How Patient-Centred Are Inhaler Device Choices? A Survey of Canadian Prescribers

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ABSTRACT

Background: The choice of inhaler device type can play a crucial role in managing asthma and chronic obstructive pulmonary disease (COPD). With various devices available, differences in choice and application may lead to confusion for both prescribers and patients. Furthermore, improper use of a device may lead to suboptimal or inadequate treatment.

Objectives: The primary objective was to identify factors that prescribers consider when selecting an inhaler device for a patient. The secondary objective was to evaluate the rankings of these factors, including identification of which factors had greater importance and frequency for prescribers' choice of inhaler device for patients.

Methods: A 10-question online survey was developed and distributed in late 2021 to prescribers (physicians, nurse practitioners, and pharmacists) in western Canada in an outpatient setting. Prescribers were asked to use their own words to describe the factors they considered important and were then asked to rank the stated factors in order of importance for 2 scenarios: an 83-year-old woman with COPD and a 21-year-old man with asthma. The results were examined qualitatively and quantitatively. Recurring themes were identified, and each response was categorized on the basis of its corresponding theme.

Results: In all, 82 respondents completed the survey (yielding a total of 164 responses across the 2 scenarios). Overall, prescriber experience (84/164, 51%), cost (84/164, 51%), patient ease of use (59/164, 36%), and other patient considerations (49/164, 30%) were the factors most frequently mentioned. The prescriber's experience was most often mentioned as a factor for scenario 1 (COPD), whereas cost was most often mentioned for scenario 2 (asthma). In both scenarios, prescriber experience was the highest-ranked factor.

Conclusions: When determining the appropriate type of inhaler device, respondents frequently prioritized their own experience, as well as cost and ease of use. However, many respondents ranked prescriber experience higher than all other factors.

Keywords: inhaler devices, asthma, chronic obstructive pulmonary disease, prescriber decision-making, patient-centred care

Note: This article contains supplementary material, available at https://www.cjhp-online.ca/index.php/cjhp/article/view/3507/

RÉSUMÉ

Contexte : Le choix du type d'inhalateur peut jouer un rôle crucial dans la gestion de l'asthme et de la maladie pulmonaire obstructive chronique (MPOC). Étant donné la diversité des dispositifs disponibles, les différences de choix et d'application peuvent prêter à confusion tant pour les prescripteurs que pour les patients. De plus, la mauvaise utilisation d'un appareil peut conduire à un traitement sous-optimal ou inadéquat.

Objectifs : L'objectif principal consistait à identifier les facteurs pris en compte par les prescripteurs lors de la sélection de l'inhalateur pour un patient. L'objectif secondaire consistait à évaluer le classement de ces facteurs, notamment l'identification des facteurs les plus importants et des inhalateurs les plus fréquemment choisis par les prescripteurs.

Méthodes : Un sondage en ligne de 10 questions a été préparé et distribué fin 2021 aux prescripteurs (médecins, infirmières praticiennes et pharmaciens) de l'ouest du Canada en milieu ambulatoire. Les prescripteurs devaient, dans leurs propres mots, décrire les facteurs qui leur semblaient importants avant de les classer par ordre d'importance dans le cadre de deux scénarios : une femme de 83 ans atteinte de MPOC et un homme de 21 ans avec de l'asthme. Les résultats ont fait l'objet d'un examen qualitatif et quantitatif. Des thèmes récurrents ont été identifiés et chaque réponse a été catégorisée en fonction du thème correspondant.

Résultats : Au total, 82 répondants ont répondu au sondage (total de 164 réponses dans les 2 scénarios). Dans l'ensemble, l'expérience du prescripteur (84/164, 51 %), le coût (84/164, 51 %), la facilité d'utilisation pour le patient (59/164, 36 %) et d'autres considérations en rapport avec le patient (49/164, 30 %) étaient les facteurs déterminants les plus fréquemment mentionnés. Pour le scénario 1 (MPOC), l'expérience du prescripteur était le facteur le plus souvent mentionné, alors que le coût l'était pour le scénario 2 (asthme). Dans les deux scénarios, l'expérience du prescripteur était le facteur le plus important.

Conclusions : Lors de la détermination du type d'inhalateur approprié, les répondants ont souvent donné la priorité à leur expérience personnelle, ainsi qu'au coût et à la facilité d'utilisation. Cependant, de nombreux répondants ont accordé une note plus élevée à l'expérience du prescripteur qu'à d'autres facteurs.

Mots-clés : inhalateurs, asthme, maladie pulmonaire obstructive chronique, prise de décision du prescripteur, soins centrés sur le patient

INTRODUCTION

The choice of inhalation device type, such as dry powder inhaler, pressurized metered-dose inhaler, soft mist inhaler, or nebulizer, is an important aspect of managing asthma and chronic obstructive pulmonary disease (COPD).[1] The choice of device should take into account the patient's inspiratory flow rate, physical attributes (including hand dexterity and comorbidities), cognitive ability, age, and overall capability to use the device, as well as the cost of the device.[1] With various device types available and differences in the method of using each device, the selection of a device can be tailored to the individual patient's needs.[2-5] Several guidelines are available to aid prescribers with decision-making in the choice of inhaler devices for asthma and COPD.[4,5] However, limited research is available concerning what prescribers actually consider when selecting inhaler devices for their patients.

The primary objective of this survey study was to identify the factors that outpatient prescribers in western Canada consider when selecting inhaler devices for their patients. The secondary objective was to evaluate the ranking of these factors.

METHODS

This cross-sectional questionnaire-based study used an online survey distributed to Canadian prescribers in November and December 2021. The University of British Columbia's Behavioural Research Ethics Board approved the study.

Development of Survey

A literature search was conducted to identify factors associated with the selection of inhaler devices for patients with asthma and COPD. The investigators developed a 10-question survey based on 2 patient scenarios (see Supplement 1, available at https://www.cjhp-online.ca/index.php/cjhp/article/view/3507/). The survey consisted of 8 multiple-choice questions and 2 open-text questions. The first patient scenario described an 83-year-old woman with moderate COPD. The survey stated that the next step would be to add a long-acting β-agonist (LABA) or long-acting muscarinic antagonist (LAMA) in accordance with guidelines.[5] The scenario description noted that a LAMA would be appropriate, and prescribers were therefore asked which device they would select from the currently marketed options (listed in the survey) and what factors they would consider in device selection for this patient. The second patient scenario described a 21-year-old male student with asthma who was using salbutamol as needed but reported increased coughing and wheezing that occurred 2 or 3 times per week. According to guidelines, one suggestion would be to add an inhaled corticosteroid.[4] Prescribers were asked which device they would select from the currently marketed options listed (for which pictures were provided within the survey) and what factors they would consider in device selection for this patient.

Both of the patient cases were designed with the intent of minimizing the influence of medication selection, instead focusing on the selection of device type (e.g., metered-dose inhaler or dry powder inhaler). Furthermore, these 2 distinctive patient profiles were intended to generate different considerations. For the first scenario, given the expected degree of frailty in an 83-year-old woman and potential difficulties with the use of some inhalers, the hypothesis was that factors such as ease of use, patient considerations (e.g., age, hand dexterity), or device-related factors (e.g., dose counter, portability) would be ranked with greater importance. For the second scenario, concerns about cognition, hand dexterity, and overall frailty would be of less concern, and it was expected that other issues relevant to the patient, such as cost or frequency of dosing, would come to the forefront. Before distribution, the survey was reviewed by 2 prescribers to ensure the questionnaire was in accordance with the study objectives. The survey was designed and disseminated with Qualtrics, an online survey tool platform. The analysis was limited to responses from those who met eligibility criteria and completed the entire survey.

To address the primary objective, the open-text questions within the survey asked prescribers what factors they considered for device selection in each patient case, with responses to be entered in order from most important to least important. To address the secondary objective, the rankings of these factors were evaluated, including identification of which factors were ranked with greater importance and frequency in the choice of an inhaler device for the 2 patients.

Distribution of Survey

A link to the online survey was distributed to prescribers by various methods: direct email, a newsletter (*Fast Facts*, a publication of the Vancouver Division of Family Practice), various online platforms such as prescriber association websites (e.g., classified section of the *British Columbia Medical Journal*), and social media platforms such as Twitter (promoted by the Therapeutics Initiative and the BC College of Family Physicians) and Facebook (Primary Care Doctor group). A $25 gift card giveaway (for 8 randomly selected participants) was advertised within the survey to encourage participation in the survey. Respondents participated voluntarily, and the survey was completed anonymously, except for those who chose to enter the draw for the giveaway.

To prevent "multiple participation", duplicate entries were identified and assessed through the Qualtrics software. This was accomplished by inspecting participants' IP addresses, email addresses (if provided), and survey responses for any signs of duplicate entries.

Eligibility Criteria

This study was open to registered Canadian prescribers, such as physicians, nurse practitioners, and pharmacists. Potential participants had to be practising in a primary care or outpatient setting in Alberta, British Columbia, or Manitoba. The choice to limit participation to these provinces was based on convenience, because members of the research team were situated in these provinces and had established connections with primary care prescriber networks. In addition, the research team assumed that prescribing behaviour would be similar across all Canadian provinces and the results would thus be generalizable.

Data Analysis

To identify the factors that prescribers considered when selecting an inhaler device, the investigators examined survey responses to questions 8 and 10, the open-text questions asking what factors would be considered when prescribing an inhaler device within each patient scenario. There was no minimum or maximum limit on the number of factors that a participant could mention. To consolidate these unprompted text responses, each individual response was first examined by one investigator (I.R.F.) with a view to identifying themes across all written responses. Next, each response was reviewed and consolidated with its corresponding theme. For data verification, a random sample of 10 responses was selected for independent review and consolidation by a second investigator (A.M.T.). These responses were then compared with the first investigator's matching process to ensure at least 90% agreement; in fact, there was 100% agreement between the investigators for this randomly selected sample. Once all responses had been consolidated and categorized by theme, all of the factors considered by respondents in both scenarios were examined descriptively and quantitatively, and they were then sorted by frequency and ranking.

No formal qualitative research methods were employed for analyzing responses to the open-text questions; rather, all of the analyses and interpretations were meant to be exploratory. In addition, we did not conduct any formal statistical analyses based on the number of factors listed by respondents, and we did not think that the difference in number of factors listed by respondents would influence our interpretation of the responses.

RESULTS

Demographic Characteristics

A total of 148 participants interacted with the survey link. Of these, 111 participants met the eligibility criteria (questions 1 to 4), and 82 survey respondents completed the entire survey (questions 1 to 10). The majority of respondents who completed the entire survey were physicians (91%), approximately half were from Manitoba (49%), and time as a prescriber ranged from less than 5 years to more than 10 years of experience (Table 1).

For the main outcome measures, we analyzed the 82 responses from those who completed the entire survey. Across both cases combined, the average number of factors listed by respondents was 4.

Primary Outcome

In terms of the factors that respondents mentioned as affecting their choice of inhaler devices for a patient with asthma and a patient with COPD, the most common were cost, the prescriber's experience (with the device), various patient considerations, device-related factors, frequency of dosing, ease of use, drug-related factors, sample availability, and environmental factors. If the response mentioned the word "patient" or made any reference to the patient (e.g., age, elderly, lung capacity, patient preference), the response was categorized as a patient-related consideration. However, if the response made no reference to the patient and mentioned only factors related to the device, it was categorized as a device-related factor (see Supplement 2, available at https://www.cjhp-online.ca/index.php/cjhp/article/view/3507/).

In scenario 1 (patient with COPD), the prescriber's experience and perceived ease of use by the patient were mentioned most frequently (each 52%), followed by cost (49%) and patient considerations (35%). In scenario 2 (patient with asthma), cost was the most frequently mentioned factor (54%), followed by prescriber experience (50%) and device-related factors (38%). When the results for scenarios 1 and 2 were combined, the most frequently mentioned factors overall were prescriber experience and cost (both 51%), followed by ease of use (36%) (Table 2). To assist with qualitative visualization, these factors were assembled into a word cloud according to frequency of mention (Figure 1).

TABLE 1. Characteristics of Study Participants

Characteristic	No. (%) of Respondents (*n* = 82)
Location	
Alberta	11 (13)
British Columbia	31 (38)
Manitoba	40 (49)
Type of prescriber	
Nurse practitioner	6 (7)
Pharmacist	1 (1)
Physician	75 (91)
Time as a prescriber	
< 5 years	21 (26)
5–10 years	30 (37)
>10 years	31 (38)

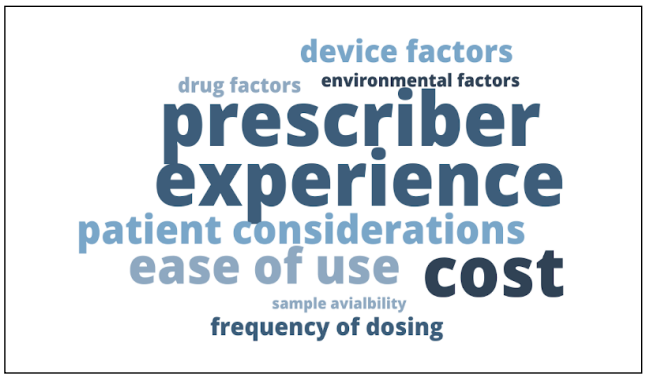

FIGURE 1. Word cloud of factors mentioned in relation to choice of inhaler device in 2 hypothetical cases (open-text responses).

Secondary Outcomes

The secondary outcomes were based on evaluating and comparing which factors would be ranked with greater importance by respondents when choosing an inhaler device for a patient with COPD and a patient with asthma. In both scenario 1 (COPD) and scenario 2 (asthma), the factor ranked first most frequently was prescriber experience. For each scenario, the 3 factors most frequently ranked first are listed in Table 3.

DISCUSSION

In the evaluation of factors that respondents considered in selecting inhaler devices, across both scenarios, prescriber experience was mentioned most frequently, followed by cost and ease of use. More specifically, in scenario 1, an elderly woman with COPD, prescriber experience and ease of use were mentioned most frequently. In scenario 2, a university student with asthma, cost was mentioned most frequently. In both scenarios, respondents ranked prescriber experience with greatest importance. These results are similar to those of a previous study by Miravitlles and others,[6] who found that the most frequently selected factor in choice of a device was the prescriber's experience with the inhaler. Additionally, they found that the factors identified by consensus as most relevant when selecting a device were the patient's ability to handle the inhaler and the patient's experience with the inhaler.[6]

In addition to identifying the common themes found within responses to this survey, it was also important to examine the language used in the unprompted responses. More than half of the respondents mentioned prescriber experience and ranked this factor with the highest importance. The language used for responses collected under this theme included "familiarity", "habit", "prescriber comfort", "experience", and "prescriber preference". A third of the respondents mentioned patient-related considerations. The language used for responses collected under this theme included "patient preference", "adherence", "age of patient", "dexterity", "inspiration force", and "adequate technique". Although it was encouraging to find that these factors were often considered, terms related to age, manual dexterity, cognition, and patient frailty were not frequently mentioned in the unprompted responses, which suggests room for further education in this area. For example, although prescribers might frequently consider multiple variables, the variables allowing for optimal, patient-centred choice of inhaler device may not always be prioritized when prescribers are making individual patient decisions. To enable prescribers to make optimal choices in this regard, education initiatives or readily accessible decision support tools could be developed. At the point of care in busy clinics, most clinicians spend less than 2 minutes answering clinical

TABLE 2. Factors Mentioned in the Scenarios

	Scenario; No. (%) of Responses		
Category	Scenario 1 (*n* = 82)	Scenario 2 (*n* = 82)	Both Scenarios (*n* = 164)
Prescriber experience	43 (52)	41 (50)	84 (51)
Cost	40 (49)	44 (54)	84 (51)
Ease of use	43 (52)	16 (20)	59 (36)
Patient considerations	29 (35)	20 (24)	49 (30)
Device factors	16 (20)	31 (38)	47 (29)
Frequency of dosing	12 (15)	11 (13)	23 (14)
Drug factors	12 (15)	11 (13)	23 (14)
Environmental factors	3 (4)	9 (11)	12 (7)
Sample availability	4 (5)	2 (2)	6 (4)
Other	4 (5)	2 (2)	6 (4)

TABLE 3. Summary of Factors Ranked First Most Frequently

Factor	No. (%) of Responses with Ranking of 1
Scenario 1: 83-year-old woman with COPD	*n* = 82
Prescriber experience	33 (40)
Ease of use	18 (22)
Cost	15 (18)
Scenario 2: 21-year-old male student with asthma	*n* = 82
Prescriber experience	27 (33)
Cost	22 (27)
Device-related factors	9 (11)

COPD = chronic obstructive pulmonary disease.

questions.[7,8] Therefore, to improve medical education and prescriber experience with patient considerations, device factors, and cost, clinicians should have rapid access to suitable tools to assist with these decisions.[7]

Furthermore, specific medications were still considered important by respondents, even though the survey design was intended to eliminate the particular medication as a factor. More specifically, the scenario descriptions stated the appropriate drug class choice for each patient and only provided options for drugs within that class. The intention was to have respondents assume that all drugs within a class were equivalent in terms of efficacy and safety[4,9] and to have them select the device type according to factors such as functionality of the device, cost, and patient considerations. However, marginal differences in efficacy and safety may be noted within drug classes, and some agents have been studied more than others.[10-12] For example, in a previous study, the investigators found that most prescribers prioritized the selection of a particular drug (referred to as "drug factors" in this study) over the selection of device type.[7] Cost is also an important consideration, given that acquisition costs can differ substantially between products within a particular drug class.[12]

The study had several limitations. The survey was distributed through various online platforms, and there was no way to confirm that the survey had been distributed to all prescribers within the target provinces. The survey design may have constrained the number of responses. More specifically, the survey contained 2 open-text questions, which were intended to eliminate any prompts or predetermined answers for respondents. However, this type of question requires respondents to spend more time and effort in providing the data, which may have reduced the volume of responses. In addition, with this survey design, it was not possible to determine the number of prescribers who encountered the survey invitation, but of the 148 participants who interacted with the survey link, only 82 completed the survey and met the eligibility criteria. The survey results may not be generalizable to all prescribers in Canada. Also, in the open-text questions, respondents were asked to enter the factors they considered in order of importance (i.e., from most important to least important). However, this request could have been overlooked by respondents, and we therefore considered this as a secondary outcome. Moreover, the ranking of factors was arbitrary, given that a number of expected factors were not mentioned in the responses, such as frailty, cognitive skills, dexterity, and socioeconomic status. Therefore, if more information had been provided for each case, the rankings might have been different. Additionally, the costs and accessibility of inhaler devices vary among Canadian provinces and between Canada and other countries, which may limit the external validity of the results and generalizability. Furthermore, participants were not asked about their experience in managing asthma and COPD, including the percentage of patients in their caseload with these conditions, nor were they asked about any relevant education they may have received on the subject. Finally, none of the investigators had extensive experience with qualitative research methods and data analysis; therefore, the interpretation of responses to the open-text questions was exploratory in nature.

CONCLUSION

In this study, prescribers commonly considered their own experience, cost, and ease of use when choosing inhaler devices for their patients with asthma and COPD. Prescriber experience was mentioned most frequently across both case scenarios and was ranked first by many prescribers, with less emphasis on patient-related considerations, which may indicate that device choices are not entirely driven by patient-centred factors. Further research in education and decision-support tools should be considered for prescribers to enhance patient-centred inhaler device choices.

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