

The Impact of the COVID-19 Pandemic Lockdown Measures on Diabetic Retinopathy Services in the East Kent Area of the United Kingdom - A Special Focus on the Pregnant Diabetic

Alamin Alkundi^{1*}, Rabiuh Momoh²

¹Consultant Diabetologist, William Harvey Hospital, Ashford, Kent, United Kingdom

²Senior House Officer, Acute Medicine Department, William Harvey Hospital, Ashford, Kent, United Kingdom

*Correspondence should be addressed to Alamin Alkundi; alamin.alkundi@nhs.net

Received date: August 17, 2020, **Accepted date:** September 02, 2020

Copyright: © 2020 Alkundi A, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

The impact of extended lockdown measures, aimed at controlling the COVID-19 viral spread, are starting to be evaluated in many world regions. We have evaluated the impact of lockdown measures on diabetic retinopathy services in our region, especially as it affects pregnant diabetics who are at risk of diabetic eye disease progression. As services start to return, the potential impact of absent diabetic eye screening and intervention services over a 3-month period is envisaged to be seen. Coverage about this topic of interest is scanty, hence its timeliness.

Keywords: COVID-19, Diabetes, Retinopathy, Pregnancy, Lockdown

The COVID-19 pandemic has shaped activities across almost all human endeavours. Changes are still ongoing to accommodate all the challenges it poses. The healthcare sector, working closely with governments of nations and regulatory agencies, has helped to control the impact of this highly contagious virus. The shutdown of non-essential services has been employed in many countries to reduce the burden of infection rates and deaths recorded from the COVID-19 viral infection.

The opportunity cost of deploying lockdown of non-essential services in the control of COVID-19 spread is the challenge of not managing other aspects of human health that require physical clinic attendance. The diabetic retinopathy clinic service falls within the category of these withheld services. The reasoning is right that the COVID-19 virus is transmitted mainly by inhalation, with the virus being able to stay on surfaces and potentially infect staff members and patients alike.

It is also true that asymptomatic carriers can transmit this infection, and for most eye screens or interventions,

the health personnel and the patient are often in close. COVID-19 viral particle landing on the cornea of an uninfected person is a known route into the body for an onward systemic COVID-19 effect. Conjunctivitis and corneal oedema have been associated with the spectrum of disease manifestation of the COVID-19 virus. The confirmation of the viral particle in the ensuing secretion has also been described [1].

Diabetes, when poorly managed, has possible complications in the eyes as long-term sequelae. These effects become evident from about 15 years into the disease process. This diabetic eye disease (diabetic retinopathy) accounts for the leading cause of blindness among working-age adults in most developed countries [2]. These changes in the eye span across a spectrum from non-proliferative changes to proliferative changes (neovascularization and vitreous haemorrhage). These changes can be mitigated by ensuring glucose control, ensuring blood pressure control, and having eye checks for these changes. Treatments modalities available for the management of the various stages of these eye changes include laser photocoagulation,

injection of steroids, and anti-vascular endothelial growth factors or vitrectomy, among other things [3].

Diabetic eye changes can be exacerbated in pregnant diabetics. Pre-conceptual counselling and baseline retinal studies would usually be obtained in diabetic females intending conception. In the event of a pandemic causing a lockdown of diabetic retinopathy services, contraceptive advice to female diabetics may be advised to reduce the danger of diabetic eye disease due to pregnancy. Pregnant diabetics would typically undergo eye examinations (including fundoscopic examinations) at booking and follow-up plans made [4].

Despite the low risk of progression of diabetic retinopathy in pregnant Type 2 diabetics, sight-threatening deterioration does occur in this group too (with worse changes in pregnant Type 1 diabetics) [4]. Identified risk factors for diabetic retinopathy progression in pregnancy include the duration of diabetes, poor glycaemic control, the severity of retinopathy preceding pregnancy, and poor control of co-existing hypertension [5].

Axer-Siegel et al., in their published work in 1996 on 65 insulin-dependent pregnant diabetics, found an incidence of 77.5% retinopathic progression among those with pre-existing diabetic retinopathy and a 26% retinopathic change among those with no pre-conceptual diabetic eye changes [6]. Mallika et al. reckoned that the development of sight-threatening diabetic retinopathy is rare but possible. They also acknowledged that these diabetic eye changes that accompany pregnancy tend to regress at the end of pregnancy [4].

Hellstedt et al. revealed that the increased microaneurysm turnover that occurs in pregnant diabetics with mild retinopathic changes continue into the third month post-partum, and then start to decline [7]. Jane et al., in their work observing retinopathy changes in 53 pregnant patients, found neovascularization in 4 patients, with one patient developing that for the first time. They also noted that there was some regression of these neovascularizations by six months post-pregnancy [8].

During the COVID-19 pandemic, the dangers of rendering eye, dental, ear, nose, and throat services is an ever-present threat, and most hospital services are having to make modifications to manage this. While telephone and video consultations were deployed to review and manage these patients' blood sugar control, the missing piece in the care line was an actual attendance for a physical eye check or intervention. Pregnant patients with diabetes also classed as being vulnerable for COVID-19 infection, hence getting them into the hospital for such examinations made for concerns. Hospitals are now faced with the backlog of pregnant diabetics who could not be accorded with an eye exam and the potential changes in their eyes due to the interruption in service.

Making the diabetic retinopathy clinic service area a haven for these pregnant diabetics and other diabetics remains a goal. Ensuring periodic cleaning, safe distances, providing hand-washing areas for patients and staff members, provision and use of personal protective equipment (PPEs), triaging patients in order of greatest service needs, pre-screening for symptomatic patients and the provision of screen-barriers between the patient and the health personnel while conducting retinal examinations or interventions have been recommended [9-11].

Mobile retinopathy services (where feasible) and increased education to diabetics may limit the impact of the lockdown of retinopathy services due to a pandemic or epidemic [12]. Ehtasham et al., in their published work in May 2020, acknowledged the potential role that the existing ophthalmological telemedicine services and devices could play in delivering quality ophthalmological services in the face of the ongoing pandemic [13]. Devices that can further increase the physical distance between operators and patients, conduct a lot more eye checks, make an immediate assessment for retinopathy, store images and probably offer interventions may complement current technologies and human resources required to mitigate the effect of a protracted lockdown on diabetic retinopathy services due to an epidemic or a pandemic in the future [14].

Conflict of Interest

None to declare.

Acknowledgement

The author wishes to acknowledge all the staff members of the William Harvey hospital for their continued effort in the care of patients despite the challenges posed by the COVID-19 pandemic.

Author Contributions Statement

Both authors contributed equally towards this document.

References

1. Bacherini D, Biagini I, Lenzetti C, Virgili G, Rizzo S, Giansanti F. The COVID-19 pandemic from an ophthalmologist's perspective. *Trends in Molecular Medicine.* 2020 Apr 6.
2. Pearce I, Simó R, Lövestam-Adrian M, Wong DT, Evans M. Association between diabetic eye disease and other complications of diabetes: implications for care. A systematic review. *Diabetes, Obesity and Metabolism.* 2019 Mar;21(3):467-78.

3. Shah AR, Gardner TW. Diabetic retinopathy: research to clinical practice. *Clinical Diabetes and Endocrinology.* 2017 Dec;3(1):1-7.
4. Mallika PS, Tan AK, Aziz S, Asok T, Alwi SS, Intan G. Diabetic retinopathy and the effect of pregnancy. *Malaysian Family Physician: The Official Journal of the Academy of Family Physicians of Malaysia.* 2010;5(1):2.
5. Morrison JL, Hodgson LA, Lim LL, Al-Qureshi S. Diabetic retinopathy in pregnancy: a review. *Clinical & Experimental Ophthalmology.* 2016 May;44(4):321-34.
6. Axer-Siegel R, Hod M, Fink-Cohen S, Kramer M, Weinberger D, Schindel B, et al. Diabetic retinopathy during pregnancy. *Ophthalmology.* 1996 Nov 1;103(11):1815-9.
7. Hellstedt T, Kaaja R, Teramo K, Immonen U. The effect of pregnancy on mild diabetic retinopathy. *Graefe's Archive for Clinical and Experimental Ophthalmology.* 1997 Jul 1;235(7):437-41.
8. Moloney JB, Drury MI. The effect of pregnancy on the natural course of diabetic retinopathy. *American Journal of Ophthalmology.* 1982 Jun 1;93(6):745-56.
9. Korobelnik JF, Loewenstein A, Eldem B, Jousseaume AM, Koh A, Lambrou GN, et al. Guidance for anti-VEGF intravitreal injections during the COVID-19 pandemic. *Graefe's Archive for Clinical and Experimental Ophthalmology.* 2020;258(6):1149.
10. Naveed H, Scantling-Birch Y, Lee H, Nanavaty MA. Controversies regarding mask usage in ophthalmic units in the United Kingdom during the COVID-19 pandemic. *Eye.* 2020 Apr 23:1-3.
11. Sengupta S, Honavar SG, Sachdev MS, Sharma N, Kumar A, Ram J, et al. All India Ophthalmological Society–Indian Journal of Ophthalmology consensus statement on preferred practices during the COVID-19 pandemic. *Indian Journal of Ophthalmology.* 2020 May 1;68(5):711.
12. Attipoe-Dorcoo S, Delgado R, Gupta A, Bennet J, Oriol NE, Jain SH. Mobile health clinic model in the COVID-19 pandemic: lessons learned and opportunities for policy changes and innovation. *International Journal for Equity in Health.* 2020 Dec;19(1):1-5.
13. Ahmad E, Davies MJ, Khunti K. Rapid Review: Diabetic retinopathy screening during the COVID-19 pandemic. <https://www.cebm.net/covid-19/rapid-review-diabetic-retinopathy-screening-during-the-covid-19-pandemic/>
14. Padhy SK, Takkar B, Chawla R, Kumar A. Artificial intelligence in diabetic retinopathy: A natural step to the future. *Indian Journal of Ophthalmology.* 2019 Jul;67(7):1004.