

Audit of referral of diabetic patients to an eye clinic, from a Primary Health Care clinic

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ABSTRACT

Objective: To determine the referral, the feedback rates and to find out the prevalence of diabetic retinopathy among diabetics who were referred from a primary health care center, to Abha General Hospital in Aseer Region.

Methods: This study was conducted at Wasat Abha Primary Health Care Center in Aseer region at the end of 1996 and 1997. All the diabetic files were reviewed and evaluated for referral to the eye clinic, their feedback and the prevalence of diabetic retinopathy among diabetics for whom fundoscopy was carried out. The related data was entered and analyzed by using the statistical package for social sciences program.

Results: A total of 203 diabetic files were reviewed. Forty percent were referred during 1996 while 68.5% were referred during 1997. The rates of feedback were 72% in

1996 and 71.2% in 1997. Twenty percent were referred twice during these 2 years. The prevalence of diabetic retinopathy was 11.3%.

Conclusion: The referral rate and the feedback from the eye clinic was lower than the national target. A poor referral system was responsible for such a low rate. Either reorganization of the referral system or calling the ophthalmologists to attend Primary Health Care Centers monthly will increase the rate of eye examination among diabetics and will help in early detection of diabetic retinopathy and in prevention of blindness.

Keywords: Referral, feedback, diabetic retinopathy, primary health care centre.

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Diabetes mellitus (DM) is one of the most common chronic health problems in the KSA. The national chronic metabolic diseases survey showed that the prevalence of diabetes exceeded 25% in most of the regions after 40 years and more than 50% of the study population after the age of 50 years in the eastern and northern regions.¹ Diabetes is known to have acute and chronic serious complications. Diabetic retinopathy (DR) is one of the most commonly reported complications and the cause of legal blindness in the 25-74 years age group,² which is defined as visual acuity of 3/60 or

less for the purposes of registration of blindness in United Kingdom (UK), and 20/200 in the United States of America (USA) and Canada. The prevalence of retinopathy varies with the type and duration of diabetes.^{3,4} Up to 21% of patients with type-2 diabetes have been found to have retinopathy at the time of diagnosis⁵ while 15 years after the diagnosis almost all the diabetics have some degree of retinopathy.^{3,4} There are wide variations in the prevalence of diabetic retinopathy throughout the world which ranges between 20%-82%⁶⁻¹⁴ but still the resulting blindness is preventable if diagnosed early.

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Once diagnosed it can be treated and the further process leading to blindness can be stopped. With increasing prevalence of DM and with decreasing prevalence of infectious causes of blindness, DR is estimated to be the leading cause of blindness in the KSA.^{15,16} The prevalence of diabetic retinopathy in KSA varies from a minimum of 2.2% to a maximum of 53%.¹⁷⁻²² Despite the high prevalence of diabetes mellitus and of diabetic retinopathy, many diabetic patients are not referred annually for fundoscopy.²³⁻²⁴ The aims of this study were to determine the referral rates in diabetic patients for fundoscopy and to find out the prevalence and the pattern of diabetic retinopathy among the the diabetics on whom fundoscopy was performed during years 1996 and 1997.

Methods. Aseer is one of the biggest administrative regions in the KSA, with a total population of 1.2 million. The health services are provided through 245 Primary Health Care Centers (PHCCs) and 14 hospitals. For simplification and smooth flow of health services including referral system, Aseer region is divided into 14 health sectors. Depending upon the size of population in each sector, the medical care facilities are extended through a network of 5-35 PHCCs and a General hospital. Care of diabetic patients in Aseer region is provided by 3 major governmental agencies; Ministry of Health, Ministry of Defence and Aviation, Ministry of Interior and by many private hospitals and polyclinics. Wasat Abha Primary Health Care Center (WAPHCC) where this study was carried out was one of the 6 urban PHCCs in Abha, the capital city of Aseer region. This WAPHCC serves 15000 registered inhabitants, out of which 440 patients had diabetes. Two hundred and three (46.1%) of them were followed up regularly in the centre. Care of diabetics in our practice was carried out through a diabetic mini-clinic that functioned thrice weekly. Diagnosis, treatment and follow up of diabetes in our practice were based on the guidelines of the Saudi National Protocol (SNP) of diabetes that was developed by the National Scientific Committee.²⁵ Each diabetic file has 6 sheets which covered all aspects of diabetes including referral and feedback. A referral form was designed especially for referring the diabetic patient to the eye department in Abha General Hospital (AGH). Each referral letter was also recorded in a referral register and results of the referral feedback were also written in the same register. The feedback letters were attached with the diabetic file of the patient. Another register was used for enlisting those diabetics who had complications. This register had details on the type of complication, date of onset and the action plan for management. As observed by the

investigators, referral process to eye clinic went through the following steps: 1. Physician referred the patient to eye clinic at AGH. 2. Patient took the referral letter by hand and went to the hospital receptionist who received the letter and gave an appointment card if there was a possibility for consultation or told patient to come the next day. 3. Waiting for consultation and consultation process took an average of 45 minutes while waiting, the pupils were dilated. At the end of consultation, the nurse in-charge provided the patient with a feedback that he or she took back to PHCC. At the end of 1996 and 1997, all diabetic files including referral and

Table 1 - Characteristics of diabetic patients at Wasat Abha primary health care center in 1997 (N=203).

Characteristics	N (%)
Age	
≤45 years	39 (19.2)
>45 years	164 (80.8)
Sex	
Male	125 (61.6)
Female	78 (38.4)
Duration of diabetes	
≤5 years	87 (42.9)
>5 years	116 (57.1)
Marital status	
Married	182 (90.4)
Single	5 (2.5)
Widow	16 (7.1)
Educational status	
Illiterate	79 (39.0)
Educated	100 (50.5)
Missing	24 (10.5)
Employment	
Employed	156 (76.8)
Unemployed	47 (23.2)
Type of Diabetes	
Type 1	10 (4.9)
Type 11	193 (95.1)
Family History of DM	
Positive	100 (49.3)
Negative	77 (37.9)
Missing	26 (12.8)
Smoking	
Smoker	9 (4.4)
Non smoker	185 (91.1)
Missing	9 (4.4)
Type of Therapy	
Diet only	17 (8.4)
Diet and drug	186 (91.6)
N=number, DM=diabetes mellitus	

feedback referral register and register of complications were reviewed by one of the investigators. Data of diabetic patients was entered and analyzed using the statistical package for social sciences program. Appropriate statistical tests were used and P-value considered significant if it was < 0.05.

Results. A total of 203 diabetic files at WAPHCC were reviewed for referral to the eye clinic at AGH. Demographic data of the diabetic patients are summarized in **Table 1**. The mean age \pm standard deviation was 56 ± 12.2 years. More than one 3rd (38.4%) were females and 90% were married. Fifty percent were educated and 77% were employed. Diabetes mellitus type 2 represented the majority of diabetes mellitus, 92% were on diet and drug therapy and 49% had positive family history of diabetes. The average duration of diabetes among these patients was 8 years. About 5% of diabetics were found to be smokers. **Table 2** shows the frequencies and percentages of referral to eye clinic and feed back during the 2 consecutive years. Forty percent of total diabetics were referred during 1996 and feedback rate was 72%. In 1997, the rate of referral increased to 68.5% while feedback rate did not change (71.2%). However, one 5th of the patients were referred twice during the years 1996 and 1997 while 21.7% and 56% were referred only once during the same period. **Table 3** displays the association between some patient's characteristics and referral rate to eye clinic. Association between patient or disease characteristics and the rate of referral or feed back were not statistically significant except for the sex and compliance to appointment. We found that the referral rate among the males was more than the females which were statistically significant ($X^2 = 7.3$, $P = 0.0006$). Education status also played a role but compliance to appointment had the highly significant role in rate of referral ($X^2 = 15.7$, $P = 0.001$), so much so that the patients who attended our clinic more than once during the last 6 months of consultation were referred more frequently than those who did not attend ($X^2 = 12$, $P = 0.01$).

Twenty-three cases out of 203 diabetics had diabetic retinopathy with a prevalence of 11.3%.

Table 2 - Frequency and percentage of referral of diabetics to eye clinic and feedback during 1996 and 1997.

Year of referral	Referral N (%)	Feedback N (%)
1996	82/203 (40.4)	59/82 (72.0)
1997	139/203 (68.5)	99/139 (71.2)
N=number		

Table 3 - Association between the rate of referral and patients characteristics.

Characteristics	N (%)	X ²	P-value
Sex			
Male	108/125 (86)	7.3	0.006
Female	56/78 (71)		
Age			
≤45 years	34/39 (87)	0.23	0.4
>45 years	130/164 (79)		
Marital status			
Married	148/182 (81)	2.9	0.4
Single	5/5 (100)		
Widow	10/16 (62)		
Educational status			
Educated	87/100 (87)	4.4	0.05
Illiterate	77/79 (97)		
Type of DM			
Type 1	7/10 (70)	0.9	0.3
Type 11	156/193 (80)		
Duration of DM			
≤5 years	70/87 (80)	1.9	0.1
>5 years	83/116 (71.5)		
Compliance to appointment			
Good/fair	122/142 (86)	15.7	0.001
Poor	42/61 (69)		
N=number, DM=diabetes mellitus			

Most of them (8.8%) had the background type of retinopathy.

Discussion. One of the most important roles of a general practitioner or primary health care physicians is coordination between patients and hospital specialist and consultants or both through referral system.²⁶ Quality assurance guidelines in primary health care and other authorities recommended that type 2 DM patient should be evaluated for diabetic retinopathy at the time of diagnosis and then annually.^{25,27} We found that referral rates of our diabetic patients for fundoscopy were less than the national target of 100%.²⁵ However, the rate of referral in the 2nd year was better than the first year. This improvement could be due to the impact of continuity of care of diabetics at our practice through a diabetic mini-clinic. Feedback rates were almost similar in both the years which were low compared to the national target.²⁵ The reasons for this low figure were numerous and could be related to the gender of patient, to the referral system which allowed the patient to carry referral letters to hospital and also to poor coordination between hospital clinics and PHCCs in the region.²⁸⁻³⁰ The aspects needed further investigation. Our referral rates in both the years were higher than the rate of

referral from the same region reported in 2 consecutive studies.²³⁻²⁴ The funduscopy procedure was carried out in 53.6% and 61.5% of diabetics in a practice in Riyadh city, which was 2 consecutive studies.^{31,19} One practice in the UK reported that the rate of referral for eye check up among diabetics was 65% in insulin-dependant diabetes mellitus and 64% in non-insulin-dependant diabetes mellitus.³² However the discrepancy of referral rates among these different practices might be due to better organization of referral system, difference in literacy and socio-cultural status of the patients. There is a gradual increase of referral rate for funduscopy in our practice which could be explained by the improvement in the organization of practice, use of diabetes protocols and audits which are in line with the observations of Khattab et al, 1995.²³ Prevalence of diabetic retinopathy in our study was 11.3%, which was similar to the study of Kingston and Skoog.¹⁸ Most of the patients suffered from background DR. This figure was lower than the other studies conducted in Riyadh, Dammam and Jeddah^{18,20,22} and was higher than the study by Khattab et al from Aseer region.²³ Maculopathy was not reported in any case. The differences in the rates of retinopathy could be due to the gender of the diabetics duration of DM, age of the patient at diagnosis, their small number in the study and type of DM. In spite of the low number of our patients suffering from DR, we observed that those diabetics above 65 years of age were suffering more from DR than below 65 years of age ($X^2=24.7$, $P=0.00$). Similar associations were also observed in a study from Jeddah, KSA.³³ Males had more diabetic retinopathy in the present study as compared to a study from Jeddah²¹ where the proportions of males and females affected with DR was found to be 30% and 33.5%. However, the findings in the present study were statistically significant ($X^2=7.3$, $P=0.006$).

In conclusion, referral and feedback rates of diabetics in our practice were lower than the national target. This rate should be increased by organized referral system in the region or by calling the ophthalmologist to attend PHCCs to carry out funduscopy once a month. This arrangement could increase the rate of funduscopy and early detection of DR and could make this procedure easily accessible to diabetics in our practice and to enable the GPs to learn proper examination of diabetic fundus. Prevalence of retinopathy was also lower as compared to many studies that could be attributed to low referral and feedback rate, gender of the diabetics, compliance to appointment type and duration of DM, smaller number of patients and the place of study. Considering the importance of DR

and its preventable nature, detailed and well designed referral studies are required to be conducted elsewhere in the Kingdom with the aim to find out the obstacles and solutions in the process of eye referral for funduscopy.

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