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Self Care Practices among Patients with Diabetic Retinopathy

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Abstract: *Diabetic retinopathy (DR) is a fatal ophthalmic complication resulting from diabetes mellitus (DM).It is one of the most causes of blindness all over the world. Awareness about DR is very important; it can assist in management and avoidance of complications of DR. Inadequacy of proper knowledge and behavior among patients with DR management resulting in poor self-care practices.*

Aim of the study: *This study aimed to assess self-care practices among patients with diabetic retinopathy.*

Setting: *The study was conducted at Vitreo- retinal Outpatient Clinic at Alexandria Main University Hospital, Alexandria, Egypt.*

Materials and Method*: This is a descriptive research design. Data were collected from 110 patients from the previous setting. Self-care practices for patients with diabetic retinopathy structured interview schedule, was utilized for data collection.*

The results: *The majority of the studied patients, their age ranged from 50 to ≥ 60 years old and about three quarter of them were having type I DM. The majority of the studied patients (62.7%) had fair overall self-care practices and more than one third of them (37.3%) had poor overall self-care practices. Statistically significant moderate positive correlation was found between the total patients' knowledge mean percent score and patients' overall practices mean percent score at P=0.001.*

Conclusion: *The majority of DR patients had poor knowledge and nearly two thirds of them had fair overall self-care practices.*

Recommendations: *Development of health education programs for patients and their families to facilitate self-care management and to teach patients how to apply healthy self-care practices related to DR and avoid unhealthy practices.*

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I. Introduction

Diabetes mellitus (DM) is one of the most reasons of mortality and morbidity all over the world; also it has a great effect on the patients' productivity, quality of life and includes huge health costs for every country[(1,2)]. According to the World Health Organization (WHO) it was estimated that the total number of patients with DM will double from 171 million in 2000 to be 366 million in 2030 [(3)]. In Egypt, the International Diabetes Federation ranked Egypt as one of the world's top ten with the largest number of diabetic patients in 2003 representing 3.9 million and the number of diabetic patients is expected to rise by 2025 to be 7.8 million [(4)].

In this context, DM is a chronic disease accompanied by both macrovascular complications, including cerebrovascular disease, ischemic heart disease besides peripheral vascular disease and microvascular complications including neuropathy, nephropathy, as well as retinopathy [(5)].Diabetic retinopathy (DR) is a fatal ophthalmic complication resulting from DM. It refers to a chronic progressive, potentially blinding disease of the retinal microvasculature accompanied with the prolonged hyperglycemia [(6, 7)]. DR is one of the leading causes of blindness all over the world. It occurs in nearly all patients with type 1 DM and in more than 75% of patients with type II DM .Moreover, the major risk factors for DR are poor control of DM, prolonged duration of diabetes, hyperlipidemia, as well as hypertension [(8,9)].

Diabetic retinopathy occurs in four stages, which progress from mild, moderate and severe non-proliferative to proliferative diabetic retinopathy. Mild, non-proliferative retinopathy is the early stage of DR in which the retina swells like a balloon. Moderate non-proliferative retinopathy, in which the blockage of the blood vessels that nourish the retina has occurred. Besides, severe non proliferative retinopathy, in which blockage of the blood vessels in many areas of the retina has occurred. The last stage is proliferative diabetic retinopathy (PDR), in which neovascularization has been occurring [(2)].

In this regard, DR is usually associated with blurred vision, sensitivity to glare and light, halos around lights or sparkles, flashes, floaters, difficulty reading, poor night vision, trouble in the transition from the bright light to pale light, decrease in visual acuity as well as sudden and total loss of vision [9, 10, 11]. On the other hand, there are various eye examinations that help in the diagnosis of DR such as; optical coherence tomography and fluorescein angiography [11]. Once DR is diagnosed the patient must be compliant with their therapeutic regimen to avoid various complications as; vitreous hemorrhage, retinal detachment and blindness which will be a threat to the patients' quality of life [2].

Retinal management can be divided into pharmacological and non-pharmacological management. As for pharmacological management, no treatment is required during the first three stages of DR, if macular edema is not present. Proliferative retinopathy as a last stage of DR can be treated with laser surgery "focal laser treatment" that can slow or stop blood and fluid leakage in the eye. In addition, scatter laser treatment is another form of laser surgery that aid in shrinking the abnormal blood vessels in the retina [12,13].

As for non-pharmacological management, the nurse has an important role to play in implementing the individual care plan and educating the patient about self-care management. Thus, patients who are educated about their disease and its treatment are more likely to be effective in managing their disease [14,15].

Self-care practices are one of the most important elements in people's health and well-being and have a greater importance than professional health services in treating DR. It refers to the activities carried out by individuals and families that aim to health improvement, disease prevention, illness limitation and health restoration [16]. Self care practices in DR encompass eye care, self-monitoring of glucose in blood and urine, periodic health checkups, proper intake of medications, dietary intake as well as physical activity [17]. Hence, the occurrence of disease complications and disability are decreased in patients who follow good self care practices than those with poor self care practices [18].

Moreover, awareness about diabetic retinopathy is very important; it can assist in management and avoidance of complications of DR [15].Inadequacy of proper knowledge and behavior among patients with DR management resulting in poor self-care practices [19]. Therefore, poor awareness among those patients is a part of the significant variables affecting the progress of DR [20 ,21]. Also, unsatisfactory health outcomes can result from insufficient knowledge, poor adherence to medications and poor self-care practices. As literature review revealed limited studies assessing self care practices among patients with diabetic retinopathy in Egypt, lack of date necessities the design of this study.

Aim of the study: This study aimed to assess self care practices among patients with diabetic retinopathy.

Research question: What are the self-care practices adopted by patients with diabetic retinopathy?

II. Materials and method

Materials

Research design: A descriptive research design was utilized in this study.

Setting: The study was conducted at Vitreo- retinal Outpatient Clinic at Alexandria Main University Hospital, Alexandria, Egypt.

Subjects: The epidemiology information statistic program (**Epi info10)** was used to estimate the minimum sample size required using the following parameters:

- Population size: 280 / year
- Expected frequency: 50%
- Acceptable error: 10%
- Confidence coefficient: 99%
- Minimum sample size: 104

In the present study, a convenience sample of 110 adult patients from Vitreo-retinal Outpatient Clinic was included in the study and meeting the following criteria:

- Age group from 20 up to 60 years old.
- Able to communicate verbally.
- Not scheduled for surgery.

Tools of the study: One tool was utilized for the purpose of data collection.

- **Self-Care Practices for Patients with Diabetic Retinopathy Structured Interview Schedule:** It was developed by the researcher, based on relevant recent literature [10, 11, 15, 20, 21] to assess self-care practices among patients with diabetic retinopathy. It included three parts:

Part I: Bio-sociodemographic data: This part included data related to socio demographic and clinical data as gender, age, level of education, area of residence, marital status, occupation , monthly income, family history of DM , associated diseases, types and duration of DM, onset and chief complain of DR.

Part II: Diabetic Retinopathy Patient's Knowledge Assessment Questionnaire:

This part was used to assess patient's knowledge related to diabetic retinopathy, which included (8) MCQ questions related to the following items: definition of diabetic retinopathy, signs and symptoms of the disease,

risk factors for developing diabetic retinopathy, complications of diabetic retinopathy disease, methods of treatment, self-care of DR, prevention of complications of diabetic retinopathy and sources of information about diabetic retinopathy disease.

- **Patients' knowledge was calculated as follows:**

The correct answers scored (1) and the wrong answers scored (0). The total score was summed up and converted into percentages. Patient knowledge was evaluated as the following:

- More than 75% was considered to have good knowledge level.
- 50≤75% was considered to have satisfactory knowledge level.
- Below 50% was considered to have poor knowledge level.

Part III: self-care practice interview schedule

It was developed by the researcher based on relevant recent literature [10,11, 15, 20, 21] and was used to assess self-care practices undertaken by the patients in relation to eye care, self-monitoring of glucose in blood and urine, periodic health checkups, proper intake of medications, dietary intake and physical activity. It is a three point Likert scale ranged from 0 to 2 where answers of 0 mean (never), 1 mean (sometimes) and 2 mean (always).It consisted of a (67) statements related to the following areas:

- **Eye care** included (17) statements related to; the periodic funduscopy, report ophthalmologist for any unusual conditions, adherence to the prescribed eye medications, regular wearing of eyeglasses, regular checkup on the eye glasses ,wear dark glasses ,keep a visual acuity test, techniques of administration of eye medications, adjust lighting and finally periodic follow up with the ophthalmologist.
- **Self-monitoring of glucose in blood and urine** included (7) statements related to monitor of blood glucose level monthly, regular monitoring of glycosylated hemoglobin (HbA1c), causes of not monitoring of blood glucose levels, ask others for help in urine glucose testing, regular follow up and discuss results of findings with a physician.
- **Periodic health checkups** included (6) statements regarding checkups yearly, regular monitoring of blood pressure, regular check of blood lipid, checkup of weight and causes of not following up with the doctor.
- **Proper intake of medications** included (9) statements regarding adherence to a therapeutic regimen of diabetes mellitus and eye, ask others for help in preparing insulin, adaptive techniques in taking medications, take eye medications or not in case of forgetting the medication dose, cause of not taking corticosteroid and regular intake of appropriate treatment in case of coughing.
- **Dietary intake** included (10) statements related to compliance with therapeutic diet, the number of meals per day, intake of herbs, drink juices between meals, cause of eating fibers, cause of intake of low fat in diet**,** cause of not taking foods that affect hypertension, causes of follow up with a dietitian and an adaptive technique in eating.
- **Physical activity** included (18) statements related to perform exercises, avoid activities that need forward bending, moderate performance of daily living activities, cause of not performing exercises, ask others for help to go to the work, decrease the number of working hours, adaptive techniques in working and in performing daily living activities, keep floors always dry and ask others for help in daily living activities.

- Patient response was calculated as follows: (0) for never, (1) for sometimes and (2) for always. The total score was summed up and converted into percent. The patient practices evaluated as the following:
- Scoring of more than75% of the total self-care practice score was considered as a good.
- 50 ≤ 75% of the total self-care practice score was considered as fair.
- Below 50% of the total self-care practice score was considered as poor.

Method

- An official permission was obtained from the hospital's directors after explanation of the aim of the study**.**
- The tool for the study was developed by the researcher based on a recent review of literature.
- The content validity of the tool was submitted to jury members of five experts; four experts in the field of Medical-Surgical nursing and Ophthalmology to assure the content validity, completeness and applicability of items .The necessary modifications were introduced accordingly.
- The study tool was tested for its reliability using Alpha Cronbach's statistical test for internal consistency of tool items. The data were analyzed; the correlation coefficient was (α= 0.712).
- A pilot study was carried out on 10 patients at Vitreo- retinal Outpatient Clinic at Alexandria Main University Hospital to ascertain the clarity, feasibility and applicability of the study tool and to identify obstacles that may be faced during data collection. Those patients were excluded from the actual study subjects.

- **Data collection:**

Each patient was interviewed individually once for 30-45 minutes by the researcher to collect the necessary data related to knowledge and self-care practices at the reception of the Vitreo-retinal Outpatient Clinic before the examination and the tool was filled out by the researcher.

- **Ethical Considerations:**

- Approval of ethical research committee was obtained.
- Written informed consent was obtained from each patient after explanation of the aim of the study.
- Confidentiality and privacy were ascertained.
- Patients' right to withdraw at any time of research participation was considered and respected.

- **Statistical Analysis:**

- After data collection, data were coded and transferred into a specially designed format so as to be suitable for computer feeding. Following data entry, checking and verification processes were carried out to avoid errors during data entry. Data fed to the computer and analyzed using IBM SPSS software package version 20.0. [22,23] .A value less than or equal to 0.05 was considered to be statistically significant and the following statistical measures were used:

a. Qualitative data were described using numbers and percent. The Kolmogorov-Smirnov test was used to verify the normality of distribution. Quantitative data were described using range (minimum and maximum), mean, standard deviation and median.

b. Analytical statistics:

1. Chi-square test (χ^2): For categorical variables, to compare between different groups.
2. Fisher's Exact or Monte Carlo correction: Correction for chi-square when more than 20% of the cells have expected count less than 5.
3. Pearson coefficient (r): To correlate between two normally distributed quantitative variables.

- Value of r: 0.00-0.19: "very weak"
0.20-0.39: "weak"
0.40-0.59: "moderate"
0.60-0.79: "strong"
0.80-1.0: "very strong"

III. Results

Table (1): Shows distribution of the studied patients according to their sociodemographic data: More than two thirds of the total studied patients (71.8%) were females. The majority of the studied patients (84.5%), their age ranged from 50 to ≥ 60years. Nearly half of the studied patients (43.6%) were illiterate. In addition, it was evident that, urban residents, married, housewives constituted the higher percentage of the studied patients (64.5%, 70.9%, 63.5%) respectively. Concerning monthly income, the table illustrated that, the majority of the patients (83.6%) had not enough income per month.

Table (1): Distribution of the studied patients according to their sociodemographic data.

Socio-demographic data	No. (n=110)	%
Gender		
Male	31	28.2
Female	79	71.8
Age		
20 > 40	3	2.7
40 > 50	14	12.8
50 ≥ 60	93	84.5
Level of education		
Illiterate	48	43.6
Read and write	29	26.4
Primary	6	5.5
Preparatory	7	6.3
Secondary	18	16.4
University and more	2	1.8
Area of residence		
Rural	39	35.5
Urban	71	64.5
Marital status		
Single	2	1.8
Married	78	70.9
Divorced	18	16.4
Widow	12	10.9

Occupation		
Employed	17	15.5
Professional	8	7.3
Free work	8	7.3
Housewife	70	63.5
Retired	1	0.9
Not working	6	5.5
Monthly income (from patients point of view)		
Not enough	92	83.6
Enough	18	16.4

Table (2): Presents distribution of the studied patients according to their clinical data: the table illustrated that, more than half of the studied patients (63.6%) had positive family history with DM disease. The majority (75.5%) of the studied patients had associated diseases. Also, more than two thirds of the studied patients (75.5%) were having type I DM, while less than one third of them (24.5%) were having type II DM. Moreover, more than one third (36.4%) of the studied patients began to complain of diabetic retinopathy from less than 1 year with mean± SD 2.07 ± 1.90. The majority (62.7%) of the studied patient's complaint from blurred vision and the emergence of "spiders" or small black spots floating in the vision. In relation to patient's duration of diabetes mellitus, the table illustrates that, (57.3%) of the studied patients has DM for 15 years and more.

Table (2): Distribution of the studied patients according to their clinical data.

Clinical data	No. (n=110)	%
Family history of DM		
Yes	70	63.6
No	40	36.4
Associated diseases		
Yes	83	75.5
No	23	20.9
Types of DM		
Type I DM	83	75.5
Type II DM	27	24.5
Onset of complaining of diabetic retinopathy (DR)		
<1year	40	36.4
1 - <3 year	33	30.0
3+ year	37	33.6
Min. – Max.0.08 – 10.0		
Mean ± SD. 2.07 ± 1.90		
Chief complaint of DR		
▪ Blurred vision and the emergence of "spiders" or small black spots floating in the vision	69	62.7
▪ Blurred vision, poor night vision and partial or total loss of vision	23	20.9
▪ Blurred vision and trouble in the transition from the bright light to pale light.	9	8.2
▪ Poor night vision, trouble in the transition from the bright light to pale light.	9	8.2
Duration of DM (in years)		
1 < 5	4	3.6
5<10	12	10.9
10<15	31	28.2
15 and more	63	57.3

Table (3): Presents distribution of the studied patients, according to total patients' knowledge mean percent scores: The table showed that, the majority of the studied patients (93.6%) had poor knowledge about diabetic retinopathy; while only 1.9% of them had a good knowledge percent score with mean± SD 9.87 ± 14.70.

Table (3): Distribution of the studied patients according to total patients' knowledge mean percent scores

Total knowledge	No. (n=110)	%
<50% poor	103	93.6
50≤75% satisfactory	5	4.5
75+% good	2	1.9

Total score
Min. – Max.0.0 – 5.0
Mean ± SD.0.69 ± 1.03
% score
Min. – Max.0.0 – 71.43
Mean ± SD.9.87 ± 14.70

Table (4):Shows distribution of the studied patients in relation to their overall self care practices mean percent scores. The table illustrated that, (62.7%) of the studied patients had fair overall self care practices and more than one third of them (37.3%) had poor overall self care practices percent score with mean ± SD 51.65 ± 5.85.

Table (4): Distribution of the studied patients in relation to their overall self care practices mean percent scores.

Overall self- care practices	**No. (n=110)**	**%**
<50% poor	41	37.3
50≤75%fair	69	62.7
75+% good	0	0.0
Total score		
Min. – Max. 53.0 – 92.0		
Mean ± SD. 68.90 ± 7.94		
% score		
Min. – Max.38.97 – 68.66		
Mean ± SD.51.65 ± 5.85		

Table (5):Presents relationship between the total patients' knowledge mean percent scores and their socio-demographic data, the only statistically significant relation was found between the total patients' knowledge mean percent scores and patients' educational degree (P=0.033) where, the poor knowledge mean percent scores were for those who illiterate (42.7%).

Table (5): Relationship between the total patients' knowledge mean percent scores and their socio-demographic data.

Socio-demographic data	**Total knowledge mean percent scores**						**χ^2**	**^{MC}p**
	<50% poor (n=103)		**50≤75% satisfactory (n= 5)**		**75+% good (n= 2)**			
	No.	%	No.	%	No.	%		
Gender								
Male	29	26.4	1	0.9	1	0.9	0.988	0.804
Female	74	67.3	4	3.6	1	0.9		
Age								
30 > 40	3	2.7	0	0.0	0	0.0	2.695	0.707
40 > 50	13	11.8	1	0.9	0	0.0		
50 ≥ 60	87	79.1	4	3.6	2	1.8		
Level of education								
Illiterate	47	42.7	1	0.9	0	0.0	16.971*	**0.033***
Read and write	26	23.6	2	1.8	1	0.9		
Primary	5	4.5	1	0.9	0	0.0		
Preparatory	6	5.5	0	0.0	1	0.9		
Secondary	18	16.4	0	0.0	0	0.0		
University and more	1	0.9	1	0.9	0	0.0		
Area of residence								
Rural	37	33.6	2	1.8	0	0.0	0.908	0.841
Urban	66	60.0	3	2.7	2	1.8		
Marital status								
Single	2	1.8	0	0.0	0	0.0	3.547	1.000
Married	72	65.5	4	3.6	2	1.8		
Divorced	17	15.5	1	0.9	0	0.0		
Widow	12	10.9	0	0.0	0	0.0		
Occupation								
Employee	16	14.5	1	0.9	0	0.0	9.572	0.710
Professional	8	7.3	0	0.0	0	0.0		
Free work	7	6.4	0	0.0	1	0.9		
Housewife	65	59.1	4	3.6	1	0.9		

Retired	1	0.9	0	0.0	0	0.0		
Not working	6	5.5	0	0.0	0	0.0		
Monthly income								
Not enough	86	78.2	4	3.6	2	1.8	0.554	1.000
Enough	17	15.5	1	0.9	0	0.0		

χ^2, p: χ^2 and p values for **Chi square test** ^{MC}p: p value for **Monte Carlo** for Chi square test
*: Statistically significant at $p \leq 0.05$

Table (6): Shows relationship between patients' overall self care practices mean percent scores and their socio-demographic data .The table revealed that, statistically significant relation was found between the patients' overall self care practices mean percent scores and the patients' gender (P=0.046). (40.9%)of female gender had fair practices as compared to male gender (21.8%). In addition, statistically significant relation was detected between the patients' overall self care practices mean percent scores and patients' marital status (P=0.011) where, the highest score (45.5 %) for fair practices were for married. Finally, there was no statistical significant relation between the studied patients' age, level of education, area of residence, occupation, monthly income and overall self-care practices mean percent scores.

Table (6): Relationship between patients' overall self care practices mean percent scores and their socio demographic data.

Socio-demographic data	**Overall self care practices mean percent scores**				**χ^2**	**p**
	<50% Poor (n=41)		**50≤75% Fair (n=69)**			
	No.	**%**	**No.**	**%**		
Gender						
Male	7	6.4	24	21.8	3.985*	**0.046***
Female	34	30.9	45	40.9		
Age						
30 > 40	3	2.7	0	0.0	5.001	^{MC}p= 0.056
40 > 50	6	5.5	8	7.3		
50 ≥ 60	32	29.1	61	55.5		
Level of education						
Illiterate	18	16.4	30	27.3	2.824	^{MC}p= 0.764
Read and write	9	8.2	20	18.2		
Primary	2	1.8	4	3.6		
Preparatory	3	2.7	4	3.6		
Secondary	9	8.2	9	8.2		
University and more	0	0.0	2	1.8		
Area of residence						
Rural	17	15.5	22	20.0	1.031	0.310
Urban	24	21.8	47	42.7		
Marital status						
Single	2	1.8	0	0.0	9.867*	**^{MC}p= 0.011***
Married	28	25.5	50	45.5		
Divorced	10	9.1	8	7.3		
Widow	1	0.9	11	10.0		
Occupation						
Employee	6	5.5	11	10.0	5.300	^{MC}p= 0.368
Professional	2	1.8	6	5.5		
Free work	1	0.9	7	6.4		
Housewife	28	25.5	42	38.2		
Retired	0	0.0	1	0.9		
Not working	4	3.6	2	1.8		
Monthly income						
Not enough	35	31.8	57	51.8	0.143	0.705
Enough	6	5.5	12	10.9		

χ^2, p: χ^2 and p values for **Chi square test** ^{MC}p: p value for **Monte Carlo** for Chi square test
^{FE}p: **:**p value for **Fisher Exact** for Chi square test *: Statistically significant at $p \leq 0.05$

Table 7 (Figure 1): Presents correlation between total patients' knowledge mean percent scores and overall self-care practices mean percent scores .The findings reveal that, statistically significant moderate positive correlation was found between the total patients' knowledge mean percent score and patients' overall practices mean percent score at P=0.001.

Table (7): Correlation between total patients' knowledge mean percent scores and overall self-care practices mean percent scores.

	Knowledge	
	r	**P**
Practice	0.476*	0.001*

*: Statistically significant at $p \leq 0.05$
r: Pearson coefficient
Evans (1996) suggests for the absolute value of r [23]:
0.00-0.19: "very weak"
0.20-0.39: "weak"
0.40-0.59: "moderate"
0.60-0.79: "strong"
0.80-1.0: "very strong"

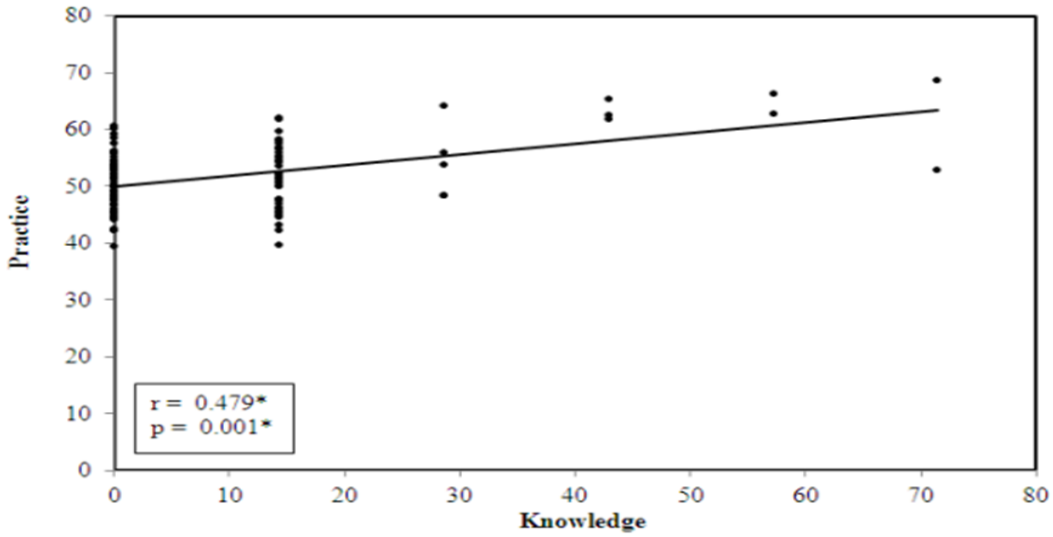

Fig. 1: Correlation between total patients' knowledge mean percent scores and overall self care practices mean percent scores.

IV. Discussion

Optimal management of diabetic retinopathy (DR) should include annual screening, adequate control of risk factors and laser treatment [24]. Furthermore, a significant element towards an optimal management of DR is the improvement of awareness, knowledge and education about self care practices among DR patients. Therefore, patients have to accept a high level of personal responsibility for the daily self management of their regimens, as self management is essential in controlling DR and its complications. [25, 26].

Concerning sociodemographic and clinical data of the studied patients:

The results of the present study revealed that, female patients comprised higher population than male. This finding may be due to that, most of the studied patients were house wives and according to the WHO report (2010), in Egypt women are not getting access to treatment, so most housewives get their health care from public clinics and women are not using eye care services as well as they have less access to financial resources to pay for eye care [27]. This finding was supported by Rani et al (2008), Raghu et al (2016) and Bogunjoko (2017) who reported that, women accounted for a larger proportion of the sample[28,29,30].

Concerning age and level of education, The findings of the present study indicated that, the majority of the studied patients were illiterate and in the age group of 50 to 60 years, this finding was in agreement with Achigbu et al (2016) and Memon et al (2015) who found that, most of the studied patients were illiterate and between age group 51to 60 years old [31-32].

In the current study, it has been noticed that, the higher percentage of the studied patients were coming from urban areas. It could be due to that, urbanization is associated with changes in lifestyle, such as an unhealthful diet and obesity, all of which have been implicated as contributing factors in the development and progression of DR. This finding was in the line with Prabhu et al (2015) who found that, more than two thirds of their studied populations were from urban areas [(33)].

The findings of the current study revealed also that, more than half of the studied patients were married; housewives and the majority of them had not enough income per month. The interpretation as reported by patients may be related to that, most of the studied patients were females who have a lot of house working and responsibilities subsequently, ignoring adoption of healthy lifestyles which led to increased risk for DR development, also the majority of them reported experiencing economic difficulties, so some studied patients delayed or did not receive treatment because of economic problems. These results were in agreement with Gilbert (2013) and Yang et al (2017) who emphasized that, the majority of the studied patients were married[(34, 35)].

Also, these findings were matched with Foster et al (2016) who found that, the majority of patients were housewives and a majority of those had lower income [(36)]. However, our findings contradict with the findings of Al Zarea (2016) who reported that, half of his studied patients belonged to high economic status [(37).]

In relation to family history, the present study revealed that, around two thirds of the studied patients had positive family history of DM. This result was supported by Li et al (2013) who stated that, risk of DR is usually associated with a family history of DM [(38)]. Conversely, Prabhu et al (2015) found that, less than one quarter of patients had a family history of DM [(39)].

Moreover, the present study result revealed that, more than two thirds of the studied patients had type I DM, similarly to Low et al (2015) who stated that, prevalence of DR in type IDM were more than among type IIDM patients [(40)]. This finding also,explainedby Lima et al (2016) who proved that, increased risk of DR was associated with type I DM [(41)].

Regarding chief complaint of DR, the present study denoted that, around two thirds of the studied patients complained of blurred vision and the emergence of "spiders" or small black spots floating in the vision. It could be due to the fact that, the retina needs a constant supply of blood, which it receives through a network of tiny blood vessels. Over time, a persistently hyperglycemia can damage these blood vessels in three main stages, background retinopathy, in which tiny bulges develop in the blood vessels, which may bleed slightly. Pre-proliferative retinopathy in which more significant bleeding into the eye and finally proliferative retinopathy, in which scar tissue and new blood vessels develop in the retina, which are weak and bleed easily, this can lead to blurred or loss of vision in some patients. This result was in line with Fenwick et al (2012) who stated that, many DR patients described experiencing blurred, distorted vision and seeing black lines and dots [(42)].

In this regard, the present study revealed that, more than half of the studied patients had DM for 15 years and more. These findings were similar to Foster et al (2016) who indicated that, the majority of their participants had DM for ≥15 years. On the other hand, these findings contradict with Khandekar et al (2010) who illustrated that, majority of their studied patients had been diagnosed as diabetic for 5 years or less[(36,43)].

Concerning total patients' knowledge and overall self-care practices mean percent scores

In the current study, data about patients' knowledge scores regarding DR disease proved that, the majority of the studied patients had poor knowledge. Nevertheless, nearly two thirds of them had fair overall self care practices. The interpretation may be related to that, the majority of the studied patients have not received enough information about DR self care practices may be due to lack of health care providers and increase workload on them so they didn't have enough time to give patients adequate information.

This finding was in accordance with Cetin et al (2013), who found that, lack of patients' knowledge about DR scored the highest percentage among their studied patients [(19)].Our findings also were supported by Khandekar et al (2010) who reported that, two thirds of their DR participants had a satisfactory level of self care practices[(43)]. However. Our findings disagreed with the results of Raniet al (2008)and Srinivasan, et al (2017) who reported that, the majority of the participants had good knowledge and self care practices about DR management [(28, 44)].

Concerning the relationship between total patients' knowledge and self -care practices mean percent scores with their socio-demographic data:

The present study revealed that poor knowledge regarding DR was significantly affected by level of education especially among illiterate patients. This finding was in agreement with Seneviratne and Prathapan (2016) who found that, statistically significant relationship between poor knowledge mean scores and the patients' level of education with a P value of 0.000[(45)].

As regards the relationship between patients' overall self-care practices mean percent scores and their socio-demographic characteristics, it was observed that, there were statistically significant relation between the

patients' overall self-care practices mean percent scores and marital status especially among married patients. This significance was supported by Gilbert (2013) [(34)] who revealed that, significant relation was found between marital status and self-care practices.

Finally, there was statistically significant moderate positive correlation between the total patients' knowledge mean percent scores and patients' overall self care practices mean percent scores, which mean when patients' knowledge increase, their self care practices improved .Therefore, depending on the previous data, assessment of knowledge and practices of patients regarding DR disease will help the nursing personnel to plan and carry out health education training programs for patients related to DR to increase their awareness, knowledge and self care practices, to help them to take proper precautions to prevent complications such as blindness and improve their quality of life.

V. Conclusions

Based on the findings of the current study, it can be concluded that, the majority of diabetic retinopathy patients had poor knowledge regarding to DR management and nearly two thirds of them had fair overall self care practices. Statistically significant relation was found between the total patients' self care practices mean percent scores and patients' marital status as well as patient gender .Also statistically significant moderate positive correlation was found between the total patients' knowledge scores and patients' overall self care practice scores.

VI. Recommendations

- Development of health education programs for patients and their families to facilitate self care management and to teach patients how to apply healthy self-care practices related to DR and avoid unhealthy practices.
- Development of educational handouts containing relevant information and simple figures about self-care practices and should be available at Vitreo- retinal Outpatient Clinic.
- Education programs and continuing educational sessions have to be provided for nurses about diabetic retinopathy, its complications, treatment modalities and nursing management.
- Specialized survey should be done to explore barriers associated with diabetic retinopathy management, including patients, health care providers and health systems related barriers.
- Further studies should be conducted on a larger sample size to assess self care practices among patients with diabetic retinopathy in different hospital areas.

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