Prescribing medications to patients living with a visual impairment: a qualitative study of physicians to explore their usual clinical practices

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ABSTRACT

Objectives Visual impairment is a disability affecting a large number of people worldwide, who are more likely to experience difficulties in their daily lives, impacting on their quality of life, independence, mobility and state of health. However, there is a lack of progress in the field of healthcare for individuals living with a visual impairment. The objectives of this study were (1) to illustrate the usual clinical practices of physicians to support the care of individuals with a visual impairment and (2) to identify the components considered to reduce risks resulting from the prescription of medications to these individuals.

Methods and analysis Semi-structured interviews were conducted with French-speaking physicians via videoconference in Belgium. Participants were recruited voluntarily and using the snowball method. An interview guide was developed to meet the objectives of the study. Interviews were carried out until theoretical data saturation, recorded, transcribed *verbatim* and analysed in a double-blind fashion using thematic analysis. Data were organised using NVivo V.14 software.

Results Three themes were addressed in the 24 interviews: consultation with patients with a visual impairment, prescribing medications to patients with a visual impairment and medication risk management for patients with a visual impairment. Most participants reported that they had not received specific education in visual impairment. Some physicians reported that they did not differentiate between patients living with a visual impairment and other patients, while others reported taking some additional measures.

Conclusions This qualitative study highlighted a lack of knowledge and awareness among physicians regarding visual impairment and at-risk medications in these patients. The development of recommendations and tools is a solution to improve the quality of care for patients living with a visual impairment.

INTRODUCTION

Visual impairment (VI) is a disability affecting a large number of people worldwide, which results in activity limitations and participation restrictions in daily and social life.^{1 2} It may be related to conditions that are hereditary, present at birth or become apparent during

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Previous research has shown that individuals living with a visual impairment perceive a lack of active listening and involvement in treatment planning, as well as inadequate explanations of medications from physicians.

WHAT THIS STUDY ADDS

⇒ This study is the first to examine specifically the management of individuals with a visual impairment by physicians, and the factors considered when prescribing medications to this population.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ In the light of the results of this study, the education and training of physicians could focus on inclusive care for patients with disabilities, particularly visual impairment. The findings of this study may serve as a foundation for the formulation of recommendations aimed at more effectively addressing the specific needs of persons living with a visual impairment and reducing risks.

childhood, are injury-related or are associated with a longstanding chronic pathology.³ People with a VI are more likely to experience multiple morbidities.⁴ Indeed, risk factors for many chronic diseases, including obesity, smoking, hypertension and cardiovascular disease, are higher for individuals with disabilities than for the general population.⁵ Additionally, around one in three individuals with a VI suffer from depression, because of the negative impact of vision loss on mental health and quality of life.⁶⁷ However, people with a VI have been identified as a group for whom depression is most likely to be missed by their general practitioner.⁸ They also have an increased risk of falls and post-fall fractures⁴ and are more likely to suffer from delirium.⁹

To cite: Merenda T, Sibilles Z, Denis J, *et al.* Prescribing medications to patients living with a visual impairment: a qualitative study of physicians to explore their usual clinical practices. *Fam Med Com Health* 2025;**13**:e003253. doi:10.1136/ fmch-2024-003253

Additional supplemental material is published online only. To view, please visit the journal online (https://doi.org/10.1136/ fmch-2024-003253).

Received 11 December 2024 Accepted 27 April 2025



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There is still a lack of advancement in healthcare for people with a VI.¹⁰ Indeed, in a mixed-method study conducted in Poland, one of the primary expectations expressed by participants with a VI was to be treated with respect and dignity. This expectation signified a shift in perspective from a medical model, in which persons are regarded as mere 'medical conditions', to a more humanised approach that recognises individuals as unique entities with their own unique needs and lives.¹¹ However, a study demonstrated that people with disabilities were more likely than those without disabilities to feel that their physician did not listen to them, did not involve them in the treatment plan and did not adequately explain treatments.^{12 13} In another study, persons with a VI interviewed recounted experiences of frustration stemming from the perceived lack of understanding of their needs by care providers.¹⁴ More specifically, persons with a VI encounter difficulties in communicating with physicians and accessing health information.¹⁵ In particular, healthcare providers did not allocate sufficient time to provide people with clear and accessible information regarding their condition.¹¹ For example, explanations of treatments or medical instructions were frequently too general, or not adapted to the needs of individuals with a VI, making the care experience more difficult.¹¹ Furthermore, individuals with a VI frequently encounter challenges when attempting to access crucial information, including prescriptions, test results and written medical instructions.¹⁶ This inaccessibility of health information leads to negative consequences, including loss of independence, safety issues (eg, misreading medication labels) and missed appointments.¹⁰ Furthermore, patients with a VI may encounter challenges in differentiating between their medications. The use of small font sizes may impede their ability to read instructions related to storage, dosage and administration of medications.¹⁷ Another study conducted in California on communication with physicians when prescribing new medications revealed that only 55% of participating physicians provided their patients with instructions for use, and only a third explained side effects and the duration of treatment.¹⁸ Nevertheless, factors such as adverse drug events, patient preferences and their physical and cognitive state must be considered to manage medication in a targeted and optimal manner.¹⁹ The focus groups carried out by McClintock *et al*²⁰ showed that carefully listening to patients is a crucial element in comprehending their unique and specific medical needs. It is therefore imperative that effective communication be employed to ensure adherence to treatment and to prevent negative repercussions on the patient's health.²⁰ Additionally, focus groups conducted with individuals with a VI explored the influence of medical interactions on their overall satisfaction with healthcare. This study yielded insights into the correlation between respect, understanding and adapted medical interactions, with a greater confidence in healthcare providers and a positive experience.¹⁴

One effective method of assessing the current practices of healthcare professionals is to collect information directly from them.²¹ In light of the aforementioned findings, the researchers sought to conduct interviews with physicians, with the aim of exploring their usual clinical practices to support the care of individuals with a VI and identify the components considered to reduce risks resulting from the prescription of medications to these individuals.

METHODS

Study design

The study methodology consisted of semi-structured interviews with physicians practising in Belgium. An interview guide (online supplemental material) composed of three topics was devised in advance and subsequently validated internally by the research team. The interview guide included solely main and follow-up open-ended questions, thereby enabling the physicians to express and develop their ideas freely. Each question was structured in a simple grammatical form, and the vocabulary employed was scientific and precise. The three topics covered were the following:

- ► **Topic 1** *Sociodemographic data*: to characterise the sample to detect any potential correlation between the answers provided and the sociodemographic profile of the participants.
- Topic 2 Visual impairment and training: to determine whether physicians had received specific training in VI and to estimate whether the potential shortcomings encountered with their patients living with a VI were linked to a lack of training.
- ► **Topic 3** *Visual impairment and prescription*: to understand the practices and challenges encountered in prescribing and managing medication-related risks for these patients.

Selection criteria

The study involved French-speaking physicians practising in Belgium, who had previously prescribed medications to one or more patients with a VI. To ensure a comprehensive exploration of the phenomenon and to ascertain whether theoretical saturation of data had been attained, a dissimilar case (ie, a physician who did not treat persons with a VI) was also recruited.

Participants were recruited on a voluntary basis and using the snowball method. For this purpose, physicians were contacted by telephone or email to provide a brief overview of the study. Each physician who expressed interest in participating in the study was sent an information letter, and an appointment was scheduled.

Data collection

The semi-structured interviews were conducted by TM and ZS via videoconference on the Microsoft Teams application from October 2023 to December 2023. The interviews lasted an average of 16 min (SD 6) and

 Table 1
 Description of the sample

Pseudonym	Gender	Province	Medical specialty	Training	Experience (years)	Number of visually impaired patients estimated by physicians in their patients	Duration of interview (minutes)
Phy1	Μ	Hainaut	General medicine	Ophthalmology course	29	1–5	26
Phy2	Μ	Hainaut	Nephrology	-	20	40	24
Phy3	Μ	Hainaut	General internal medicine	Ophthalmology course	11	20–30	14
Phy4	W	Hainaut	Geriatric medicine	Ophthalmology course	23	100	13
Phy5	W	Hainaut	Geriatric medicine	Ophthalmology course	13	100	24
Phy6	Μ	Hainaut	Cardiology	Ophthalmology course	19	No idea*	20
Phy7	W	Hainaut	General medicine	-	19	5–10	9
Phy8	W	Hainaut	Endocrinology Diabetology	Ophthalmology course	8	5–10	12
Phy9	Μ	Hainaut	General internal medicine	-	12	10–20	9
Phy10	W	Hainaut	Endocrinology	Ophthalmology course	20	100	13
Phy11	W	Hainaut	Endocrinology Diabetology	-	22	5–10	13
Phy12	W	Hainaut	General medicine	-	38	10–20	13
Phy13	Μ	Hainaut	Pneumology Oncology	Ophthalmology course	40	None	14
Phy14	Μ	Hainaut	General medicine	Ophthalmology course	21	1–5	24
Phy15	Μ	Hainaut Brussels- Capital	Ophthalmology	Scientific conference	21	5–10	30
Phy16	W	Hainaut	Ophthalmology	-	45	No idea*	13
Phy17	Μ	Hainaut	Ophthalmology	-	23	100	18
Phy18	W	Hainaut	General medicine	_	5	1–5	7
Phy19	W	Hainaut	Pneumology	-	21	1–5	12
Phy20	W	Hainaut	Ophthalmology	Scientific conference	35	No idea*	20
Phy21	Μ	Hainaut	General medicine	-	5	1–5	16
Phy22	W	Hainaut	General medicine	-	6	1–5	7
Phy23	Μ	Hainaut	General medicine	-	40	5–10	11
Phy24	W	Hainaut	General medicine	-	35	5–10	17

*The physicians were unable to estimate the number of individuals with a visual impairment within their patients. M, man; W, woman.

were recorded directly in the application to facilitate the transcription phase. Prior to commencing the interview, researchers requested the physicians' agreement to record the interview and reminded them of the rules pertaining to confidentiality, appropriate processing and data retention. Throughout the interview, questions were asked topic by topic, and follow-up questions were employed only when necessary to expand the discourse.

Data analysis

Each interview was transcribed *verbatim* into a separate Word document by ZS. This phase lasted around 2 hours per interview and was carried out soon after the interviews to ensure that the main points made were retained. Next, researchers conducted a double-blind analysis for each interview based on the six phases of Braun and Clarke's thematic analysis²² using an abductive (deductive–inductive) approach. This stage was performed at the same time as the data collection phase using NVivo V.14 software. This iterative process was repeated until the theoretical data saturation was reached, which occurred after the 22nd interview. This is defined as the point at which no new data relevant to the research question appeared during the interview. Two additional interviews were conducted to confirm the theoretical data saturation, and it was determined that no further pertinent information was identified. At the end of the process, TM and ZS triangulated their data, that is, pooled the themes and sub-themes identified independently during their analyses.

A Cronbach's α coefficient was calculated using IBM SPSS V.29 Advanced software to check the reliability of the analyses between researchers. The interpretation of this coefficient was based on the criteria defined by George and Mallery, specifying that the reliability between analyses is acceptable for an α coefficient greater than 0.7.²³

Trustworthiness

This qualitative study was reported following the Standard for Reporting Qualitative Research checklist,²⁴ and the trustworthiness was assessed according to the criteria defined by Korstjens et al.²⁵ The credibility of the research was promoted by three different strategies: prolonged engagement, persistent observation and triangulation in data analysis (two different researchers). Indeed, the double-blind analysis of the data conducted, including the comparison of the databases, avoided any bias in interpretation or data selection and ensured consistency in the analysis. The transferability was promoted through a rich description of the study context. Finally, the dependability was promoted through strict adherence to the six phases of Braun and Clarke's thematic analysis.¹⁹ Additionally, the Cronbach's alpha coefficient was 0.979, indicating that the analyses between researchers were highly reliable.

RESULTS

The 24 semi-structured interviews facilitated a comprehensive understanding of the usual clinical practices employed by physicians when interacting with individuals living with a VI. Table 1 presents the sociodemographic data of the sample. The participants, representing eight distinct medical specialties, were 45.8% men and 54.2% women, with an average experience of 22.1 years (SD 11.8). The physicians in the study had between 1 and 100 patients with a VI, with the exception of one of them who had no patients with a VI. Furthermore, the majority of the physicians interviewed stated that they had not received any specific training in VI. Their knowledge is largely based on an ophthalmology course taken during their university studies. However, two ophthalmologists did mention their involvement in conferences pertaining to low vision. Another individual mentioned the existence of such events but indicated that time constraints precluded their attendance.

Three themes were addressed in the semi-structured interviews and divided into 14 sub-themes (table 2).

The themes are presented individually and illustrated with relevant *verbatim* excerpts (these excerpts were translated in English as they were selected).

Theme 1: consulting patients with a visual impairment

The physicians indicated that the patients with a VI they saw for consultations were typically accompanied

Table 2	Main themes and sub-themes resulting from the
analysis	

Themes (n=3)	Subthemes (n=14)				
Consulting	Supporting patients with a VI				
patients with a VI	Adaptations proposed by physicians				
	Communicating information to patients with a VI				
	Checking the overall environment				
Prescribing	Factors considered by physicians				
medications to	Dosage forms avoided in prescribing				
	Dosage forms preferred in prescribing				
	Treatment adaptations proposed by physicians				
	Identifying risks for patients with a VI				
Managing the	Human resources requested				
risks associated with medications	Therapeutic education				
for patients with	Recommended assistive products				
a VI	Advice given by physicians				
	Ideas for possible solutions proposed by physicians				

Themes and sub-themes in italics were created during the analysis. VI, visual impairment.

by a sighted individual. Some physicians indicated that consultations with these patients were conducted in a conventional manner, employing the same approach as with other patients and focusing on clinical signs to diagnose. Others, however, reported adapting their methods on multiple levels. Indeed, in terms of the environment, some physicians offer their assistance in physically guiding persons with a VI or removing any barriers that could cause them to fall. General practitioners may also offer home consultations if the person has too much difficulty getting around, or if they are in a nursing home. During the consultation itself, some physicians stated that they take more time to provide as much information as possible, so that patients can manage their medications more effectively at home.

Patients who are completely visually impaired due to a disease x or y who come for a consultation, generally come accompanied by a sighted person. IPhy3 (11 years' experience)

I have a visually impaired patient and so if you like I already take him by the arm, so there's a way of directing the patient which is quite particular so that he doesn't lose his head. I put the stools to one side, so he doesn't trip. IPhy15 (21 years' experience)

Furthermore, physicians reported that communication with their patients living with a VI is conducted through both written and oral means. The written documentation provided to patients typically pertains to their treatment. To facilitate rereading, physicians modify the size of their handwriting or print, use colour, create explanatory drawings or employ tables. It is important to note that even in cases of total blindness, physicians provide



Figure 1 Medications at risk for individuals living with a visual impairment. CNS, central nervous system; GLP-1, glucagon-like peptide-1; HAS-BLED, hypertension, abnormal renal/liver function, stroke, bleeding history or predisposition, labile INR, elderly, drugs/alcohol concomitantly; VI, visual impairment.

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written notes to the individual accompanying the patient, facilitating appropriate assistance. Additionally, information about the treatment is conveyed orally, with physicians reporting repeating explanations several times to assist the patient in assimilating them. They also suggest that patients record the discussion on their smartphone, allowing them to revisit the information if necessary and preventing any confusion.

I edit electronically using characters that are quite bold and large. IPhy2 (20 years' experience)

I've already met patients when I worked in hospital who typically knew how to use a smartphone, so we could make recordings. IPhy21 (5 years' experience)

Moreover, physicians stated to examine specific elements pertaining to the safety of persons with a VI during the consultation. To this end, physicians ensure that the patient and any accompanying person have fully assimilated the explanations given and understood any changes made to the treatment. To avoid any risk of error, particularly if the patient is not sufficiently independent, the physicians ensure that there is help at home to prepare (eg, a pill organiser) and/or administer the medication. Finally, they inquire about the safety of the patient's home to ensure that the risk of falling is minimised.

In other words, I want to make sure who... That's a question I often ask. Who prepares the medications? Who gives them? IPhy2 (20 years' experience)

Theme 2: prescribing medications to patients with a visual impairment

In response to a query regarding the factors considered when prescribing medications to patients living with a VI, some physicians indicated that no specific distinction is made for this patient population. The criteria considered are therefore general and include allergies, potential side effects, contraindications, drug interactions, the benefit/risk ratio, life expectancy, STOPP/START criteria (specific to geriatrics) and response to treatment. Conversely, other physicians discussed the consideration of factors more specific to individuals with a VI, including their disability, lifestyle, frailty, manual dexterity, and the presence of ocular pathologies (eg, glaucoma, diabetic retinopathy).

No, I don't think I make any difference in prescribing medication for the visually impaired compared to other patients, insofar as [...], the ones I have in mind are patients who had treatment before and we continue the treatments as they were before their sight problem. IPhy7 (19 years' experience)

Visual impairment is not homogeneous, it's something that gives you several different contraindications depending on the pathology found in the eye. IPhy12 (38 years' experience) The physicians addressed elements related to the medication itself. In particular, three principal factors were identified with respect to the selection of medications for patients with a VI.

First, the physicians proposed *adaptations to the treatment plan* with the objective of simplifying the process of taking the medications as much as possible. In certain cases, they attempt to minimise the number of pharmaceutical agents consumed by patients with polypharmacy. This is achieved by prioritising combinations of molecules or eliminating medications that are deemed superfluous. Other physicians favour treatments that only require administration once a day, to minimise the risk of errors associated with each dose. They also ensure consistency of treatment, prescribing the same specialty or generic medication consistently, to avoid confusion for patients, who often identify their medications by the colour or shape of the packaging. Furthermore, they avoid prescribing medications with similar names, to prevent any risk of confusion.

We try to aim for one dose a day rather than several doses a day, so these are always things to think about when prescribing. IPhy4 (23 years' experience)

When it comes to patients with polypharmacy, I avoid adding up the number of pills. And so, if there are medications that can combine several molecules in a single tablet, I'm going to opt for that to limit the number of doses per day and simplify things as much as possible. IPhy3 (11 years' experience)

The selection of dosage form was also discussed during the interviews. Physicians discussed dosage forms they considered to be preferable and which they advised against. For instance, effervescent tablets and sachets of powder are not advised, as individuals with a VI may encounter difficulties in verifying that the medication has fully dissolved in water. Similarly, physicians indicated that they refrain from prescribing liquid formulations, such as syrups and droppers, due to the potential complexity for patients with a VI to administer an accurate volume of liquid independently. It is not recommended that complex inhalation devices, such as single-dose dry powder inhalers, be used by these patients due to the difficulty in performing the required handling steps. Consequently, physicians tend to prefer to prescribe aerosols and advocate the utilisation of an inhalation chamber. Furthermore, shortacting forms are avoided due to the necessity of multiple doses per day, which increases the risk of dosing errors. In terms of dosage forms, tablets are undoubtedly the preferred option when prescribing to individuals living with a VI. Additionally, an ophthalmologist highlighted the importance of prescribing preservative-free eye drops, particularly in multidose bottles with special filters or in single-dose bottles. This approach is crucial to avoid potential long-term side effects associated with certain excipients.

Dosage forms with a very short duration of action that have to be given several times a day. So that's something I avoid. IPhy10 (20 years' experience) Syrups aren't easy...I prefer tablets to drops because all that isn't possible. IPhy24 (35 years' experience)

Ultimately, it is imperative to ascertain the potential *risks associated with medications* for people with a VI. The interviews revealed two principal categories of risk: those associated with ocular toxicity and those exacerbated by VI. The medication classes and molecules that were discussed by the physicians are presented in figure 1.

Theme 3: managing the risks associated with medications for patients with a visual impairment

Risk management by physicians is based on four main pillars.

Pillar 1: human resources required

The physicians interviewed indicated that they advise persons with a VI to use the services of various professionals (e.g., nurses, ergotherapists, pharmacists, orthoptists, etc.) to assist them with managing their disability, particularly with regard to the accurate and safe administration of their medications. These professionals communicate via letters or notes, often addressed to the general practitioner, who serves as the primary point of contact for patients. One participant also mentioned the use of a health diary as a means of facilitating communication between the patient, their relatives, the nurse and the physician.

I'm concerned about whether he's taking his medication correctly, I'm concerned about whether there's a nurse to administer his treatments if necessary. IPhy6 (19 years' experience)

Pillar 2: therapeutic education

Some physicians proposed the implementation of therapeutic education sessions for patients with a VI and their families. For instance, nurses could instruct patients in the recognition of tablets based on their shape, or in the calculation of the number of international units of insulin by referencing the sound of the pen when adjusting the dial. Similarly, physiotherapists could provide education on the appropriate utilisation of inhalation devices, particularly in terms of synchronising breathing with the triggering of the device.

If the patient is on his own all the time, education can be provided by the education nurses, because on the insulin pens, there are clicks...when you turn the little knob to set the units, there are also clicks that can be heard, which correspond to the units. So that's where we're trying to educate people. IPhy10 (20 years' experience)

Pillar 3: recommended assistive products

Some physicians reported referring individuals with a VI to organisations that specialise in low vision. These organisations can provide a range of assistive products, including magnifiers, remote magnifiers, audiobooks

and audio pill organisers, which can assist patients in managing and taking their medications.

The associations help them to read more easily. They offer magnifying glasses and computers so that they can continue to read. IPhy12 (38 years' experience)

Pillar 4: advice given by physicians

Physicians offer counsel and guidance on the optimal means of managing the risks associated with medications. First, physicians stated that they provide warnings to patients with a VI regarding specific aspects of the treatment that may require attention. Additionally, they offer practical guidance to assist patients in administering their treatment correctly, such as using fixed-time alarms on their mobile phones to remind them of their medication schedule. When prescribing medications with the potential to cause ocular toxicity, physicians consult with an ophthalmologist and recommend that patients with a VI undergo regular ophthalmological examinations.

If a patient is taking Amiodarone or any other drug that has a toxic effect on one or other organ, in this case the eyes, we obviously recommend regular ophthalmological check-ups and give the necessary advice. IPhy1 (29 years' experience)

Finally, the physicians presented potential solutions that, although not currently employed in their clinical practice, could facilitate the treatment of patients living with a VI. Some participants emphasised the dearth of adapted material for these individuals, expressing a desire to provide documentation in Braille. The integration of QR codes on medication packaging was proposed as a means of providing patients with access to information via a mobile application. Furthermore, the potential use of a medication reminder application with voice alerts was also discussed. One physician proposed the addition of distinctive aromas when prescribing magistral preparations, thereby enabling patients to associate a smell with a medication. Additionally, a suggestion was made to modify the corners of medication blisters in a manner that would facilitate tactile identification. It was also proposed that prescriptions be amended to specify that measuring pipettes supplied with liquid preparations must have a precise volume, thus allowing patients to simply take the liquid without having to measure the volume.

If you have two different creams prepared in magistral form, all you have to do is ask the pharmacist to use different smells, and the patient can recognise the magistral form. IPhy14 (21 years' experience)

The elements pertaining to these three themes are presented in summary form in figure 2.

DISCUSSION

This qualitative study revealed that physicians lack comprehensive knowledge regarding VI. While many responses



- Reminder to take via voice-activated mobile application
- 3D printing of Braille documents

Figure 2 Care process for individuals living with a visual impairment. B/R, benefit/risk; LV, low vision; STOPP/START, screening tool of older person's prescriptions/ screening tool to alert to right treatment; VI, visual impairment.

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were provided concerning the general management of individuals living with a VI, they were not consistently cited by all the physicians interviewed, indicating inconsistencies in their understanding and practices. These discrepancies may be associated with an overall deficiency in training among physicians in the management of these individuals. None of the interviewed physicians mentioned the availability of continuing training in this area. Indeed, according to Rotoli et al,¹² there are a few universities that have incorporated caring for people with disabilities in their programme. It is therefore important to recognise that a lack of knowledge regarding VI is not solely a result of a lack of interest among physicians. Rather, it is also a consequence of the limited scope of in-service training and a lack of awareness about the issue among physicians. These same shortcomings were identified in other studies conducted with healthcare providers. For instance, a study of community pharmacists highlighted the lack of awareness of VI, as well as training and recommendations on the management of these people in pharmacies.²⁶ Another study of dental practitioners showed that 83.3% of respondents would like hands-on experience in treating patients with disabilities during their university education.² In a similar vein, a study by Karl *et al*²⁷ revealed that nursing students identified deficiencies in their training and support. These students articulated a requirement for enhanced guidance and training to address the particular challenges associated with caring for individuals with disabilities. While the theoretical underpinnings of disability were addressed, the practical training component was found to be inadequate in preparing the students for the actual demands of caring for individuals with disabilities within a clinical setting. Focus groups conducted by Binder-Olibrowska et al^{11} and O'Day et al^{15} with individuals with a VI also emphasised the absence of adequate training and the necessity for specific training for healthcare professionals. Consequently, online resources and awareness-raising through university courses on the inclusion of individuals with disabilities may prove to be efficacious strategies for enhancing the knowledge of healthcare providers.²⁰ This training programme should include practical guidance on effective interaction techniques with such people, alongside the adaptation of care procedures and the cultivation of a more profound comprehension of the distinctive challenges confronting these individuals.¹¹¹⁴

The communication and accessibility of medical information are of particular importance for individuals with a VI. In this study, physicians indicated that they use oral and written communication of information, including large print or diagrams. The utilisation of assistive technology and Braille labels was also mentioned by physicians. These results are consistent with those found in the literature. Indeed, Heydarian *et al*¹⁴ have previously asserted that the provision of information in accessible formats, such as audio, Braille or adapted digital versions, is necessary for individuals to access their medical records and understand treatments. Other studies have shown that healthcare providers need to adopt more detailed and clear communication, offering verbal explanations during

consultations and being more proactive in responding to patients' specific needs.^{11 15} With regard to proactivity, some physicians reported offering physical guidance and removing obstacles from the path themselves. In particular, O'Day *et al*¹⁵ highlighted the importance of physical guidance for individuals with a VI, especially in environments where physical accessibility is limited. It is also important to consider the individual characteristics of each person and to be mindful of their needs,¹⁹ as the physicians interviewed have already demonstrated. This necessitates a comprehensive inquiry into the aetiology of the VI, with the objective of identifying any underlying pathology that could potentially influence the selection of an appropriate medication, considering existing contraindications. O'Day et al¹⁵ emphasised that the healthcare professional must take the time to understand the individual needs of people with a VI, adopting an active listening style and adapting care to each person's specific preferences. Another essential element to consider is that of inclusion. Becker *et al*¹⁶ conducted a systematic review of the benefits of user-centred design (UCD) in healthcare for people with a VI. UCD is predicated on the principles of centring the needs, preferences and capabilities of users at the core of the design process. In the context of healthcare, this entails the adaptation of services, devices and medical environments for individuals with a VI, with the objective of enhancing their experience. This approach involves the active involvement of users in every stage of the process, from research to implementation, with the objective of creating solutions that are more accessible, inclusive and adapted to the specific needs of these individuals. Moreover, the physicians surveyed indicated that multidisciplinary collaboration was a crucial aspect of effectively managing individuals with VI. To facilitate communication with other health professionals, they reported using various methods, including letters, notes and health booklets. However, none of the physicians mentioned the use of the Electronic Patient Record (EPR). Despite the EPR's ability to securely store patients' health information on secure servers, its implementation could potentially enhance the precision of patient monitoring across different clinicians.

Furthermore, it is important to consider the dosage form of the prescribed medication and the method of administration (self-administration or assistance from a third party) for persons with a VI, to provide the necessary solutions in case of necessity (eg, the presence of a nurse). In particular, with respect to the utilisation of insulin pens in patients with VI who are unable to read the dose scale, a prevalent methodology, as reported by the physicians interviewed, is to enumerate the 'clicks' or the auditory signal emitted on setting the dose. Asakura and Seino²⁸ cite the NovoPen 3 and FlexPen as examples of pens that offer superior auditory confirmation of dose setting due to their elevated sound level. This renders them the preferred option for patients with VI who use sound as a cue. Conversely, tactile feedback of dose setting is also crucial for these individuals. Therefore, auditory and tactile confirmation are essential elements to consider when prescribing insulin pens to patients living with a VI.²⁹ It would be prudent to develop insulin pens that are specifically adapted for these patients in the future, particularly given that a significant proportion of people with a VI are patients with diabetes, many of whom are affected by diabetic retinopathy, which can lead to blindness.³⁰ To achieve this, it is essential that therapeutic patient education (TPE), as cited by physicians for risk management purposes, is provided. The objective of TPE is to facilitate patient comprehension of their diseases and equip them with the tools to gain knowledge and skills.³¹ This facilitates the ability of patients to make well-informed decisions, effectively manage their symptoms and prevent potential complications.³¹ Moreover, TPE facilitates the formation of an efficacious therapeutic alliance between the patient and their caregivers, wherein the patient is regarded as an active participant and decision-maker in their own care.^{32 33} This reinforces the collaborative approach and improves attitudes and practices, self-efficacy and adherence to medication.³³ A number of studies have demonstrated the impact of TPE as a clinical solution for improving biomedical outcomes in people with metabolic disorders.^{34–38} A meta-analysis by Correia *et al*^{β 1} also demonstrated the effectiveness of TPE delivered by paramedical professionals (eg, nurses) or physicians in patients with diabetes and obese patients, suggesting its larger implementation in healthcare.

It is also imperative that physicians are cognizant of the potential associated with medications, particularly the risks of ocular toxicity, such as those linked to corticosteroids, which can precipitate cataracts and glaucoma.³⁹ They must also be mindful of the heightened risks associated with VI, such as the increased likelihood of falls,⁴⁰ and thus exercise caution when prescribing medications. Figure 1, which lists the classes of medications and molecules at risk of ocular toxicity mentioned by physicians, demonstrates that although the majority of these medications do indeed have ocular effects, some were cited incorrectly. Despite the absence of any mention of ocular toxicity associated with calcitriol in the medical literature,⁴¹ one physician cited it. Similarly, while rifampicin was mentioned, the only ocular condition reported in connection with it was tear discolouration.⁴² Additionally, the molecules cited represent a mere fraction of the potentially toxic medications for the eyes. These findings underscore a dearth of awareness among physicians regarding the ocular effects of medications, which may result in the inappropriate prescription of medications that could exacerbate VI of individuals.

Strengths and weaknesses

TM conducted the semi-structured interviews with ZS, a student in the final year of the Pharmaceutical Sciences course. Prior to the study, ZS received an introduction to qualitative research from TM to familiarise herself with the key concepts. It is therefore possible that the researchers' knowledge regarding medications influenced data collection. There was a potential bias in the recruitment of participants because only those interested in the issue agreed to take part. Furthermore, despite the fact that more than 100 physicians were contacted throughout the Walloon region, the results are confined to physicians practising in the provinces of Hainaut and the Brussels-Capital region. Consequently, the findings cannot be extrapolated to encompass all French-speaking physicians in Wallonia. The study did not include all medical specialities. The researchers sought to recruit diabetologists, pulmonologists and ophthalmologists to get information on specific dosage forms. Geriatricians and nephrologists were included in the study due to their greater likelihood of treating patients living with a VI. This targeting approach also contributes to the non-representativeness of the sample. Additionally, the majority of physicians in the study sample had patients with a VI, and therefore had the necessary expertise regarding the problem. Indeed, a study conducted among nursing students revealed that interaction with individuals with a VI fostered the development of a more profound understanding of the challenges confronting these individuals, thereby facilitating the enhancement of their professional competencies, particularly in the domains of communication and the adaptation of care.²⁷ However, in qualitative research, the concept of dissimilar case (participant who did not meet all the inclusion criteria for the study) can be integrated into the methodology. This dissimilar case was represented by a physician who had never treated a person with a VI. The additional data provided by this participant meant that theoretical saturation had not vet been reached, and that subsequent interviews would yield further insights.

It is also noteworthy that a substantial number of interviews were conducted due to the diversity of the sample. In general, when the target population is homogeneous, the theoretical saturation of the data is reached more quickly because the responses tend to be similar. Conversely, when the population under study is heterogeneous, the saturation process typically requires a longer duration.⁴³ In this case, the heterogeneity of the sample can be attributed to the diverse medical specialties represented by the surveyed physicians. Data saturation was achieved with one physician and corroborated by two additional interviews with physicians. This could be perceived as a potential bias in the saturation process. However, in each specialty, the final interview yielded fewer novel data than the preceding interviews, which suggests a gradual saturation of the data for each specialty.

In terms of the analysis, only ZS was tasked with transcribing the semi-structured interviews. Consequently, the concepts elicited during the interviews were less readily accessible to TM, as she was not involved in the transcription process. This resulted in a more labourious and timeconsuming data analysis phase. Nevertheless, this bias was mitigated by two factors. First, the transcriptions were made directly after the interviews had been conducted, and the analysis was carried out concurrently with the data collection phase. Second, the six phases of the thematic analysis were strictly adhered to, with the first phase concerning the impregnation of the data, which generally required multiple rereadings. Finally, it should be noted that the double-blind analysis of the data was a significant strength of the methodology, as it facilitated objective interpretation of the results, limiting personal bias in the analysis.²⁵ Cronbach's alpha exceeded 0.7, indicating the reliability of the analyses conducted by researchers.

Future research

Further research is required to expand on the results obtained in this study. As a result, it is recommended that future research endeavours seek to incorporate a more diverse and representative sample of physicians from a range of geographical locations and specialties, thereby ensuring the attainment of comprehensive insights. It would be worthwhile to study each medical specialty separately until the theoretical data saturation. This would allow for the highlighting of specific features and for the cross-referencing of the data. This approach would facilitate the development of a comprehensive framework to guide physicians in the care of individuals living with a VI, emphasising the distinctive characteristics inherent to each medical specialty. Additionally, the development of a prospective longitudinal study to assess the long-term impact of specific interventions for individuals with a VI would be a valuable endeavour. To achieve this objective, it will be imperative to categorise individuals with a VI into two distinct groups: the first group will receive specific interventions, while the second group will not receive any interventions. These people should be observed over an extended period, during which various data points relating to therapeutic adherence, medication errors, hospitalisations and other relevant metrics could be collected. This would facilitate a comprehensive comparative analysis between the two groups.

CONCLUSION

This study revealed a dearth of awareness among physicians regarding the issue of VI, coupled with a paucity of academic and continuing training opportunities. Furthermore, the study revealed a lack of harmonisation and recommendations for the specific management of individuals living with a VI. During the interviews, the physicians indicated that patients with a VI were typically accompanied by a third party, which facilitated their identification. They perceived that the care provided to these patients remained largely traditional. All the physicians interviewed stated that they did not consider the specific aspects of VI that are crucial for adapting their care. They also highlighted difficulties in communicating written information when patients come in consultation without a third party. Moreover, they expressed concerns about the adequacy of their knowledge regarding the medications that may pose particular risks for individuals with a VI. However, there is a paucity of data indicating a higher

prevalence of medication-related problems in these individuals compared with the general population. It would be prudent to conduct comprehensive studies to ascertain whether there is indeed a higher prevalence in these patients. A future investigation would be to examine hospitalisations due to medications and assess the role of VI in these incidents.

In view of the multiplicity of factors that require consideration, it would be prudent to implement guidelines that assist physicians in evaluating and overseeing the potential problems associated with medications in patients with VI. Additionally, it may be beneficial to develop training programmes tailored to physicians, emphasising the safe and effective prescribing of medications and the management of related risks. This approach would facilitate a more structured approach to care and enable physicians to adapt their clinical practices to meet the unique needs of these individuals, thereby ensuring optimal medical care.

Acknowledgements The authors would like to thank the physicians for their commitment and participation in the study, and the Association Les Amis des Aveugles for its advice in carrying out the study.

Contributors TM: conceptualisation, formal analysis, investigation, methodology, visualisation, writing – original draft. ZS: formal analysis, investigation, writing – original draft. JD: methodology, writing – review and editing. JPS: conceptualisation, writing – review and editing. SP: conceptualisation, supervision, validation, writing – review and editing. TM is the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval The study protocol was approved on 8 May 2023 by the Ethics Committee of the Faculty of Psychology and Education of University of Mons (file number: UMONS-2023.04.25-MT-013). All participants provided informed consent. During transcription, all data were pseudonymised according to the following convention: the letters IPhy, standing for 'Interview Physician', were associated with a number assigned in the order in which the semi-structured interviews were conducted. Finally, all data will be stored securely for a period of 10 years on the encrypted computer system at the Unit of Clinical Pharmacy. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

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