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Original Article

Diabetic retinopathy knowledge and management approaches of primary care physicians

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Abstract

Aim: We evaluated the level of knowledge on diabetic retinopathy (DR) and management approaches of primary care physicians with important roles in preventive health services.

Material and Methods: Using a Google form, a 14-item questionnaire was prepared to the family physicians' knowledge about DR and the examination tools they use and their management approach. This questionnaire was sent to 92 family physicians in Turkey via the What's App Messenger.

Results: According to the questionnaire responses, 90 (97.8%) of the family physician centers had a Snellen chart and 91 (98.9%) a direct ophthalmoscope. Among the physicians, 79 (85.9%) did not perform visual acuity examinations for diabetic patients, and 39 (42.4%) did not use an ophthalmoscope. While 34 (37.0%) of the surveyed physicians did not refer diabetic patients to an ophthalmologist for DR examinations at all, only 22 (23.9%) referred patients to an ophthalmologist at the time of initial diagnosis and 19 (20.7%) referred patients at 1 year after the initial diagnosis. 10 (10.8%) of the surveyed physicians referred patients to an ophthalmologist at 2-year intervals, 4 (4.3%) at 6-month intervals, and three (3.3%) at over 2-year intervals. Among the physicians, 64 (69.6%), 57 (62.0%), and 63 (68.5%) were not familiar with the stages of DR, fundus fluorescein angiography, and laser treatment for DR, and 60 (65.2%) did not know how to perform intraocular injection treatment methods. A total of 87 (94.6%) physicians stated a need for training programs in DR.

Conclusion: DR, an eye complication of diabetes mellitus, is not well understood by family physicians, and more than half of physicians referred their patients to an ophthalmologist either late after diagnosis or not at all. It is therefore important for family physicians to undergo training programs on DR to increase their effectiveness in primary health care services.

Keywords: Diabetes mellitus; diabetic retinopathy; family physician

INTRODUCTION

Family medicine, which has been practiced in Turkey since 2005, is now practiced throughout the country. According to Turkish laws, family physicians are responsible for managing family health centers, supervising the work team, providing in-service training, and providing health care services for individuals, which are required by private health programs managed by the ministry and institution. In addition, family physicians treat registered persons and provide preventive, therapeutic, and rehabilitative health services for these people in a team environment (1).

Diabetes mellitus is a systemic disease that is becoming widespread both in Turkey and the rest of the world, and it can cause serious morbidities as well as mortality. Diabetic retinopathy (DR) is a microvascular complication of diabetes that can result in blindness if not treated in a timely and appropriate manner. The prevalences of DR and proliferative DR were reported to be 35.4% and 7.5%, respectively, in a meta-analysis of several studies (2). DR is the most common cause of new cases of blindness in adults in developed countries. The prevalence of DR is strongly correlated with diabetes duration, glycemic control, nephropathy, hypertension, and dyslipidemia (3-6). Intravitreal anti–vascular endothelial growth factor (anti-VEGF) antibodies, steroids, and laser photocoagulation are the main treatments for DR (7-11). As DR is easily diagnosed by an ophthalmoscopic examination, periodic fundus examinations are very important for early diagnosis and referral of patients to an ophthalmologist, before development of severe DR (12).

In a study on the awareness of DR, 83% of patients with DR

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reported being unaware of DR during their first visit (13). Increasing the level of knowledge on DR among family physicians working in primary health care centers, where patients visit initially, can prevent DR-induced blindness by ensuring that patients receive timely and appropriate treatments. It is therefore important to increase the awareness of DR among family physicians, which provide preventive health services.

The aim of this study was to determine whether there is a need for further education on DR, by determining the DR knowledge and management approaches of primary care physicians, who have important roles in preventive health services. This information will contribute to implementation of DR training programs for these physicians.

MATERIAL and METHODS

Our study was conducted in accordance with the principles of the Declaration of Helsinki. Using a Google form, a 14-item questionnaire was designed to determine the working conditions of family physicians and their DR knowledge and management approaches. The questionnaire was sent via the What's App Messenger (an internet-based mobile messaging application) to 92 family physicians working in Turkey. Physicians were asked to complete the questionnaire by selecting the most appropriate answers according to their opinions. The survey took about 10 minutes to complete. We reached the required number of answers within 1 week. Google Form has analyzed the data automatically. The survey results were then obtained from the Google drive form and recorded.

RESULTS

A total of 92 primary care physicians participated in the survey. The questionnaire responses indicated that 90 (97.8%) of the family physician centers had a Snellen chart and 91 (98.9%) a direct ophthalmoscope. Of the physicians, 79 (85.9%) do not perform visual acuity

Table 1. The tendency of primary care physicians to refer diabetic patients to an ophthalmologist for funduscopic examinations

Timing of referral to an ophthalmologist	N (%)
Not referred	34 (37.0%)
At the initial diagnosis	22 (23.9%)
1 year after diagnosis	19 (20.7%)
At 2-year intervals	10 (10.8%)
At 6-month intervals	4 (4.3%)
At over 2-year intervals	3 (3.3%)

Table 2. Approach patterns of primary care physicians about diabetic retinopathy

Question	Yes N (%)	No N (%)
Is there a snellen chart in your center?	90 (97.8)	2 (2.2)
Do you have a direct ophthalmoscope at your center?	91 (98.9)	1 (1.1)
Do you perform visual acuity examination in patients with diabetes mellitus?	13 (14.1)	79 (85.9)
Do you use a direct ophthalmoscope?	53 (57.6)	39 (42.4)
Do you refer the patients with diabetes mellitus to the ophthalmologist for eye examination even if they do not have any complaints?	58 (63.0)	34 (37)
Do you inform patients with diabetes mellitus about possible diabetes complications even if they do not have any complaints about eye diseases?	72 (78.3)	20 (21.7)
Do you know the stages of diabetic retinopathy?	28 (30.4)	64 (69.6)
Have you heard of fundus fluorescein angiography?	35 (38.0)	57 (62.0)
Do you know the treatment methods in diabetic retinopathy?	23 (25.0)	69 (75.0)
Do you know the laser treatment in diabetic retinopathy?	29 (31.5)	63 (68.5)
Have you heard of anti-vascular endothelial growth factor treatment in diabetic retinopathy?	32 (34.8)	60 (65.2)
Do you think there should be an educational seminar on family physicians?	87 (94.6)	5 (5.4)

examinations in diabetic patients, and 39 (42.4%) do not use an ophthalmoscope. According to the answers given to the survey while 34 (37.0%) of the surveyed physicians did not refer diabetic patients to an ophthalmologist for DR examinations at all, only 22 (23.9%) referred patients to an ophthalmologist at the time of initial diagnosis and 19 (20.7%) referred patients at 1 year after the initial diagnosis. 10 (10.8%) of the surveyed physicians referred patients to an ophthalmologist at 2-year intervals, 4 (4.3%) at 6-month intervals, and 3 (3.3%) at over 2-year intervals. Sixty-four (69.6%) physicians stated not knowing the stages of DR. Furthermore, 57 (62.0%), 63 (68.5%), and 60 (65.2%) physicians reported not being familiar with fundus fluorescein angiography, laser treatment for DR, and intraocular injection treatment methods, respectively. When asked if they needed training on DR, 87 (94.6%) physicians responded 'yes' (Table 1 and 2).

DISCUSSION

In our study, although most family health care centers where primary care physicians work are equipped with ophthalmoscopes and visual charts, we found that their use was not common. In addition, we found that most family physicians refer diabetic patients to an ophthalmologist for evaluation of DR, a serious complication of diabetes, either late after diagnosis or not at all. Similarly, we found that family physicians did not have sufficient information on DR or its treatments. The majority of physicians who participated in the survey therefore indicated that training programs on DR are needed.

According to the American Diabetes Association, diabetic patients should be screened for DR at regular intervals. The frequency of this screening depends on the presence, progression, and risk factors of DR. Patients with type 2 diabetes should undergo an eye examination by an ophthalmologist at the time of diagnosis, whereas those with type 1 diabetes should be examined at 5 years after diabetes onset. If DR is absent according to one or more eye examinations, examinations should continue to be performed every 2 years. If there is any evidence of DR, dilated retinal examinations should be repeated at least once a year by an ophthalmologist. If the retinopathy is progressing, these examinations should be performed more frequently (14). In our study, one-third of the physicians never referred their diabetic patients to an ophthalmologist, and almost half did not refer patients at the initial diagnosis. In addition, only one of the three doctors referred patients to an ophthalmologist at the time of diagnosis.

According to regulations on family practice medicine published in the Official Gazette in Turkey in 2013, ophthalmoscopes and Snellen charts are among the minimal requirements of medical devices and equipment in family health centers (15). However, in a study examining the ophthalmological approach and applications of primary care physicians in Turkey, ophthalmoscopes were present in only 31.8% of health institutions and 50.3% did not have any basic tools for diagnosis or treatment of eye diseases. Our study revealed that although almost all family physician centers are equipped with a visual ophthalmic device and a direct ophthalmoscope, a significant number of physicians do not use these devices. The reason was thought to be an inability to use these devices.

In another study, 54.1% of family physicians stated that internship in an ophthalmology faculty was not sufficient, and 69.2% stated that eye disease training at the end of specialized training in family medicine was not sufficient. In this study, the most important reason for insufficiency was the lack of practice in both a medical faculty (77.2%) and during specialty education (52.8%), whereas the most important insufficiency was reported to be the use of an ophthalmoscope (76.8%) (16). Most physicians had insufficient knowledge of the diagnosis and treatment of DR, such as the stages of DR, fundus fluorescein angiography procedures, laser treatment in DR, and intraocular injection therapy. Also, almost all participants in our study indicated that they needed training seminars on DR.

CONCLUSION

Our study showed that DR, an eye complication of diabetes mellitus, is not well understood by family physicians in Turkey, and that more than half of the patients were referred to the ophthalmologist either late after diagnosis or not at all. For these reasons, it is important for family physicians to undergo training programs in DR to increase the effectiveness of primary health care services.

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