Medications for Individuals With Visual Impairment: Development and Content Assessment of a Medication Decision Support Tool

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Objective: Many medications can cause ocular adverse drug events that interfere with visual function. In individuals with pre-existing visual impairment, this necessitates heightened vigilance to ensure safe and appropriate management. In addition, some pharmaceutical dosage forms are challenging for these patients to utilise. The objective was to develop a medication decision support tool and assess its content to assist in the prescription and dispensation of medications for individuals living with visual impairment.

Methods: An analysis of the Summary of Product Characteristics and a literature search were performed to identify high-risk medications and complex dosage forms for individuals with visual impairment. A medication decision support tool was created, and a Delphi survey for consensus building was conducted by a French-speaking European panel of experts. The experts were invited to indicate their degree of agreement on a Likert scale and descriptive statistics were produced using IBM SPSS software. This process was repeated until a consensus was reached between all experts.

Results: Initially, 744 medications were included in the tool, that is, 40.5% of the medications marketed in Belgium. The tool was divided into 2 parts: Part 1 is related to high-risk medications while Part 2 is focused to pharmaceutical dosage forms. Four rounds of the Delphi method were necessary to the panel of 9 experts to evaluate the tool. Ultimately, 836 compounds were included in the tool, that is, 45.4% of the medications marketed in Belgium.

Conclusion: The consensus process ensured a consolidated and relevant tool for disseminating high-quality content to Belgian community pharmacists and physicians. Although the analysis focused on medications marketed in Belgium, it is evident that many of these are also utilized in other European countries, thereby indicating that the approach may hold relevance beyond the Belgian context.

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The assessment study was conducted anonymously after experts had received an information letter.

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Many medications are known to cause ocular adverse drug events (ADEs), largely due to systemic absorption that affects various organs, including the eyes.[1–5] Miguel et al[1] identified amiodarone, sildenafil, hydroxychloroquine, and bisphosphonates as commonly implicated molecules. While corneal deposits from amiodarone are usually benign and reversible,[6] its association with optic neuropathy can result in irreversible blindness.[7–9] Sildenafil has been linked to retinal toxicity, including dyschromatopsia, and is associated with optic neuropathy, central serous chorioretinopathy, and retinal artery occlusion.[7,10–13] Ahmad and Mehta[3] also reported multiple drug classes responsible for ocular ADE, notably anticholinergics and corticosteroids. Anticholinergics can trigger dry eyes and acute glaucoma in anatomically susceptible individuals,[14–16] while corticosteroids are associated with cataracts, central serous chorioretinopathy, and elevated intraocular pressure, increasing the risk of glaucoma.[14,17,18] Lambert et al[4] conducted a meta-analysis on isotretinoin, encompassing 53 studies that primarily reported eye dryness as the most frequent ocular ADE. A narrative review of 41 case reports also revealed more severe outcomes, including vision changes. Similarly, Trad et al[5] documented various instances of drug-induced ocular inflammation, such as keratopathy and optic necrosis, sometimes mimicking exacerbations of underlying eye disease. Phillippa et al,[19] in a UK-based study showed that certain medications may lead to either transient or permanent visual impairment (VI).

Although these ADE are to be expected in all patients, particular attention should be paid to those living with VI, which is characterized by a diminution in various visual functions or a functional incapacity to perform daily living activities (eg, to take medications).[20,21] Indeed, these individuals have an increased risk of domestic accidents[22] and fractures following a fall.[23,24] In a study by Kelly,[25] 40% of older people with VI reported frequent falls, which often resulted in injury. Another study carried out in the United States among adults over the age of 65 showed that, in 2014, 46.7% of participants with VI had fallen in the previous 12 months, compared with 27.7% of people with normal vision.[26] In addition, the management of certain pharmaceutical dosage forms can present a heightened level of complexity for people with VI. These individuals are

unable to see the graduations on measuring pipettes, the small marks on inhalation devices, or count the drops of liquid or injectable forms and eye drops.[27,28] They may also experience difficulties with using topical forms[29] and opening certain medication packs.[30]

In this context, the objective of this study was to develop a medication decision support tool and to reach consensus on its content, to assist in the prescription and dispensation of medications for individuals living with VI, with the aim of enhancing the safety of their treatment. The use of the tool in clinical practice was not assessed.

METHODS

Study Design

A comprehensive analysis of the Summaries of Product Characteristics (SPC) available on the website of the Belgian Center for Pharmacotherapeutic Information (BCPI), as well as a comprehensive literature search, were conducted to facilitate the development of a tool, named VISUAL-Medications (Visual Impairment: Safe Use of All-Medications) (Fig. 1).

The initial selection of SPC was made on the basis of 5 exclusion criteria that had been defined *a priori*: (I) following classes (antitumor agents, vaccines, and homeopathy), (II) molecules for hospital use, (III) duplicates (same molecule with same route of administration), (IV) associations where each molecule exists on its own, and (V) molecules whose specialities have been withdrawn from the market. Subsequently, a reading of predefined sections ("Contraindications", "Adverse reactions", "Special warnings and precautions for use") and a keyword check were performed. Following the extraction of pertinent data, a sorting was made by the deletion of ocular ADEs that were deemed to be benign (eg, eye pain and dry eyes) and due solely to overdose. The literature search was conducted using the PubMed database, guided by predefined search equations. The initial screening of articles was conducted on the basis of their titles and abstracts, with the objective of assessing their relevance. Subsequently, the full-text articles were subjected to meticulous review to extract the relevant data and synthetized them.

The tool comprises 2 parts. The first part shows molecules with ocular ADE, contraindications and increased risks (fall, fracture following a fall, and hemorrhage following a fall), and shows guidelines for minimizing these risks. This part is based on the Anatomical Therapeutic Chemical (ATC) classification system, which is used internationally. The second part shows pharmaceutical dosage forms that may be more complex to use for people with VI and guidelines for making them easier to administer, as well as excipients that may cause ocular ADE. This part was created using standard terms of the European Directorate for the Quality of Medicines and Health Care (EDQM), and is classified according to the site of administration. The employment of color coding and symbols has been used to facilitate enhanced readability and comprehension (Fig. 2).

The VISUAL-medications tool was then assessed by an interdisciplinary European panel of experts by the Delphi method, a technique frequently used to obtain a consensus about a given subject without direct communication.[31,32] The Delphi method is also well-established for the development of guidelines in the pharmaceutical field.[33] The present study was reported in accordance with the guidance on Conducting and REporting DElphi Studies (CREDES).[34]

Questionnaire

The various elements to be assessed were encoded on the LimeSurvey platform using a questionnaire (Table 1). The structure of each question was such that it contained only a single idea, with the objective being to facilitate the Delphi assessment process.

Expert Selection Criteria and Recruitment

The selection of experts was based on the skills necessary to assess the tool content. The experts who participated in the study were required to possess extensive knowledge in the domains of pharmaceutical care, pharmaceutical formulation, pharmacology, and ophthalmology. For the present study, it was therefore decided to include a panel of French-speaking pharmacists and physicians of European standard working at a university or a university hospital center. The involvement of university experts suggests a degree of experience in the domain of scientific research, which may positively impact the caliber of the expertise during assessment. All experts who had one or more conflicts of interest were excluded from the study.

The experts were recruited on a voluntary basis in Belgium, France, and Switzerland, and were contacted by e-mail. An information letter was subsequently dispatched electronically to the experts who had indicated their interest in participating in the study.

Data Collection

The link to the questionnaire and the original version of the tool were dispatched separately to each expert by e-mail.[35,36] Documentation on the study process and a glossary of complex ophthalmological terms were also transmitted to the experts. A note was issued to provide clarification on the purpose of the consensus process and the stipulated deadline for its completion. This was done to ensure that the experts could provide optimal responses.[37] The experts were sent weekly reminders to complete the questionnaire. They were invited to indicate their level of agreement or relevance on a 2, 4 or 5-points Likert scale[38] and to provide a justification for their choices so that the tool could be modified in the most appropriate way.[39] The description of the Likert scales is the following:

Two-point Likert scale: 1 = not agree and 2 = agree.

Four-point Likert scale: 1 = not agree/relevant, 2 = agree/relevant with major changes, 3 = agree/relevant with minor changes, and 4 = agree/relevant without changes (relevance was requested for the explanation of masked effects and increased risks and for the recommendations).

Five-point Likert scale: 1 = not agree, 2 = agree with major changes, 3 = agree with minor changes, 4 = agree without changes, and 5 = not competent.

Only one completion per round was permitted. At the conclusion of each Delphi round, a thorough analysis of the results was conducted, any modifications necessary were implemented, and a new questionnaire was encoded and disseminated to the experts. The results of the preceding rounds were also communicated to the experts.[35] This iterative process continued until a consensus was reached among the experts on all the elements of the tool requiring an agreement.[36,40,41]

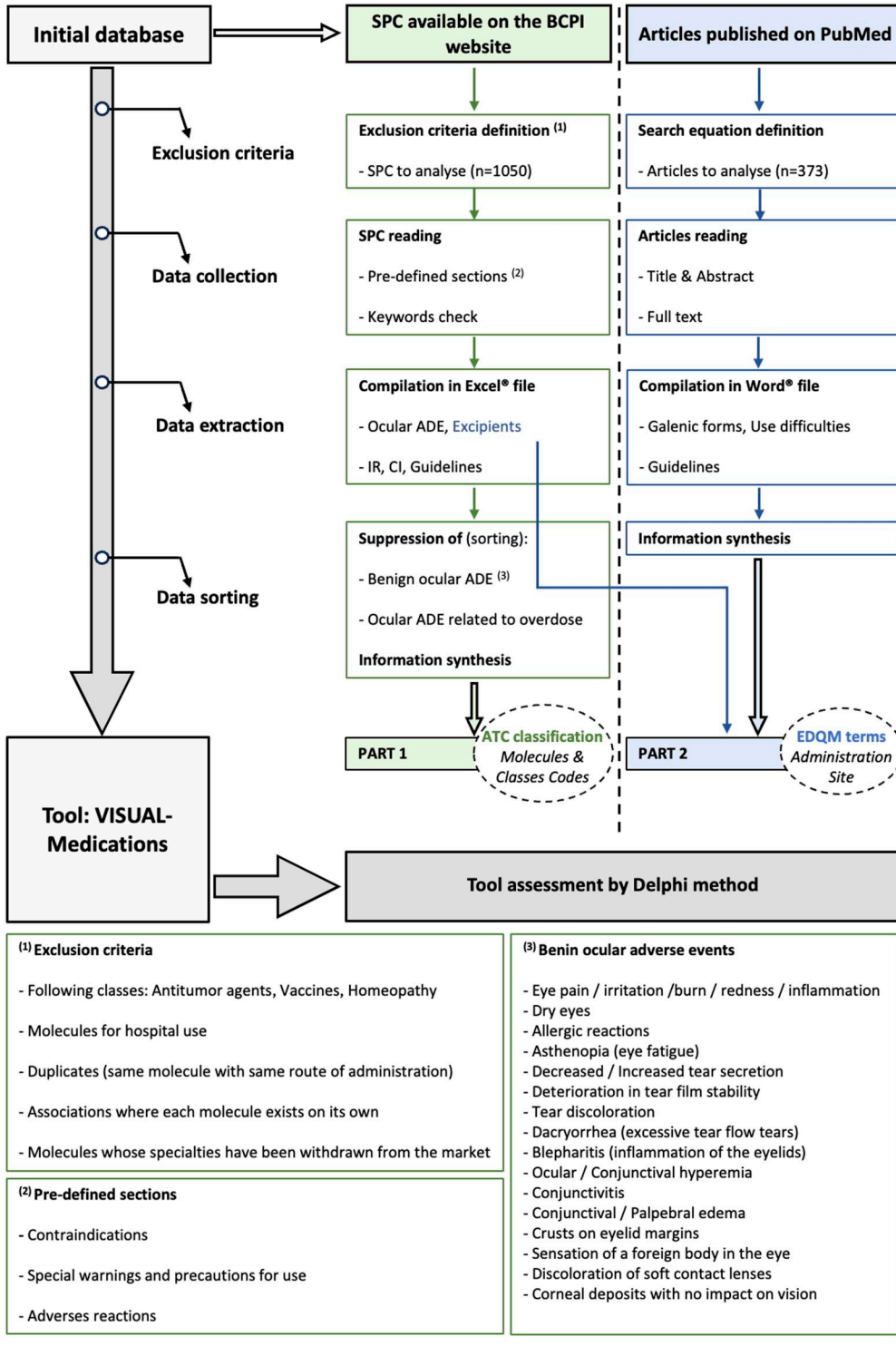

FIGURE 1. Detailed process for the creation of the tool. ADE indicates adverse drug event; ATC, anatomic, therapeutic, and chemical; BPCI, Belgian Center of Pharmacotherapeutic Information; CI, contraindication; EDQM, European Directorate for the Quality of Medicines and Health Care; IR, increased risk; SPC, Summary of Product Characteristic.

	Class effects (Part 1) or Form effects (Part 2)
Orange Text	Increased risks
Red Text	Ocular ADE related to overdose
Yellow Text	Minor ocular ADE
Green Text	Molecules/Associations
Purple Text	Excipients
	Ocular ADE related to misuse
CI	Contraindication
	Ophthalmological follow-up
	Initiation of treatment or another follow-up
	Dose reduction/Stop treatment/Abstention
	Caution/Advance/Verification/Evaluation

FIGURE 2. Color coding and symbols are used for the creation of the tool. ADE indicates adverse drug event.

Data Analysis

The median score was calculated for each item based on the numerical ratings provided by all participating experts, as the median is considered an appropriate measure of central tendency for ordinal data. All analyses were performed using IBM SPSS 29 Advanced software. Furthermore, an agreement rate was calculated for each item to quantify the level of consensus among experts. The agreement rate was defined as the proportion of experts assigning the same score to an item, divided by the total number of experts involved, and multiplied by 100. Decision rules we applied by combining the median score and the agreement rate as follows:
An agreement rate ≥ 80% for score 1 (not agree) resulted in item deletion.
An agreement rate ≥ 80% for score 4 (agree without modifications) resulted in a fully accepted item.
An agreement rate < for score 4 (agree without modifications)+a median score ≥2 resulted in tool modification based on experts' comments.

The 80% threshold for consensus was chosen in accordance with commonly accepted standards in Delphi methodology.[37,40] Qualitative experts' comments were analyzed using an iterative content review process. All expert feedback was examined, compared, and synthesized to identify recurring suggestions or points of disagreement, which were then used to guide tool modification.

Items without agreement or that underwent modification were resubmitted for evaluation in subsequent Delphi rounds.

Ethical Considerations

Upon completion of the questionnaire by the experts, the data remained nonanonymized for researchers, who were able to contact the experts by telephone in the event of any persisting misunderstandings despite the comments that had been written.[42] However, the e-mails were sent separately to each expert so that they could remain anonymous to each other. Upon analysis of the results, each expert was assigned a pseudonym consisting of a letter and a number, for example, E1 signifying "Expert 1." This enabled the results of previous rounds to be communicated pseudonymously.

RESULTS

The website of the BPCI comprised a total of 1851 molecules and associations at the time of the study. Following the application of the defined exclusion criteria, a total of 1050 SPCs were analyzed, yielding a total of 1050 molecules and associations. Of these, 744 molecules and associations were incorporated into the tool (Fig. 3), constituting 40.5% of the molecules and associations.

The Delphi assessment process was conducted over a period of 7 months (from February to August 2024). The initial panel for this study comprised a group of 9 experts, with a sex distribution of 56% male and 44% female, and an experience from 3 to 28 years, with an average of (15 ± 11) years. Table 2 presents the sociodemographic characteristics of the sample.

Four rounds of the Delphi method were necessary to reach a consensus on the VISUAL-Medications tool. Figures 3 and 4 provide a detailed description of the Delphi assessment process.

Round 1

The 9 experts who were contacted completed the questionnaire in full. They agreed on 5 out of 7 elements for exclusion criteria. Essentially, the experts recommended the incorporation of vaccines and associations where each molecule exists on its own in the tool. Consequently, a further analysis of vaccines and associations for which the molecule alone exists was conducted, employing the same method as previously described. The inclusion of ocular ADE related exclusively in cases of overdose, as well as benign ocular ADE was deemed pertinent by the experts, except for asthenopia (eye fatigue). These effects have been incorporated into a category designated "Ocular events of lesser impact." Several changes were also requested about

TABLE 1. Categories of Tool Elements to be Assessed

Categories	Item number	Assessment types
Assessment of the exclusion criteria used to design the tool	7	AD-LS 2 points
Assessment of the sorting criteria	1	AD-LS 2 points
Ocular ADE related to overdose	1	AD-LS 5 points*
Ocular ADE deemed benign		
Assessment of major ocular ADE included in the tool	7	AD-LS 5 points*
Assessment of a guideline from Part 1 of the tool	1	R-LS 4 points
Assessment of increased risk in Part 1 of the tool	3	R-LS 4 points
Increased risks explanations	3	AD-LS 4 points
Molecules and associations involved		
Assessment of guidelines from Part 2 of the tool	20	R-LS 4 points
Global assessment of the tool	6	AD-LS 4 points

*A "not competent" option was left for experts with a lesser knowledge of signs, symptoms, and ocular pathologies. AD indicates agreement degree; ADE, adverse drug event; LS, Likert scale; R, relevance.

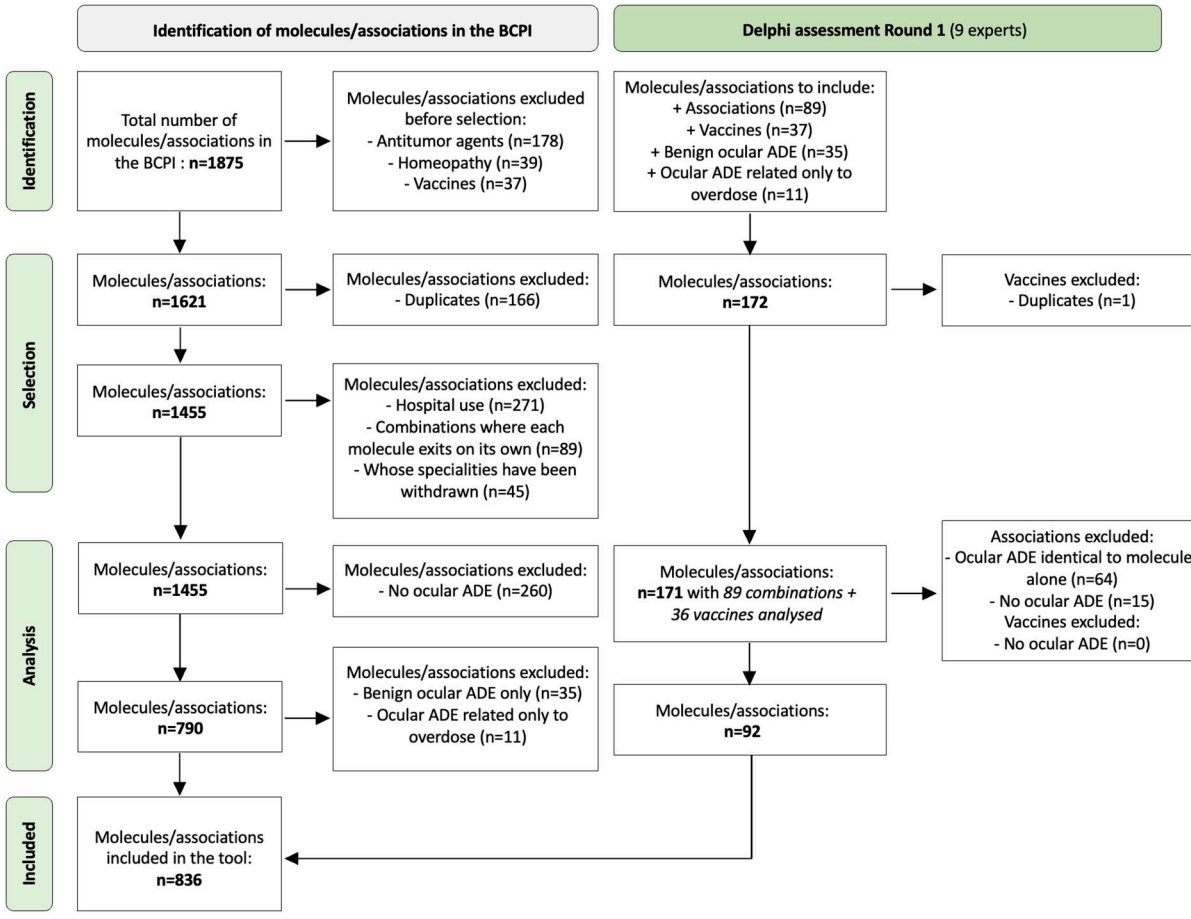

FIGURE 3. Assessment process for the VISUAL-medications tool using the Delphi method for exclusion and sorting criteria. BCPI indicates Belgian Center of Pharmacotherapeutic Information.

the precision of ophthalmological terms (regroup decrease in lacrimal secretion with dry eye and ocular hyperemia with ocular redness). A total of 92 additional molecules/associations were incorporated into the tool after round 1. Furthermore, the assessment process revealed that 6 out of 7 categories of major ocular ADE included in the tool were endorsed by the experts. It was requested that clarifications be provided on certain ophthalmological terms, including "retinal lesions," "worsening of diabetic cataracts," and "worsening of diabetic retinopathy." The guideline in part 1 of the tool was also modified based on the experts' comments. Two increased risks were deemed relevant (falls and hemorrhage following a fall). The other increased risk (fracture following a fall) has undergone modifications, particularly with a view to elucidating their explanations. The lists of molecules/associations associated with these 3 increased risks have been revised based on the experts' comments. Regarding the pharmaceutical dosage forms section, the experts agreed on 9 guidelines, while 4 guidelines with agreement and 7 guidelines without agreement were modified based on the experts' comments. The construction of the tables based on the ATC classification and EDQM standard terms was deemed relevant by the experts for the overall assessment of the tool. The remaining elements, namely color coding, comprehensibility, and ease of use, required revision.

TABLE 2. Sociodemographic Characteristics of the Sample

Expert	Sex	Studies	Profession	Country
E1	M	Medicine	Ophthalmology professor	France
E2	W	Pharmacy	Clinical pharmacist	Switzerland
E3	M	Medicine	Clinical pharmacology professor	Switzerland
E4	W	Pharmacy	Pharmaceutical practices professor	Belgium
E5	M	Medicine	Ophthalmology professor	Belgium
E6	M	Pharmacy	Clinical pharmacist	France
E7	W	Pharmacy	Pharmaceutical care professor	Belgium
E8	W	Medicine	Ophthalmology professor	Belgium
E9	M	Pharmacy	Pharmaceutical formulation professor	Belgium

M indicates man; W, woman.

Round 2

The 9 experts who were contacted completed the questionnaire in full. They agreed on modifications to the exclusion criteria and the ocular ADE related to overdose incorporated within the tool. Further elucidation was

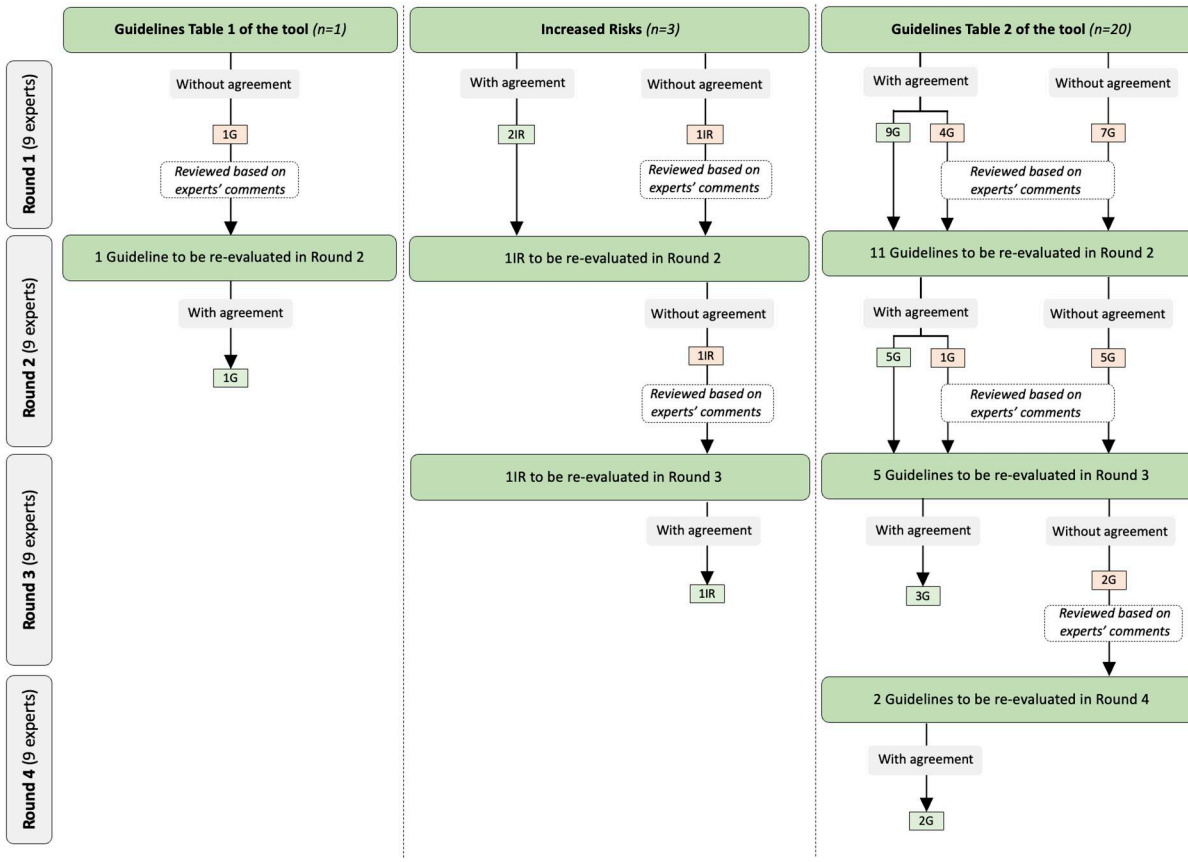

FIGURE 4. Assessment process for the VISUAL-medications tool using the Delphi method for guidelines and increased risks. G indicates guideline; IR, increased risk.

sought regarding the "ocular events of lesser impact" category, which was appended to the previous round. The experts recommended that this category be designated "Minor ocular ADE" and that the term "lens discolouration" be substituted for "lens colouration." "Ocular inflammation" was removed from the minor ocular ADE category, as this reaction can potentially lead to blindness. The experts also agreed on modifications regarding major ocular ADE and the guideline in part 1 of the tool, as well as one increased risk (fracture following a fall). Furthermore, they agreed on the list of molecules/associations associated with an increased risk (falls). Regarding pharmaceutical dosage forms, they agreed on 5 guidelines, while one guideline with agreement and 5 guidelines without agreement were modified based on the experts' comments. The remaining elements, namely color coding, comprehension, and ease of use, required further consideration.

Round 3

The 9 experts who were contacted completed the questionnaire in full. The experts agreed on the modifications regarding minor ocular ADE. The validity of all elements relating to increased risks was confirmed by the experts. The experts agreed on 3 guidelines regarding pharmaceutical dosage forms, while 2 were modified based on their comments. They also agreed remaining elements, namely color coding, comprehension, and ease of use.

Round 4

The 9 experts who were contacted completed the questionnaire in full. The experts agreed on the final 2 guidelines in part 2 of the tool.

Following assessment using the Delphi method, 836 molecules and associations were included in the tool (Fig. 3), representing 45.4% of the molecules and associations available on the website of the BPCI. The tool incorporated 3 increased risks:

Fall: People with VI are predisposed to a heightened risk of falling, owing to a diminution in postural stability, which can result in an imbalance, impaired contrast sensitivity, and diminished depth perception. These individuals have been observed to experience greater difficulty in the identification of obstacles and the estimation of distance.

Fracture following a fall: People with VI have an increased risk of fracture due to a greater likelihood of falling, the use of medications that may induce atypical stress fractures (eg, bisphosphonates) or loss of bone mass (eg, corticosteroids) and/or osteoporosis already present.

Hemorrhage following a fall: People with VI have a greater risk of hemorrhage due to an increased probability of falls or injury, in addition to medications that itself increases the risk of bleeding (eg, anticoagulants).

Furthermore, the tool encompasses ocular ADE attributable solely to overdose, in addition to minor ocular ADE. The complex pharmaceutical dosage forms are

classified according to 7 administration sites: ISI-0022 Cutaneous, ISI-0030 Ocular, ISI-0031 Oral, ISI-0032 Oromucosal, ISI-0033 Parenteral, ISI-0034 Pulmonary, and ISI-0035 Rectal. The final version of the VISUAL-Medications tool that has undergone assessment is available in Appendix 1, Supplemental Digital Content 1, http://links.lww.com/JPS/A798.

DISCUSSION

The VISUAL-Medications is the first tool to assist in the prescription and dispensation of medications for individuals living with VI with the aim of enhancing the safety of their treatment. The present study describes the assessment of the tool content using the Delphi method.

Contribution to the Assessment Process

In recent years, several articles have been published regarding medications with ocular ADE. In 2015, the Swiss Medical Journal published an article dealing with various drug-induced ocular toxicities.[14] In 2021, an Australian review of ocular ADE and associated guidelines was published.[3] In 2023, the company marketing clomiphene warned health care professionals about the significant visual disturbances induced by clomiphene, which can lead to blindness, and detailed the precautions and measures to be taken with this drug.[43] Furthermore, certain SPC cite ocular ADE for specific molecules or therapeutic classes within the designated "Adverse reactions" section. An example of this can be found in the SPC for amiodarone, wherein corneal microdeposits are enumerated. Nevertheless, the subject remains to a certain extent incomplete, as these are nonexhaustive lists of medications that present ocular ADE. Furthermore, the extant literature exclusively addresses ocular ADE, and these effects are typically applicable to a specific therapeutic class. Effects that are more specific to a particular molecule or association are not invariably included. Despite the plethora of scientific articles addressing ocular ADE, these frequently pertain to medications that induce a particular type of ocular ADE (eg, molecules that cause acute glaucoma). A paucity of publications has been observed regarding the consideration of other risks for people with VI, such as increased risks, hazards related to misuse, or pharmaceutical dosage forms. These factors have reinforced the imperative for the creation of a medication decision support tool that encompasses the most exhaustive list of medications that pose a general risk or complex pharmaceutical dosage forms in cases of VI.

It is essential that tools are distributed to pharmacists and physicians. The VISUAL-medications tool has been developed through a rigorous and methodical process involving reflection, analysis, and drafting. The development process was conducted exclusively based on data collected from SPC and several articles in the scientific literature. Despite its length, the tool has been presented as a Portable Document Format (PDF) file with an interactive table of contents, thus facilitating the process of locating the required information by health care professionals. However, a fully digital solution, such as a web-based platform, could further enhance usability by offering advanced search functions, dynamic content updates, and improved accessibility.

During this Delphi study, an evaluation was conducted for the purpose of ascertaining which elements required removal or addition. Indeed, the experts emphasized the importance of incorporating minor ocular adverse ADE, ocular ADE related solely to overdose, and vaccines for a comprehensive tool. Vaccines were initially excluded from the tool due to their almost unique administration, which is usually supervised by a physician (or a pharmacist in the case of the influenza and SARS-CoV-2 vaccines). However, the analysis conducted as part of the initial round of the assessment process, in accordance with the recommendations provided by subject matter experts, has confirmed the pertinence of incorporating vaccines within the tool. The experts were able to provide clarification on the veracity of the ocular ADE cited, including the grouping of effects and the correction of names. In conclusion, the experts contributed to enhancing the precision and caliber of the instrument's guidelines.

Clinical Approach

The tool has been designed to assist health care professionals in making decisions when dispensing

Systems	ATC (sub)-classes	Molecule(s)	Ocular adverse drug events	Guidelines
Class ATC A Digestive system and metabolism	**A01** Stomatological preparations			
	A02 Medications for acid-related disorders			
	A02BC Proton pump inhibitors	**All**	Visual disorders	-
	A03 Medications for functional gastrointestinal disorders			
	A03AB Anticholinergics	**All**	Increased risk: **fall** (confusion, dizziness)	▶ Use of a walking aid **if** necessary
		Glycopyrronium	Photophobia, nystagmus, mydriasis, acute glaucoma	CI **Predisposition to acute glaucoma**
		Otilonium	-	▲ Caution **if** predisposition to acute glaucoma
	A03AD Papaverine and derivates	*Papaverine*	Blurred vision, diplopia, nystagmus, miosis	-
	A03AX Other medications for colon disorders	*Peppermint*	Blurred vision	-
	A03BB Belladonna alkaloids	*Butylhyoscine*	Mydriasis, ↗ of intraocular pression	CI **Predisposition to acute glaucoma** 👁 Ophthalmological follow-up **if** there is a combination of eye symptoms (pain + redness/loss of vision)
	A03FA Propellants	*Metoclopramide*	Increased risk: **fall** (orthostatic hypotension)	▶ Use of a walking aid **if** necessary
	A04 Antiemetics and antinauseants			
	A04AA Serotonin antagonists	*Ondansetron*	Transient blurred vision and blindness	-
	A05 Bile and liver treatments			
	A06 Laxatives			
	A06AA Emollients	*Liquid paraffin*	↘ of visual acuity because of a ↘ of vitamine A absorption	▶ Vitamin A supplementation for prolonged use
	A06AH Opioid antagonists	*Methylnaltrexone*	**Misuse**: mydriasis is a symptom of opioid withdrawal, especially when doses ↘ rapidly. Treatment should not be stopped abruptly and ↘ doses should be reduced gradually. Caution should be exercised in patients with a history of substance abuse.	

FIGURE 5. Example of Part 1 of the tool for class ATC A.

Administration sites	Dosage forms	Molecule(s)/Excipient(s)	Use difficulties/Ocular adverse drug events (ADE)	Guidelines
Site ISI-0031 Oral	**SOM-0097** Solid forms			
	BDF-0054 Gums	*Butylhydroxytoluene*	Minor ocular ADE: eye irritation in the event of eye contact [1] + Blurred vision in case of eye contact [1]	⚠ Patient warned to avoid contact with eyes [1] Wash hands with soap and water after use [1] ▶ Rinse eyes with clean water for 15 minutes if contact is made [1] 👁 Ophthalmological follow-up if eye pain, ↘ of the visual acuity or permanent irritation after rinsing [1]
	SOM-0099 Liquid forms			
	BDF-0086 Syrups	**All**	Measuring the correct volume to administer	▶ Search for a solid drug alternative if there are no swallowing problems (e.g. tablets, capsules, etc.) Use of a syrup in single-dose form if available, or preparation of single doses (by deconsolidation) if the stability of the active ingredient allows it Use a syringe with a capacity identical to the quantity to be administered in each case (e.g.: cough syrup for an adult with a dosage of 5 ml, use a 5 ml syringe) Put a coloured mark on the syringe/cup if colour identification is possible, or a tactile mark if the liquid level is perceptible in both cases. Reserve the syringe/cup for one patient only ⚠ Checking the patient's ability to draw the correct volume ▶ Conversion of units into number of calibrated spoons (e.g. 5 ml calibrated spoon)
	BDF-0090 Drops (drinkable)	**All**	Counting the correct number of drops to administer	▶ Search for a solid drug alternative if there are no swallowing problems (e.g. tablets, capsules, etc.) Production of a magistral preparation in capsule form, either from the raw material (if available), or from the speciality (if the latter does not exist in the desired dosage)

FIGURE 6. Example of Part 2 of the tool for site ISI0031.

medications to patients living with VI and provide quality outpatient care. The final tool is composed of 2 parts. The first part lists molecules and associations that are potentially problematic for individuals with VI, organized according to physiological systems. For the purposes of illustration, the section pertaining to class ATC A (digestive system and metabolism) has been translated in English and is presented in Figure 5 for subclasses A01 to A06. The complete set of the system is available in Appendix 1, Supplemental Digital Content 1, http://links.lww.com/JPS/A798. The second part lists the pharmaceutical dosage forms potentially complex for individuals with VI, organized according to administration site. For the purposes of illustration, the section pertaining to site ISI0031 (Oral) has been translated in English and is presented in Figure 6.

Information can be accessed by searching for the name of a molecule or therapeutic class for part 1, or by searching for a pharmaceutical dosage form for part 2. This tool emphasizes the limited accessibility of certain dosage forms for which no satisfactory alternative is currently available (eg, inhalation devices and eye drops), underlining the need to develop adapted administration strategies. Furthermore, the tool necessitates an individualized evaluation of the benefit/risk ratio, particularly in cases where medications are anticipated to induce ocular ADE or are deemed incompatible with dosage forms. If the anticipated benefits to the patient outweigh the potential risks associated with the administration of the molecule or dosage form, its continued prescription may be considered. The tool is therefore intended to provide practical support to guide the therapeutic choice according to the patient's profile and clinical indications, in a personalized and pragmatic approach. Due to its time-consuming nature, its use may be particularly relevant during structured medication reviews for patients with VI, similarly to established tools, such as STOPP/START criteria.[44]

Strengths and Weaknesses

The present study has several strengths. The combined expertise of the interdisciplinary panel of experts enabled an exhaustive review of the aspects relating to pharmaceutical care, pharmaceutical formulation, and ocular ADE included in the tool. By integrating both medical and pharmaceutical perspectives, the panel ensured that therapeutic decision-making and practical dispensing considerations were jointly addressed during the assessment process. Furthermore, the data indicates that more than half of the experts had more than 10 years' experience, demonstrating an in-depth understanding of the subject. In addition, the composition of the expert panel reflected the recommended number of members in the literature (8-12 experts). The Delphi method offers the advantage of anonymizing the results for the experts, thereby allowing each expert to express their opinion freely without the influence of a dominant opinion within the group.[45] The online delivery of the questionnaires obviated the need for the experts to meet in person, a particularly advantageous feature given the geographical dispersion of the experts (Belgium, France, and Switzerland).

Nevertheless, it is important to acknowledge the limitations of the study. It is important to recognize that the length of the process, the large number of questions (n = 58 in round 1) and the considerable number of rounds (n = 4) may have introduced a certain bias in the responses when the questionnaires were completed. Indeed, the Delphi method necessitates a considerable investment of time and effort from researchers and participants.[46] In this study, the sets of items presented to experts varied across Delphi rounds. It is possible that the ratings given by experts may have been influenced by changes in the context of the items in question. This approach was adopted to reduce participant burden and minimize fatigue, thereby supporting continued participation and response quality

across rounds. Moreover, the data analysis process intrinsic to the Delphi method is subjective. The process of condensing, refining and developing the elements is subject to the knowledge, experience, and perceptions of the researchers.[47] In the course of the study, the researchers attempted to incorporate the comments of the experts in a way that was appropriate and faithful to their input when reformulating the subsequent courses of action.

CONCLUSION

This study used the Delphi method to develop and assess the content of a medication decision support tool designed to assist health care professionals in the prescription and dispensation of medications for individuals living with visual impairment. The consensus process ensured that the tool is relevant, coherent, and aligned with key clinical and pharmaceutical considerations. While the tool has the potential to support safer medication use, its implementation in clinical practice was not assessed. Future research should assess the implementation and use of the tool in clinical practice, including its evaluation by intended end users, such as physicians and community pharmacists.

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