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## Abstract

### Background

While there is evidence that supervised withdrawal of inappropriate medications might be beneficial for individuals with polypharmacy, little is known about their attitudes towards deprescribing.

### Objective

This study aimed to describe the situation among older community-dwelling Canadians.

### Methods

A self-administered survey was adapted from the Patients' Attitudes Towards Deprescribing questionnaire and distributed to 10 community pharmacies and 2 community centers. The participants rated their agreement on statements about polypharmacy/deprescribing on a 5-point, Likert-type scale. Correlations between the desire to have medications deprescribed and survey items were evaluated using Spearman's Rho and Goodman and Kurska's gamma rank correlations.

### Results

From the 129 participants, 63% were women [median age: 76 (IQR:71–80); median number medication: 6 (IQR: 3–8)]. A proportion of 50.8% (95%CI: 41.6%–60.0%) expressed the desire to reduce their number of medications. This desire was strongly correlated with the individuals' feeling of taking a large number of medications and moderately correlated with the belief that some of the medications were no longer needed or that they were experiencing side effects.

### Conclusions

The results show that older individuals in the community are eager to undertake deprescribing, especially if they have a large number of medications, are experiencing side effects or feel some medications are no longer necessary.

## Introduction

Medication use has been steadily increasing over time. In Canada, it represents the third-largest portion of healthcare expenses.1 Polypharmacy is frequent, especially for older individuals. In 2012, two thirds of Canadians 65 years and over used at least 5 unique prescription medications, and nearly a third used more than 10.2 However, polypharmacy has been associated with hospitalization, deaths, falls, functional impairment,3 increased risk of drug interactions4 and use of inappropriate medications.5 It thus appears fundamental to tackle the risks polypharmacy imposes. Deprescribing methods – the systematic processes of withdrawal of inappropriate medications in an individual in order to reduce polypharmacy and eventually improve health outcomes-appear promising to reach this aim.6

In accordance with patient-centered care and shared decision-making, deprescribing involves an implicit partnership between the health providers and the individuals. The individuals' commitment in the process, and thereby its success, is likely to be influenced by the perception they have of their medications and deprescribing. A small number of previous studies have explored this using the Patients' Attitudes Towards Deprescribing questionnaire.7 Three studies have been conducted in Australia (in outpatients attending an ambulatory hospital consulting service,8 hospital inpatient statin users9 and residential aged care facilities residents10) and one in Italian hospital inpatients.11 These studies found that between 80 and 92% of participants reported being willing to have one or more of their medications deprescribed if their doctor said it was possible. However, the perspectives that older individuals living in the community hold about deprescribing remains largely unknown. We therefore aimed to describe the community-dwelling older individuals' attitudes and perceptions towards deprescribing in the province of Quebec, Canada.

## Methods

### Survey

A survey was created that was adapted from the Patients' Attitudes Towards Deprescribing questionnaire.7 The participants had to rate their agreement on a 5-point, Likert-type scale on 10 questions and answer 5 multiple-choice questions about polypharmacy and deprescribing. They were

also asked to report their age, sex, number of medications taken, use of pill-dispensing aids, and who manages medications.

Study population and recruitment

The surveys were distributed in 10 community pharmacies and 2 community centers located in the province of Quebec, Canada (Bas St-Laurent, Chaudière-Appalaches, Capitale Nationale, Centre du Québec). Each pharmacy was provided with a poster that described the study. The community pharmacist and the nurse, when present, were invited to inform individuals of the possibility to participate in the study. A research assistant also invited individuals attending a community center to fill out the survey. The individuals had to be 65 years and over to participate. Those taking no medication were excluded.

A letter joined to the survey explained the purpose of the study, how to proceed to answer the questions, the benefits and disadvantages of participating and the fact that all responses would be anonymous. The individuals were invited to either answer the survey at the pharmacy/community centre and put it in a sealed box, or mail the completed survey using a pre-paid envelope.

Sample size

Reeve et al described that a 20% difference in the first ten questions of the Patients' Attitudes toward Deprescribing Questionnaire, with alpha set at 0.05, would require 92 individuals to be part of the study.7 It was therefore aimed to reach 100 participants in our study.

Statistical analysis

Descriptive statistics were used to summarize the participants' characteristics and to present proportion of agreements for each question. The two categories of agreement (strongly agree and agree) were aggregated, as were the two categories of disagreement (strongly disagree and disagree) for questions 1 to 10. Corresponding 95% confidence intervals were calculated.

Using Spearman's Rho, the associations between the desire to reduce the number of medications that the individual takes with age and with the number of daily medications were assessed. Goodman and Kurska's gamma rank correlations were used to measure the strength of the association between the

desire to reduce the number of medications that the individuals take (Question 5) and the other 9 Likert-type questions of the survey. All analyses were performed using SPSS, version 23 (SPSS, Inc., Chicago, IL). Alpha was set at 0.05.

## Ethics

The study was approved by our institutional Ethics Research Board (#CER-85-578) and Ethics Research Board of the Research Centre of the CHU of Quebec (#2016–2362). All surveys were treated anonymously because the participants did not provide any nominal information. The surveys were either mailed in pre-paid envelopes or placed in sealed boxes in the community pharmacies or community centers. The boxes were similar throughout all places and were only opened at the laboratory.

## Results

A total of 138 individuals responded to the survey. We excluded 9 individuals because they were less than 65 years. Table 1 presents the characteristics of the 129 individuals included. Most of the participants were women (81 individuals, 63%) and the median age was 76 years (IQR:71–80). They were taking a median number of daily medications of 6 (IQR: 3–8), and the vast majority (114 individuals, 88%) self-managed their medications.

Table 2 reports the participants' responses to the first ten questions of the survey. A total of 63 participants (51.2%; 95%CI:41.6%–60.0%) considered they were taking a large number of medications, but more than 80% of participants judged their medications as necessary and felt comfortable with the number they were taking. In fact, 103 individuals (81%) would have agreed to take more medications if their health condition had required it. Nonetheless, half of the participants [63 individuals; 50.8% (42.3%–59.7%)] reported that they would like to reduce the number of medications they are taking. Additionally, 89 individuals (71.2%; 63.3%–78.3%) reported that they would be willing to cease one or more of their regular medications if their doctor said it was possible.

The responses to questions 11 through 15 are presented in Table 3. Only 85 individuals (66%) answered the question that targeted the number of pills considered to be too many. No consensus emerged on how many medications was considered excessive. In fact, the responses varied widely [from 0 (n = 15), 2 (n = 9), 4 (n = 8), 5 (n = 13), 10 (n = 11) to 20 (n = 5)], and the median response was 5 (IQR: 2-10). Interestingly, 60% of individuals reported never stopping a medication in the past. Only around half (51.2%) would be comfortable if a pharmacist was the primary health professional involved in the deprescribing process, while the proportion fell to 42.6% for a nurse. If they had to

stop taking a medication, most participants (74.4%) would prefer a face-to-face appointment to ensure follow-up.

The desire to reduce the number of medications taken was correlated with many items of the survey (Table 4). There was a strong association between response to this question and belief that the individuals were taking a large number of medications, used medications that they no longer needed or had side effect from their medications. On the opposite, the fact that people were comfortable with the number of medications they take or believe that all their medications are necessary were negatively correlated with the wish of reducing the number of medications. There was no correlation between the wish to reduce medication use and age.

## Discussion

Around half of the older Quebeckers living in the community indicated they would like to reduce the number of medications they are taking. Nearly three out of four participants would be willing to have a medication deprescribed if their doctor said it was possible. The perception that they were taking a large number of medications, that they were experiencing a side effect, and that one or more of their medications is no longer necessary were some of the most important beliefs associated with the want to have the number of medications reduced.

Compared to previous studies, a lower proportion of participants in the current study demonstrated readiness to reduce the number of medications taken. For example, 68% of individuals in Australia reported such desire,8 while the proportion reached as high as 89% in hospitalized patients in Italy.11 The difference observed may stem from the fact that individuals included in this survey may have been in better health. Indeed, the median number of drugs was 11 in Australia,8 but only 6 in the current study. As such, this study falls more within a mode of preventing polypharmacy.

This is the first study to report an association between the number of medications taken and desire to reduce the number of medications. The correlations between feeling like the individuals are taking a large number of medications and being less comfortable with their medications and desire to stop a medication was also found in a previous study in Australia.8 Identifying such perceptions may help predict what individuals would be eager to embark on a deprescribing attempt.

The results also portray how older people may experience mixed attitudes towards medications. Although they acknowledge that medications are necessary to treat a wide variety of conditions and can improve their health, many older patients would rather not use medications. For example, 14

(16%) individuals indicated that 0 was the number of pills they considered to be too much in our survey. On the other hand, a very large proportion of participants (80%) were willing to take more medications if their health status required it. This mixed attitude has been reported before in qualitative studies.12, 13 For example, Tordoff et al. report that although some older people dislike taking pills, their beliefs about medication are mainly positive.12

Interestingly, a large proportion of the study population (60%) reported never having previously experienced stopping a medication. This fact may suggest that deprescribing is not well-known and implemented. Alternatively, participants may not have recalled individual medication discontinuation as a part of their regular care. Education – and probably a profound medical culture change –may be necessary to increase deprescribing in regular practice. The participants in this study expressed a great confidence in their doctors managing their medications, which means doctors should probably have a preponderant role in implementing deprescribing, at least at the beginning, to build on this trust. This is supported by previous interventional studies which generally show that interventions to reduce inappropriate medication use that closely involve the general practitioner are more successful than those that don't.14, 15 The participants showed less enthusiasm having a pharmacist or a nurse managing deprescribing. This may result from a traditional point of view where doctors are mainly responsible for managing the health conditions. Giving older people the opportunity to get involved in multidisciplinary projects such as deprescribing may help change their conceptions. In an ideal world situation, a pharmacist could identify inappropriate medications, and in conjunction with the general practitioner and patient, could determine which should be desprescribed. A nurse could be involved in monitoring the process, from side effects detection to patients' appreciation of the process.

Study strengths and limitations

A major strength of this study is the use of a representative sample of the community-dwelling older population in Quebec. There are also some limitations. No data on clinical values or the type of medications used were collected, and the number of medications used was self-reported. Also, as the survey was purely quantitative, there were no potentially enriching qualitative comments captured. The individuals sometimes struggled to understand the questions, which led to incoherent responses or unanswered items. Some participants also had difficulties using the Likert-type scale (e.g. differentiating between strongly agree and agree). As participation relied on volunteers, the participants may have been more informed and healthier than the general population, and may also be more open-minded to relatively newer concepts such as deprescribing. Additionally, this study

utilized a previously validated questionnaire translated into French. Future studies should validate this French-language version.

## Conclusion

The need to prevent unnecessary polypharmacy is growing, as there are rising concerns about the vertiginous escalation in the number of medications older individuals are exposed to. The results of this study show that older individuals in the community are eager to undertake deprescribing, especially if they have a large number of medications, are experiencing side effects or feel some medications are no longer necessary. There is a need to demystify deprescribing and empower older adults to regularly question medication use. Implementation of multidisciplinary teams in routine practice may help engage older individuals in the deprescribing process.

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Table 1. Participants characteristics (n=129)

| **Characteristics** | **Number of individuals (%)** |
|---|---|
| Age (years) (median; interquartile range) | 76 (71-80) |
| Sex | |
| Male | 48 (37,2%) |
| Female | 81 (62,8%) |
| Number of daily medications (median; interquartile range)[1] | 6 (3-8) |
| Drug administration aid users | 56 (43,4%) |
| Medication management | |
| Self-management | 114 (88,4%) |
| Spouse | 6 (4,7%) |
| Family | 4 (3,1%) |
| Other | 4 (3,1%) |
| Missing data | 1 (0,8%) |

[1]Data was missing data for 6 individuals.

Table 2: Results from the first ten questions of the survey (questions based on the Patients' Attitudes Towards Deprescribing questionnaire[7])

| Question | Strongly agree | Agree | Unsure | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| Q1. I feel that I am taking a large number of medications. | 17 (14%) | 46 (37%) | 16 (13%) | 28 (23%) | 16 (13%) |
| Q2. I am comfortable with the number of medications that I am taking. | 29 (23%) | 74 (58%) | 14 (11%) | 8 (6%) | 2 (2%) |
| Q3. I believe that all my medications are necessary. | 32 (26%) | 73 (58%) | 12 (10%) | 5 (4%) | 3 (2%) |
| Q4. If my doctor said it was possible, I would be willing to stop one or more of my regular medications. | 32 (26%) | 57 (46%) | 12 (10%) | 19 (15%) | 5 (4%) |
| Q5. I would like to reduce the number of medications that I am taking. | 19 (15%) | 44 (35%) | 26(21%) | 30 (24%) | 5 (4%) |
| Q6. I feel that I may be taking one or more medications that I no longer need. | 7 (6%) | 19 (16%) | 24 (20%) | 52 (43%) | 18 (15%) |
| Q7. I would accept taking more medications for my health conditions. | 26 (21%) | 73 (59%) | 16 (13%) | 7 (6%) | 2 (2%) |
| Q8. I have a good understanding of the reasons I was prescribed each of my medications. | 31 (25%) | 82 (66%) | 3 (2%) | 9 (7%) | 0 (0%) |
| Q9. Having to pay for fewer medications would play a role in my willingness to stop one or more of my medications. | 14 (11%) | 27 (22%) | 16 (13%) | 51 (42%) | 14 (11%) |
| Q10. I believe one or more of my medications is giving me side effects. | 10 (8%) | 21 (17%) | 19 (16%) | 51 (42%) | 20 (17%) |

Table 3. Results from questions 11 to 15 of the survey (adapted from the Patients' Attitudes Towards Deprescribing questionnaire[7])

| Question | Answer | N (%) |
|---|---|---|
| 11. Have you ever tried to stop a regular medication? | No | 78 (60.5) |
| | Yes and was able to remain off the medication | 14 (10.9) |
| | Yes but had to restart the medication | 32 (24.8) |
| | Yes but had to start a different medication | 2 (1.6) |
| | Unsure | 1 (0.8) |
| 12. How many different tablets or capsules per day would you consider to be a lot? **(N=85)** | Median: 5; Range : 0-20 | |
| 13. How comfortable would you be if a pharmacist was involved in stopping one or more of your regular medications and provided the follow-up (informing your doctor of the progress)? | Comfortable | 66 (51.2) |
| | Unsure | 32 (24.8) |
| | Uncomfortable | 25 (19.4) |
| 14. How comfortable would you be if a nurse was involved in stopping one or more of your regular medications and provided the follow-up (informing your doctor of the progress)? | Comfortable | 55 (42.6) |
| | Unsure | 29 (22.5) |
| | Uncomfortable | 40 (31.0) |
| 15. If one of your regular medications was stopped, what follow-up would you like? | Face-to-face appointment | 96 (74.4) |
| | Telephone call(s) | 16 (12.4) |
| | Written information sent in the mail | 3 (2.3) |
| | Written information sent by e-mail | 5 (3.9) |
| | No planned follow-up needed | 9 (7.0) |

| | | |
|---|---|---|
| | Other | 2 (1.6) |

Table 4. Correlations between the wish to reduce the number of medications taken (Q5) and age, number of medication and survey questions 1-10

| Variable | Spearman[1] or Gamma value[2] | p |
|---|---|---|
| | | |
| Age | 0,076[1] | 0,399 |
| Number of medications | -0,353[1] | <0,0001 |
| Q1. I feel that I am taking a large number of medications. | 0,535[2] | <0,0001 |
| Q2. I am comfortable with the number of medications that I am taking. | -0,347[2] | 0,007 |
| Q3. I believe that all my medications are necessary. | -0,306[2] | 0,019 |
| Q4. If my doctor said it was possible, I would be willing to stop one or more of my regular medications. | 0,596[2] | <0,0001 |
| Q6. I feel that I may be taking one or more medications that I no longer need. | 0,375[2] | <0,0001 |
| Q7. I would accept taking more medications for my health conditions. | -0,022[2] | 0,858 |
| Q8. I have a good understanding of the reasons I was prescribed each of my medications. | -0,205[2] | 0,148 |
| Q9. Having to pay for fewer medications would play a role in my willingness to stop one or more of my medications. | 0,275[2] | 0,017 |
| Q10. I believe one or more of my medications is giving me side effects. | 0,425[2] | <0,0001 |

[1] Spearman statistics ; [2] Gamma statistics

Conflict of interest: The authors report no conflict of interest.