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AWARENESS AND KNOWLEDGE AMONG DIABETEC PATIENTS OF DIABETES MELLITUS AND ITS OCULAR COMPLICATIONS

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ABSTRACT

Objective: To assess the level of awareness and knowledge of patients with diabetes about diabetes mellitus and its related ocular complications.

Study Design: Cross sectional study.

Place and Duration of Study: Eye and Medical Departments of Pakistan Naval Ship Hospital Shifa, from Oct 2018 to Mar 2019.

Methodology: Diagnosed cases of diabetes mellitus, of more than one year and age more than 15 years were included in the study. A structured questionnaire was given to each participant. Statistical analysis was done using SPSS 13.0.

Results: A total of 182 subjects having mean age of 50.10 ± 11.05 years were included. A total of 122 (67.03%) patients were aware about diabetes mellitus and its effects on eyes and 139 (76.37%) were aware that diabetes mellitus can affect eye sight. About 142 (78.02%) of patients believed that patients with diabetes should have regular eye examination. Awareness was significantly higher in patients who were more qualified (p=0.005) and who had relatively higher income (p=0.012).

Conclusion: The overall level of awareness and knowledge about the diabetes mellitus and its related eye complication is average. Hence, there should be continuous process of evaluation to improve patient care and importance of awareness campaign and patient counseling to improve their knowledge regarding diabetes.

Keywords: Awareness, Diabetes mellitus, Diabetic retinopathy, Screening.

INTRODUCTION

Diabetes Mellitus (DM) epidemic is one of the most alarming health burdens in developing countries having a strong influence on the quality of lives of patients. Recent analysis showed that the pooled prevalence of DM was 13.7% in Pakistani population and various diabetic surveys conducted in Pakistan reported prevalence of DM between 0.95%-32.9%[1]. Rapid increase of DM in our country raises the need for awareness of diabetes and its related complications. Research showed that in developing countries like Pakistan people with DM had a surprisingly low level of awareness about diabetes, its related complications and management. Awareness and education of the community about the DM is the most costeffective way of reducing the burden of DM and its related complications. Ather *et al*, in their study reported that 25.3% patients were aware about diabetic complications[2]. Various studies conducted in Pakistan, India and Saudi Arabia revealed that awareness of DM and its ocular complications among diabetic patients is variable depending upon the education level, economic status, gender and rural or urban origin of patients[3-7].

Complications of DM include diabetic retinopathy (DR), cardiovascular disease, diabetic neuropathy and diabetic nephropathy. DR is the major complication which is considered a leading cause of vision impairment and blindness worldwide. Enhancing the level of awareness of DR among patients with diabetes is considered an important factor for early diagnosis and management of DR, and hence prevention of possible visual impairment due to the disease. Studies showed variable level of awareness of ocular

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involvement and DR among patients of DM[3, 6-9]. Hakeem *et al*, in their study on Pakistani population reported that only 25% of the patients considered eyes to be the main area of body affected by DM; however, 71% have had their eyes checked at least once since having diabetes[10]. Keeping in view the high rate of diabetes in Pakistan and socioeconomic burden of DR, assessing and enhancing people's knowledge about diabetes, DR and other diabetic complications is required. Insight into the gaps of knowledge about diabetes is important in order to create awareness in the community.

Keeping in view the higher complications of DM in our country, this study was conducted to assess the current and actual magnitude of awareness of diabetic complications among patient with diabetes, so that necessary measures should be taken to educate the patients regarding diabetes and its related complications. The objective of the study was to assess the awareness and knowledge of diabetic patients about DM and its related ocular complications.

METHODOLOGY

This cross sectional study was conducted from October 2018 to March 2019 in eye and medical departments of Pakistan Naval Ship Hospital after approval of ethics review committee (ERC/2018/OPH/06) of the hospital. One hundred and eighty two individuals who were diagnosed cases of DM, having DM for more than one year and had age more than 15 years were included in the study. Patients with senile dementia, stroke and poor general condition were excluded as there condition might prevent from answering the questionnaire. A sample size of 182 was calculated taking prevalence of DM in Pakistan as 13.7% and using WHO sample size calculator with a 95% confidence level and precision as 0.05[1]. Non probability, consecutive sampling technique was used for patient selection. Informed written consent was obtained from all the participants who fulfilled the questionnaire. A 17 points structured questionnaire was developed which was focused on the level of awareness and participants knowledge regarding DM and its related complications. The questionnaire consisted of demographic section that included gender, age, DM type, duration of DM, treatment modalities, educational level and economic status of the participants. Then it included a section regarding knowledge and awareness about DM and its complications. A scoring system was developed to assess the awareness regarding DM and its complications. The patients who answered 60% of questions positively were labeled as aware about DM and its complications. The questionnaire contents were validated by two senior eye specialists and reliability was assessed after conducting a pilot study on 20 patients and obtained a Cronbach Alpha value of 0.837. The questionnaires were filled by undergraduate final year students after explaining everything to the patients in the language they understood.

Statistical analysis was done using SPSS 13.0. Mean ± SD was used for numerical data i.e. age whereas, frequency and percentages were used for categorical data such as gender, type of DM, duration, treatment modalities, education, economic status and awareness questions. Significant difference smong various variables was found using Chi Square test. The level of significance was set as $p \leq 0.05$.

RESULTS

A total of 182 participants fulfilled the desired questionnaire. Mean age of study population was 50.10 ± 11.05 years (range: 17-80 years) from which 95 (52.19%) were males and 87 (47.80%) were females. Demographic and socioeconomic parameters of study population are given in table-I. A total of 87 (47.80%) patients knew they had normal plasma glucose level, whereas 73 (40.10%) did not have normal plasma glucose level and 22 (12.08%) did not know about it.

Out of 182 participants 122 (67.03%) were aware about DM and its effects on eyes. However, 139 (76.37%) were aware that DM can affect eye sight. Queries related to the knowledge of DM and its management revealed that 142 (78.02%) patients believed that diabetic patients

should have regular eye examination. Sixty two (34.06%) patients believed that they should visit ophthalmologist once a year, 13 (7.14%) twice a year, 55 (30.21%) occasionally and 52 (28.57%) believed that regular examination is not required

Table-I: Demographic and socioeconomic factors of study population (n=182).

Characteristics	n (%)
Gender	
Male	95 (52.19)
Female	87 (47.80)
Educational Level	
Illiterate	41 (22.52)
Primary	47 (25.82)
Secondary	71 (39.01)
Graduate	23 (12.63)
Economic Status	
Low (<15 K)	8 (04.39)
Moderate (15-20 K)	34 (18.68)
Good (20-50 K)	104 (57.14)
High (>50 K)	36 (19.78)
Type of Diabetes Mellitus	
Type 1	40 (21.97)
Type 2	142 (78.02)
Duration of Diabetes Mellitus	
<5 Years	61 (33.51)
6-10 Years	63 (34.61)
11-15 Years	39 (21.42)
>15 Years	19 (10.43)
Treatment	
None	4 (02.19)
Insulin	38 (20.87)
Oral	99 (54.39)
Both	41 (22.52)

(figure). Patient's knowledge about the organs affected by DM and the eye complications that DM can cause (table-II). When asked about the treatment modalities for ocular complications 85 (46.70%) patients told about general diabetic control being enough, 21 (11.53%) told about laser treatment, 26 (14.28%) about surgery, 9 (4.94%) believed it to be nontreatable while 41 (22.52%) were not aware of any treatment. Regarding the awareness about screening should be done for eye complications in patients diagnosed with DM, 151 (82.96%) patients were in favor of screening. Moreover, 108 (59.34%) patients were also in favor of awareness programs for DM.

Among 182 study subjects there was statistically significant difference found between the

Table-II: Awareness of diabetic complications.

	n (%)*
Organs Affected By Diabetes Mellitus	
Heart	88 (48.35)
Kidney	88 (48.35)
Eyes	88 (48.35)
Nervous System	22 (12.08)
Others	27 (14.83)
Eye Complications that Diabetes Mellitus Can Cause	
Cataract	112 (61.53)
Glaucoma	64 (35.16)
Retinopathy	49 (26.92)
Ocular Nerve Palsy	09 (04.94)
Others	16 (08.79)

*Multiple presentations reported simultaneously by many patients.

education level and awareness of DM. The awareness was more in subjects who were more qualified (p=0.005) (table-III). Similarly, there was also statistically significant difference between the economic status and the awareness of DM. The awareness was more in subjects who had relatively higher income (p=0.012) (table-III). However, there was no difference found between the gender, type of DM, duration of DM, treatment modalities and the level of awareness of DM (table-III).

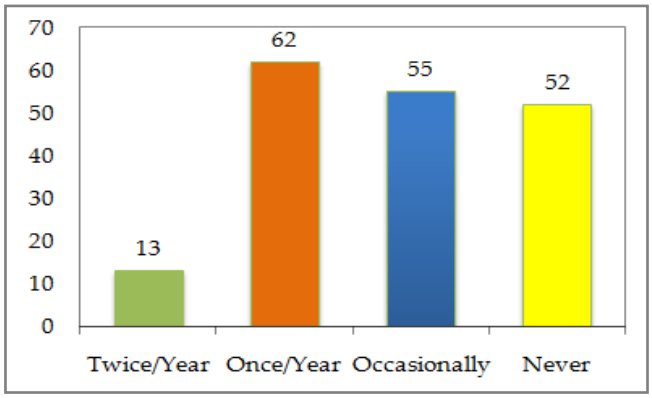

Figure: Follow up check-ups to eye specialist.

DISCUSSION

Increasing prevalence of DM over time is greatly affecting the economic resources of all, especially the poor and developing countries like Pakistan. The lack of awareness about DM and its related ocular complications has been a major health problem that could interfere with proper management and prevention of possible visual impairment. The aim of our study was to report the levels of awareness of DM and its related ocular complications among patients with DM. In our study 67.03% of the patients were aware about the DM and its effects on eyes and 76.37% were aware that DM can affect eye sight. Ullah *et al*, in their study on Pakistani population reported that 37.50% had good, 25% had average and 37.50% had poor knowledge about the complications of DM[11]. Younis *et al*, reported that 60.5% of participants were aware of eye problems being caused by DM[12]. While in studies from Saudi Arabia Abdulaal *et al*, and Alzahrani *et al*, reported that 80.8% and 82.6% of the patients knew that DM can affect the eyes[13,14]. Bakkar MM reported that 88.2% patients were aware that DM can affect the retina through DR and 81.9% patients reported that DR can lead to blindness[15]. Hamzeh *et al*, found 93.8% of patients were aware that DM could affect the eye and 67.3% were aware that it could cause blindness[16]. Various studies conducted in Pakistan revealed that awareness of DM and its complications among patients with diabetes is low[2,17,18]. Main reason for lower level of awareness and knowledge is the educational status of the participants, their socio economic status and nonavailability of the diabetic educational programs.

Table-III: Awareness with respect to different variables (n=182).

Variable	Aware (n=122)	Unaware (n=60)	*p*-value
Gender			
Male	69 (72.63%)	26 (27.36%)	0.093
Female	53 (60.91%)	34 (39.08%)	
Type of Diabetes Mellitus			
Type 1	25 (62.50%)	15 (37.50%)	0.490
Type 2	97 (68.30%)	45 (31.69%)	
Duration of Diabetes Mellitus			
< 5 Yrs	43 (70.49%)	18 (29.50%)	0.743
6-10 Yrs	41 (65.07%)	22 (34.92%)	
11-15 Yrs	27 (69.23%)	12 (30.76%)	
>15 Yrs	11 (57.89%)	8 (42.10%)	
Education Level			
Illiterate	22 (53.65%)	19 (46.34%)	0.005
Primary	26 (55.31%)	21 (44.68%)	
Secondary	54 (76.05%)	17 (23.94%)	
Graduate	20 (86.95%)	3 (13.04%)	
Economic Status			
< 15 K	3 (37.50%)	5 (62.50%)	0.012
15-20 K	19 (55.88%)	15 (44.11%)	
20-50 K	69 (66.34%)	35 (33.65%)	
> 50 K	31 (86.11%)	5 (13.88%)	
Treatment			
None	1 (25.00%)	3 (75.00%)	0.212
Insulin	23 (60.52%)	15 (39.47%)	
Oral	69 (69.69%)	30 (30.30%)	
Both	29 (70.73%)	12 (29.26%)	

Variables significantly influencing awareness about DM and its complications were higher education level (p=0.005) and higher economic status (p=0.012). These results are comparable to those given in studies by Ather *et al*[2], Saluja *et al*[3], and Tahir *et al*[5]. In another study, patients with a relatively higher educational level (graduates and postgraduates) were more aware of DR occurring as a consequence of diabetes (p=0.003)[15]. In our study 78.02% of patients believed that patients with diabetes should have regular eye examination. In other studies the authors found that 73.80% and 86.9% of patients with diabetes reported about having their regular eye examinations[6,16]. However, in another study the awareness among rural diabetics of annual retinal examination was found to be only 8 (18.16%). In our study, 41.20% of patients believed that they should visit an ophthalmologist for eye examination once or twice a year while Hakeem reported 87.2% of patients believed that once a year examination should be done[10]. In another study more than 63% of the patients thought that a person with DM should undergo an eye checkup once a year or every 6 months[14].

Regarding the treatment modalities for ocular complications 46.70% of our patients told

about general diabetic control being enough, 11.53% told about laser treatment, 14.28% about surgery, 4.94% believed it to be nontreatable while 22.52% were not aware of any treatment. Whereas, Al Zarea[6], in their study reported that 71.07% of patients believed that control of DM is sufficient, while 69.70% believed that surgery is the treatment and 36.90% believed that only medications can treat DR and 24.60% of patients had no knowledge of available treatment. In another study, 11% and 25% of patients reported surgery and laser treatment, respectively, as available treatment options for DR[14]. In our study 48.35% of patients consider that eyes are the major organ affected by DM. Whereas Hakeem *et al*[10], found only 25% patients considering eyes to be the main area of body affected by diabetes while Younis *et al*[12], reported 60.5% of patients were aware of eye problem in DM. Diabetics are 25 times more likely to become blind than non-diabetics due to DR. For this reason it is vital to increase the awareness about the DM and its ocular complications like DR by educating the patients through the health care professionals and public seminars.

The limitation of this study was that it had been conducted in a single tertiary care hospital, and therefore may not be representative of the entire population. A multicenter study is required to find the consistency of the results among the population of Pakistan.

CONCLUSION

The overall level of awareness and knowledge about the diabetes mellitus and its related eye complication is average. Hence, there should be continuous process of evaluation to improve patient care and importance of awareness campaign and patient counseling to improve their knowledge regarding diabetes.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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