

Evaluation of the Current Care Pathway for Diabetic Eye Screening in Malta

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Abstract

Diabetic retinopathy is a leading cause of preventable vision impairment and a common complication of diabetes. Diabetic retinopathy screening can identify early changes in the retina so treatment can be given before vision impairment or blindness occurs. The aim of this audit is to evaluate the diabetic eye screening pathway in Malta to reduce the risk of vision impairment among diabetic patients through the identification and effective management of sight-threatening diabetic retinopathy by evaluating adherence to diabetic retinopathy screening guidelines and identifying areas for improvement within the screening pathway at Mater Dei Hospital (MDH). The practical implications of the audit's findings highlight the importance of more awareness of current guidelines on the recommended time of first eye examination and routine minimum follow up interval at the Endocrinology Department at MDH. 26.7% of the doctors participating in this audit perform funduscopy on initial assessment only, while 13.3% perform funduscopy every visit. On the other hand, 60% of the participants never perform funduscopy.

Keywords

Diabetic Retinopathy, Audit, Referral, Screening

1. Introduction

Diabetic retinopathy is a leading cause of preventable vision impairment and a common complication of diabetes. It is estimated that 950,000 people in the WHO European Region have vision impairment or blindness because of diabetic retinopathy [1]. Its damaging effects on vision can be prevented by early detection and treatment through screening [2] [3]. Diabetic retinopathy is mainly caused by the effect of raised blood glucose damaging blood vessels in the retina. Abnormal blood vessels can grow from the retina, which can bleed or cause scar-

ring of the retina which in turn can result in vision impairment or blindness. This mainly happens when there is diabetic macular oedema. It can be prevented, and its progression slowed, by controlling blood glucose level [4]. The aim of diabetic eye screening is to reduce the risk of vision impairment and blindness among asymptomatic diabetic patients through the identification and effective management of sight-threatening diabetic retinopathy [4]. Prevention and slowing the progression of diabetic retinopathy depends on good diabetes management. Providing patient education and facilitating the control of blood sugar, blood pressure, and lipids through a healthy lifestyle and the appropriate treatment can help achieve a better health outcome and quality of life.

Diabetic eye disease can be picked up and treated before the patient is symptomatic, a screening service exists to detect such cases and prevent sight loss. Screening in Malta is performed at Health Centres or Diabetes Outpatients. It is done by using dilating eye drops to enlarge the pupil for fundoscopy. Detected diabetic eye problem is referred to Mater Dei's Ophthalmology Outpatients' attention for the adequate treatment [5]. Current guidelines regarding eye examination recommend that patients with Type I Diabetes Mellitus (T1DM) have their first eye examination 5 years after diagnosis and to be followed up at least annually. Patients with Type II Diabetes Mellitus (T2DM) should have their 1st eye examination upon diagnosis and to be followed up at least once a year, too. Pregnant patients, with either T1DM or T2DM, should have their first eye examination soon after conception and early in the 1st trimester. For patients with no retinopathy to mild or moderate Nonproliferative Diabetic Retinopathy (NPDR) should be followed up every 3 to 12 months. Patients with severe NPDR or worse need to be followed up every 1 - 3 months [6].

2. Aim

To evaluate the current care pathway at Diabetes Clinic at MDH with regards to diabetic eye screening and referrals, and if there is awareness on current guidelines.

3. Methodology

This audit sought to obtain a picture of the current pathway for diabetic eye screening in Malta. Following ethical approval from the MDH Data Protection Officer, a set of survey questions about current practices in Diabetes Clinic at MDH with regards to diabetic eye screening and referrals were asked electronically. The survey was carried out using a Google form and was filled in by 15 doctors seeing patients in the Diabetes Clinic, including Basic Specialist Trainees (BSTs), Higher Specialist Trainees (HSTs), Resident Specialists (RSs) and Consultants. Excel was utilized to analyse the data collected. The type of questions included multiple choice questions and rating scales. A limitation of this method was that not all doctors receiving the survey participated; thus, leading to a smaller representative sample.

4. Results

Participants in this audit included a representative sample of Endocrinologists from various grades, from BSTs to Consultants. Results showed that 26.7% of the participants perform funduscopy on initial assessment only, while 13.3% perform funduscopy every visit. On the other hand, 60% of the participants never perform funduscopy. For initial Screening, as seen in **Figure 1**, 80% refer to Diabetes Clinic Outpatients; 13.3% refer to Ophthalmology Outpatients; and, 6.7% refer to Health Centre for screening. **Figure 2** and **Figure 3** describe how

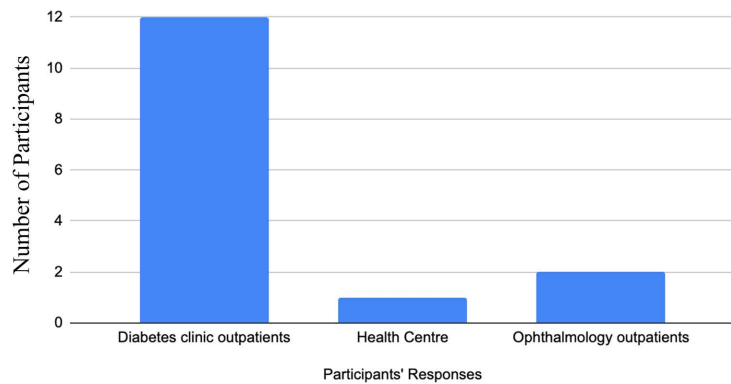


Figure 1. Initial screening referrals.

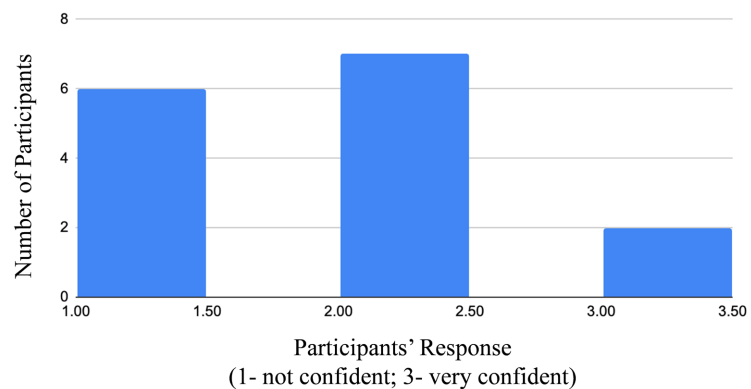


Figure 2. How confident do Endocrinologists feel in interpreting and grading images.

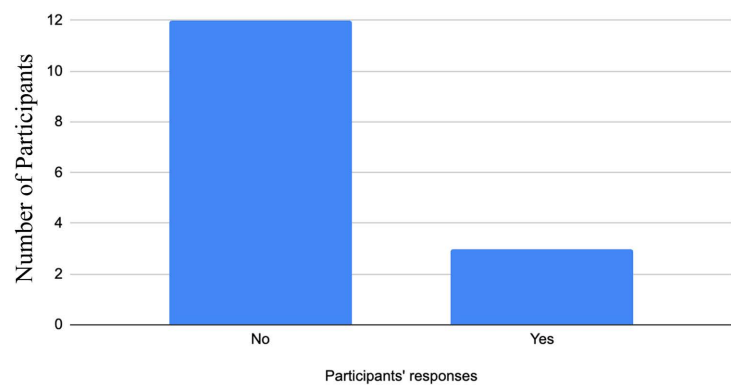


Figure 3. Training on how to interpret and grade images provided.

40% of the doctors participating in this survey feel that they are not confident in interpreting and grading funduscopy images, with only 20% of the participants being trained on how to interpret and grade images.

When asked on routine follow ups, as described in **Figures 4-7**, 86.7% of the participants think that the minimum routine follow up interval for screening is 1 year if no retinopathy is detected; 80% think that the minimum routine follow up

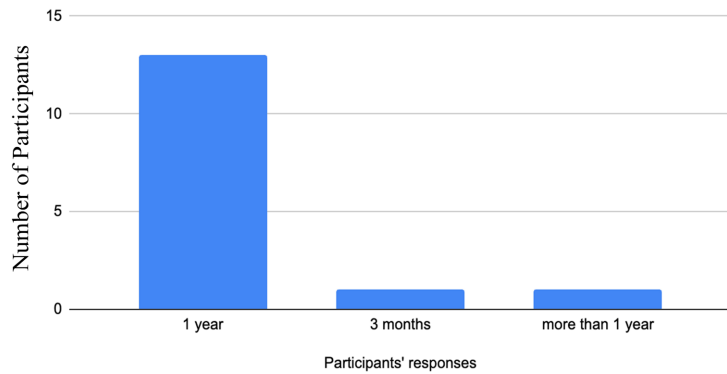


Figure 4. The minimum routine follow-up interval for eye examination if no retinopathy detected on screening.

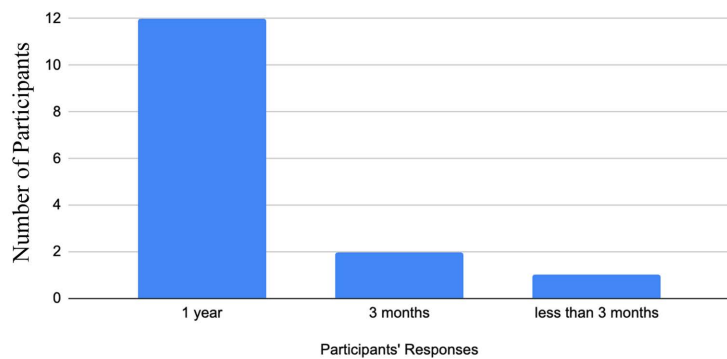


Figure 5. The routine follow-up interval for eye examination if background Retinopathy detected on screening.

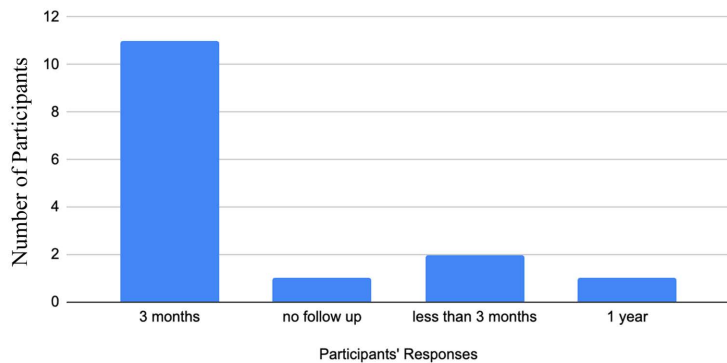


Figure 6. The routine follow-up interval for eye examination if pre-proliferative retinopathy detected on screening.

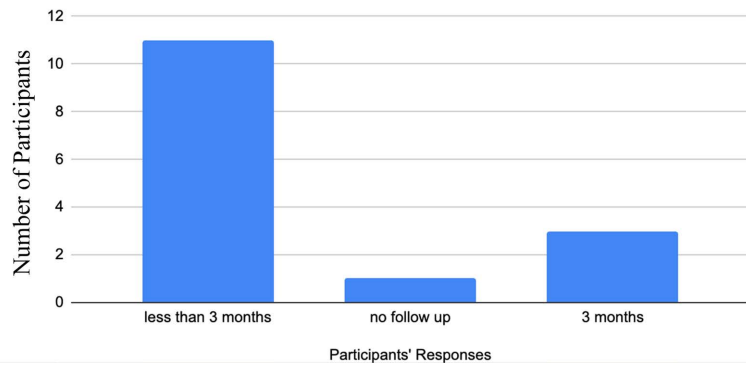


Figure 7. The routine follow-up interval for eye examination if proliferative retinopathy detected on screening.

interval for screening is 1 year if background retinopathy is detected; 73.3% think that the minimum routine follow up interval for screening is 3 months if pre-proliferative retinopathy is detected; 73.3% think that the minimum routine follow up interval for screening is less than 3 months if proliferative retinopathy is detected.

When asked regarding referrals to Ophthalmology Outpatients Department, 73.3% of the participants refer to Ophthalmology Outpatients when pre-proliferative disease or worse is present. 26.7% refer to the department when background retinopathy is present. As seen in **Figure 8** and **Figure 9**, 40% of the

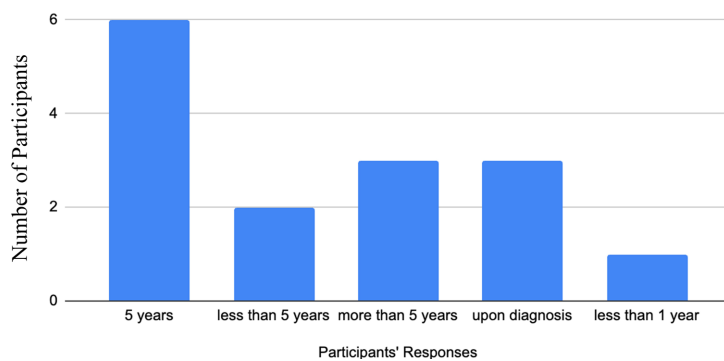


Figure 8. The time interval between diagnosis and first eye examination in patients with T1DM.

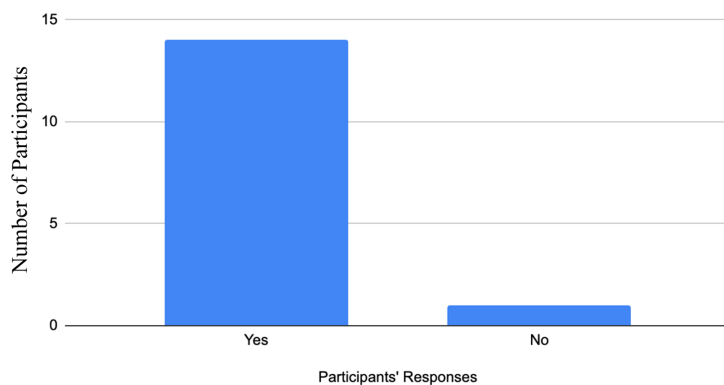


Figure 9. TIIDM patients are referred to eye screening upon diagnosis.

doctors participating, refer patients with T1DM for initial screening 5 years after diagnosis; while, 20% refer upon diagnosis and 20% refer for screening more than 5 years after diagnosis. In T2DM, 93.3% refer for initial screening upon diagnosis; while, 6.7% do not refer upon diagnosis.

When managing diabetes during pregnancy, 93.3% recommend fundoscopy during the 1st trimester in Pregnancy with T1DM or T2DM; While, 6.7% do not recommend screening during pregnancy.

5. Discussion-Strengths and Limitations

The authors sought to obtain a picture on the current pathway for eye screening for patients presenting to Diabetes Clinic in MDH via the use of a questionnaire. It was sent to different grades within the Endocrinology Department, ranging from consultants to BSTs; thus, obtaining a representative sample of the department. Also, one can observe any knowledge gaps or different practices amongst different grades in the department.

Unfortunately, Private Hospitals and Clinics were excluded, therefore one can only evaluate practices within MDH since practices outside of MDH were not considered. Also, the feedback received via the questionnaire represents a percentage of the endocrinologists at MDH as not all endocrinologists participated in the questionnaire.

6. Conclusion-Outcomes and Recommendations

Screening in Malta is performed in Health Centres or Diabetes Outpatients. Detected diabetic eye problems are referred to Mater Dei's Ophthalmology Outpatients' attention for the adequate treatment [5]. The appropriateness of the diabetic retinopathy screening program in Malta is supported by Wilson & Jungner's Principles of Screening which state that the condition should be an important health problem, it being a leading cause of preventable vision impairment. There should be an accepted treatment for patients with recognized disease, which includes laser treatment or anti-vascular endothelial growth factor (VEGF) injection. Facilities for diagnosis and treatment should be available and there should be a recognizable latent or early symptomatic phase as in background or pre-proliferative retinopathy. There should be a suitable test or examination and it should be acceptable to the population, such as fundoscopy. The natural history of the condition, including development from latent to declared disease, is adequately understood. Guidelines are present on whom and when to treat [7].

40% of Endocrinologists in MDH still do not feel confident in interpreting and grading images; with only 20% of the participants being trained in interpreting and grading the images. Regarding patients with T1DM, 40% of the participants refer for initial screening 5 years after diagnosis. In patients with T2DM, 93.3% of the participants refer to initial screening upon diagnosis. 93.3% of the participants recommend fundoscopy during the 1st trimester in Pregnancy with T1DM or T2DM. If no retinopathy detected, 86.7% of the participants

replied that the minimum routine follow up interval should be 1 year. If background retinopathy detected, 80% of the participants replied that the minimum routine follow up interval is 1 year. If pre-proliferative retinopathy is detected, 73.3% of the participants answered that the minimum routine follow up interval is 3 months. For patients with proliferative retinopathy, 73.3% of the participants answered that the minimum routine follow up interval is less than 3 months.

To sum up, the results show the need for more awareness of current guidelines on the recommended time interval for initial screening and routine minimum follow up interval in the Endocrinology and Ophthalmology Departments at MDH. Posters or information leaflets should be distributed amongst doctors at the Diabetes Clinic at MDH to guide them in the management of such cases. The Ophthalmology Department should work hand in hand with the Diabetes Clinic to organise more practical sessions on interpreting/grading funduscopy results which will help the Endocrinologist to accurately monitor and not to miss any diabetic retinopathy changes. Also, both departments should work together on campaigns about diabetic retinopathy to promote better glucose control and regular eye examination.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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