Examining the Opportunity Costs due to diabetic macular edema taking into account access barriers evaluated in the Barometer Program Survey in Colombia

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Introduction

The survey titled 'Market Research Survey focusing on the management and treatment of diabetic retinopathy (DR)- with and without diabetic macular edema (DME)' aimed to provide a comprehensive view of the challenges arising from patients' lack of adherence to prescribed treatments, exploring perceptions of the treatment experience from both patients with DME and the clinics, healthcare personnel, and providers responsible for care.
Based on the survey conducted in 24 countries, a report was published with specific results for Colombia, regarding the five participating ophthalmology clinics. In these clinics, four printed questionnaires using optical brand recognition were employed to gather information on the perceptions and opinions of the following groups [2]:

- Patients currently receiving anti-VEGF therapy for the treatment of DME.
- Healthcare professionals (or providers) who prescribe and/or administer anti-VEGF injections in the treatment of DME.
- Staff members of any kind in the participating clinics who, although they do not prescribe or administer anti-VEGF injections for the treatment of DME, regularly interact with patients in other ways.

In the survey, 41 questions are specifically directed at patients with DME, addressing topics such as the interaction between patients and the medical staff responsible for their treatment, satisfaction and adherence to prescribed treatment, and the main challenges they face when attending medical appointments. Additionally, it includes detailed information on the sociodemographic data of the patients. For the purposes of this study, only the information from the questions directed at the patients will be considered.

Objective

To calculate the costs related to access barriers for Diabetic Macular Edema (DME) patients over a two-year period (2022/2023), based on data from “International Market Research Survey focusing on the management and treatment of diabetic retinopathy (DR) — with and without diabetic macular edema (DME)”, which included Colombia

Methods

This study examines the barriers to accessing treatment for Diabetic Macular Edema (DME) identified in the "Market Research Survey on the Management and Treatment of Diabetic Retinopathy (DR)- With and Without DME" conducted in Colombia, which surveyed 325 patients. Additionally, it estimates the economic impact of DME treatments related to three approved treatment options in the country: anti-VEGF injections, corticosteroids, and laser therapy.
In public health management, measuring access to healthcare services serves as an indicator for evaluating the population's protection against illness and the effectiveness of strategies and resources available to address various diseases.

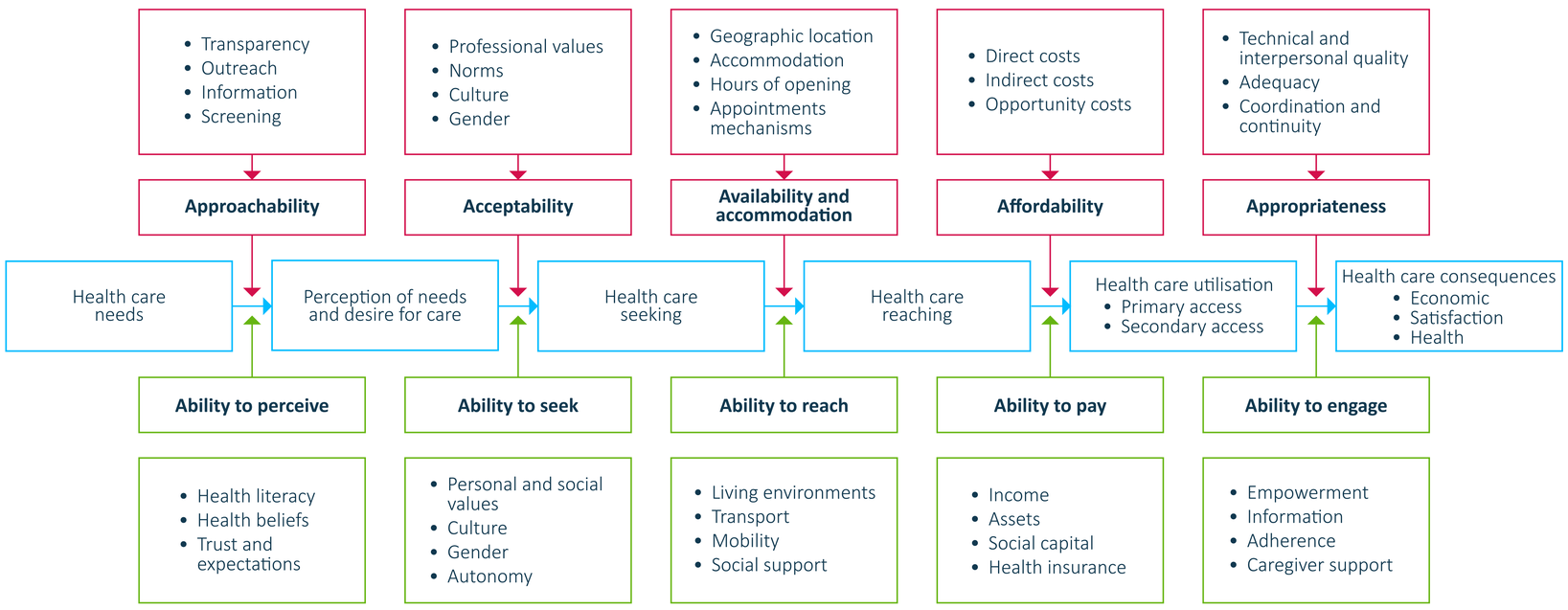


Figure 1. A conceptual framework of access to health care.

The Levesque classification of access to healthcare services is addressed through five fundamental dimensions:

1) Accessibility; 2) Acceptability; 3) Availability and accommodation; 4) Affordability; and 5) Appropriateness, which reflect the characteristics from the supply side (health systems and organizations) and, from the demand side (patients, users), the following capabilities are considered: 1) Perception capacity; 2) Search capacity; 3) Reach capacity; 4) Payment capacity; and 5) Participation capacity

Taking this approach as a reference, based on the data provided by the survey, it is possible to identify variables that generate access barriers, both from the perspective of patients and their environment, as well as those related to the current provision of services by the surveyed clinics for the treatment of DME:

1. Barrier of availability, accommodation, and reach
To estimate the marginal costs associated with this barrier, we compared the expenses incurred by patients and their companions (when applicable) living in urban areas to those in suburban or rural areas. The following variables from the survey were taken into account for this calculation:

- Number of surveyed patients
- Residence: urban, suburban, and rural environment.
- Type of treatment

$$CM_{urb-suburb} = (CTrans_{suburb} - CTran_{Surban}) \cdot (Q_{pat} \cdot \%Pat_{ter\_i} \cdot \%Pat_{suburb})$$

$$CM_{urb-rur} = (CTrans_{rur} - CTran_{Surban}) \cdot (Q_{pat} \cdot \%Pat_{ter\_i} \cdot \%Pat_{rur})$$

2. Participation barrier
To estimate the costs associated with treatment non-adherence, we considered the marginal costs of patients identified in the survey as "non-adherent" or those who missed two or more follow-up or injection appointments. It is important to note that the survey assessed adherence solely for patients receiving anti-VEGF injection therapy

$$CM\_NoAdh_{year1} = (Cost\_Adh_{year1} - Cost\_NoAdh_{year1}) \cdot Q\ patients_{NoAdh}$$

$$Cost\_Adh_{year2} = (Cost_{mon\ diagnos\ year2} + Cost_{mon\ +\ Treat\ year2})$$

3. Barrier of affordability and payment capacity
To estimate the marginal costs incurred by patients according to the type of treatment funding, the following questions from the survey were used:

- Number of surveyed patients
- Percentage of patients by type of treatment
- Percentage of patients by type of payment for treatment costs (Included payments; Fully covered by insurance or government funding, Partially self-funded with the remainder covered by insurance or government, and Fully self-funded)

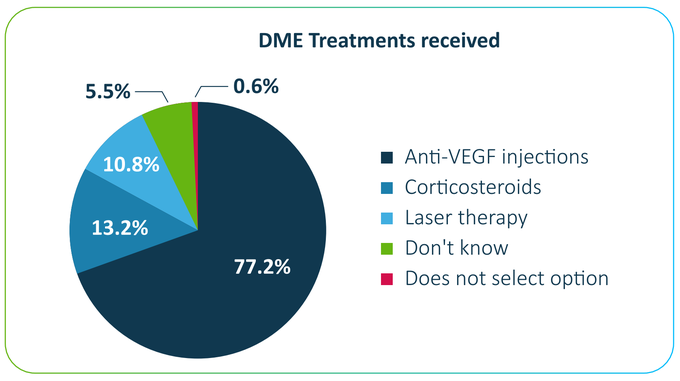
$$CM_{parc.\ cub.} = (Cost_{par\_cub\ year\ t} - Cost_{tot\ Covered\ year\ t}) \cdot (Q_{pat} \cdot \%Pat_{Therapy\ i} \cdot \%Pat_{par.\ cub.})$$

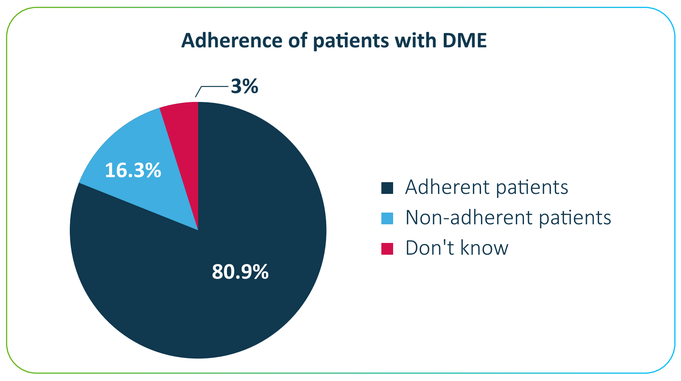
$$CM_{Autofin} = (Cost_{autofin\ year\ t} - Cost_{tot\ Covered\ year\ t}) \cdot (Q_{pat} \cdot \%Pat_{Therapy\ i} \cdot \%Pat_{Autofin})$$

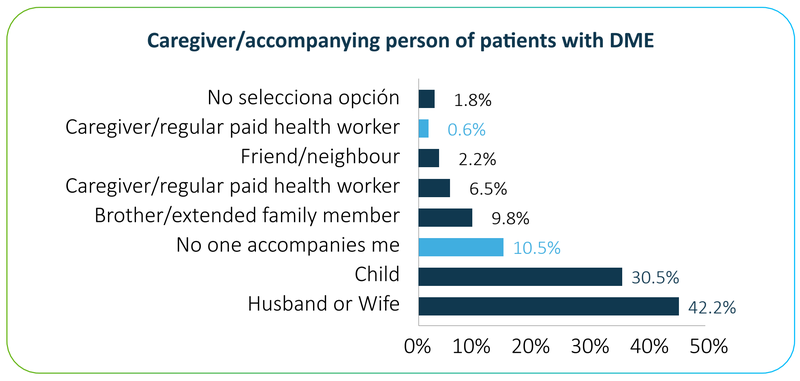
Results

In Panel, it is observed that most patients receive anti-VEGF injections, while a smaller proportion is treated with corticosteroids or laser photocoagulation. Regarding adherence, it is found that only 16.3% (53 patients) have stopped attending treatment or follow-up appointments, which allows us to infer that many patients are adequately following the treatment with anti-VEGF intravitreal injections.
Finally, in relation to the type of caregiver, it is highlighted that most patients with DME require an accompanying person (paid or unpaid) to assist them with their treatments. It is noted that nearly 90% of the companions/caregivers are unpaid (partners, family members, or others), and only a small number of patients (0.6%) choose to pay for a caregiver (nurse or professional caregiver).

Figure 2. Information on the treatment of surveyed patients







The cost results by access barriers presented in the following table correspond to the total per barrier for the two-year study period (2022 – 2023), at 2024 prices.

Table 1. Marginal cost results by access barriers 2022-2023

Barriers	# Patients	Marginal Total Costs(USD$)	Patient Marginal Costs(USD$)	
Barrier of availability, accommodation, and reach	92	$ 20.678	$ 225	The marginal costs of this access barrier are directly influenced by the frequency of medical appointments required according to the type of therapy, along with the time and distances needed to access the treatments
Participation barrier	53	$ 456.228	$ 8.608	If the 53 patients who reported being non-adherent in the survey were adherent, the healthcare system would save $456,228 USD over a period of 2 years, equivalent to 55%, as the additional costs associated with loading doses would be avoided. In terms of per patient, the savings would be $8,608 USD over a period of 2 years.
Barrier of affordability and payment capacity	100	$ 191.125	$ 1.909	The additional cost that a patient incurs based on the type of health coverage they have also determines their ability to manage the expenses related to treatment.
Total		**$ 668.031**	**$ 10.742**	

Conclusions

Additional costs paid by patients and health system due to barriers to access in DME treatment in Colombia are not due to the effectiveness of treatment, is mainly driven by adherence and affordability of treatment. If patients were adherent to treatment, the health system would save USD$8.608 per patient (55%), but structural factors make access to treatment limited. These results highlight the need for interventions aimed at reducing these barriers to make clinical outcomes effective as a treat & extend protocol

References

1 AddA. L. ,. R. D. e. a. Lundeen EA, «Trends in Prevalence and Treatment of Diabetic Macular Edema and Vision-Threatening Diabetic Retinopathy Among Medicare Part B Fee-for-Service Beneficiaries,» JAMA Ophthalmol, 2022. 2. Pauline Lukey, David Lukey & Callum Campbell, Target to Treatment Consulting Ltd Moira Murphy, Exploristics , «Market Research Survey focusing on the management and treatment of diabetic retinopathy (DR)- with and without diabetic macular edema (DME),» 2023. 3. J. D. Bravo , A. Correa , A. Bravo , R. Bravo y O. A. Villada , «Retinopatía Diabética y Edema Macular Diabético en Población de Antioquia. Estudio transversal,» Universidad de Antioquia , Medellin, 2022. 4. J. G. Sanchez, H. H. Ocampo D., F. J. Rodriguez , M. A. Grisales E., C. A. Caballero y Á. J. Ruiz , «Terapias anti-VEGF en el tratamiento de enfermedades de la retina: Recomendaciones para la práctica en Colombia,» Sociedad COlombiana de Oftalmología, 2018. 5. Asociación Panamericana de Oftalmología, Programa Visión 2020 /IAPB Latinoamérica, Consejo Internacional de Oftalmología ICO, «Actualización de la Guía Clínica de Retinopatía Diabetica.,» 2016. 6. M. Herrera Collazo y I. Chaviano Pedroso , «Los costos indirectos en la evaluación económica de salud,» La habana, 2022. 7. World Health Organization, «WHO methods and data sources for global burden of disease estimates 2000-2021,» 2024. 8. D. Pabón Guerrero, I. Y. Muñoz Silva , J. P. Muñoz Valencia y S. A. Noguera Muñoz , «Barreras de acceso en la prestación de los servicios de salud para los usuarios de la IPS Totoguampa del municipio de Silvia en el departamento del Cauca,» Universidad Católica de Manizales, Manizales, 2022. 9. J.-F. Levesque, M. F. Harris y G. Russell, «Patient-centred access to health care: conceptualising access at the interface of health systems and populations,» International Journal for Equity in Health, vol. 12, nº 18, 2013. 10. Agencia de Evaluación de Tecnologías Sanitarias de Andalucía (AETSA), «Ranibizumab y bevacizumab en el tratamiento del edema macular diabético,» Sevilla, 2014. 11. M. O. Quintana Zavala, L. Vázquez Arreola, M. G. Moreno Monsiváis, R. E. Salazar Ruibal y R. M. Tinarejo González, «Costos directos e indirectos de hospitalización en pacientes con Diabetes Mellitus Tipo 2,» BIOtecnia, vol. XI, nº 2, pp. 43-50, 2009. 12. Y. Gil Rojas, D. Amaya, C. Sardi Correa, A. Robles y F. Hernández, «Carga económica de la degeneración macular neovascular y el edema macular diabético en Colombia,» Revista Sociedad Colombiana de Oftalmología, nº 56, pp. 54-62, 2023.

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