Research Article

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Knowledges, Attitudes and Practices of Diabetic Patients Face to Diabetic Retinopathy in Parakou in 2019

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ABSTRACT

Introduction: *Diabetic retinopathy is one of the main causes of blindness. Preventive measures and screening will reduce its impact.*

Objective: *Study the knowledges, attitudes and practices of diabetic patients about diabetic retinopathy from 03 hospitals in the District of Parakou in 2019.*

Methods: *The study was carried out in 03 hospitals in northern Benin (University and Regional Health Center of Borgou and Alibori, Army Health Center of Parakou, and the Diabetes Center of Benin. This was a descriptive and analytical cross-sectional prospective study that covered a period of 03 months from 15th May to 20th August, 2019. The sampling method was non-probability. Selection of diabetic patients was exhaustive taking care for the consent of each patient. The aged group was at least 18 years old and above, resident in Parakou and followed up in one of the above heath centers. We enrolled 150 patients after submitted them to some questionnaires.*

Results: *From the total number of 150 patients, 59.33% were male. The mean age was 55.07 ± 11.62 years. The participants were predominantly married (87.33%) and 62% of them were literate. 48% of patients said diabetes mellitus is responsible of eye complications. 52% and 12% of patients reported that balancing blood sugar and normalizing blood pressure, respectively, are preventative factors for diabetic retinopathy. 27.33% of patients reported the need for a regular eye fundus exam. 12.67% of patients have a regular annual eye fundus examination and 56.67% of patients have never had one. Education and gender were associated with level of knowledges; education and low income were associated with level of practices.*

Conclusion: *Reducing the impact of diabetic retinopathy requires better involvement of the diabetic patient, the ophthalmologist, the endocrinologist and the authorities of the Ministry of Health.*

Keywords

Knowledge's, attitudes, practices, diabetic retinopathy, Parakou.

Introduction

The International Diabetes Federation (IDF) estimated the number of people with diabetes at 151 million in 2000, this was increased to 415 million in 2015 and can be estimated to around 642 million by year 2040 [1]. Many complications of this condition can involve some number of systems including the visual one. The ocular complications of diabetes mellitus are mainly Diabetic Retinopathy (DR), Diabetic Maculopathy, Cataracts and Neovascular Glaucoma [2,3]. Diabetic retinopathy is a major cause

of blindness with 4.8% of ocular morbidity according to the World Health Organization (WHO) in 2003 [4]. In sub-Saharan Africa, a hospital-based prevalence of 17.5% was found in Benin (Parakou) in 2014 [5]. Basic investigation strategy of screening for DR include ophthalmoscopy, optical coherence tomography (OCT), fluorescein angiography and retino photography [6,7]. Preventive approach consists of strict management of blood sugar levels and the control of certain risk factors, mainly high blood pressure and hypercholesterolemia [8]. The aim of this work was to study the knowledges, attitudes and practices of diabetic patients regards to diabetic retinopathy in Parakou in 2019.

Materials and Methods

Study area, patient selection and strategy

This was a cross-sectional, descriptive, analytical multicenter study with prospective data collection. It covered a period of 04 months from May 15, 2019 to August 20, 2019 in the University and Regional Health Center of Borgou and Alibori (URHC / BA), the Army Health Center of Parakou (AHC) and the NGO Diabetes Center Bénin.

Were included in the study patients who meet the following criteria: diabetic patients aged 18 years old and above, patients followed in one of the three selected health facilities. We enrolled those who have given their consent.

The variables studied were: socio-demographic characteristics, clinical findings, level of knowledges and level of practices regarding ocular complications of diabetes mellitus.

Data analysis

The data collected were recorded, processed, and analyzed respectively with the software Epi Data 3.1 and Epi info 7.2.0.1. The qualitative variables were analyzed independently and presented as numbers (n) and proportions in the population (%) with their 95% confidence intervals. Quantitative variables have been presented as means and standard deviations. Chi-square test or Fischer test was used for the comparison of qualitative variables. The measure of association between the dependent variable and the independent ones was determined using logistic regression. P values <5% were considered statistically significant.

Results

Sociodemographic characteristics

Age and gender

A total of 150 patients were included in the study among them, 89 were male (59.33%) and 61 were female (40.67%) with a sex ratio of 1.46. The mean age of the patients was 55.07 years ± 11.62 years with the extremes of 24 and 81 years. Patients aged 60 years old and above represented 40.67% of the population as shown in Figure 1.

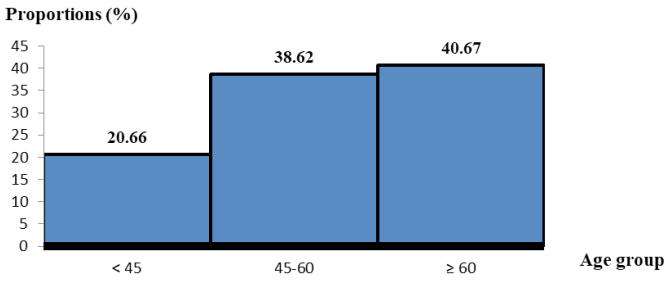

Figure 1: Distribution of subjects according to the age group N = 150 (Multicenter study, Parakou 2019).

Educational level and socio-professional category

In this series, 57 patients were not educated at school and 38% of them (n=56) were illiterate (98.24%). Shopkeepers were in the majority (32%) followed by retired civil servants (22.60%) and housewives (9.33%) as shown in Table 1.

Table 1: Distribution of patients by level of education and profession. N = 150 (Multicenter study, Parakou 2019).

	Total	%
Schooling		
Schooled	93	62.00
unschooled	57	38.00
Socio-professionnal category		
Shopkeeper	48	32.00
Retired	34	22.67
Housewives	29	19.33
Artisans	20	13.33
farmers/ livestockers	09	06.00
Government workers	06	04.00
Etudiants	01	00.67
Other*	03	02.00

*: Pastor / Priest and priestess, Vodoun.

Clinical characteristics

Type of diabetes and its duration

In our study, 99.33% of patients had type II diabetes. Patients with past history of diabetes less than 5 years represented 45.33%. Table 2 shows the distribution of patients included in the study according to the duration of diabetes.

Table 2: Distribution of patients according to the duration of diabetes in years. N = 150 (Multicenter study, Parakou 2019).

	Total	%
< 5	68	45.33
5-10	47	31.33
10-15	22	14.67
≥ 15	13	08.67
Total	**150**	**100.00**

Prevention factors

Patients who reported blood sugar control as a preventative factor accounted for 52%.

Table 3: Distribution of participants according to their knowledge of the factors for preventing diabetic retinopathy. N = 150 (Multicenter study, Parakou 2019).

	Total	%
Never done	85	56.67
Occasionally	44	29.33
At least once per year	19	12.67
In case of ocular condition	05	03.33

Blood sugar monitoring frequency

Of the patients, 61.33% (n = 92) only monitored blood sugar during consultations as shown in Table 4.

Table 4: Distribution of participants according to the frequency of glycemia control. N = 150 (Multicenter study, Parakou 2019).

	Total	%
Once per day	05	03.33
Once per month	21	14.00
Once per week	15	10.67
Once per year	10	06.67
Only during consultation	92	61.33
Never	03	02.00

Frequency of lipid assessment

From our study, it shown that 60% of patients had never benefited from a lipid balance check as shown in Table 5.

Table 5: Distribution of subjects according to the frequency of monitoring the lipid balance. N = 150 (Multicenter study, Parakou 2019).

	Total	%
One per week	05	03.33
Once per year	25	16.00
Occasionally	25	16.00
Never	90	60.00

Patient practice level

In our study, 88 patients had an average level of practice, i.e. a proportion of 58.67% as shown in Figure 2. Practice was considered good for a score between 04 and 05 points; average for 02 to 03 points then bad between 00 and 01 point.

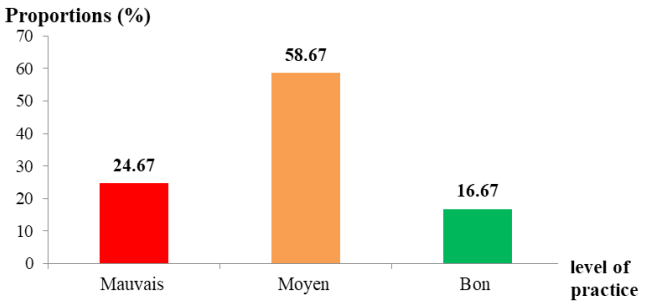

Figure 2: Distribution of subjects according to level of practice. N = 150 (Multicenter study, Parakou 2019).

Analysis of associated factors

Influence of socio-demographic characteristics on knowledge.

In this study, gender and education level were statistically associated with knowledge of patients with p = 0.0173 and p = 0.0259, respectively.

Age and occupation were not statistically associated with knowledge with respectively p = 0.510 and p = 0.0624.

Table 6 presents the relationship between the level of knowledge and socio-demographic characteristics.

Table 6: Relationship between the level of knowledge and the socio-demographic characteristics of the patients included in the study. N = 150 (Multicenter study, Parakou 2019).

	Knowledge							
		Bad		Average				
	Total	n	%	N	%	RP	$IC_{95\%}$	*P*
Sex								**0.0173**
Female*	61	48	78.69	13	21.31	1		
Male	89	82	92.13	07	07.87	1.17	[1.01-1.35]	
Age (year)								0.5010
< 50*	43	36	83.72	07	16.28	1		
≥ 50	107	94	87.85	13	12.15	1.05	[0.90-1.22]	
Literacy level							**0.0259**	
Scolarisé*	93	76	81.72	17	18.28	1		
Non scolarisé	57	54	94.74	03	05.26	1.16	[1.03-1.29]	
Socio-professional category							**0.0624**	
Artisan	20	18	90.00	02	10.00	1.80	[0.79-4.06]	
shopkeeper	48	44	91.67	04	08.33	1.83	[0.82-4.409]	
Farmer	09	09	100.00	00	0.00	2.0	[0.89-4.45]	
Goverment workers*	06	03	50.00	03	50.00	1		
homewives	29	27	93.10	02	06.90	1.86	[0.83-4.17]	
Retired	37	27	79.41	07	20.59	1.58	[0.70-3.59]	
Other	04	02	50.00	02	50.00	1	[0.28-3.54]	

*: Reference method.

Influence of socio-demographic characteristics on practice

In our study, the level of education was statistically associated with the practice of patients with p = 0.0019.

Gender, age and socio-professional category were not statistically associated with the practice with respectively p = 0.2551; p = 0.3036 and p = 0.1325.

Table 7 presents the relationship between practice and socio-demographic characteristics.

Table 7: Relationship between the level of practice and the socio-demographic characteristics of the patients included in the study. N = 150 (Multicenter study, Parakou 2019).

	Practice							
		Bad		Average				
	Total	n	%	N	%	RP	$IC_{95\%}$	*P*
Sex								**0.2551**
Female*	61	12	19.67	49	80.33	1		
Male	89	25	28.09	64	71.91	1.43	[0.78-2.61]	
Age (year)								**0.3036**
< 50	43	08	18.60	35	81.40	1		
≥ 50	107	29	27.10	78	72.90	1.46	[0.72-2.93]	
Literacy level							**0.0019**	
Schooled*	93	15	16.13	78	83.87	1		
Unschooled	57	22	38.60	35	61.40	2.39	[1.36-4.22]	
Socio-professionnal category							**0.1325**	
Artisan	20	04	20.00	16	80.00	1.20	[0.16-8.79]	
Shopkeeper	48	11	22.92	37	77.08	1.37	[0.21-8.85]	
Farmer	09	04	44.44	05	55.56	2.67	[0.39-18.41]	
Goverment Worker*	06	01	16.67	05	83.33	1		
Homewives	29	12	41.38	17	58.62	2.48	[0.39-15.64]	
Retired	34	04	11.76	30	88.24	0.70	[0.09-5.27]	
Others	04	01	25.00	03	75.00	1.5	[0.12-17.67]	

*: Reference method

Influence of socioeconomic characteristics on practice

Low monthly income was statistically associated with poor practice with p = 0.0074. The proportion of unappropriated practice was 1.41 times higher in patients with less than 72.34 USD than those with a monthly income between 72.34 USD and 180,84 USD.

Relationship between patient knowledge and practice in diabetic retinopathy.

In our series the proportion of unappropriated practice is 5.53 times higher in participants with poor knowledge. There is a statistically significant relationship between the level of knowledge and the level of practice of diabetic patients regarding diabetic retinopathy with p = 0.0284.

Discussion

Sociodemographic data

A total of 150 patients were included. The mean age of the patients was 55.07 years ± 11.62 years with the extremes of 24 and 81 years. Patients aged 60 years old and above represent the majority of the sample that is 40.67% of the study population. This finding is similar to those of Çetin et al. [9] in Turkey in 2013 and Al Zarea [10] in Saudi Arabia in 2016.

Among the patients, 89 were male (59.33%) and 61 were female (40.67%) with a sex ratio of 1.46. These results are similar with those of Snirivasan et al. [11] in India and Al Zarea [10] in Saudi Arabia. This could be explained by the fact that in the African and Asian conception man has more power to take decision inside the family, which makes it easier for him to go to heath facilities. Male has also the financial power.

In our study, we described the level of education taking into account a minimum basic education. Thus 93 patients, or 62% of the study population were literate and 38% were illiterate. The proportion of illiterates found in our study is higher than that of Ovenseri Ogbomo et al. [12] in Ghana, Al Zarea [10] in Saudi Arabia and Snirivasan et al. [11] in India who's found respectively 26.2%, 22.8% and 23.3% of illiterate subjects. This difference can be explained by the low literacy rate of the population of Parakou and around. In case of the patients knowledges about diabetic retinopathy, in our study, 72 patients declared that diabetes mellitus can have eye complications with 48%. Among them we found 32 male patients (44.44%) and 40 female patients (56.56%). In the study conducted by Ovenseri Ogbomo et al. [12], 49% of participants also stated that diabetes mellitus can have eye complications, among which 78.8% of women are found. Al Zarea [10], Alzahrani et al. [13] and Srinivasan et al. [11] found for the same variable, respectively 75.62%, 82% and 71.9%. This difference could be related to the level of education of the subjects and the performance of the health system.

Furthermore, with regard to the nature of the ocular complications, in our study 48% of patients mentioned blindness while only 8.33% mentioned diabetic retinopathy, 8.33% mentioned glaucoma and only 1 patient (1.39%) reported diabetic maculopathy. In India, 17% of patients in study conduct by Srinivasan et al. [11] have suggested diabetic retinopathy. Koshy et al. [14] reported 30.9% of patients having referred to diabetic retinopathy. In Bangladesh in the study conduct by Ahmed et al. [15], 63%, 55% and 44% of patients reported respectively blindness, diabetic retinopathy and glaucoma. These significant differences could be related to the fact that most of the patients in our study are either illiterate or with a minimum basic education.

Regarding the factors of prevention of ocular complications, in our study 52% of patients mentioned glycemic control, 12% mentioned normalization of blood pressure, 11.33% were for reducing fat consumption, 9.33% for good therapeutic adherence and 2.67% for stopping smoking. In Turkey, Çetin et al. [9] found 62.1% of patients cited blood sugar control as a preventive factor. Since patients consider diabetes to be an increase of blood sugar, they easily come to the conclusion that a decrease in its consumption could reduce the complications of diabetes, especially those of the eye.

In our series, 138 patients or 92% had no idea of any treatment for diabetic retinopathy. Six patients (04%) mentioned a surgical treatment without specifying its nature, 04 patients (02.67%) mentioned a laser treatment without giving the type. In the study done by Al Zarea [10] 69.70% of patients knew that there is a surgical alternative to the treatment of diabetic retinopathy. Khandekar et al. [16] and Koshy et al. [14] reported respectively 18% and 32.6% of their patients had a good knowledge score on the treatment modalities of ocular complications of diabetes mellitus. This difference can be explained by the fact that in our context, the therapeutic education of the patient is more focused

on the prevention of ocular and systemic complications. Specific treatment is often discussed with patients who developed varying degrees of diabetic retinopathy or those who are interested to understand it process.

At the end of the assessment of the knowledge score of the patients in our series, it noticed that none of our patients had a good level of knowledge of the ocular complications of diabetes mellitus. One hundred and thirty (n=130) patients or 86.67% had a poor level of knowledge and 20 patients or 13.33% had an average level. Srinivasan et al. [11] in India reported 4.51% of patients with a good level of knowledge against 55% according to Ahmed et al. in Bangladesh [15]. Khandekar et al. [16] in Oman found 72.9% of patients with good knowledge about eye complications of diabetes mellitus. This difference noticed from our study explained the weakness of the therapeutic education of patients on ocular complications of diabetes mellitus.

Patient attitude towards diabetic retinopathy

Twenty-three patients (15.33%) considered that it is necessary to do eye fundus examination in any control of risk factors including blood sugar control and blood pressure normalization. In a study conducted in Saudi Arabia [10] by Al Zarea 61.50% of patients felt it was necessary to continue regular visits to the ophthalmologist despite of balanced blood sugar level. Such a difference in attitudes could be explained by the fact that our patients considered hyperglycemia to be the predominant factor in the occurrence of ocular and systemic complications. For our patients, using the treatment and having a well-controlled blood sugar level protect them from all complications; some factors such as the duration of diabetes and the age are underestimated.

In our series, the proportions of patients with poor, average and good attitude were 6.04% (n = 10), 84.93% (n = 134) and 4.03% (n = 6), respectively. These results are similar to those of Srinivasan et al [11] who reported 9.37% of patients having a good attitude towards diabetic retinopathy. Compared to the assessment of the level of knowledge (where no patient had a good level), we noted in our study an improvement in the results. This can be explained by two reasons: first, the parameters used to assess the level of attitude are not as restrictive; on the other hand, the patient's attitude also calls for judgment.

Practice of diabetic subjects facing diabetic retinopathy

In our series, 85 patients had never had an eye fundus examination, i.e. 56.67%. Studies in Turkey and Ghana reported that 25% and 36.4% of patients, respectively, had never seen an ophthalmologist [9,12]. The reasons behind this observation are of two types. On the one hand, patients do not have adequate information about the need for eye fundus examination and they are unaware that sometimes advance stages of diabetic retinopathy can be asymptomatic. On the other hand, the heavy workload of practitioners does not allow them to have sufficient time for therapeutic education, especially in systematic screening for eye complications of diabetes mellitus. A study conducted at Riyadh in Saudi Arabia by Abu-amara et al. [17] shown that out of 355 non-ophthalmologist physicians, revealed that despite their good knowledge of the screening and prevention of diabetic retinopathy, only 40% of their diabetic patients benefited from the prescription of an annual routine examination of the eye.

In addition, 24 patients, or 16%, declared having had an eye fundus examination in the past 12 months. These figures are similar to those reported by Ovenseri-Ogbomo, et al. [12] with 19.5% of patients having had an ophthalmologic examination during the past year. In addition, regarding to the frequency of having the eye fundus examination, 19 patients (12.67%) reported that they had one regular fundus exam per year. Five patients (3.33%) reported seeing an ophthalmologist only for visual disturbances. Some reasons given by patients justify these unappropriate habit in their practice. Indeed, among the patients in the study, 52 said that they were not informed (34.67%), 09 did not have the financial support for the examination (6%). The differences observed in this situation are mainly explained by the difficulties of patient to access eye health facilities; difficulties not only related to limited resources but also to inadequacies in therapeutic education and monitoring of diabetic patients.

In our series, 05 patients (3.33%) controlled their blood sugar daily, 15 patients (10.67%) did it once a week and 21 patients (14%) did it once per month. According to a study by Alzharani and al. [13], 9.4 %% of patients check their blood sugar daily, 5.1% do it once a week and 2.7% do it once a month. In addition, 92 patients in our series, i.e. 61.33%, only had their blood sugar levels checked during diabetes follow-up consultations. Self-control at home is not affordable for them and make the control of blood sugar only when they had the possibility to come for a consultation.

In our series, 20 patients (13.34%) had their blood pressure measured once a week while 88 patients (58.67%) did so only during the diabetes follow-up consultations. In fact, on the one hand the majority of patients would not have a blood pressure monitor and on the other hand the patients did not understand that systemic hypertension contribute to the development of diabetic retinopathy.

In our series, the level of practice was poor, average and good in 24.67% (n = 37), 58.67% (n = 88) and 16.67% (n = 25), respectively. In a study conducted in India 20.8% of patients had a good level of practice according to Srinivasan et al. [11]. Another study conducted in Bangladesh by Ahmed et al. [15] reported a good practice score in 22% of patients. These unsatisfactory figures are mainly due to poor acceptation by patients of having the regular eye fundus examination for various reasons. A systematic review of 77 studies on the barriers and motivations for performing an eye fundus examination [18] reported as difficulties in low- and middle-income countries like in our context in Benin: the low level of knowledge regarding ocular complications of diabetes mellitus, the asymptomatic nature of diabetic retinopathy which makes patients think that they cannot suffer from it, low

financial resources and the lack of equipped health facilities with diagnostic and treatment equipment for diabetic retinopathy. This is well demonstrated in our study where there is a statistically significant relationship between the level of knowledge and the level of practice ($p = 0.0284$); between low monthly income and unappropriate practice ($p = 0.0074$) then between level of education and good practice ($p = 0.0019$).

Conclusion

The patients included in the study were in their 50 years of age. The predominant sex was male. Most of the patients had minimal education; the majority were shopkeepers. Half of the patients had a monthly income of less than 72,16 USD. The patients did not have a good knowledge of the risk factors, the means of prevention, screening and modalities of treatment of diabetic retinopathy. Knowledge level was associated with female gender and level of education. Patients had good attitudes when ocular symptoms occurred, less good about the need for eye fundus examination in the absence of ocular symptoms.

The patients did not have good practice regarding regular eye fundus examinations, regular monitoring of blood sugar, blood pressure and lipid profile. This is due to the lack of information on the need for eye fundus examination and the financial difficulties limiting access to eye health care facilities. The practice was associated with knowledge level, education level and monthly income.

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