in general hospitals (Al-Amiri Hospital, Al-Zohour Hospital, Al-Nasr Hospital, and Port Fouad Hospital). **Subjects**: This study was carried out on 100 patients recorded in the general hospitals at Port-Said City. **One tool used for data collection**; "Structured questionnaire sheet" which consists of questions related to socio-demographic characteristics, and thirty-eight questions related to the patient's history, and diabetes mellitus. **Results**: This study indicated that more than half of both male and female patients had satisfactory awareness regarding DM. 90.9% of male patients and 73.6% of female patients had significant satisfactory awareness of the signs and symptoms. Meanwhile quite half of both male and feminine patients (54.5% and 52% respectively) had satisfactory awareness regarding the Complications. There is a significant relationship between gender and the Patient's DM Type where χ^2 (14.240) at P-value .001*. Also, there was no significant relationship between the Frequency of follow-up DM and checking the blood glucose level and gender. **Conclusion:** There is a statistically insignificant relationship between gender and a patient's awareness about diabetes mellitus except in one item related to the Patient's DM Type where P-value less than .05. **Recommendations**: Proper Diabetic education program will help in raising awareness of diabetic patients regarding the disease to prevent acute and chronic diabetic complications. Diabetes mellitus has debilitating effects on patients' status and communities. To effectively control diabetes and to delay the development of the complications, there is a dire need to educate patients, families, and communities.

Keywords: awareness, hospitalization, Diabetes Mellitus, patients, cross sectional study.

Introduction:

Diabetes Mellitus (DM) has become one of the most difficult public health issues of the twenty-first century. It presently affects over 366 million people globally, and by 2030, that number is expected to quadruple **(Shaw, et.al., 2010 & Zhang, et.al.,2010).** Diabetes might be a chronic metabolic disease that happens either when there's no production of enough insulin from the pancreas or when there's no effect using the insulin which produces. Insulin is a regulated hormone for blood sugar. Hyperglycemia, or increased blood glucose, may be a common effect of uncontrolled diabetes and over time results in serious damage to several of the body's systems, especially the nerves and blood vessels **(World Health Organization, 2015)**.

Diabetes Mellitus is a universal disease with an extreme effect on a patient's life due to its risk factors for other dangerous diseases such as coronary artery disease and its major complications **(Mansour, et al., 2004)**. According to the World Health Organization (WHO), the global prevalence of diabetes was estimated to be 9% among adults aged 18+ years, 171 million worldwide suffer from diabetes, and an estimated 1.5 million deaths were directly caused by diabetes **(World Health Organization, 2014).**

In Egypt, Diabetes is a rapidly growing health problem with a significant impact on morbidity, mortality, and health care resources. Currently, the prevalence of type 2 diabetes is around 15.6% of all adults aged twenty to seventy-nine, with an annual death of 86,478 related to diabetes. It is expected that the number of patients with diabetes in the Middle East and North Africa (MENA) region will grow by 96% from 2013 to 2035 or from 34.6 million to 67.9 million, where Egypt is the ninth country in the world in the prevalence of diabetes. Also, the number of Diabetics will almost double by 2030 if concerted action is not taken to tackle the risk factors fueling the epidemic of diabetes throughout Egypt **(Nasser, 2011; International Diabetes Federation, 2014)**.

Federated States of Micronesia (35%), Tokelau (37.5%), Kiribati (28.8%), Marshall Islands (34.9%), Vanuatu (24%), Cook Islands (25.7%), Kuwait(23.1%), Kingdom of Saudi Arabia (23.9%), Nauru(23.3%), and Qatar(22.9%) had been the absolute best 10 countries with higher prevalence of diabetes In 2013. In Riyadh city, the prevalence of diabetic patients is 461 Saudi males and 571 Saudi females. Care of diabetes is careful management, lifelong responsibility, and early treatment strategies may decrease the risk of complications, some of which are fatal **(Mashige, 2008; Nasser, 2011; International Diabetes Federation Atlas of Diabetes Health Intelligence, 2013).**

Diabetes mellitus remains the most common cause of blindness, kidney failure, heart disease, and stroke is two to fourfold greater among people with diabetes. At least 65% of people with diabetes will die from a heart attack or stroke, yet many individuals remain unaware of these risks **(Michael, 2005, American diabetes Association, 2006).** The management of diabetes poses a challenge to the nursing and medical staff as well as to the patients themselves. Since diabetes is a chronic disorder, most diabetic patients need to take their treatment **(World Health Organization, 2006)**. Also the controlling of DM through a constricting schedule of blood glucose and urine sugar monitoring, medication, and adjustment to dietary modification **(American Diabetes Association, 2013; Lwueze, 2007).**

Additionally, **Lwueze, (2007)** reported that such a chronic case requires competent self-care, which may be promoted from a radical understanding of the disease process, and therefore **Miyar, (2014)** reported that poor about DM affects the success of the treatment, prevention of impending chronic comorbidities, and the chance to improve the quality of life

Based on the previously mentioned statement and **Miyar, (2014)** study found that most diabetic patients had a satisfactory level of knowledge about DM and there is an urgent need to increase the awareness toward complications of the disease, and the author suggested that change in the diabetic patient's behavior in terms of their lifestyle is affected by the knowledge that they have about their disease, as well as other factors just like the meaning of the disease, risks and control methods. **Moodley, (2012)** found that the regular assessment of a patient's knowledge is important. Therefore, there is a need to evaluate patients' awareness regarding Diabetes Mellitus in the general hospitals at Port Said City.

Significant of the study:-

For the prevention, management, and control of DM, it is critical to be aware of the different aspects of DM. However, many studies have repeatedly shown that the general public is unaware about diabetes. Despite the fact that the illness is a serious public health issue in The Gambia, none of these researches were undertaken there. (**Foma, et.al., 2013)**.

Diabetes is one of the most common non-communicable diseases in the modern world, affecting 422 million people worldwide and causing an estimated 1.5 million deaths per year. It's a true global health hazard, with a prevalence of 8% in the United States. Diabetic progression frequently results in continuing entanglement, which reduces patient satisfaction while increasing their suffering and mortality. It also places a significant financial burden on health-care systems. The prevalence of diabetes is rising, and while there is evidence that the complications of diabetes are frequently avoided, there are still patients who lack the necessary information and abilities to manage and control their condition.

Hyperglycemia damages a few tissues inside the body, resulting in the occurrence of handicapping and dangerous unforeseen problems such as loss of vision, renal disappointment, coronary episodes, strokes, leg amputations, and coronary disappointment are all common (**Beiranvand, et.al., 2014)**. Hence, the researcher carried out the study to evaluate patients' awareness regarding Diabetes Mellitus (DM) during hospitalization in the general hospitals at Port-Said City.

Aim of Study:

To evaluate patients' awareness regarding DM during hospitalization in the general hospitals at Port-Said City.

Problem Statement:

There is an urgent need to evaluate patients' awareness regarding DM because their awareness may affect their lifestyle. Thus, it will control their disease, and prevent any serious and fetal complications.

Hypothesis Research:

H1: Diabetic patients will be aware about their disease to reduce acute and chronic complications of diabetes.

H2: There will be a relationship between gender and patient's awareness about diabetes mellitus.

Material and Methods:

Research Design:

The design of this study is a cross-sectional descriptive study done to evaluate patients' awareness regarding DM in the general hospitals at Port-Said City.

Setting:

The study was conducted in general hospitals (Al-Amiri Hospital, Al-Zohour Hospital, Al-Nasr Hospital, and Port Fouad Hospital). The study was carried out in Female, Male Internal Medicine, and Surgery Departments at Port-Said City.

Subjects:

The population of this study consisted of 100 patients who were recorded in the general hospitals at Port Said City from the beginning of June to the end of August 2014.

The inclusion criteria included:

-Adult patients aged from 20-60 years.
-Agree to participate in the study.

The exclusion criteria included:

-Adult patients are aged more than 60 years.
-Refusal to participate.

Tool for data collection

The structured questionnaire sheet was used in the study: The researcher developed one tool based on the review of related nursing literature to evaluate patients' awareness regarding DM in the general hospitals at Port Said city. It is comprised of two parts.

Part I

It included items related to socio-demographic characteristics of the studied patient such as age, sex, marital status, educational level, and occupation.

Part II

It included 38 questions related to the patient's awareness regarding DM, (patient's history, signs and symptoms, management, and complications).

Validity of the tool:

The content validity of the tool was tested by a board of 9 experts in Medical-Surgical Nursing and professors specialized in the management of patients with DM to ensure that the questions were clear, relevant, applicable, understandable, and complete and appropriate modification was done accordingly.

Reliability of the tools:

Test-retest reliability was used. The internal consistency of the tool was calculated using Cronbach's alpha coefficients. The study tool revealed reliability at Cronbach's alpha $\alpha=$ 0.79 for the tool.

Pilot study

The pilot study was carried out after finishing the development of the tool. It was carried out on 10 % of patients recording the general hospitals in Port Said City to test the reliability and applicability of the tool of the study. The radical modifications were done based on the pilot study result.

Fieldwork:

-Data Collection was within three months from the beginning of June to the end of August 2014.
-The researcher presented himself to the medical and nursing staff. The researcher explained the study's nature and goal and the participants were divided into two groups male and female diabetic patients groups who were recorded in 4 hospitals within three months in previously mentioned settings).
-Researcher attended the previously mentioned setting for collected data 5 days per week (Sunday to Thursday), from 9 am to 12 pm.

-The researcher presented himself to each patient and obtained oral consent from each patient.
-The researcher interviewed each patient individually for about one hour according to the patients' level of understanding; asked him questions and filled out the questionnaire by the researcher based on the patient's answers to each question.

The researcher presented himself to each patient and obtained oral consent from the patient. The researcher interviewed each patient individually and asked questions and filled out the questionnaire by the researcher based on the patient's answers to each question.
-In this study, the questionnaire was distributed one time.
-The researcher gave information to the subjects in the study individually.

Administrative Design:

The official letters were obtained from the Dean of the faculty to the directors of each study setting to take cooperation and permission.

Ethical Considerations:

This research was approved by the Faculty of Nursing Ethics Committee. Permission for conducting the study was obtained from the responsible authorities after explaining its purpose. Data was gotten from every patient prior to their inclusion in the study after explaining its importance and purpose. The researcher informed the patients that the study was voluntary, they were allowed to refuse to participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, the participants were assured that their information would be confidential and used for research purposes only.

Scoring system

The total score of the patient's knowledge against the 4 items was calculated to be 38. The respondent was given one point for each correct answer and zero for an incorrect one. For every part, the item scores were summed up. These scores were converted into a percent score. The total score of 60% and more were considered satisfactory in awareness while scores below 60% were considered unsatisfactory.

Statistical analysis

After data were collected, they were coded and transformed into a specially designed format suitable for computer feeding. All submitted data were verified for any errors. Data were analyzed using a statistical package for social sciences (SPSS) windows 18.0 version were presented in tables. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables. Qualitative variables were compared using the chi-square test.

Result:

Table (1) showed the socio-demographic characteristics of patients. About two-thirds of the male patients (60.6%) were more than 50 years and, (18.2%) of male patients were 35 years and less than 50 years. While about one-third of female patients (38.8%) were 35 years and less than 50 years and 25.4% of female patients were 20 years and less than 35 years. In addition, their educational level, most male patients (27.3%, 27.3 %) had a primary certificate and bachelor's degree respectively. While quite half the feminine patients (52.2%) were non-educated, and a minority of female patients (1.5%) had a Secondary Certificate. 80.6% of female patients and 54.5 % of male patients didn't work. About two-thirds of

female patients (67.2%) and the majority of male patients (81.8%) are married.

Table (2) demonstrated the frequency of diabetic male and female patients regarding diabetic patient's history. As regards their duration of diagnosis about one-third of male patients (36.4 %) and female patients (41.8%) were from 1 to 5 years. About two-third of male patients (60.6 %)regarding patient's DM types were non-insulin-dependent diabetes mellitus while one-third of female patients (38.8 %) were insulin-dependent DM (IDDM). The most of male patients (78.8%) and female patients (71.6%) regarding the frequency of follow-up were monthly. About more than half of both male and female patients (51.5%, 56.7% respectively) as regards to frequency of checking the blood glucose level were monthly. .

Table (3) illustrated the relationship between gender and diabetic patient's history. It demonstrated a statistically significant relationship between gender and the Patient's DM Type where $\chi2 =14.240a$ at p-value (.001*). Meanwhile, there was a statistically insignificant relationship between gender and Frequency of follow-up, and frequency of checking the blood glucose level where $\chi2 =1.166a$, and 1.000a respectively at p-value= .771, and .910 respectively.

Table (4) declared the frequency of diabetic male and female patients regarding patient's awareness about diabetes mellitus. The results indicated that the diabetic male and female patients had satisfactory awareness regarding DM. Whereas two-thirds of male patients (63.3%) and 43.3% of the feminine patients had satisfactory awareness regarding the Diabetes Process, and Causes. While most of the males patients (90.9%), and 73.6% of female patients had satisfactory awareness regarding the Signs and Symptoms. About two-thirds of both male and female patients (60.0%, and 61.2% respectively) had satisfactory awareness regarding management and self-care. Meanwhile quite half of both male and feminine patients (54.5 and 52% respectively) had satisfactory awareness regarding the Complications.

Table (5) showed the relationship between gender and the patients' awareness about diabetes mellitus disease. It demonstrated a statistically insignificant relationship between gender and a patients' awareness about diabetes mellitus. Finally, both male and female patients had satisfactory awareness regarding DM.

Table 1: Socio-Demographic Characteristics of Diabetic Patients

Items		Male		Female		Total	
		Count	Percentage %	Count	Percentage %	Count	%
Age	20-<35	7	21.2%	17	25.4%	24	24.0%
	35-<50	6	18.2%	26	38.8%	32	32.0%
	50+	20	60.6%	24	35.8%	44	44.0%
Educational Level	Non Educated	7	21.2%	35	52.2%	42	42.0%
	Primary	9	27.3%	14	20.9%	23	23.0%
	Intermediate	5	15.2%	4	6.0%	9	9.0%
	Secondary	3	9.1%	1	1.5%	4	4.0%
	Bachelor Degree	9	27.3%	13	19.4%	22	22.0%
Occupational Status	Working	15	45.5%	13	19.4%	28	28.0%
	Not Working	18	54.5%	54	80.6%	72	72.0%
Marital Status	Married	27	81.8%	45	67.2%	72	72.0%
	Un Married	6	18.2 %	22	32.0 %	28	28.0%
Total		33	100%	67	100%	100	100%

Table 2: Frequency of diabetic male and female patients regarding diabetic patient's history.

patient's awareness about		Male		Female		Total	
		Count	Percentage %	Count	Percentage %	Count	%
Duration of diagnosis	1-5 years	12	36.4%	28	41.8%	40	40.0%
	6-10 years	11	33.3%	22	32.8%	33	33.0%
	11-15 years	3	9.1%	5	7.5%	8	8.0%
	16-20 years	4	12.1%	5	7.5%	9	9.0%
	20+ years	3	9.1%	7	10.4%	10	10.0%
Patient's DM Type	IDDM	7	21.2%	26	38.8%	33	33.0%
	NIDDM	20	60.6%	15	22.4%	35	35.0%
	I don't know	6	18.2%	26	38.8%	32	32.0%
Frequency of follow up	Monthly	26	78.8%	48	71.6%	74	74.0%
	Every six months	4	12.1%	13	19.4%	17	17.0%
	yearly	1	3.0%	1	1.5%	2	2.0%
	Never	2	6.1%	5	7.5%	7	7.0%
Checking the blood glucose level frequency	yearly	1	3.0%	3	4.5%	4	4.0%
	Monthly	17	51.5%	38	56.7%	55	55.0%
	Weekly	8	24.2%	11	16.4%	19	19.0%
	Daily	5	15.2%	10	14.9%	15	15.0%
	Never	2	6.1%	5	7.5%	7	7.0%
Total		33	100.0%	67	100.0%	100	100.0%

Table 3: Relationship between gender and diabetic patient's history.

Patient's history	X^2	P- Value
Patient's DM type	14.240[a]	.001*
Frequency of follow up	1.166 [a]	0.761
Checking the Blood Glucose Level	1.000 [a]	0.910

Statistically significant (*) P-value<.0005.

Table 4: Frequency of diabetic male and female patients regarding patients ' awareness about the diabetes mellitus.

Patients' awareness about		Sex				total	
		Male		Female		count	%
		count	Percent %	count	Percent %		
Diabetes process and Causes	satisfactory	21	63.6%	29	43.3%	50	50.0%
	unsatisfactory	12	36.4%	38	56.7%	50	50.0%
Signs and Symptoms	satisfactory	30	90.9%	49	73.1%	79	79.0%
	unsatisfactory	3	9.1%	18	26.9%	21	21.0%
Management and Self-Care	satisfactory	20	60%	41	61.2%	61	61.0%
	unsatisfactory	13	39.4%	26	38.8%	39	39.0%
Complications	satisfactory	18	54.5%	35	52.2%	53	53.0%
	unsatisfactory	15	45.5%	32	47.8%	47	47.0%
Total	satisfactory	33	100%	67	100%	100	100%

Table 5: Relationship between gender and patients' awareness about diabetes mellitus.

Patient's awareness about:	X^2	P-Value
DM Process and Causes	.000	1.000
Signs and Symptoms	.588	.745
Management and Self-Care	4.153	.125
Complications	1.026	.599

Discussion:

Diabetes mellitus is a major public health problem that is the cause of morbidity and mortality **(Whitly, et. al, 2006; World Health Organization, 2014.).** There is an urgent need for a rise in the awareness of diabetes management and its complications within the healthcare sector. Continuing education on DM and its complications for diabetic patients is crucial and this should be accompanied by a regular assessment of their diabetic awareness **(American diabetes Association, 2006; Colbert, 2007)**. So the aim of this study was to evaluate patients' awareness regarding DM in the general hospitals in Port Said City.

The results of the present study revealed that about two-thirds of the male patients (60.6%) were more than 50 years old. While about one-third of females (38.8%) were 35 years and less than 50 years. These results could be related to that about one-third of the sample (35.0 %) were NIDDM These results were supported by **leite, et al. (2008)** who reported that in Brazil, a study in multi-center about the prevalence of DM found that the frequency gradually increases after the age of fifty. This same study emphasized the importance of diabetes as ill-health related to the progressive tendency of population aging that has been confirmed in brazil.

Concerning their educational degree, the majority of male patients (27.3 %, 27.3 %) had a primary certificate and bachelor's degree respectively. While more than half of the females (52.2%) were non-educated. These results were in line with **Otero, et.al, (2008)** who found that the majority of the studied subjects had only primary education but 7.5% of studied subjects were illiterate. These results were in disagreement with **leite, et al. (2008)** who found that (59.3%) patients hadn't finished the primary level of education, which is in agreement with the study on the prevalence in brazil and Ribeirao Preto- SP. This finding was supported by **Otero, et.al, (2008)** who reported that 42.6% of patients were retired. **(Whitly, et. al, 2006; Otero, et.al, 2008; Torquato, 2011).**

The results of the present study revealed that 54.5 % of the male patients and 80.6% of the female patients had no occupation. further 81.8% of the male patients and 67.2% of the female patients are married. These results might be due to the fact that 42.0% of the total studied sample are non-educated, most of the old age, and no effect of disease on the relationship of

marriage. In this respect, this finding was supported by **Otero, et.al, (2008)** who reported that 42.6% of patients were retired.

As regards the patient's awareness about DM in the current study, about two-thirds of male patients (63.3%) and more than half of female patients (56.7%) had satisfactory awareness regarding the diabetes process and causes. This result might be due to increasing awareness and educating the nurses, physicians, and community towards DM. This result was in agreement with **Miyar, et al (2014)** who added that most diabetic patients have awareness regarding the causes of disease.

In this respect, **Rodrigues, (2009)** stated that a Brazilian study in Ribeira˜o Preto, SP, Brazil with 82 DM patients reported that 78% of 82 diabetic patients had sufficient awareness regarding the disease. Moreover, **Dias, et.al.,(2010)** reported 57.6% of the population had knowledge regarding the disease.

The findings of the present study, 60.0% of males were patients' DM Type 2 while 38.8% of females were Type 1 of diabetes mellitus. These results might be due to the fact that 38.8% of females were in the age group 35 and less than 50 years. This finding was in accordance with **Dias, et.al.,(2010)** In a Brazilian study in Sa˜o Paulo, SP, which indicated to the most Brazilian of 357 DM patients of a public health state hospital 53.2% didn't know their disease type.

The results of the current study revealed that 74%, 55% respectively of the total studied sample were monthly follow-up of the disease and checking blood glucose level. These findings might be due to the fact that 60.6% of males were aged more than 50 years and 38.8% of females were in the age group 35 and less than 50 years and 42.0% of the studied sample were non-educated and 72% 0f studied sample were not-working. Also,40.0% of the total studied sample had the duration of diagnosis from 1 year to 5 years. These results were in the same line with **Rodrigues, (2009)** who reported that there is a lack of awareness and knowledge regarding some aspects of DM, especially men who had lower knowledge compared to the women because most of the subjects had primary education and the rest were illiterate.

The results of this study, 90.9% of male patients and 73.6% of female patients had satisfactory awareness of the signs and symptoms. This result might be due to most patients experiencing the signs and symptoms since an episode of DM. This finding was in accordance with **Miyar, et al (2014)** who found that a significant increase in the awareness about signs and symptoms of the disease.

The finding of this study revealed that about two-thirds of both male and female patients (60.0%, and 61.2% respectively) had satisfactory awareness regarding management and self-care. This result might be due to relevance as these health professionals play a role of great responsibility in educating diabetic patients toward self-management. This result was in agreement with **Miyar, et al (2014)** who reported that a significant increase in the patients' awareness about self-management was observed so it is important to understand that diabetic patient's awareness about the disease is that the basis to realize diabetes self –management.

This result was in disagreement with **Moodley (2012)** who supported that African diabetic patients have a poor ability to manage their disease. Optimal patient self–management of diabetes is largely dependent on patient knowledge. The results of the present study revealed that more than half of both male and female patients had satisfactory awareness regarding complications. These results might be due to the studied patients asking about the short and long-term complications. This result was in disagreement with **Moodley (2012)** who reported that studied diabetic patients had no awareness about its complications.

The present study also confirmed that the male gender had higher DM knowledge scores than the females. This result is in disagreement with **Carlos, (2014)** who reported that the female gender had higher DM knowledge scores than males in the study about knowledge of Diabetes Mellitus: Does Gender Make a Difference?. The current study revealed that there is a statistically insignificant relationship between gender and a patient's awareness about diabetes mellitus except for the relationship between gender and diabetic patient's history. These results were disagreement with **Ahmad S.,(2014)** found that though there was not a notable difference in the knowledge levels of the male and female population except for one or two aspects of diabetes, there are many patients who lack awareness and basic knowledge of the complications of this disease. Moreover, These results were in the same line with **Bahru, (1993)** who reported that twenty years ago, an Ethiopian study did not observe significant gender differences in DM knowledge.

Conclusions:

Based on the results of this study, the subsequent were concluded:

- ❖ About more than half of both male and female patients had satisfactory awareness regarding DM.
- ❖ The majority of male patients (90.9%), and 73.6% of female patients had satisfactory awareness regarding the Signs and Symptoms.

❖ Approximately 54.5% of male patients and 52% of female patients had satisfactory awareness regarding the Complications.

❖ There is a significant relationship between gender and the patient's DM Type.

❖ There was an insignificant relationship between frequency in follow-up DM and frequency of checking the blood glucose level and gender.

Recommendations:

❖ A well-organized and structured education program should be established at Portsaid City for diabetic patients.

❖ Health care providers should take time to explain in-depth diabetes, causes, and prevention/control through health and self-care measures to prevent serious complications.

❖ Family members of diabetic patients should also be counseled to adopt a healthy lifestyle to prevent diabetes.

❖ Studies in a similar context but with a wider scope and much larger sample size are suggested to confirm the findings of this study.

❖ Evaluation relationship awareness of diabetic guidelines and adoption or adherence to recommendations important for outcomes and quality of care.

❖ The awareness-to-adherence model helps in identifying barriers to the use of guidelines.

Acknowledgment:

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