



Saudi Journal for Health Sciences

A Taif University Peer-reviewed Journal Devoted for the Advancement of Basic and Applied Health Sciences

Vol 3 / Issue 1 / January 2014

Online full text at www.saudijhealthsci.org



Do medical practitioners perform eye examination as a component of managing diabetic patients?

Abdulkabir Ayansiji Ayanniyi, Kehinde Fasasi Monsudi¹, Aliyu Hamza Balarabe¹, Abdul Fattah Isa¹

Department of Ophthalmology, College of Health Sciences, University of Abuja, Nigeria, ¹Ophthalmology, Federal Medical Centre, Birnin Kebbi, Nigeria

Address for correspondence:

Dr. Abdulkabir Ayansiji Ayanniyi,
Department of Ophthalmology, College of
Health Sciences, University of Abuja,
PMB 117, Abuja, Nigeria.
E-mail: ayanniyikabir@yahoo.com

ABSTRACT

Context: Diabetic retinopathy (DR) is a serious eye complication of diabetes mellitus and a leading cause of blindness among the working population. The ophthalmoscopy can screen, detect, and follow-up DR. However; it appears medical practitioners (MPs) rarely do ophthalmoscopy on diabetic eyes. **Aims:** To determine the knowledge, attitude, and practice (KAP) of ophthalmoscopy in diabetics among MPs in Kebbi State, Nigeria. **Settings and Design:** KAP survey using participants' self-administered questionnaire. **Subjects and Methods:** A survey of 70 consenting MPs attending Continuing Medical Education (CME) in 2012 using self-administered structured questionnaire on ophthalmoscopy and eyes in diabetic patients. **Statistical Analysis Used:** The analysis was done using simple frequency proportions/cross tabulations and Fisher's exact test for significance. The $P < 0.05$ was considered as statistically significant. **Results:** Most MPs were affirmative on their knowledge (67, 95.7%; $P = 0.055$) and use (52, 74.3%; $P = 0.028$) of ophthalmoscope, and interest in being trained on how to use it (41, 58.6%; $P = 0.201$). However, two (2.9%) wrongly thought ophthalmoscope was used to measure intraocular pressure, one (1.4%) was oblivious of ophthalmoscope, 18 (25.7%) did not know how to use it, and 27 (38.6%) were uncommitted whether they wanted to be trained on how to use it. Most MPs (54, 77.1%) understood diabetic retinopathy (DR); however, 15 (21.4%) wrongly equated DR to all eye changes in diabetics and one (1.4%) admitted not knowing it ($P = 0.649$). Most (58, 82.9%) knew that diabetes mellitus affects the eye, 10 (14.3%) did not and two (2.9%) were uncommitted ($P = 1.000$). Most 68 (97.1%) thought ophthalmoscopy was necessary in all diabetics, while two (2.9%) did not ($P = 0.709$). Many (47.1%) had ever conducted ophthalmoscopy in diabetics, while 37 (52.9%) never ($P = 0.036$). Many MPs (34, 49%) always attended to diabetics; however, some 7/20 (35%) thought referring diabetics for eye consultations unnecessary. **Conclusions:** The surveyed MPs knew diabetes mellitus affects eye, but many never done ophthalmoscopy in diabetics and only few referred them for eye specialists' assessment. The need for MPs to pay particular attention to assessment of diabetic eye disease and refer appropriately underscored.

Key words: Continuing Medical Education, diabetes mellitus, diabetic retinopathy, eye examination, medical practitioner, ophthalmoscopy

INTRODUCTION

Ophthalmoscopy is the use of ophthalmoscope to visualize the eye fundus. Essentially, it assesses the disc, the vessels, the macula, or posterior pole and the retina periphery with

the purpose of arriving at a conclusion that the eye is normal or otherwise. It is of diagnostic and follow-up significance. One important systemic condition that affects the eye and whose effects can be picked using ophthalmoscopy is diabetes mellitus (DM).

Diabetes mellitus is now a pandemic disease^[1] and is on the increase globally especially due to epidemic of type 2 DM.^[2] The effects of diabetes on the eye have been summed up as 'diabetic eye disease'. One devastating diabetic eye disease and a leading cause of blindness among the working population^[3,4] is 'diabetic retinopathy' (DR). The prevalence of DR increases with duration of diabetes.^[5] The ophthalmoscopy can screen, detect, and follow-up DR.

Access this article online

Website:

www.saudijhealthsci.org

DOI:

10.4103/2278-0521.130203

Quick Response Code



Generally, undergraduate and some specialists' medical education curricula include ophthalmoscopy as a necessary skill for trainees to ensure its appropriate application at clinical consultations. For some reasons only few diabetics see eye care specialists yet many are cared for by non-eye-care medical practitioners (MPs). These MPs are not necessarily specifically examining the eyes of the diabetics at consultations. This implies missed opportunity to screen, detect, diagnose, and appropriate referral for diabetics with DR. In a study of diabetic eye disease among adults in Fiji with self-reported diabetes, Brian and associates observed evidence of failure of management of diabetes and its eye complications. The study underscores need to improve their management to avoid increasing diabetes-related visual disability in the society.^[6]

The healthcare service in Kebbi State (a federating member of Nigeria's 36 states with a population of 3.2 million^[7]) is mostly delivered by nonspecialist MPs and a few available ophthalmologists are working at Birnin Kebbi, the state capital. The proficiency of the non-eye-care MPs can guarantee diabetics monitoring and early eye specialists consult and preventing diabetes associated blinding conditions. The importance of early detection and treatment of DR cannot be overemphasized. The objective of this study was to determine the knowledge, attitude, and practice (KAP) of ophthalmoscopy in diabetics among MPs in Kebbi State, Nigeria. The information so generated would be useful in addressing gaps in knowledge and practice among MPs.

SUBJECTS AND METHODS

The study was conducted during the Continuing Medical Education (CME) session organized in Birnin Kebbi by Nigeria Medical Association (NMA) Kebbi State branch in November 2012. The pretested structured questionnaire was administered to all the attending MPs working in Kebbi State. The questionnaire sought participants' years of medical practice and place (health facility) of practice; the knowledge of and previous use of ophthalmoscope to examine the eyes of diabetics; the importance of ophthalmoscopy in diabetics; and whether interested in being trained on how to use the ophthalmoscope. Others include the MP's knowledge of diabetic retinopathy, opinion on ophthalmoscopy in diabetics and whether they referred diabetics for eye consultations. Those who declined written informed consent were excluded from the study.

The data was coded, entered, and analyzed using Statistical Package for Social Sciences (SPSS) 15.0 (SPSS 2006, Chicago, Illinois, USA). The analysis was done using simple frequency proportions/cross-tabulations and Fisher's exact test for significance. The $P < 0.05$ was considered as statistically significant. The ethical approval for the study was obtained from the Federal Medical Center ethical review committee. Written informed consent was obtained from each participating MPs.

RESULTS

Seventy of the 74 MPs (90.5%) who attended the CME were surveyed. Many (32, 45.7%) had practiced for more than 5 years and most 55 (78.6%) worked at the Federal Medical Center and various general hospitals in Kebbi state [Table 1].

Most MPs were affirmative on knowledge (67, 95.7%; $P = 0.055$) and use (52, 74.3%; $P = 0.028$) of ophthalmoscope, and interest in being trained on how to use ophthalmoscope (41, 58.6%; $P = 0.201$). However, two (2.9%) thought ophthalmoscope was used to measure intraocular pressure, one (1.4%) were oblivious of the use of ophthalmoscope, 18 (25.7%) did not know how to use ophthalmoscope, and 27 (38.6%) were uncommitted whether they wanted to be trained on how to use ophthalmoscope [Table 2].

Most MPs (54, 77.1%) understood DR; however, 15 (21.4%) wrongly equated DR to general eye changes in diabetics and one (1.4%) admitted not knowing it ($P = 0.649$). Most 58 (82.9%) knew that diabetes mellitus affects the eye, 10 (14.3%) did not, and two (2.9%) were uncommitted ($P = 1.000$). Most (68, 97.1%) thought ophthalmoscopy was necessary in all diabetics, while two (2.9%) did not ($P = 0.709$). Many (47.1%) had ever conducted ophthalmoscopy for diabetics, while 37 (52.9%) never ($P = 0.036$) [Table 3].

Many MPs 34 (49%) always attended to diabetics [Figure 1]; however, some MPs (7/20, 35%) thought referring diabetics for eye consultations unnecessary [Figure 2].

DISCUSSION

Ophthalmoscopy achieves direct inspection of blood vessels, or central nervous system in the intact, living patient; hence, a window of opportunities to determine the eye and systemic well-being. Nevertheless, many doctors consider ophthalmoscopy the most difficult procedure in routine examination. Contrarily; practice, patience, and persistence will convince all that it is not only simple but also highly

Table 1: Distribution of medical practitioners by place and duration of practice, n=70

Place of practice	Number	Percentage (%)
Federal medical center	31	44.3
General hospital	24	34.3
Specialist hospital	09	12.9
Private hospital	06	08.5
Duration of practice (years)		
1-5	38	54.3
>5-10	12	17.1
>10-15	08	11.4
>15-20	02	02.9
>20	10	14.3

Table 2: Associations of duration of medical practice, knowledge, use, and interest in ophthalmoscope among medical practitioners

Knowledge, use, and interest in ophthalmoscope	Duration in medical practice (years)					Total
	1-5	>5-10	>10-15	>15-20	>20	
What is ophthalmoscope?						
Instrument used to view the fundus of the eye	38	10	08	02	09	67
Instrument used to measure intraocular pressure	00	02	00	00	00	02
I do not know	00	00	00	00	01	01
Total	38	12	08	02	10	70
Fisher's exact test=13.823; P=0.055						
Do you know how to use ophthalmoscope?						
Yes	32	05	07	01	07	52
No	06	07	01	01	03	18
Total	38	12	08	02	10	70
Fisher's exact test=9.555; P=0.028						
Do you want to be trained on how to use ophthalmoscope?						
Yes	23	10	02	01	05	41
No	01	00	01	00	00	02
No response	14	02	05	01	05	27
Total	38	12	08	02	10	70

Fisher's exact test=10.466; P=0.201

rewarding. This study examined the KAP of MPs in Kebbi State about ophthalmoscopy in diabetics. The information so generated would be useful in addressing gaps in knowledge and practice among MPs.

Since the time immemorial ophthalmoscopy remains a cornerstone of eye care practice and is useful in early diagnosis, referral, and prompt treatment of various eye conditions including DR. It is not unusual to see many MPs not willing or not proficient in the use of ophthalmoscopes yet they see many patients including diabetics who should benefit from the ophthalmoscopy. The reasons for MPs's poor attitude to ophthalmoscopy may include short duration of undergraduate ophthalmic posting^[8] leading to inadequate training/exposure, lacking interest, busy clinic, and cutting corners on 'standard practice'. It has been reported that most of the physicians are not trained to detect and refer sight

Table 3: Associations of duration of medical practice, knowledge, and interest in diabetic eye among medical practitioners

Knowledge and interest in diabetic eye	Duration in medical practice (years)					Total
	1-5	>5-10	>10-15	>15-20	>20	
What do you understand by diabetic retinopathy?						
Eye changes in Diabetic patient	10	02	01	00	02	15
Retinal changes in Diabetic patient	28	10	07	02	07	54
I do not know	00	00	00	00	01	01
Total	38	12	08	02	10	70
Fisher's exact test=7.73; P=0.649						
Do you know that diabetic mellitus affects the eye?						
Yes	30	10	07	02	09	58
No	06	02	01	00	01	10
No response	02	00	00	00	00	02
Total	38	12	08	02	10	70
Fisher's exact test=3.308; P=1.000						
Do you know it is necessary to do ophthalmoscopy in all diabetic patients?						
Yes	37	11	08	02	10	68
No	01	01	00	00	00	02
Total	38	12	08	02	10	70
Fisher's exact test=3.371; P=0.709						
Have you ever use ophthalmoscope to examine eyes of diabetic patients?						
Yes	17	02	06	02	06	33
No	21	10	02	00	04	37
Total	38	12	08	02	10	70
Fisher's exact test=9.462; P=0.036						

threatening DR for timely treatment.^[9] Appropriate referral can actually enhance the ability of eye specialists to reach and care for diabetics thus protecting their sight.^[10]

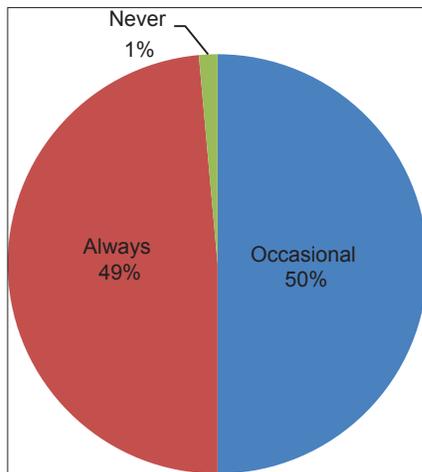


Figure 1: Medical practitioners' frequency of seeing diabetics in clinical practice, $n = 70$

For many reasons countless diabetics will never have the benefit of the ophthalmologists' assessment. This may translate to delay treatment leading to complications or ocular morbidity in some of these patients. Globally, there is epidemic of DM^[1] and ophthalmologists alone cannot cope with examining all the eyes of diabetics. Therefore, many non-eye MPs would be of great assistance in this direction. In a study, 'Accuracy of screening for DR by family physicians', Gill and associates found mean sensitivity of 87% (95% confidence interval (CI), 83-91%) and specificity of 57% (95% CI, 46-68%) for the family physicians. The overall agreement was moderate (mean kappa 43; 95% CI 0.39-0.47%). The study concluded that family physicians were fairly accurate in using ophthalmoscope in screening patients for DR and although the technique used is not totally accurate to replace routine referral for all diabetics, it can be used to improve care for diabetics without benefit of routine eye screenings.^[11]

This study enjoyed high response rate and many MPs had practiced for a reasonable time frame making information generated representative of the sampled cohort. It is remarkable that most MPs affirmed their knowledge, use and interest in ophthalmoscopy as well as understanding of DR. Nevertheless, the responses of some MPs indicate lack of knowledge, use, and interest in ophthalmoscopy and DR.

Screening for DR in all diabetics has been widely suggested and is capable of reducing visual disability due to DR through early referral and intervention.^[12-15] The lofty but seemingly impossible task of 'all diabetics screening' appears simplified by the National Program for Control of Blindness of India following a recommendation of 'opportunistic screening' for identification of diabetic retinopathy.^[15] This implies using every opportunity of contact to screen diabetics for DR. In the setting of our study as elsewhere, MPs will be invaluable in 'opportunistic screening'. Moreover, it has been recommended that screening for retinopathy should be performed within 3-5 years after the onset of type 1 diabetes

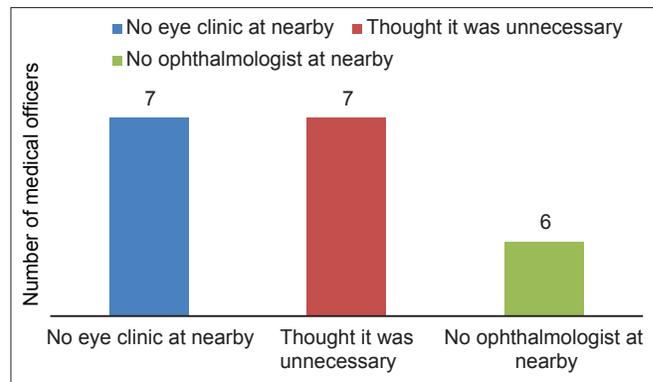


Figure 2: Medical practitioners' reasons for not referring diabetics for eye consultations, $n = 20$

and shortly after the diagnosis of type 2 disease, with annual follow-up examinations in both types of diabetes.^[14] This frequency and regularity of screening for DR would require more personnel than available eye specialists can cope with and a motivated, trained MP can bridge this gap.

This study is quite revealing and indicates that many MPs consider not the eyes of diabetics while managing them. Chou and associates in a study, 'Impact of geographic density of eye care professionals on eye care among adults with diabetes', found that about 10% of respondents with diabetes lived in counties with no eye care professionals and opined that adult diabetics resident in areas with few eye specialists risk a low chance of receiving standard funduscopy.^[10] The trend can and should be reversed through CME which will reinforce positive attitude among MPs with correct practice and enhance same among those MPs who are lagging behind in order to benefit the diabetics and the society. However, achieving optimally in such CME will require carrying MPs along including conveying the import of ophthalmoscopy and the benefits accruable from such positive reorientation. It has been observed by Alsharif and Al-Khalidi that primary healthcare physician would benefit from CME, but its content should be relevant to their practice needs.^[16]

This study was limited by possible MPs' biases, but on the whole it is representative of the reality in the clinical practice in the surveyed environment and possibly elsewhere.

In conclusion, the surveyed MPs knew diabetic mellitus affects eye, but many had never done ophthalmoscopy in diabetics and only few referred them for eye specialists' assessment. The need for MPs to pay particular attention to assessment of diabetic eye disease and refer appropriately underscored.

REFERENCES

1. Kempen JH, O'Colmain BJ, Leske MC, Haffner SM, Klein R, Moss SE, et al. The prevalence of diabetic retinopathy among adults in the United States. *Arch Ophthalmol* 2004;122:552-63.
2. Zimmet P, Alberti KG, Shaw J. Global and societal implications of the diabetes epidemic. *Nature* 2001;414:782-7.

3. Lamoureux EL, Tai ES, Thumboo J, Kawasaki R, Saw SM, Mitchell P, *et al.* Impact of diabetic retinopathy on vision-specific function. *Ophthalmology* 2010;117:757-65.
4. Mohamed Q, Gillies MC, Wong TY. Management of diabetic retinopathy: A systematic review. *JAMA* 2007;298:902-16.
5. Klein R, Klein BE, Moss SE, Cruickshanks KJ. The Wisconsin Epidemiologic Study of Diabetic Retinopathy: XVII. The 14-year incidence and progression of diabetic retinopathy and associated risk factors in type 1 diabetes. *Ophthalmology* 1998;105:1801-15.
6. Brian G, Fischer-Harder K, Sikivou B, Qoqonokana MQ, Szetu J, Ramke J. Diabetic eye disease among adults in Fiji with self-reported diabetes. *Clin Experiment Ophthalmol* 2010;38:867-74.
7. Federal Republic of Nigeria: 2006 population census. Available from: <http://WWW.nigerianstat.gov.ng/Connections/Pop2006.pdf> [Last accessed on 2012 May 20].
8. Adeboye A, Ayanniyi AA, Ademola-Popoola DS, Owoeye JF. The choice of ophthalmology as a career among Nigerian medical interns. *Afr J Med Sci* 2006;35:321-3.
9. World Diabetes Foundation: Annual Review 2002 (ed Meyer AH), Videback Bogtrykken: Lyngby, Denmark. Available: http://www.worlddiabetesfoundation.org/sites/default/files/AR2002_reduced.pdf [Last accessed on 2013 October 21].
10. Chou CF, Zhang X, Crews JE, Barker LE, Lee PP, Saaddine JB. Impact of geographic density of eye care professionals on eye care among adults with diabetes. *Ophthalmic Epidemiol* 2012;19:340-9.
11. Gill JM, Cole DM, Lebowitz HM, Diamond JJ. Accuracy of screening for diabetic retinopathy by family physicians. *Ann Fam Med* 2004;2:218-20.
12. Khandekar R. Screening and public health strategies for diabetic retinopathy in the Eastern Mediterranean region. *Middle East Afr J Ophthalmol* 2012;19:178-84.
13. Ding J, Wong TY. Current epidemiology of diabetic retinopathy and diabetic macular edema. *Curr Diab Rep* 2012;12:346-54.
14. Bloomgarden ZT. Screening for and managing diabetic retinopathy: Current approaches. *Am J Health Syst Pharm* 2007;64(17 Suppl 12):S8-14.
15. Vashist P, Singh S, Gupta N, Saxena R. Role of early screening for diabetic retinopathy in patients with diabetes mellitus: An overview. *Indian J Community Med* 2011;36:247-52.
16. Alsharif AI, Al-Khaldi YM. Attitude, practice and needs for continuing medical education among primary health care doctors in Asir region. *J Family Community Med* 2001;8:37-44.

How to cite this article: Ayanniyi AA, Monsudi KF, Balarabe AH, Isa AF. Do medical practitioners perform eye examination as a component of managing diabetic patients? *Saudi J Health Sci* 2014;3:32-6.

Source of Support: Nil, **Conflict of Interest:** None declared.