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Concerns Regarding Diabetes Mellitus among Adult Patients in Minia University Hospital.

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Abstract

Background: Type II diabetes mellitus (DM) is a devastating chronic health illness bringing reasons for cessation of work and an increased attendance in emergency hospitals. Patients with type II DM badly need effective self-management for their illnesses which is enhanced through patients' success in solving their identified problems. The current study **aimed to** assess concerns of adult patients with DM in Minia City university hospital regarding their illness. **Methods**: A descriptive research design was utilized for the current study. All the available adult patients with type II DM meeting the inclusion criteria either admitted to or followed their diabetes at El- Mina university hospital within the period between first of January to July 2013, were recruited to the current study (n=132). Data were collected by three instruments: a) structured interview questionnaire sheet, developed by the researchers, covered both patient's socio-demographic data and attitudes towards DM; b) insulin subcutaneous injection observational checklist adopted from (24) c) foot care observational checklist adopted from (25); both checklists were implemented by the researchers. **Results**: Results showed that, (24.2%) of the study sample were illiterate; (69.7 %) of the study sample were females where (51.5 %) of them were housewives. Also, (57.6 %) aged from 41 – 65 years with mean and standard deviation of 44.00 ± 12.79. Also, statistically significant differences were found between study sample's attitudes and their educational level, employment status, age, access to health facilities & crowding index. Significant differences were found between study sample's self-care health practices of DM employment status, income and access to health care services. Statistically significant difference was found between study sample's performance of foot care and their performance of insulin subcutaneous injection (P=0.001). No statistically significant differences were found between either inpatient or outpatients' attitudes and self-care health practices regarding DM. **Conclusion**: The majority of study sample had negative attitudes and unsatisfactory self-care practices regarding DM. **Recommendations**: Developing quality evidence-based clinical practice guidelines regarding management of DM for healthcare professionals whenever patient needs clarification.

Key wards: Concerns, Type II Diabetes Mellitus**,** Attitude**,** Self –Care Health Practices, Crowding Index**.**

1. Introduction

Diabetes type II is one of the devastating chronic health conditions that brings about reasons for cessation of work and, an increased attendance in emergencies hospital. Despite improved treatment options, diabetes type II morbidity and mortality continue to be major health issues for adult population (Halpin, Morales-Sugrez-Varela & Martin-Moreno, 2010). Diabetes mellitus (DM) type II is a major public health problem worldwide, and it is known a risk factor for many dangerous health problems such as micro vascular and macrovascular diseases, ophthalmic diseases, coronary artery disease, kidney and liver diseases (Latifa & Kaoul, 2007).The global prevalence of diabetes is 6.4%, the prevalence varies from 10.2% in the Western Pacific to 3.8% in the African region (Shaw, Sicree & Zimmet, 2010).

World Health Organization (WHO) predicts that developing countries will bear the burden of this epidemic in the 21st century. An estimated 285 million people, corresponding to 6.4% of the world's adult population do live with diabetes since 2010. The number is expected to grow to 438 million by 2030, corresponding to 7.8% of the adult population. While the largest age group currently affected by diabetes is between 40-59 years, by 2030 this “record” is expected to move to the 60-79 age group with some 196 million cases. Non-communicable diseases including diabetes account for 60% of all deaths worldwide (Boden-Albala et al, 2008) & (WHO, 2013).

In developing countries, less than half of people with diabetes are diagnosed. Without timely diagnoses and adequate treatment, complications and morbidity from diabetes rise exponentially (American Diabetes Association, 2009) & (kattratt, 2013). Egypt Prevalence of diabetes has reached epidemic proportions. It is estimated that by the year 2030, Egypt will have at least 8.6 million adults with diabetes which is the eleventh most important cause of premature mortality in Egypt, and it is responsible for 2.4% of all years of life lost. Similarly, diabetes is the sixth most important cause of disability burden in Egypt (Arafa, & Amin, 2010).

About 80% of type II diabetes is preventable by changing diet, increasing physical activity and improving the living environment (Bouguerra, Alberti, Salem, Rayana, Atti et al, 2007).Yet, without effective prevention and control programs, the incidence of diabetes is likely to continue rising globally (Zaoui, Biémont & Meguenni, 2007).

The financial burden borne by people with diabetes and their families as a result of their disease depends on their economic status and the social insurance policies of their countries. In the poorest countries, people with diabetes and their families bear almost the whole cost of the medical care they can afford (Alhyas, McKay, Balasanthiran & Majeed, 2011).

Unless addressed, the mortality and disease burden from diabetes will continue to increase. WHO projects that globally deaths caused by these health problems will increase by 17% over the next decade, with the greatest increase in low- and middle-income countries, mainly in the African (27%) and Eastern Mediterranean (25%) and south Asia (23-25%) regions (Summary health statistics for U.S. adults (National health interview survey, 2010-2012).

The underlying premise of Healthy People 2020, diabetes goal is to reduce the disease and economic burden of diabetes mellitus (DM) and improve the quality of life for all persons who have, or are at risk for DM. This goal does help guide in promoting the public's health, as the health of individual community members is almost inseparable from the health of the larger community (www.healthypeople.gov/2020/topicsobjectives2020, 2013). So, successful programs to close the gap in diabetes-related health disparities in various populations are built on strengthening the links between health care providers and the community members they serve (www.healthypeople.gov/2020/topicsobjectives2020, 2013) & (Roe & Thomas, 2009).

Like a number of other chronic disease challenges, diabetes prevention and self-care are less dependent on "high-tech" clinical approaches than they are on "high-talk" efforts that provide social support, outreach, consistent follow-up, preventive care, community and family education, and community mobilization given by community health care providers (Hewitt, Smeeth, Chaturvedi, Bulpitt & Fletcher, 2011).

In fact, all health professionals and community healers, leaders, and members are needed to arrest the mounting challenge of diabetes in their communities (Hewitt et al, 2011). Community health nurses are uniquely qualified to carry out culturally relevant communication and health promotion approaches necessary to address diabetes within an ecological context as they are in a position to respect and honor local knowledge, speak their familial language, build trust for health care delivery systems, support people in making informed and adaptive health choices consistent with their personal and cultural values, and help mobilize their communities to promote participation in planning and delivery of interventions and identification of additional resources. Community health nurses have unique abilities to serve as "bridges" between community members and health care services (Satterfield, Burd, Valdez, Hosey & Shield, 2012).

Patients with diabetes mellitus type II make day-to-day decisions about self-manage their illnesses (Stein, 2011). Whereas traditional patient education offers information and technical skills, self-care education teaches problem-solving skills. Self-care is enhanced when patients succeed in solving their -identified problems (Torres, Rozemberg, Amaral & Bodstein, 2010).

Self-care is essential for good diabetes care. Diabetes self-care is what people with diabetes do day to day to control blood glucose and prevent diabetes complications. Actually, more than 95% of diabetes care is done by the patient. Health care providers offer instruction, but day-to-day implementation depends on patients themselves, who care for their diabetes "within the context of the other goals, priorities, health issues, family demands, and other personal concerns that make up their lives (King, Glasgow, Toobert, Strycker, Estabrooks et al, 2010).

People who have diabetes can live healthy when they take on the day-to-day responsibilities of their own diabetes self-care. The five basic elements of diabetes self-care are diet, exercise, medications, monitoring, and skin/foot care. As with any habit, these diabetes self-care habits will help maintain good health when done regularly (Safford, Russell, Churl Suh, Roman & Pogach, 2005).

Regarding skin & foot care, diabetes causes changes in nerves and blood circulation, particularly in the lower limbs. Amputations, a major diabetes complication, can be prevented by daily foot care should include looking for sores or cuts, wearing comfortable shoes and socks, and taking care of skin to prevent blisters, calluses, and cracks (American Diabetes Association, 2009).

2. Significance of the study

Diabetes mellitus represents a significant public health burden worldwide by decreasing quality of life and causing death and disability at great economic cost (Latifa & Kaoul 2007). The global prevalence of DM in the year 2010 among adults has been estimated to be 6.4% (Halpin, Morales-Sugrez-Varela & Martin-Moreno, 2010). Meanwhile, in Egypt is more than 11% of the population suffers from diagnosed (type II) diabetes. Moreover, a recent New York Times report stated "In Egypt, 42% of people with diabetes experience early-stage eye disease and 5% are legally blind" (GYCA Egypt, 2013). It is estimated that by the year 2030, Egypt will have at least 8.6 million adults with diabetes (Arafa, & Amin, 2010).

Based on that, diabetic effective self-care in the form of patients' attention to insulin administration, blood glucose monitoring, meal planning, diabetic foot care, and screening for other comorbidities has been considered as essential diabetic care and is best undertaken in the context of a multidisciplinary health team (Bos and Agyemang 2013). For this reason, the current study emphasis was on assessing the adult diabetic patients' attitude as well as self-care practices regarding diabetes mellitus.

3. Aim of the study

The aim of the current study was assessed concerns of patients with diabetes mellitus through:

1- To assess attitudes of patients with diabetes mellitus regarding their illness.
2- To assess self-care health practices of patients with diabetes mellitus.

Conceptual framework

For the purpose of the current study, the following concepts were defined as follows:

Attitude: For the current study, it is what the study participants think, feel, imagine …etc regarding DM that was assessed through using the attitude rating scale.

Self-Care Health Practices: For the current study they are the study participants' both insulin subcutaneous self-injection and diabetic foot self-care that were assessed through using the observational checklists for both insulin subcutaneous injection and diabetic foot care.

Concerns: For the current study, they are the study participants' attitudes and self-care health practices regarding DM that were assessed through using the attitude rating scale and the observational checklists for both insulin subcutaneous injection and diabetic foot care.

Crowding Index: For the current study, it is the result of dividing the number of total family members by the number of rooms.

Research questions

1- What are the attitudes of patients with diabetes mellitus?
2- What is the level of performance of patients with diabetes mellitus regarding their self-care health practices?
3- Is there a relationship between attitudes of patients with diabetes mellitus and their self-care health practices?

4. Subjects & Methods

Research design:

A descriptive research design was used for the current study.

Setting:

The current study was conducted in Minia University Hospital at medical wards and outpatients' clinics at Minia city. This hospital provides their services to Minia community (10 cities and its villages).

Sample:

Convenient sample, all the available adult patients with type II DM of both sexes either admitted to the medical ward or who came to follow up their diabetes in outpatient clinics at the same period between first of January to July 2013.The total sample size was 132 patients, 65 patients of them were admitted to medical ward and the remaining 67 patients were coming to the outpatient clinics to follow up their diabetes.

Inclusion Criteria:

Patients were included in the study according to the following criteria:

- Adult ≥18 years,

- Patients with type II DM on insulin therapy,
- Male and female patients,
- Patients who received previous instruction about diabetes self-care health practices.

Study Instruments:

Data pertinent to patients' concerns of DM were collected through utilizing three instruments developed by the researchers after extensive review of literature;

- Structured interview questionnaire sheet covering both patient's socio-demographic data and attitudes towards DM.
- Insulin subcutaneous injection observational checklist.
- Foot care observational checklist; both checklists were implemented by the researchers.

First instrument: A structured interview questionnaire sheet was designed in Arabic language by the researchers through an extensive literature review. It composed of two parts;

1st part: covered socio-demographic data of study participants as age, gender, level of education, employment status, crowding index …etc .The crowding index was calculated using the formula developed by (Goodyear, Fabian & Hay, 2011). Crowding index is the ratio between the number of family members and the number of rooms. 2nd part: the attitude rating scale that was designed by the researchers after extensive review of literature to assess patient's attitude regarding DM, it was five-point scale with rating scores between strongly agree and strongly disagree and included 22 items. The scale was validated by experts.

Second instrument: Insulin subcutaneous injection observational checklist was adopted from (Kozier & Erbs, 2008) and modified by the researchers after extensive literature review. It included 22 items to assess participants' performance regarding insulin subcutaneous self-injection.

Third Instrument: Diabetic foot care observational checklist was adopted from (CDC, 2012) and modified by the researchers after extensive literature review. It included 39 items to assess participants' performance regarding diabetic foot care. So, both observational checklists included 61 items to assess the participants' self-care health practices regarding DM to fulfill aims of the study.

A diabetes guidelines booklet: prepared by the researchers was disseminated to all study participants after their assessment as a teaching aid regarding diabetes disease and related self -care health practices.

Administrative design:-

- An official permission was obtained through the appropriate channels from the director of Minia University Hospital, as well as from both heads of the medical ward and outpatient clinics after researchers' explanation of the aim and scope of the study.

Ethical consideration

- Ethical and eligibility considerations were cleared to hospital authorities and study participants.
- A voluntary acceptance and informed consents were obtained from study subjects to participate in the study. The significance and purpose of the study was explained to them and confidentiality of any obtained information was ensured to them as well.

Pilot study:-

A pilot study was carried out on approximately10% from the study sample to test for clarity, feasibility, applicability, and the content validity as well as appropriateness of the study tools, then all the necessary modifications were done. Also expert validity was carried out (i.e. a panel of expertise composed of 7 experts in the field). The participants in the pilot study were excluded from the total study sample.

Duration of the Research

- Data collection was taken approximately six months started from the first of January to July 2013.

Procedure:

An official permission was obtained through the appropriate channels from the director of Minia University Hospital, as well as from both heads of the medical ward and outpatient clinics after researchers' explanation of the aim and scope of the study. Purpose, nature and scope of the study were clearly explained for the entire study sample. Then, the researchers obtained the patients' verbal informed consents before conducting the study.

Data pertinent to the study were collected through both a structured interview with and direct observation of the study participants. The researchers were present with the study participants during their filling out of the

structured interview questionnaire sheets. The researchers clarified any ambiguities present in the sheets. So, the total study participants had fully completed filling out the structured interview questionnaire sheets, with its both socio-demographic data and attitude scale parts, in the presence of the researchers. It took about 15-20 minutes for each participant to fill out the structured interview questionnaire sheet. After each participant finished filling out the structured interview questionnaire sheet, the researchers offer the equipment needed for performing diabetic foot care and insulin subcutaneous injection procedures for the participant to apply both procedures in the presence of the researchers. Then, researchers evaluated participants' performance by using the two observational checklists (one was for assessing the foot care performance and the other was for insulin subcutaneous procedure). It took about 25-35 minutes for each participant to carry out both procedures and for the researchers to fill out both observational checklists.

Diabetes guidelines Booklet:

A designed manual developed by the researchers in simple Arabic language was disseminated to every participant patient as a teaching aid regarding DM and self- care health practices. The purpose of this developed instructional guidelines was to help patients with DM to have better dealing with their illness, to meet their needs, interests as well as to raise their awareness and so encourage them to change their health behavior from negative to positive one regarding DM. This manual includes the following aspects: definition, early detection and complications of DM. Also this manual offers patient's with DM the ideal self-care practices according to their information backgrounds and at their levels of their understanding. Pictures illustrating the important points were included for illiterate patients. Booklets were disseminated after finishing data collection. Elaborations were completed by giving examples about proper self-care management, early detection, complications of DM and when to seek medical advice. The time spent to disseminate and illustrate this manual content for each patient ranged from 20– 25 minutes either for patient in medical ward or outpatient clinics.

Statistical design

- **Scoring system:**

In the attitude scale, the items “strongly disagree”, “disagree”, “neutral”, “agree” and “strongly agree” were scored 1, 2, 3, 4, and 5, respectively. The score was reversed for negative items. The scores of the items were summed-up and the total divided by the number of the items and multiplied by 100, giving a mean percent score. Then, means and standard deviations were computed. The subject was considered as having adequate attitude whenever his/her score was equal to or exceeding 60%, otherwise he/she was considered as having inadequate attitude.

For insulin subcutaneous injection checklist, the scores ranged from score 0 (not done), 1 (done with assistance) to 2 (done independently). On the other hand, diabetic foot care checklist scores ranged from score 0 (not done), 1 (done with assistance) to 2 (done independently). For both observational checklists, study participant was considered as having poor diabetic self-care health practices, when he/she had a score of <50% out of total score; and considered as having satisfactory diabetic self-care practices when he/she had a score of 50% - <65% out of the total score; and finally considered as having good diabetic self-care health practices when he/she had a score > 65% out of the total score.

- **Statistical analysis:**

Data were tabulated and summarized. They were computed and analyzed by using computer software packages appropriate statistical tests. Descriptive and inferential statistics was applied. The following descriptive statistical tests, e.g. using the numbers frequency and percentage, means and standard deviation were calculated by using Statistical Package for Social science through SPSS 20 programs. Descriptive statistical tests, e.g. percentage, means and standard deviation were calculated. Different tests for significance were applied as chi square and T-test. A probability level of 0.05 was adopted as a level of significance for the applied statistical tests.

The first step in the analysis of data was to try to quantify the observations to facilitate data presentation and analysis. Sociodemographic data were collected using the structured interview questionnaire sheet. Crowding index (i.e. number of family members/ number of rooms) stated by (Goodyear, Fabian & Hay, 2011) was scored as follows:

Crowding index	
4 or more	0
4-	1
2-	2
<2	3

Ethical consideration:

- After approval of the ethics committee, an official permission was obtained from administration of the selected hospital directors and head of each selected department for to collect data.
- Informed consents were obtained from the study participants before participation in the study.
- The significance and purpose of the study were explained to study participants and confidentiality of any obtained information was ensured to them.
- All needed permissions were obtained through the appropriate channels.

5- Results

Table 1. Percent distribution of the study sample's socio demographic characteristics (n= 132)

Socio-demographic characteristics	NO	%
Gender		
• Male	40	30.3
• Female	92	69.7
Age		
• 18 – 30 years	32	24.2
• 31- 40 years	24	18.2
• 41-65 years	76	57.6
Mean ± SD	44.00 ± 12.79	
Range	23 - 56 years	
Employment		
• Free work	36	27.3
• Employee	28	21.2
• House wife	68	51.5
Education level		
• Illiterate	32	24.2
• Primary education	8	6.1
• preparatory education	32	24.2
• Secondary/ Diploma education	40	30.3
• University education	20	15.2

Table 1 shows that, more than two thirds of the total study sample (69.7 %) were females and more than half (57.6 %) aged from 41– 65 years with mean and standard deviation of 44.00 ± 12.79. As regards occupation, it was found that, about half of the study sample (51.5 %) was housewives. Also nearly one third of the study sample's level of education (30.3 %) was secondary school /diploma level of education.

Table 2. Percent distribution of the study sample's socio demographic characteristics (n=132)

Socio-demographic characteristics	**NO.**	**%**
Income.		
• Low (≤ 700 LE).	96	72.7
• Moderate 1200 – 2500 LE).	36	27.3
Access to health care services.		
• Easy.	48	36.4
• Difficult.	84	63.6

Table 2 depicts that, nearly three quarters of the study sample were of low income (72.7%). As regards access to health care services, it was found that, nearly two thirds of the study sample (63.6%) experienced difficulty to access health care services.

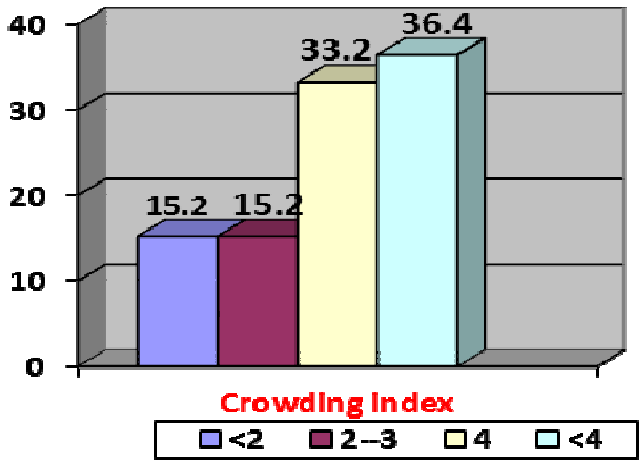

Figure 1. Percent distribution of the crowding index among study sample (n=132).

Figure 1. Illustrates that, more than two thirds of the study sample had crowding index equal to or more than four (33.2 &36.4 %) respectively.

Table 3. Differences between total mean of score for foot care & insulin subcutaneous injection among participants the study sample (N=132).

Items	Foot care		Insulin subcutaneous injection		Statistical test	P-value
	X	SD	X	SD		
Total Foot care & Insulin subcutaneous injection scores	81.45	46.24	53.15	26.97	11.31	0.001*

(*) Statistically significant

Table 3 reveales that, a highly statistically significant difference was found between study sample's performance of foot care and their performance of insulin subcutaneous (P =0.001*).

Table 4. Relationship between education level and employment status of study sample's and their attitudes towards diabetes mellitus (n=132).

Socio- demographic data	Study sample's attitude		χ^2	*P* - value
	Positive	Negative		
	No %	No %		
Education level				
Illiterate	0 (0)	32(24.2)	9.859	0.04*
Primary education	0 (0)	8 (6.1)		
preparatory education	0 (0)	32 (24.2)		
Secondary / Diploma education	4 (3.0)	36 (27.3)		
University	16 (12.1)	4 (3.0)		
Employment status				
• Free work	32 (24.2)	0 (0)	5.938	<0.05*
• Employee	16 (12.1)	12 (9.1)		
• House wife	60 (45.5)	12(9.1)		

(*) Statistically significant

Table 4 reveals that, statistically significant relation was found between study sample's who were had a negative attitude towards diabetes mellitus and who their education level were Illiterate and secondary or diploma (p-value = 0.04),while a statistically significant difference was found between study sample's who were had a positive attitude towards diabetes mellitus and their employment as housewives (p-value < 0.05).

Table (5) Relationship between adequacy of study sample's attitudes towards diabetes mellitus and their age and gender (n=132).

Socio- demographic data	**Study sample's attitude**		**χ^2**	***P* - value**
	Positive	**Negative**		
	No %	**No %**		
Age				
• 18 – 30 years	8 (6.0)	24(18.2)	14.564	0.001*
• 31- 40 years	16 (12.1)	8 (6.1)		
• 41-65 years	52(39.4)	24 (18.2)		
Gender			0.296	0.586
• Male	36 (27.3)	4 (3.0)		
• Female	76 (57.6)	16 (12.1)		

(*) Statistically significant

Table 5 reveals that, a high statistically significant difference was found between study sample's attitudes towards diabetes mellitus and age (P-value=0.001*). On the other hand, no statistically significant difference was found between study sample's attitude towards diabetes mellitus and their gender.

Table (6) Relationship between study sample's attitudes towards diabetes mellitus and their income , access to health care services and crowding index characteristics (n=132).

Socio- demographic data	**Study sample's attitude**		**χ^2**	***P* - value**
	Positive	**Negative**		
	No %	**No %**		
Income				
• **Low (**< 700 LE)	24 (18.2)	72 (54.5)	11.567	0.01*
• **Moderate (**700 – < 2500 LE)	24 (18.2)	12 (9.1)		
Access to health care services				
• Easy	36 (27.3)	12 (9.1)	12.754	0.001*
• Difficult	28 (21.2)	56 (42.4)		
Crowding index			3.213	<0. 05*
• < 2	12(9.1)	8 (6.1)		
• 2-3	8 (6.1)	12 (9.1)		
• 4	12 (9.1)	32 (24.2)		
• 4 or more	12 (9.1)	36 (27.2)		

(*) Statistically significant

Table 6 represents that, statistically significant differences were found between study sample's attitudes towards diabetes mellitus and their income, access to health care facilities and their crowding index (P-values= 0.01, 0.001 and <0.05 respectively).

Table 7. Relationship between performance level of study sample's regarding diabetes mellitus self-care health practices and certain sociodemographic characteristics (n=132).

Items	Insulin subcutaneous injection procedure			Diabetic foot care procedure		
	Poor	Satisfactory	Good	Poor	Satisfactory	Good
	No (%)	**No (%)**	**No (%)**	**No (%)**	**No (%)**	**No (%)**
Education level						
Illiterate	20 (15.2)	12 (9.1)	0 (0)	30 (22.7)	0 (0)	2 (1.5)
Primary education	4 (3.0)	4 (3.0)	0 (0)	4 (3.0)	4 (3.0)	0 (0)
preparatory education	24(18.2)	4 (3.0)	4 (3.0)	20 (15.1)	5 (3.8)	7(5.3)
Secondary/ Diploma education	8 (6.1)	16 (12.1)	16(12.1)	26 (19.6)	4 (3.0)	10 (7.6)
University education	8 (6.1)	0 (0)	12 (12.1)	8 (6.0)	0 (0)	12 (9.1)
	T =1.8	***P* – value** =0.213		T =0.9	***P* – value** 0.7507	
Employment						
Free work	20 (15.2)	8 (6.1)	8 (6.1)	19 (14.4)	10 (7.6)	7 (5.3)
Employee	12(9.1)	4(3.0)	12 (9.1)	24 (18.2)	0 (0.0)	4 (3.0)
House wife	32(24.2)	24(18.2)	12 (9.1)	42 (31.8)	12 (9.1)	14 (10.6)
	T =3.75	***P* = 0.<05***		T =3.81	***P* = 0.<05***	

(*) Statistically significant

Table 7 depicts that, no statistically significant relation was found between performance level of study sample regarding insulin subcutaneous self-injection & foot care and their educational level (p-value 0.213 & 0.7507). Meanwhile, statistically significant relation was found between poor performance of study sample regarding same previous practice with their employment as housewives (p-value 0.05).

Table 8. Relationship between performance level of study sample regarding diabetes mellitus self-care health practices and sociodemographic characteristics (n=132).

Items	Insulin Subcutaneous injection procedure			Diabetic foot care procedure		
	Poor	Satisfactory	Good	Poor	Satisfactory	Good
	No (%)	**No (%)**	**No (%)**	**No (%)**	**No (%)**	**No (%)**
Gender						
Male	20 (15.2)	8 (6.1)	12 (9.1)	36(27.3)	0 (0.0)	4 (3.0)
Female	44 (33.3)	28(21.2)	20 (15.2)	52(71.9)	26 (19.7)	14 (10.6)
	T =7.81	***P* = 0.04***		T =7.82	***P* = 0.04***	
Age						
18 – 30 years	16 (12.1)	4 (3.0)	12 (9.1)	8 (6.1)	16 (12.1)	8 (6.1)
31- 40 years	12 (9.1)	8(6.1)	4 (3.0)	6 (4.5)	12 (9.1)	6 (4.5)
41-65 years	36 (27.3)	24 (18.2)	16 (12.1)	56 (42.4)	10 (7.6)	10 (7.6)
	T = 1.7	***P* = 0.683**		T =1.5	***P* = 0.709**	

(*) Statistically significant

Table 8 shows that, statistically significant difference was found between poor performance level of study sample's regarding insulin subcutaneous self-injection & foot care and their gender as females (p-value 0.04).

Table (9) Relationship between performance level of study sample's regarding diabetic foot care procedure and their income ,health care service access and crowding index (n=132)

Socio- demographic data	Diabetic foot-care procedure			χ^2	*P* – value
	Poor	Satisfactory	Good		
	No %	No %	No %		
Income					
• **Low (**< 700 LE)	64 (48.5)	20 (15.2)	12 (9.1)	3.743	<0. 05*
• **Moderate** (700 – < 2500 LE)	16 (12.1)	16 (12.1)	4 (3.0)		
• **High** (2500 + LE)	0 (0.0)	0 (0.0)	0 (0.0)		
Access to health care services					
• Easy	44 (33.3)	4 (3.0)	0 (0)		
• Difficult	8 (6.0)	4(3.0)	72 (54.5)	5.034	0.003*
Crowding index					
• < 2	16 (12.1)	0 (0)	4 (3.0)	2.754	0.06
• 2-3	8 (6.0)	8 (6.0)	4(3.0)		
• 4	4 (3.0)	32 (24.2)	8 (6.0)		
• 4 or more	40 (30.3)	4 (3.0)	4 (3.0)		

(*) Statistically significant

Table 9 illustrates that, statistically significance differences were found between poor performance level of study sample regarding diabetic foot care and both their income and access to receive health care services (p-values = <0. 05 & 0.003 respectively).

Table (10) Relationship between performance level of study sample's performance regarding Insulin subcutaneous injection procedure and sociodemographic characteristics (n=132).

Socio- demographic data	Insulin subcutaneous injection procedure			χ^2	*P*– value
	Poor	Satisfactory	Good		
	No %	No %	No %		
Income					
• **Low (**≤ 700 LE)	76 (57.6)	12 (9.1)	8 (6.1)	1.823	<0. 05*
Moderate 1000 – 3000 LE)	16 (12.1)	12 (9.1)	8 (6.1)		
Access to health care services					
• Easy	32 (24.2)	12 (9.1)	4 (3.0)	2.053	0.002*
• Difficult	68 (51.5)	8 (6.1)	8 (6.1)		
Crowding index					
• < 2	12 (9.1)	4 (3.0)	4(3.0)	1.905	0.04*
• 2-3	16 (12.1)	4 (3.0)	0(0)		
• 4	28 (21.2)	12 (9.1)	4(3.0)		
• 4 or more	40 (30.3)	0(0.0)	8(6.1)		

(*) Statistically significant

Table 10 shows that, statistically significant differences were found between performance level of study sample regarding subcutaneous insulin injection procedure and their income, access to health care services and their crowding index (P – values = <0.05, 0.002 & 0.04 respectively).

Table 11. Relationship between inpatients' & out patients' attitudes and self-care health practices regarding diabetes mellitus (n=132).

	In patient (No. 65)	Outpatient (No. 67)		
	No %	No %	$\chi 2$	*P* - value
Total attitude				
• **Positive**	8 (12.3)	7 (10.44)	2.90	0.09
• **Negative**	57 (87.7)	60 (89.56)		
Total practice				
• **Poor**	35 (62.5)	43 (64.18)	2.042	0.16
• **Satisfactory**	14 (25)	12 (17.91)		
• **Good**	7 (12.5)	12 (17.91)		

(*) Statistically significant

Table 11 shows that, no statistically significant differences were found between inpatient and outpatient subjects in the study sample as regards their attitudes and self- care practices towards diabetes mellitus.

6- Discussion

The current study revealed that, more than two thirds of the total study sample (69.7%) were females. This may be related to the progressing incidence of Type II DM in Egypt among adult women who are especially presented with sedentary lifestyle, excessive junk food consumption and obesity. This result contradicts (Connecticut, 2013) who found that, difference in diagnosed diabetes rates by gender is not statistically significant.

Concerning study sample's age data revealed that, more than half of the study sample's aged from 41 – 65 years. This came in line with International Diabetes Federation 2012 statistics (Zhang, Brown, Vistisen, Sicree, Shaw et al, 2010) that shows Egypt to be on the top of all the countries in the Middle East and North Africa (MENA) regarding prevalence of type II DM reported as 15.27%. Also (Van Dieren, Beulens, Van der schouw, Grobbee & Neal, 2010) mentioned that, middle and late adulthood populations are thought to be the major drivers of the increasing prevalence of diabetes in Egypt and Africa in general. While the current study results are not in the same line with (American Diabetes Association, 2009) who stated that, people who develop diabetes are usually under the age of 20.

Focusing on the female employment status it was found that, half of the females in study sample were housewives. This may be related to their low educational level that gave them no chance for employment. Also the cultural aspect that women in Upper Egypt should mostly be housewives may play a significant role in this regard.

Regarding level of education data revealed that, nearly a quarter of the study sample were illiterate while about two thirds had basic and secondary school /diploma education. This is congruent with (Zhang, Brown, Vistisen, Sicree, Shaw et al, 2010) who stated that, relatively high illiteracy level in Egypt (with the illiteracy rates among women in Upper Egypt reported to be 24%). Also the prevalence rates of diagnosed diabetes are significantly lower among adults with higher levels of educational attainment (Connecticut, 2013).

Data also revealed that, the majority of the study sample had low income. This result was expected because of the fact that, significant numbers of people and villages in Upper Egypt are under estimated and under developed and no doubt that developing DM for an individual is greatly affected by many aspects of his/her daily life as and socio-cultural factors. This agrees with (Zhang, Brown, Vistisen, Sicree, Shaw et al, 2010) who mentioned that around 25% of the Egypt population lives below the poverty line. Also this result agrees with (Shaw, Sicree & Zimmet, 2010) who mention that, about 70% of the studied cases of diabetes occur in low- and middle income countries and communities. This result is contrary to (International Diabetes Federation, 2011) who found that, type II diabetes is responsible for 85-95% of all diabetes in high-income countries.

As regards access of study sample to health care services, it was found that, majority of study sample experienced difficulty to access to health care services. This finding was expected because Minia Governorate has only two hospitals serving the whole community there with insufficient transportation means for citizens.

The current study illustrated that, more than two thirds of study sample had crowding index equal to or more than four. This finding correlates with sociocultural aspects of study sample as in people in Upper Egypt do think

in large families and prefer to have many children to increase their support network.

Statistical difference between attitude and self-care practice regarding DM among study sample, this may be due to lack of participants' awareness about DM health outcomes that depend mainly on the patient's self-management. This finding is supported by the findings of (CDC, 2012) & (The World Bank report on countries, 2012) who stated that, the existence of many socio-cultural myths about diabetes and barriers to good diabetes health education and self-management may explain the gap between patients' attitudes and their actual self-management practices. This result is congruent with (Al-Maskari, El-Sadig, Al-Kaabi, Afandi, Nagelkerke et al. 2013) & (Aly, 2013) who illustrated that, patients' attitude and practice were statistically significantly in patients with DM.

Data also revealed that, a significant difference was found between total study sample's attitude towards diabetes mellitus and their level of education and employment status. This may be related to the fact that, individual's behavior is effected by level of education and work environment. This result disagrees with (Thoolen, De Ridder, Bensing, Gorter, Rutten, 2007) who found that, less educated study participants reported more positive attitude towards diabetes self-management intervention. Meanwhile, this finding agrees with (American journal occupational therapy, 2011) who reported that, an employment influences on adults' ability to effectively manage diabetes and study participants often experienced tension between diabetes self-management and participation in valued occupations.

The current study also revealed high statistically significant difference between total sample's attitudes towards diabetes mellitus self-care and their age. This result came in line with (Zhang, Zhang, Brown, Vistisen, Sicree, et.al. 2010) who concluded in his study that, people in their middle adulthood stage may be may be careless about their health status and having less health concern than older adults.

The current study showed no statistically significant difference was found between study sample's attitude towards diabetes mellitus self-care and their gender. This may be due to the fact that the vast majority of study sample have low educational levels either males or females. Also in Egyptian culture in general and in rural or underdeveloped areas in particular, there is no information seeking concerns discriminate women from men. This result agrees with (Mufunda, Albin & Hjelm, 2012) & (Hjelm & Nambozi, 2008) stated who found that, gender was limited diabetes knowledge and self-care seemed to influence the risk awareness of the disease, with females thus being more information-seeking was indicated.

The current study represented that, statistical significance differences were found between study sample's attitudes towards diabetes mellitus' self-care practices and their income, access to health care facilities and crowding index. These results synchronize with (Shokair, 2007) & (Singh, Armstrong & Lipsky, 2005) who stated that, despites that, between total sample's health practices regarding diabetes mellitus self-care and their monthly income and availability of health care services within their neighborhood. (Shokair, 2007) & (Singh, Armstrong & Lipsky, 2005) also added that, in large relatively low socioeconomic families/communities, it is clear that, considerable number of members belonging to these families/communities have negative or unfavorable attitudes and self-care health practices towards chronic diseases in general and diabetes in particular. (Eledrisi, Mohsen, Alshanti, Mohammed & Shah et al, 2005) (Geiss, Engelgau, Pogach et al, 2005) emphasized that, early detection and management of diabetes complications; and improvements in preventive care, treatment, and diabetes care management are directly related to percapita income and using different community health resources.

Meanwhile, statistically significant difference was found between total study sample's health practices regarding diabetes mellitus self-care and their employment status. This result was expected because most of the study sample participants were housewives that are basically overwhelmed with housework and caring for their families.

The current study showed that, statistically significant difference was found between both study sample's level of performing diabetic foot care and subcutaneous self-injection of insulin and either their income or access to health care services. This could be due to lack of study setting to provide effective health education and training program targeting self-care for patients with diabetes either for free or at a cost that they can afford.

These findings agree with (Shokair, 2007), (Saadine, Cadwell & Gregg, 2006) & (Boulton, Vileikyte, Tennvall & Apelqvist, 2009) who emphasized in their study that, the lifetime risk of a person with diabetes developing a foot ulcer could be as high as 25% and people at greatest risk of ulceration can easily be identified by careful clinical examination of the feet: education and frequent follow-up. They added that, all of these types of care are basically found in hospitals, outpatient clinics and primary health care centers.

Also, these findings are in the same line with (Juntunen & eHow, 2012) & (CDC, 2011) who concluded that, skilled self-injection technique was found to make the diabetic patients experience less pain and avoid unnecessary complications and basic to effective diabetes control is teaching the patients how to safely inject themselves with insulin through involving them into effective and basically affordable training programs that should be widely implemented in different community health settings.

Based on the previously discussed findings it could be said that, healthy citizens is the key to any healthy community, and the key for healthy citizens is to promote health of its different age groups and no doubt that the adult age group is considered a very important as adults actually as they are the builders of their communities. If we to promote adult group's health, we should promote their health awareness, attitudes and health practices regarding health and illness in general and regarding chronic diseases in particular as the latter forms dangerous health problems for this age-group. Central to chronic diseases is diabetes mellitus which is common health problem in Egypt and Northern Africa (Bos & Agyemang, 2013) & (Al-dsani, Moussa, Al-Jasem et al, 2009). Diabetes complications are debilitating, costly, and sometimes deadly, they tend to be more severe among people whose diabetes is poorly controlled. Diabetes control, achieved through diabetes care and management and clinical preventive care practices, keeps people with diabetes healthy and can improve health outcomes (Al-dsani, Moussa, Al-Jasem et al, 2009) & (Funnel, Brown, Childs et al, 2007). Diabetes mellitus is greatly affected by many demographic and socio-cultural factors especially in the developing countries like Egypt. Adult population is thought to be the major drivers of the increasing prevalence of diabetes in Egypt (American Diabetes Association, 2009). Diabetes prevalence was significantly higher in urban areas than in rural areas (Funnel, Brown, Childs et al, 2007) (International Diabetes Federation report on , 2012).

Conclusion

Based on the results of the current study it could be concluded that, adult patients with type II diabetes mellitus especially in developing countries like Egypt are more prone to develop complications. Study sample's attitudes and self-care practices regarding diabetes mellitus were affected by their level of education, employment status, family crowding index, age, income and access to health care services in the community among. Study sample's attitudes towards diabetes mellitus were generally negative with no statistically significant difference between being inpatient or outpatient client in this regard. Also, the self-care practices regarding diabetes mellitus were generally unsatisfactory with no statistically significant difference between being inpatient or outpatient client in this regard as well.

Recommendation

1. Provide in-service training program for nurses regarding "patients' self-care with diabetes" to improve their skills and knowledge.
2. Develop a high quality evidence-based clinical practice guidelines about the management of diabetes for healthcare professionals whenever patient needs clarification
3. Nursing educators must reexamine current approaches to clinical teaching and seek methods to better preparation.
4. Health education by health care staff and employing new research findings and useful strategies can reduce the burden of the disease.
5. Nurses should work with health-promoting education particularly to enable the patients to take responsibility for their lives and help them feel safer in making their own decisions and to improve their knowledge and attitudes towards their health.
6. Provide helpful information sources and educational aids to be always available for caregiver with diabetes.

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