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KNOWLEDGE AND AWARENESS OF DIABETIC RETINOPATHY AMONG DIABETIC PATIENTS, AL-AHSAA, SAUDI ARABIA

Ophthalmology

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ABSTRACT

Introduction:
Saudi Arabia is a country with high prevalence of diabetes. The prevalence of diabetic retinopathy is 19.7%. To decrease the incidence of diabetic retinopathy and to improve quality of life, our study aims to assess the knowledge of diabetic retinopathy among diabetic patients.

Objectives:
The primary objective is to assess the knowledge of diabetic patients about DR.

Methods:
Cross-sectional study, conducted in PHC centers. Data was collected using an interviewer-administered questionnaire to study the relationship between socio-demographic factors and knowledge about DR.

Results:
A total of 383 adult diabetic subjects participated in the. The association between socio-demographic factors and the knowledge of DR showed that, females, elderly, illiterate and those attained high school education or less showed significantly poor level of knowledge ($p<0.05$).

Conclusion:
lack of knowledge was associated with low levels of education, female and older ages.

KEYWORDS

crumb rubber, utilization, compressive strength, low cost, sustainable

INTRODUCTION

Diabetes mellitus is a chronic disease that affects many organs in the body. It is can be preventable and manageable, but it is almost impossible to cure. [1] Globally in 2013, it is estimated that almost 382 million people suffer from diabetes with a prevalence of 8.3%. Saudi Arabia is one of top 10 countries with higher prevalence of diabetes with prevalence of 23.9%. [2] Diabetes mellitus prevalence in Saudi Arabia reaches up to 18.5 and there were 3,852.000 reported cases of diabetes in 2017. [International Diabetes Federation].

Diabetic retinopathy is major microvascular complication of diabetic mellitus. The overall prevalence of diabetic retinopathy in Saudi Arabia is 19.7%, where 9.1% have non-proliferative diabetic retinopathy (NPDR), 10.6% have proliferative diabetic retinopathy (PDR) and 5.7% have macular oedema (ME). [3]

In 2014, a cross sectional study Al Ahsa District of Saudi Arabia showed that Only 11.1% of the diabetic patients were optimally controlled while 17.6% were controlled and 71.3% were poorly controlled. [4] More than 50% subjects were obese, 35.8% were overweight and only 10.1% were of normal weight. Serum triglyceride level of 57.9% of the subjects was under normal range while 18% and 24.1% of the subjects were having borderline high and high level of triglyceride respectively. Serum cholesterol level of 60.6% of diabetic patients was optimal while that of 27.3% and 11.7% were at borderline and high level respectively.

Since there is a very high percentage of obesity, hypertension and dyslipidaemia among diabetic patients in Al-ahsaa, they become more susceptible to develop diabetic retinopathy. So, in order to decrease the incidence of diabetic retinopathy and to improve the quality of life of diabetic patients, our study aims to assess the knowledge and awareness of the risk of diabetic retinopathy among adult diabetic patients.

THE OBJECTIVES:

1. To assess the knowledge of adult diabetic patients about diabetes retinopathy, and its complication.

RESEARCH METHODOLOGY

The proposed study has been carried out in Al-ahsaa, Saudi Arabia. The estimated number of diabetic patients in Al-ahsaa is 114143.7

Study Design

A cross-sectional study was conducted in primary health care centers at Al-ahsaa which targets adult diabetic patients from Al-ahssa, Eastern region, Saudi Arabia.

Questionnaire Sheet

The data was collected using an interviewer-administered questionnaire, attached in (Appendix1). The questionnaire contain16 questions (5 questions related to biographical data, and the rest of questions assessing the knowledge about diabetic retinopathy). In order to facilitate answering the questionnaire it has been translated to Arabic language.

Sample size

The sample size estimated it calculated by using OpenEpi website "www.openepi.com/SampleSize/SSPropor.htm" the samples size calculated with a margin of error of 5%, confidence interval of 95% by using the equation [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)] , and the population size is 114143.7 diabetic patients, the sample size are 383.

Study Area and Population

This study was conducted in (December 2018) among diabetic patients in Al-ahssa region aged 18 years old or more.

The ethical clearance

The ethical clearance obtained from the ethical clearance committee from the College of Medicine, and a written consent was taken from participants at the beginning of the questionnaire. Also, to ensure confidentiality, all forms was anonymized.

The statistical analysis

Data were analyzed using the Statistical Package for the Social Science (SPSS) version 22. Descriptive statistics (frequency, percentages, median) were used to analyze the distribution of the socio-demographic factors and the knowledge of diabetic patient about DR. For calculation of the total knowledge score, each correct answer was given one, while wrong or don't know answers were given zero. Then, scores above the median score (4) were considered good level of knowledge. In addition, Chi-squared test was used to investigate the relationship of socio-demographic factors, and the patient's knowledge of diabetic retinopathy. P values < 0.05 were considered significant.

The expected difficulties

The cost was minimal that we can offer.

The difficulty we may encounter was spending too much time collecting the data and analyzing them as we used a paper-based questionnaire.

RESULTS

A total of 383 adult diabetic subjects participated in the study and completed the questionnaire. The majority (95.3%) were Saudi. Females constituted 50.9% of them with nearly equal sex distribution. Nearly half (49.9%) of the respondents were older than 50-years, and about one-third (35%) were aged 31-50. Most respondents were married and attained high school education or less (73.9% and 53% respectively). As regards type of diabetes mellitus (DM), the majority (52.5%) were type II, while type I subjects constituted only 18.3%. Moreover, about one-third have been diagnosed with diabetes 1-5 years before, whereas a longer duration >15 years was recorded by only 20.6% of subjects. Eighty-six (22.5%) subjects never visit ophthalmology clinic, while 37.1% have made a visit once per year. Few (19.6%) of these patients reported history of eye disease, mainly related to cataract surgeries (Table 1).

Table (2) shows knowledge of the study participants about diabetic retinopathy (DR). About two-thirds (66.6%) of the respondents have heard about DR. Nearly half (54.6%) of them have correctly defined DR as one of the complications of DM that could cause blindness, whereas one -third knew that DR is related to damage of retinal vessels and high blood sugar due to uncontrolled diabetes (33.2% and 30.8% respectively). High percent (42.6%) of the study participants did not know that the risk of DR increases with old age, whereas 47.3% recognized that old age increases susceptibility to DR. When participants were asked about complaints of DR, 149 (38.9%) did not know, while lower percentages correctly identified blurred vision and vision loss (35% and 22.2% respectively). Less than half (42.3%) correctly recognized blindness as the worst complication of DR. Less than half (48.6%) correctly reported that DR is a treatable condition, while 40.7% did not know that.

The sources of the above information were mainly general practitioners followed by ophthalmologists (30.3% and 29.5% respectively). The role of the internet and television was limited to 19.1% and 11.2% respectively as illustrated in figure (1).

The total knowledge score was calculated. It ranged from 0 to 8 with a median score of 4 (IQR =2-6). Values above the median were considered good level of knowledge. Accordingly, 175 (45.7%) had good level, while more than half (54.3%) showed a poor level of knowledge.

Table (3) shows the association of sociodemographic factors to the level of knowledge. Females, subjects older than 50-years-old and illiterate and those attained high school education or less showed significantly poor level of knowledge ($p<0.05$). Patients who did not know their type of diabetes showed also more poor level of knowledge ($p<0.001$). Likewise, patients who did not visit an ophthalmologist had also more poor level of knowledge.

Table (1): Baseline characteristics of the study participants (N= 383).

		N	%
Sex	Female	195	50.9%
	Male	188	49.1%
Age (years)	18-30	58	15.1%
	31-50	134	35.0%
	>50	191	49.9%
Nationality	Saudi	365	95.3%
	None	18	4.7%
Marital state	Married	283	73.9%
	Single	53	13.8%
	Widow	40	10.4%
	Divorced	7	1.8%
Educational level	Illiterate	76	19.8%
	High school or less	203	53.0%
	College graduate	91	23.8%
	Post graduate	13	3.4%
Type of diabetes mellitus	Type I	70	18.3%
	Type II	201	52.5%
	I don't know	112	29.2%
Duration of diabetes (years)	1-5	131	34.2%
	6-10	111	29.0%
	11-15	62	16.2%
	>15	79	20.6%
Number of visits to an ophthalmologist	None	86	22.5%
	Once every year	142	37.1%
	More than once time a year	73	19.1%
	Once every 2 years	39	10.2%
	Once every 5 years	43	11.2%
History of eye disease	No	308	80.4%
	Yes	75	19.6%

Table (2): Knowledge of the study participants about diabetic retinopathy (N=383).

		N	%
Have you ever heard about diabetic retinopathy?	No	128	33.4%
	Yes	255	66.6%
Can you define diabetic retinopathy as one of diabetes complication that lead to vision loss?	No	174	45.4%
	Yes	209	54.6%
Can you define diabetic retinopathy as one of diabetes complication due to damage of retinal vessels?	No	256	66.8%
	Yes	127	33.2%
Can you define diabetic retinopathy as a simple eye disease due to high blood sugar?	No	265	69.2%
	Yes	118	30.8%
Do you think, as you become older, you become more susceptible?	Don't know	163	42.6%
	No	39	10.2%
	Yes	181	47.3%
What will you complain of if you have DR?	Pain	15	3.9%
	Blurred vision	134	35.0%
	Loss of vision	85	22.2%
	Don't know	149	38.9%
What do you think the worst effect of DR?	Redness	4	1.0%
	Pain	8	2.1%
	Blindness	162	42.3%
	Low vision	74	19.3%
	Don't know	135	35.2%

Do you think it's treatable?	No	41	10.7%
	Yes	186	48.6%
	Don't know	156	40.7%

Figure (1): The main sources of participant's information.

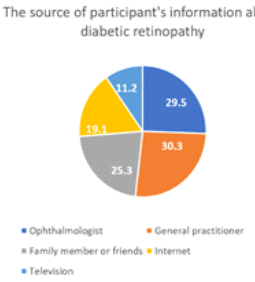

Table (3): Association of socio-demographic factors to the level of knowledge.

		Level of knowledge				Chi-Square
		Poor		Good		
		N	%	N	%	P value
Sex	Female	116	55.8%	79	45.1%	.038*
	Male	92	44.2%	96	54.9%	
Age (years)	18-30	26	12.5%	32	18.3%	.004*
	31-50	62	29.8%	72	41.1%	
	>50	120	57.7%	71	40.6%	
Education	Illiterate	55	26.4%	21	12.0%	<.001*
	High school	128	61.5%	75	42.9%	
	College	21	10.1%	70	40.0%	
	Postgraduate	4	1.9%	9	5.1%	
Marital status	Married	146	70.2%	137	78.3%	.010*
	Single	29	13.9%	24	13.7%	
	Widow	31	14.9%	9	5.1%	
	Divorced	2	1.0%	5	2.9%	
Type of diabetes	Type I	25	12.0%	45	25.7%	<.001*
	Type II	106	51.0%	95	54.3%	
	Don't know	77	37.0%	35	20.0%	
Duration of diabetes (years)	1-5	72	34.6%	59	33.7%	.759
	6-10	64	30.8%	47	26.9%	
	11-15	31	14.9%	31	17.7%	
	>15	41	19.7%	38	21.7%	
Frequency of visits	None	68	32.7%	18	10.3%	<.001*
	Once every year	65	31.3%	77	44.0%	
	More than once per year	26	12.5%	47	26.9%	
	Once every 2 years	22	10.6%	17	9.7%	
	Once every 5 years	27	13.0%	16	9.1%	

*significant at p<0.05

DISCUSSION

Awareness of diabetic retinopathy (DR) is the crucial step for early prevention, diagnosis and treatment of this disease. Diabetic retinopathy is one of the main causes of blindness and vision impairment globally. Therefore, the implication of the current study in community health planning is very essential (5). This study showed a significant poor level of knowledge among diabetic patients. The detected deficit in awareness was mainly associated with female sex, older ages and lower levels of education.

In this study, more than half of diabetic Saudi patients showed poor knowledge of DR. The level of awareness of DR reported in our study is much lower than the levels reported in Jordan, where approximately 80% of their diabetic patients knew the nature and consequences of DR (6). The authors attributed this high awareness to the presence of an established national eye health care program and referral guidelines regarding diabetes mellitus (DM) and DR management for primary care. Once diagnosis of DM has been established, patients are referred for an eye examination. Likewise, better awareness about DR was reported in Jedda, Saudi Arabia (82%) (7), and Malaya, Malaysia (86%) (8). On the other hand, the levels of knowledge about the likelihood that DM cause eye complications and blindness in this study (54.6%) is much higher than reported in India (27-37.1%) (9, 10).

There were deficiencies in proper knowledge of the studied patients regarding risks of DR. These included the relation of poor glycemic control and old age to the development of DR. likewise, less than half of the participants recognized blurred vision as a symptom and blindness as the worst complication of DR. Comparable to these findings, Cetin et al. (11) concluded lack of appropriate knowledge and behavior about the management of DR in Turkey. Furthermore, knowledge of ocular complications of uncontrolled DM and how to prevent them was very low among Hispanic individuals. Half of participants with a diagnosis of DM more than 1 year prior and one-third of newly diagnosed participants knew that uncontrolled diabetes could cause eye disease (12).

In the current study, low levels of education were the main factor related to lack of knowledge of Saudi patients about DR. Illiterate and subjects attained secondary education or less showed more deficiencies in knowledge about risks and complications of DR. This is consistent with several reports from other countries showing that patients with higher education levels are more aware and well informed about DR occurring as a complication of DM, compared to patients with low levels of education (11, 13, 14). Other factors that were related to poor awareness included female sex, older ages and patients with type 1 DM. These categories should be addressed with more concern to raise their knowledge for better quality of their lives.
The lack of awareness about DR is considered a major health problem that could interfere with proper management and prevention of possible visual impairment. Longer durations of diabetes more than 5 years were associated with better awareness in Turkey (11). However, the current study did not reveal an association between duration of diabetes and the level of awareness.

The American Diabetes Association recommends annual eye examinations for people with type 2 diabetes (15). This survey revealed a poor compliance with visiting an ophthalmologist for routine eye examination. Only 37% of the subjects kept attendance once every year. Furthermore, this poor attendance was significantly related to the poorer levels of knowledge. An individual's awareness is postulated as one of the predisposing factors that influence the behavior, for example, attendance for screening (16). Lack of awareness of our participants explain the lack of eye examination on regular basis. On the other hand, some studies reported poor patients' motivation to undergo eye examination despite their high levels of awareness about its necessity. Such a discrepancy between the levels of awareness and compliance in terms of routine eye examination seems to be common among patients with diabetes world-wide. Some reports stating that only half of the patients in Myanmar (13) and two-thirds of Japanese patients attended a routine eye examination (17). In addition, a recent study in Turkey showed that while 41.9% of patients with diabetes were aware of annual eye examination, 77.3% of these patients previously had an eye examination (11). Availability of this service and its cost could be barriers that should be considered. This emphasizes the presence of a general strategy of mandatory referrals to ophthalmologists to be adopted by general practitioners in Saudi Arabia.

The sources of DR information in this study were mainly general practitioners followed by ophthalmologists, while the role of the internet and television was limited. This is like reports of Saudi patients in Jedda (7). The role of health providers at primary care centers is essential for providing information and emphasizing the need for regular eye screening. This was highlighted in a comparable study in Ireland (18). Furthermore, media and internet should be used and directed to increase awareness of all population.

Conclusion:

In this study, most patients reported poor levels of awareness about

DR. This lack of proper knowledge was associated with low levels of education, female sex and older ages. Additionally, there was a lack of compliance with regular eye examination. These findings are of great concern, so implementation of strategies to increase the awareness of DR and the importance of early retinal screening among affected patients is very essential. Health education campaigns should address schools as part of the community may not be able to attain higher education. Additionally, a general strategy of mandatory referrals to ophthalmologists should be adopted by general practitioners in Saudi Arabia. Eventually, screening programs for DR ought to be applied.

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