



## Black eyes matter—do we treat Black patients differently in ophthalmology?

Varo Kirthi <sup>1,2</sup> · Timothy L. Jackson <sup>1,2</sup>

Received: 14 April 2021 / Accepted: 16 April 2021 / Published online: 6 May 2021  
© The Author(s), under exclusive licence to The Royal College of Ophthalmologists 2021

Despite efforts to reduce avoidable blindness by 2020, latest figures from the World Health Organisation report at least 1 billion people still living with a vision impairment that could have been prevented or has yet to be addressed [1]. In the United States, age-related eye diseases are the most common causes of vision loss; however, the prevalences of these diseases vary significantly among different ethnic groups [2].

Whilst age-related macular degeneration predominantly affects White individuals, diabetic retinopathy and glaucoma are more prevalent among Black individuals [2–4]. Furthermore, responses to therapeutic interventions, from medications to surgery, also vary considerably by ethnicity [5]. Addressing such variations in disease burden is made more difficult by lower rates of health insurance cover and poorer access to healthcare among minority groups [6]. Furthermore, regardless of ethnicity, people with lower income are not only less likely to visit an eye doctor, but are also less likely to be able to afford eyeglasses when needed [2].

There are also wider concerns that individuals from ethnic minority groups, particularly those of Black ethnicity, receive different treatment in healthcare settings. Studies have shown that Black people experience lower quality pain management, delays in receiving care within the Emergency Department, disparities in accessing cardiac tests, diagnoses and procedures, and are less likely to be placed on renal transplant waiting lists, compared to their White counterparts [7–10].

Potential reasons for this variation are complex and multifactorial. Ethnicity, older age, reduced mobility, poor baseline vision and fear of the clinical outcome have all

been linked to hospital non-attendance and loss to follow-up [11–14]. Language and cultural barriers may play a significant role, particularly where work and family commitments are prioritised over health-seeking behaviours [15]. Similarly, the burden of comorbid diseases and disability might also influence attendance at clinic and treatment appointments. For example, Black people with diabetes have disproportionately greater morbidity related to hypertension and stroke, compared to White people [16]. Competing clinic appointments, hospitalisations and transport difficulties can all hinder the timely treatment of eye disease.

Variation in health outcomes has also been linked to a lack of engagement with healthcare providers and physician bias. People from ethnic minorities and low socio-economic backgrounds report higher levels of physician and health-care system distrust, which may contribute to a reluctance to accept treatment in eye clinic [17, 18]. Whilst physician bias is difficult to confirm or quantify, studies have shown that Black people with age-related macular degeneration are 23% less likely to receive intravitreal anti-vascular endothelial growth factor (anti-VEGF) treatment and 18% less likely to have regular eye examinations compared to their White counterparts [19]. A recent large general practice study conducted in the UK ( $n = 84,452$ ) reported that both Asian and Black people were much less likely to be prescribed newer medications for diabetes, such as sodium-glucose cotransporter-2 inhibitors (odds ratio [OR] 0.68, 95% confidence interval [CI] 0.58–0.79; OR 0.50, 95% CI 0.39–0.65, respectively) and glucagon-like peptide-1 agonists (OR 0.37, 95% CI 0.31–0.44; OR 0.45, 95% CI 0.35–0.57, respectively) than their White counterparts [20].

Recently, we have also shown that among a diverse metropolitan population with a high prevalence of social deprivation, Black individuals with diabetic eye disease wait longer for treatment than their White counterparts [21]. In our study, the severity of proliferative diabetic retinopathy and diabetic macular oedema was similar in Black and White patients referred to an ophthalmologist, with

✉ Varo Kirthi  
v.kirthi@nhs.net

<sup>1</sup> King's College London, London, UK

<sup>2</sup> King's College Hospital NHS Foundation Trust, London, UK

screening assessments made by image graders without ready access to ethnicity data. Despite this similar baseline burden of disease at the point of referral, after attending a face-to-face consultation with a doctor, the time to treatment with macular laser, intravitreal anti-VEGF or panretinal laser photocoagulation was significantly longer in Black individuals ( $\chi^2 = 5.67$ ,  $P = 0.02$ ). Regression analysis revealed that people of Black ethnicity were less likely to receive a therapeutic intervention than their White counterparts (hazard ratio 0.71, 95% CI 0.53–0.95). Thankfully, despite these treatment delays, there were no significant differences in the rates of vision loss between the ethnic groups.

The recent coronavirus pandemic has exacerbated many pre-existing health inequalities among ethnic minority groups, particularly those from low socio-economic backgrounds. For example, ‘gig economy’ workers on zero-hours contracts may be less likely to attend hospital clinic or treatment appointments, for fear of losing income and employment. In a recent UK-wide cross-sectional, clustered-sample survey ( $n = 12,035$ ), vaccine hesitancy was much higher in Black individuals (OR 13.42, 95% CI: 6.86–26.24) compared to those of White ethnicity [22].

Addressing health inequities and prioritising care to at-risk groups requires collaborative input from physicians, hospital administrators, healthcare regulators and professional bodies to actively engage, listen and communicate effectively with ethnic minority communities. Whilst equality and diversity training can change attitudes, one-off training exercises do not lead to sustained behavioural changes in the workforce [23]. As physicians, we know how to identify bias when appraising research; uncomfortable as it may be, current data suggest that we may also need to look for bias in our clinics. Addressing these difficult issues is the key to narrowing the inequity of care affecting those most in need of it.

**Acknowledgements** We wish to thank Kate Reed, Ramith Gunawardena, Komeil Alattar and Catey Bunce for their invaluable contributions to the study discussed in paragraph 6 (ref. 21).

**Author contributions** This editorial was conceived by VK and TLJ. VK drafted the initial paper and TLJ provided senior oversight and critical appraisal of the final paper. Both authors accept full responsibility for the work and have agreed to the contents of the submitted paper.

## Compliance with ethical standards

**Conflict of interest** The authors declare no competing interests.

**Publisher’s note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

## References

- World Health Organization. World report on vision. 2019. <https://www.who.int/publications/i/item/world-report-on-vision>. Accessed 15 Nov 2020.
- Zhang X, Cotch MF, Ryskulova A, Primo SA, Nair P, Chou C-F, et al. Vision health disparities in the United States by race/ethnicity, education, and economic status: findings from two nationally representative surveys. *Am J Ophthalmol*. 2012;154 6 Suppl:S53–62.e1.
- Harris MI, Klein R, Cowie CC, Rowland M, Byrd-Holt DD. Is the risk of diabetic retinopathy greater in non-Hispanic blacks and Mexican Americans than in non-Hispanic whites with type 2 diabetes? A U.S. population study. *Diabetes Care*. 1998;21:1230–5.
- Wong TY, Klein R, Islam FMA, Cotch MF, Folsom AR, Klein BEK, et al. Diabetic retinopathy in a multi-ethnic cohort in the United States. *Am J Ophthalmol*. 2006;141:446–55.
- Stein JD, Kim DS, Niziol LM, Talwar N, Nan B, Musch DC, et al. Differences in rates of glaucoma among Asian Americans and other racial groups, and among various Asian ethnic groups. *Ophthalmology*. 2011;118:1031–7.
- Abdus S, Mistry KB, Selden TM. Racial and ethnic disparities in services and the patient protection and affordable care act. *Am J Public Health*. 2015;105 S5:S668–75.
- Todd KH, Samaroo N, Hoffman JR. Ethnicity as a risk factor for inadequate emergency department analgesia. *JAMA*. 1993;269:1537–9.
- Ayanian JZ, Cleary PD, Weissman JS, Epstein AM. The effect of patients’ preferences on racial differences in access to renal transplantation. *N Engl J Med*. 1999;341:1661–9.
- Einbinder LC, Schulman KA. The effect of race on the referral process for invasive cardiac procedures. *Med Care Res Rev*. 2000;57 Suppl 1:162–80.
- Wilper AP, Woolhandler S, Lasser KE, McCormick D, Cutrona SL, Bor DH, et al. Waits to see an emergency department physician: U. S. trends and predictors, 1997–2004. *Health Aff*. 2008;27:w84–95.
- Boulanger-Scemama E, Querques G, About F, Puche N, Srouf M, Mane V, et al. Ranibizumab for exudative age-related macular degeneration: A five year study of adherence to follow-up in a real-life setting. *J Fr Ophtalmol*. 2015;38:620–7.
- Angermann R, Rauegger T, Nowosielski Y, Casazza M, Bilgeri A, Ulmer H, et al. Treatment compliance and adherence among patients with diabetic retinopathy and age-related macular degeneration treated by anti-vascular endothelial growth factor under universal health coverage. *Graefes Arch Clin Exp Ophthalmol*. 2019;257:2119–25.
- Gao X, Obeid A, Aderman CM, Talcott KE, Ali FS, Adam MK, et al. Loss to follow-up after intravitreal anti-vascular endothelial growth factor injections in patients with diabetic macular edema. *Ophthalmol Retina*. 2019;3:230–6.
- Rauegger T, Angermann R, Meusburger A, Schwab J, Haas G, Kralinger M, et al. Patient mobility and journey distance as risk factors for severe visual impairment: real-life data analysis of treatment-naïve patients with nAMD under intravitreal aflibercept therapy. *Klin Monbl Augenheilkd*. 2020;237:789–96.
- Patel N, Ferrer HB, Tyrer F, Wray P, Farooqi A, Davies MJ, et al. Barriers and facilitators to healthy lifestyle changes in minority ethnic populations in the UK: a narrative review. *J Racial Ethn Health Disparities*. 2017;4:1107–19.
- Black SA. Diabetes, diversity, and disparity: what do we do with the evidence? *Am J Public Health*. 2002;92:543–8.
- Corbie-Smith G, Thomas SB, St George DMM. Distrust, race, and research. *Arch Intern Med*. 2002;162:2458–63.
- Armstrong K, Ravenell KL, McMurphy S, Putt M. Racial/ethnic differences in physician distrust in the United States. *Am J Public Health*. 2007;97:1283–9.

19. Sloan FA, Brown DS, Carlisle ES, Picone GA, Lee PP. Monitoring visual status: why patients do or do not comply with practice guidelines. *Health Serv Res.* 2004;39:1429–48.
20. Whyte MB, Hinton W, McGovern A, van Vlymen J, Ferreira F, Calderara S, et al. Disparities in glycaemic control, monitoring, and treatment of type 2 diabetes in England: a retrospective cohort analysis. *PLoS Med.* 2019;16:e1002942.
21. Kirthi V, Reed KI, Gunawardena R, Alattar K, Bunce C, Jackson TL. Do Black and Asian individuals wait longer for treatment? A survival analysis investigating the effect of ethnicity on time-to-clinic and time-to-treatment for diabetic eye disease. *Diabetologia.* 2021;64:749–57.
22. Robertson E, Reeve KS, Niedzwiedz CL, Moore J, Blake M, Green M, et al. Predictors of COVID-19 vaccine hesitancy in the UK household longitudinal study. *Brain Behav Immun.* 2021; 94:41–50.
23. Chang EH, Milkman KL, Gromet DM, Rebele RW, Massey C, Duckworth AL, et al. The mixed effects of online diversity training. *Proc Natl Acad Sci USA.* 2019;116: 7778–83.