Consumer Medication Information: Similarities and Differences Between Three Canadian Pharmacies

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Abstract. Prescription medication use is prevalent. When a new prescription medication is dispensed, Consumer Medication Information (CMI) is provided to communicate various important aspects of the medication (e.g., benefits, administration instructions, potential side effects). However, CMI is not regulated and differs from pharmacy to pharmacy. This study explores the similarities and differences between the CMI from three pharmacies (two paper print outs and one online source) for a single medication. The three CMI were assessed in terms of readability and utility. This evaluation revealed drastic differences in the length of the CMI (Range = 453 to 2 337 words). The online CMI was longer, described more topics and provided more detail than the print versions. Although online CMI has the advantage of interactivity to expedite navigation to specific topics of interest (e.g., heading links) and searching for key words, this CMI was not layered but rather presented as one long continuous page. Consumers with lower eHealth literacy skills may be deterred by the length of the document. As CMI makes the shift to online presentation an improved understanding of optimal information organization and media presentation will be needed.

Keywords. consumer medication information, patient medication information, medication, pharmacy, prescription, patient education, readability

1. Introduction

Prescription medication use is prominent. Approximately 4 in 10 Canadians (between the ages of 6 and 79) use at least one prescription medication [1]. Medication may require consumers to modify their behaviour (e.g., avoid grapefruit juice) and may also introduce the possibility of harmful side effects, allergic reactions, and drug interactions. To address, and ideally minimize, the potential negative effects of medication use, several different types of medication information are available to advise consumers of the important aspects for the safe and effective use of different medications.

Canadian community pharmacies typically employ a two-pronged approach when new (rather than refill) prescriptions are dispensed to inform consumers about important medication information (e.g., benefits, administration techniques, side effects, what should be avoided). First and foremost, pharmacists provide a verbal consultation with consumers to communicate important information and answer consumer questions.

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Second, consumers are given printed information (i.e., Consumer Medication Information or Patient Medication Information in Canada [2]) which may provide more detailed information than the pharmacist.

Consumer Medication Information (CMI) is "specific information on the safe and effective use of a medicine" provided by pharmacies to accompany "all prescription medicines filled for the first time". CMI is unregulated (i.e., does not require approval from a federal regulatory body) and may be developed by the pharmacy itself or outsourced to another organization [3]. Thus, it is not uncommon for people using the same medication to receive different CMI for a newly prescribed drug depending on where the prescription was filled. This study sought to examine the similarities and differences for CMI from three Canadian pharmacies. The research described in this paper is part of a larger effort by the first author to understand the impact of different content and media presentation approaches to consumer understanding of CMI.

2. Methods

To compare and contrast between different CMI available to Canadians, copies of the CMI for Zymar (gatifloxacin ophthalmic solution) were attained from three pharmacies. Zymar was selected for investigation as it is a commonly prescribed solution used to treat eye infections and for laser eye surgery recovery. The two largest Canadian chain pharmacies and the leading provincial pharmacy were selected to limit potential differences attributed to materials collected from smaller chains or independent pharmacies. CMI from two pharmacies (A & B) was printed on paper, which was subsequently transcribed for analysis. In contrast, transcribing was not necessary for Pharmacy C who offered CMI online. Some information (e.g., pharmacy phone number and address, date, drug identification number, etc.) were excluded from the analysis, as it was not relevant to the content of the CMI. The three CMI were compared on two primary factors readability and utility. Readability was assessed using three measures: word count, readability score, and reading time. These measures were calculated by entering the text into an online readability assessment tool [https://readability-score.com/text/]. The Simple Measure of Gobbledygook (SMOG) [4] scores were reported here, as this index has been identified as the most commonly used for healthcare information [5]. Utility was assessed by determining whether the utility components of the Consumer Information Rating Form [6, 7] (i.e., benefits, contraindications, directions, precautions, adverse effects, storage and general information) were addressed. Four more categories of information important for safe consumer medication use were added (i.e., missed dose, allergic reaction, drug interactions, and overdose). Additionally, the evaluator critically examined the content for more evidence of similarities and differences between the three CMI.

3. Results

This evaluation identified many similarities and differences between the CMI (for a summary refer to Table 1). Readability and utility will be summarized followed by a discussion of each pharmacy CMI individually.

3.1 Readability

All of the CMI had higher SMOG scores than the 6th-8th grade level recommended by Health Canada [2]. Pharmacy C (the online CMI) provided information that was drastically longer (see Table 1) and unsurprisingly more detailed, but not necessary much more complex information (i.e., similar SMOG scores) than the other two pharmacies.

Table 1. Comparison of Consumer Medication Information for Zymar from Three Canadian Pharmacies'

	Pharmacy A (paper)	Pharmacy B (paper)	Pharmacy C (online)
Readability			
Word count	453	957	2 337
Readability (SMOG index)	10.5	10.5	11.3
Reading time	1:57	4:15	10:23
Utility			
Benefits The benefits of taking the medication	✔	✔	✔
Contraindications Who should not use the medication	X	✔	✔
Directions Specific directions about how to take the medication	✔	✔	✔
***Missed Dose** Specific directions about what to do if a dose is missed	✔	X	✔
Precautions Precautions that need to be taken while using the medication	✔	✔	✔
Adverse Effects Possible side effects	2 possible	8 possible 3 serious	10 possible 5 rare but serious
What to do about side effects	✔	✔	✔
***Allergic Reaction** Possible allergens	X	✔	✔
What to do about an allergic reaction	X	✔	✔
***Drug Interactions** Medications that may be problematic to use in conjunction	X	✔	✔
***Overdose** What causes an overdose	X	✔	✔
What do to in the event of an overdose	X	✔	✔
Storage How to store the medication	✔	✔	✔
General information (e.g., description of medication)	✔	✔	✔

Note. * Indicates additional content categories not including the CIRF [6, 7].

3.2 Content

The alternate name for the medication was labelled differently by each pharmacy: chemical (Pharmacy A), generic (Pharmacy B) and common (Pharmacy C). Pharmacy C had the best utility, as it addressed all of the criteria and other topics as well. Pharmacy B failed to direct consumers on what do to if a dose was missed. Pharmacy A had the weakest utility and did not provide any information for the allergic reaction, drug interactions, or overdose criteria. Moreover, the fewest possible side effects were

reported by Pharmacy A for the medication and no serious side effects were mentioned. Interestingly one of the possible side effects listed by Pharmacies A and B (watery eyes) was not listed by Pharmacy C. Further, the side effects categorized as serious by Pharmacy B were in the common list of Pharmacy C. In contrast, the rare but serious side effects listed by Pharmacy C were not reported by Pharmacy B whatsoever.

3.3 Summary of CMI from Each Pharmacy

CMI from Pharmacy A was concise, although its brevity came at the expensive of comprehensiveness. This CMI used bullet points to delineate the steps for administering the eye drops. Bullet points are more desirable than long chunks of text, especially for consumers with limited health literacy [2]. However, Pharmacy A categorized an important precaution (i.e., contact lenses should not be worn for the duration of medication use) as *Additional Information*. Moreover, this information was located just before the *General Information* heading near the bottom of the sheet. This low priority location paired with nondescript heading could easily result in consumers overlooking this important information. In contrast, the other two pharmacies included this information in the *How to Use This Medication* section.

The CMI length from Pharmacy B was in between that of the other two pharmacies, and provided an intermediate amount of information. This CMI provided concrete advice by instructing consumers to consult their physician if improvement was not observed in a week or less. However, Pharmacy B also exhibited unnecessary, potentially confusing, and poorly located content. For example, the *Drug Interactions* Section asserted that the document did not offer an exhaustive list of possible drug interactions but failed to report a single possible drug interaction. Further, important information about how to recognize and respond to an allergic reaction was buried in the Pharmacy B side effects text. The entire paragraph in the last section of CMI for Pharmacy B entitled *Important: How to Use This Information*) was bolded and appeared to be a generic script for all CMI from that pharmacy outlining the limitations of the CMI and provided a disclaimer for its use. However, the section actually failed to explain how the document should be used. This CMI also used a smaller serif font, going against Health Canada's guidance [2].

Several aspects of the CMI for Pharmacy B indicated it was developed in the United States (US) but revised for Canadian consumers. Specifically, although the US poison control center phone number was listed, Canadians were merely instructed to call their provincial poison control centre. In case of an emergency, this would require an additional step to locate the correct phone number.

Unlike Pharmacy B, Pharmacy C cited specific medications that might interact with the CMI medication. In addition to the criteria used, Pharmacy C also had information about how the medication works and how to mitigate vitamin depletion. Online CMI may facilitate information seeking activities through hyperlinks to topics and searching for keywords. However, Pharmacy C did not layer the information, but rather presented it as single lengthy document. This may have negative consequences, especially for users with limited eHealth literacy, as they are often deterred by and skip long, dense, text [8].

The CMI for Pharmacy C was attained online. However, the print CMI was also collected. Interestingly, the printed version was identical to Pharmacy B (i.e., they used the same source). However, this printed CMI was not the same as the online CMI indicating Pharmacy C purchases its online and print CMI from different organizations.

4. Discussion

Both the quantity and quality of the information in the CMI varied between the three pharmacies. Thus, consumers will be informed about medications to various extents depending on the pharmacy they select to fill their prescription medications. All three pharmacies dispensed information that exceeded the recommendations of health Canada in terms of readability scores. Perhaps the most concerning finding from this study is the variation in effects reported by each pharmacy differed. Not only did they differ in number, but they were also inconsistent in classification between serious and common. Additionally, although Pharmacy C offered its CMI online, it failed to capitalize on the digital medium by not layering content (i.e., initially presenting the vital important information but allowing interested users to uncover greater detail). Based on evidence from limited literacy users [8], the current format of this CMI would likely present challenges many consumers. In contrast, Pharmacy A provided a brief summary of the information but failed to discuss many important aspects.

In the United States, the FDA is currently developing a framework to provide consumers with current, high quality, information for safe prescription medication use [9]. This initiative seeks to offer a single online repository of patient-oriented Patient Medication Information (PMI) replacing the three previous sources of medication information: Consumer Medication Information, Medication Guides, and Patient Package Inserts. This new PMI will still be dispensed with first time prescriptions, but may also be provided to consumers by their physicians, or accessed directly by consumers themselves [9]. As this FDA initiative progresses, it would be prudent for Health Canada to also recognize the importance of standardized, regulated CMI , both in print and online and develop a similar strategy. Additionally, the potential benefits of offering such structured medication information using multimedia remains to be explored and is the focus of the first author's current work.

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