



Knowledge, Attitude and Practice about Diabetic Retinopathy among Diabetic Patients Attending the Department of Endocrinology at Nampula Central Hospital in Mozambique during 2022

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Abstract

Aim: To evaluate the knowledge, attitude and practice about diabetic retinopathy among diabetic patients, attending the endocrinology department of Nampula Central Hospital in Mozambique.

Materials and Methods: A descriptive cross-sectional study was conducted at Endocrinology Department of Nampula Central Hospital in Mozambique. Patients' knowledge, attitude and practice were assessed using a 90-point semi-structured questionnaire. Patients were classified into different categories according to their knowledge, attitude and practice. Data analysis was performed with the aid of SPSS version 20, where frequency distribution and measures of central tendency (mean, median and standard deviation) were used to summarize the descriptive part of the study. The median of Likert scale was calculated and used to identify the majority opinion for questions related to Diabetic retinopathy. Participants were included in the study as part of the sample after signing informed consent.

Results: A sample of 305 participants was studied, where 163(53.4%) were male and 142(46.6%) were female; the mean age of the participants was 52.08(\pm 13.04) years. The mean duration of diabetes was 7.2(\pm 6.3) years. The most prevalent treatment was the combination of diet with medication represented by 51.8%. The participants had an average score of 3.98 in the knowledge section and a satisfaction level of 58.0%. The average score in the attitude was 2.92, being negative in 51.5%, and about practice they scored in average 3.49, being positive in 51.5% of the participants.

Conclusion: Study participants have satisfactory knowledge and favorable practices regarding diabetic retinopathy, but the majority's attitude is negative.

Keywords: Knowledge, Attitude, Practice, Diabetic retinopathy, Endocrinology

Introduction

Diabetes mellitus is a group of physiological disorders characterized by hyperglycemia resulting directly from insulin resistance, inadequate insulin secretion or excessive glucagon secretion.^{1,2} The global prevalence of diabetes mellitus has increased from 4.7% in 1980 to 8.5% in 2014, increasing the number of adults with diabe-

tes to a staggering 422 million worldwide, according to the World Health Organization and it is estimated that 642 million people are expected to be diabetic by 2040.^{3,4}

Diabetic retinopathy (DR) is a microangiopathy of the retina. It involves changes in the vascular wall and in the rheological properties of blood.⁵ Visual impairment as a result of diabetic retinopathy

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has a significant negative impact on a patient's quality of life and their ability to successfully manage the disease.^{6,7}

The proportion of global blindness due to DR has increased from 2.1% in 1990 to 2.6% in 2010.⁸ Globally DR accounts for 5% of all blindness, affecting 2 million people, and is the leading cause of blindness in people aged between 15 and 64 years in industrialized countries. It has been estimated that DR blindness could be reduced by up to 90% if agreed treatment protocols and standardized care for diabetics were implemented.⁹⁻¹¹ The prevalence of DR among patients with diabetes is 34.6% worldwide. Early detection depends on a regular eye exam involving assessment of visual acuity and ophthalmoscopy through dilated pupils by experienced personnel.^{12,13}

It is necessary to identify the risk factors that affect the occurrence of DR for the development of clinical management strategies to slow the progression of the disease and prevent visual loss.¹⁴ Some factors related to the diabetic state are postulated to play a causal role in this disorder.¹⁵ Prevention of blindness from diabetic retinopathy requires effective screening strategies, for which ophthalmologists need to know the magnitude of the burden and pertinent risk factors in their geographic location.¹⁶

Early detection, implementation of effective screening programs, and efforts to control risk factors for DR are crucial to delay onset and slow disease progression and also there are highly effective and low-cost treatments for RD. Up to 98% of blindness can be prevented with laser treatment and/or vitreous surgery.^{17,18}

Although early detection of diabetic retinopathy is critical to preventing vision loss, many patients are not adequately evaluated. Using a multidisciplinary approach, primary care physicians and ophthalmologists should follow evidence-based recommendations for screening and monitoring diabetic patients as they work to improve glycemic index and blood pressure.¹⁹ Despite the growing concerns about the emergence of DM as a major public health problem, there is still much to be understood about the epidemiology of DR.²⁰

Therefore, strategies must be implemented to detect DR in the early stages and manage them based on international standards. Early detection and treatment will reduce visual morbidity associated with diabetes complications. Diabetic patients must be considered as important stakeholders in this process.²¹

Material and Methods

This was a cross-sectional study to assess the knowledge, attitude and practice related to diabetic eye disease among patients with diabetes. The study was conducted among diabetic patients attending the endocrinology department of Nampula Central Hos-

pital in Mozambique. The sample size was calculated based on the unknown prevalence for KAP (50%), with $z=1.96$, for a population of 1454 diabetic patients attending the endocrinology department at Nampula Central Hospital in Mozambique, considering a significance level of 5% and 95% confidence interval. The final estimated sample size was 305.

Previous to the data collection, the protocol was submitted and approved by the Lúrio University Institutional Ethical Review Board. This study is in accordance with the tenets of the Declaration of Helsinki (2013). All patients with confirmed diagnose of DM attending the endocrinology department during the period of February to June 2022 were invited to participate in this study.

All of those who accepted, provided signed informed consent and face-to-face interviews were held to gather responses to a validated 18-item questionnaire developed to measure knowledge (9 items), attitude (6 items), and practice (3 items) about diabetic eye complications and eye care. Additional 4-items questions were performed to access demographic features of study participants (age, gender, duration of diabetes and treatment).

The questionnaire was framed in English based in the validated information available in the literature from previous published studies in the topic and translated to Portuguese by a Portuguese lecturer at Lúrio University. Therefore the back translation was performed by an English Lecturer to ensure language equivalence between the English and Portuguese versions of the scale.

Three optometrists provided opinions about meaning and content sufficiency. A pilot study Performed with 72 patients of a similar population was then conducted in January 2022 to determine whether there were any unclear questions in the scale. The data from the pilot study were not included in the final data analysis.

Responses to each item were measured on a 5-point Likert scale (ranging from "Fully disagree-1" to "Fully agree-5"). Each item was scored out of a maximum of 5 points and minimum of 1 point.

The Statistical Package for the Social Sciences (SPSS) version 20.0 was used for data entry and analysis. Data were described using mean, median and standard deviation (SD). Frequencies and percentages were calculated and presented to describe the findings.

Knowledge about DR was categorized as Satisfactory for individuals where the average score was equal or superior to the mean value of 3.98 and dissatisfactory if the average score was less than the mean value. The Attitude was categorized as Positive if the average score was equal or superior to the mean value of 2.92 and Negative if it was lower. The Practice was named Favorable if the average score was equal or superior to the mean value of 3.49 and Unfavorable if it was lower than the mean.

Results

From 305 respondents, 142(46.6%) participants were female and 163(53.4%) were male. The mean age was 52.08(\pm 13.04). According to the age distribution, 6(1.96%) participants were aged between [14-18] years, 5 (1.64%) participants were [19-23] years, 3(0.98%) participants were [24-28] years old, 7(2.29%) participants were [29-33] years old, 18(5.9%) participants were [34-38] years, 34(11.1%) were [39-43] years and 232(76.0%), were over 43 years old.

The mean duration of diabetes diagnosis was 7.2(\pm 6.3) years. 68(22.2%) out of 305 participants reported to be under treatment of diabetes for more than 10 years, 84(27.5%) participants reported [6-10] years and 158(50.1%) participants reported [1-6] years. As for the type of treatment, 11(3.6%) participants mentioned they are under medication only, 136(44.6%) mentioned they follow a recommended balanced diet only and 158(51.8%) are under the combination of both methods (recommended balanced diet and medication). The information regarding demographic features of the study population is summarized in Table 1.

Table 2 summarizes the information regarding the distribution of responses according to the 5-point Likert scale related to knowledge, attitude and practice of diabetic retinopathy.

Table 1: Demographic information of the study population.

Variable	Frequency n (%)
Gender	
Male	163 (53.4 %)
Female	142(46.6 %)
Age	
[14-18]	6 (1.96 %)
[19-23]	5 (1.64 %)
[24-28]	3 (0.98 %)
[29-33]	7 (2.29 %)
[34-38]	18 (5.9 %)
[39-43]	34 (11.1 %)
>43	232 (76.0 %)
Mean (SD)	52.08(\pm 13.04)
Length of diabetes	
[1-5]	153 (50.1 %)
[6-10]	84 (27.5 %)
>10	68 (22.2 %)
Mean (SD)	7.2 (\pm 6.3)
Kind of Treatment	
Balanced diet	136 (44.6 %)
Medication	11 (3.6 %)
Balanced diet + Medication	158 (51.8 %)

About the knowledge related questions, 240(78.7%) strongly agreed that diabetes can damage the eyes and vision while 215(70.5%) participants strongly agreed that receiving treatment on time can prevent or delay eye damage due to diabetes, 201(65.9%) participants strongly agreed that the risk of eye complications increase with poor control of diabetes, 200(65.6%) participants strongly agreed that eye treatments are successful if blood sugar is controlled, 149(48.9%) strongly agreed that Children who have diabetes are also at risk of developing eye complications, 120(39.3%) strongly agreed that the ophthalmologist can find out the effects of diabetes on the eye with the use of special equipment. When questioned if in diabetes, the eyes can be affected one at a time; if diabetes-related eye complications are treated well, the eye will not need treatment again and if eye treatments for people with diabetes are painful, 123(40.3%);102(33.4%) and 165(54.0%) participants are not sure.

Participants' attitude was assessed based in 6 questions. 166(54.4%) participants equal strongly agreed that they don't need regular (annual) eye exams even when the blood sugar level is under control and that only physicians should provide information about eye problems due to diabetes while 130(42.6%) mentioned that they control the blood sugar even when receiving treatments related to diabetes eye complications, 126(41.3%) strongly agreed that they don't need regular eye exams when the eyesight is good, 182(59.7%) strongly disagreed that it is a waste of time and money for people with diabetes to go for an eye exam if their eyesight is normal and 178(58.4%) strongly disagreed that they don't need to worry about blood sugar control when having eyes treatment.

Practice about DR was evaluated based in 3 questions. 214(70.1%) strongly agreed that If suddenly the vision gets worse and they can't see well, they have to go for an eye exam, 89(29.1%) strongly agreed that they go for a regular (annual) eye check-up appointment because of diabetes while 123(40.3%) strongly disagreed they have received advice on the prevention and treatment of diabetic eye complications from an ophthalmology team.

The median score of questions related to knowledge was 3.98; where 128(42.0%) participants have dissatisfactory knowledge about diabetic retinopathy and 177(58.0%) have satisfactory knowledge. Nevertheless, the median score for attitude related questions were 2.92, where 148(48.5%) participants demonstrated positive attitude and 157(51.5%) a negative attitude. Practice related questions about diabetic retinopathy had a median score of 3.49, where 148(48.5%) participants, have unfavorable practice, and 157(51.5%) have favorable practice. The Whole information about the classification of knowledge, attitude and practice of study participants in related to DR is summarized in Table 3.

Table 2: Assessment of the level of knowledge, attitude and practice about diabetic retinopathy.

Questions	Answers[n(%)]				
	Strongly Disagree	Disagree	Don't Know	Agree	Strongly agree
1. Knowledge					
1.1. Diabetes can damage the eyes and vision.	6 (1.96%)	2 (0.65%)	22 (7.2%)	35 (11.5%)	240 (78.7%)
1.2. The risk of eye complications increases with poor control of diabetes.	5 (1.64%)	8 (2.62%)	36 (11.8%)	55 (18.0%)	201 (65.9%)
1.3. Children who have diabetes are also at risk of developing eye complications.	3 (0.98%)	2 (0.65%)	83 (27.2%)	68 (22.3%)	149 (48.9%)
1.4. In diabetes, the eyes can be affected one at a time.	34 (11.1%)	8 (2.62%)	123 (40.3%)	56 (18.4%)	84 (27.5%)
1.5. The ophthalmologist can find out the effects of diabetes on the eye with the use of special equipment.	10 (3.28%)	11 (3.6%)	78 (25.6%)	86 (28.2%)	120 (39.3%)
1.6. Eye treatments for people with diabetes are painful.	48 (15.7%)	23 (7.54%)	165 (54.0%)	33 (10.8%)	36 (11.8%)
1.7. Getting treatment on time can prevent or delay eye damage due to diabetes.	3 (0.98%)	3 (0.98%)	27 (8.9%)	57 (18.7%)	215 (70.5%)
1.8. If diabetes-related eye complications are treated well, the eye will not need treatment again.	55 (18.0%)	14 (4.6%)	102 (33.4%)	52 (17.0%)	82 (26.9%)
1.9. Eye treatments are successful if blood sugar is controlled	4 (1.31%)	4 (1.31%)	38 (12.5%)	59 (19.3%)	200 (65.6%)
2. Attitude					
2.1. I don't need regular (annual) eye exams if I control my blood sugar.	129 (42.3%)	32 (10.5%)	47 (15.4%)	52 (17.0%)	166 (54.4%)
2.2. I don't need to worry about blood sugar control if I'm having my eyes treated.	178 (58.4%)	29 (9.5%)	43 (14.0%)	21 (6.9%)	34 (11.1%)
2.3. I don't need regular eye exams if my eyes are fine and my eyesight is good.	94 (30.8%)	32 (10.5%)	27 (8.9%)	25 (8.2%)	126 (41.3%)
2.4. Only physicians should provide information about eye problems due to diabetes.	55 (18.0%)	17 (5.6%)	15 (4.9%)	52 (17.0%)	166 (54.4%)
2.5. It is a waste of time and money for people with diabetes to go for an eye exam, as most of the time their eyes are normal.	182 (59.7%)	35 (11.5%)	22 (7.2%)	18 (5.9%)	48 (15.7%)
2.6. I control my blood sugar even if I am receiving treatments related to diabetes eye complications.	14 (4.6%)	44 (14.4%)	39 (12.8%)	78 (25.6%)	130 (42.6%)
3. Practice					
3.1. If suddenly my vision gets worse and I can't see well, I have to come for an eye appointment.	6 (1.96%)	2 (0.65%)	16 (5.2%)	67 (21.9%)	214 (70.1%)
3.2. I come to the regular (annual) check-up appointment because of diabetes.	54 (17.7%)	67 (21.9%)	37 (12.1%)	58 (19.0%)	89 (29.1%)
3.3. I received advice on the prevention and treatment of diabetic eye complications from an ophthalmology team	123 (40.3%)	28 (9.2%)	28 (9.2%)	60 (1.96%)	66 (21.6%)

Discussion

This is the first study carried out in Mozambique to assess the knowledge, attitude and practice of diabetic patients about diabetic retinopathy.

The mortality, morbidity and cost-related complications of di-

abetes are increasing worldwide and are a persistent global public health problem. Diabetic retinopathy (DR) is considered the cause of blindness in 1.8 million of 37 million cases (4.5%) worldwide.²²

In the present study, men were more representative with 53.4%. This result is lower than the result found in the study carried out in Saudi Arabia, but it is superior to the results found in China and

Nigeria.²³⁻²⁵ The discrepancy in results may be associated with differences in the socio demographic characteristics of the population in each study.

Table 3: Classification of knowledge, attitude and practice of study participants in relation to diabetic retinopathy.

Variable	Frequency	Median
Knowledge		
Satisfactory	177(58.0%)	3,98
Dissatisfactory	128 (42.0%)	
Attitude		
Positive	148 (48.5%)	2,92
Negative	157 (51.5%)	
Practice		
Favorable	157 (51.5%)	3,49
Unfavorable	148 (48.5%)	

The results of the present study indicate a satisfactory level of knowledge about diabetic retinopathy in 58.0% of the participants. This result is higher than the results of studies carried in Saudi Arabia, Goa, Sudan and Brazil, but lower than the results of studies carried out in Kenya and in Oman.²⁶⁻³¹

The attitude towards screening and treatment of diabetic retinopathy in our study was positive in 48.5% of patients. It is higher than the study carried out in India but lower than the results found in other study in southern India.^{32,33}

Recommendations for annual screening for diabetic retinopathy without health education may result in increased adherence to screening in the short term. Furthermore, if there is no feedback on the status of diabetic retinopathy by healthcare professionals, negative attitudes may develop among diabetic patients against regular screening for diabetic retinopathy.³⁴

The annual screening practice for diabetic retinopathy was 51.5% in our study. This result is higher than the one found in the study carried out in Bangladesh, however lower than the result found in Saudi Arabia.^{35,36}

Conclusion

The study demonstrated the existence of a satisfactory level of knowledge regarding diabetic retinopathy, in addition to favorable practices among patients with diabetes who attended the endocrinology department of Nampula Central Hospital in Mozambique, but patient's attitude is mostly negative.

Improved availability of resources by healthcare professionals may not produce favorable results if patients do not understand the importance of early detection.

From this study, there is evidence of the need to reinforce dissemination and education activities with the aim of improving the

situation around knowledge, attitude and practices on diabetic retinopathy.

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Conflicts of Interest

The authors do not refer any type of interest.

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