
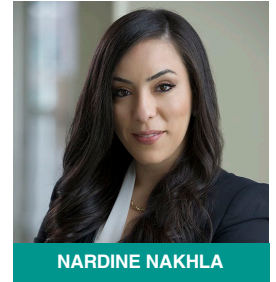


# Pharmacists' knowledge, perceptions and practices regarding frailty: A cross-sectional survey across practice settings in Canada

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Frailty describes the health and resilience of older adults and is associated with a risk of adverse drug events, especially related to polypharmacy. We surveyed Canadian pharmacists' understanding, beliefs and practices in the assessment of frailty and discuss integrating frailty into the pharmacists' workup and the pathway to frailty-based medication interventions.

*La fragilité décrit l'état de santé et la résilience des personnes âgées, et est associée au risque d'événements indésirables médicamenteux, notamment liés à la polypharmacie. Nous avons examiné la compréhension, les croyances et les pratiques des pharmaciens canadiens relatives à l'évaluation de la fragilité et nous avons discuté de l'intégration de la fragilité dans le bilan des pharmaciens et de la voie vers des interventions médicamenteuses basées sur la fragilité.*

## ABSTRACT



**Background:** Data on Canadian pharmacists' knowledge and perceptions about frailty in older adults and its assessment in pharmacy practice are scarce.

**Methods:** A cross-sectional survey of 349 Canadian pharmacists was conducted to evaluate pharmacists' knowledge, perceptions and practices regarding frailty. Descriptive analyses summarized responses by practice setting, and a multivariable logistic regression model examined associations between respondent characteristics and the likelihood of assessing frailty.

**Results:** Most respondents were female (70%), aged  $\leq 34$  years (47%), Canadian graduates (83%), from Ontario/Quebec (51%) and from urban centres (58%). Although a significant proportion agreed it is important for pharmacists to know (80%) and assess (56%) patient frailty status, only

36% reported assessing frailty in practice. Respondents exclusively practising in a community pharmacy were significantly less likely to agree that it is important for a pharmacist to know or assess frailty status and to report assessing it. Factors associated with a greater likelihood of assessment included positive beliefs about the importance of knowing a patient's frailty status and having a greater proportion of older patients with cognitive or functional impairment in practice.

**Discussion:** Findings suggest that pharmacists generally agree with the importance of understanding frailty as it relates to the appropriate use of medications, but most do not assess it. Further research is needed to identify the barriers to assessing frailty, while guidance is needed on which of the available screening tools can best be integrated into a clinical pharmacy practice.

**Conclusion:** There is an opportunity to improve pharmaceutical care for older adults by providing pharmacists the means and resources to assess frailty in practice. *Can Pharm J (Ott)* 2023;156:159-171.

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## KNOWLEDGE INTO PRACTICE



- Frailty is an age-related state of heightened vulnerability to stressors arising from impairments in multiple physiological systems and can predict negative health outcomes.
- Frailty is associated with polypharmacy and poses a risk for adverse drug events.
- Data on Canadian pharmacists' knowledge and perceptions about frailty in older adults and its assessment are scarce.
- There is an opportunity to improve pharmaceutical care for older adults by achieving a standard definition for frailty among pharmacists, prioritizing or refining the available tools for assessing it and generating the evidence necessary for pharmacists to identify and support frail and prefrail patients in practice.

## Introduction

Frailty is an age-related state of heightened vulnerability to stressors (e.g., acute illness, therapeutic interventions) arising from impairments in multiple organ systems and leading to reductions in homeostatic reserve and resiliency.<sup>1-3</sup> Related to, but distinct from multimorbidity,<sup>4</sup> frailty is associated with adverse health outcomes, including mortality.<sup>1,5,6</sup> Depending on the approach taken to identify it, 12% to 17% of community-dwelling older adults in Canada are considered frail.<sup>7</sup> Rates rise with increasing age, and more than 25% of individuals may be frail by age 85 years.<sup>8</sup> As the Canadian population ages,<sup>9</sup> the burden of frailty will increase.<sup>10,11</sup> While approaches to identifying frailty vary, the multisystem dysregulation underlying its development suggests that an accurate assessment of frailty should be multidimensional and consider items reflective of impairments in physical, cognitive, emotional, psychosocial and nutritional domains.<sup>1,3</sup>

Of particular relevance to the pharmacist's care plan, frailty is often associated with polypharmacy<sup>12</sup> and an increased risk of adverse drug events (ADEs).<sup>13,14</sup> The former appears to be bidirectional, while the latter is secondary to the psychological, cognitive and social impairments seen with frailty,<sup>13,15</sup> drug-drug and drug-supplement interactions and the altered pharmacokinetics and pharmacodynamics associated with the physiology of frailty.<sup>16,17</sup> ADEs are not only a consequence of frailty but may also contribute to its progression. Pharmacists are ideally positioned to identify patients with frailty and mitigate risks associated with drug use.<sup>18</sup> Structured medication reviews by pharmacists may be particularly valuable for frail patients when linked to timely and thoughtful medication-related interventions.<sup>19</sup> Inappropriate polypharmacy, use of high-risk medications (e.g., anticholinergics, psychotropics)<sup>20,21</sup> and drug-drug interactions could be identified, and the prescriber can be notified and issues managed.<sup>22,23</sup>

## MISE EN PRATIQUE DES CONNAISSANCES



- La fragilité est un état lié à l'âge qui se caractérise par une vulnérabilité accrue aux facteurs de stress qui découlent de déficiences dans de multiples systèmes physiologiques, et peut prédire des résultats négatifs pour la santé.
- La fragilité est associée à la polypharmacie et présente un risque d'événements indésirables médicamenteux.
- Il existe très peu de données sur les connaissances et les perceptions des pharmaciens canadiens concernant la fragilité des personnes âgées et son évaluation.
- Il est possible d'améliorer les soins pharmaceutiques pour les personnes âgées en parvenant à une définition standard de la fragilité chez les pharmaciens, en hiérarchisant ou en affinant les outils disponibles pour l'évaluer et en produisant les preuves nécessaires pour que les pharmaciens identifient et soutiennent les patients fragiles et pré-fragiles dans la pratique.

Recent reviews and consensus reports have argued that health care professionals should screen older adults in community settings for frailty.<sup>18,24,25</sup> To date, scarce attention has been paid to the role of community pharmacists in the identification, assessment and management of frailty. Therefore, this study sought to examine Canadian pharmacists' knowledge and perceptions about late-life frailty and its assessment in clinical pharmacy practice.

## Methods

*Study design and participants*

In this cross-sectional study, a national web-based, self-administered survey was developed. Licensed, practising (defined as  $\geq 1$  day per week in a patient care setting) Canadian pharmacists proficient in English were asked to complete the survey between June 8 and July 20, 2018.

This study was approved by the University of Waterloo Research and Ethics Board (ORE#22943, ORE#31716).

*Survey instrument*

Standardized items<sup>26</sup> were used to capture respondents' sociodemographic characteristics. Respondents were also asked about their primary practice setting(s), education, certifications, years and days/week of practice and characteristics of their patient population (e.g., average age, sex, cognitive/functional/frailty status).

Frailty items included in the survey were based on an earlier comparable study conducted among other health care professionals,<sup>27</sup> previous research conducted by team members<sup>13,28</sup>

and a search of English-language peer-reviewed articles and grey literature reports published between 2016 and 2018. Search terms encompassed variations of *frail*, *prefrail*, *older adults*, *pharmacist* and *community pharmacy*. The items selected explored respondents' understanding, beliefs and practices related to frailty and its assessment, as well as clinical domains assessed when caring for complex or vulnerable patients.

An English electronic survey instrument was constructed using the Qualtrics online platform (Qualtrics International Inc., Provo, UT). This survey was pilot tested by 5 pharmacists (practising in community and primary care) and 2 geriatricians, with modifications made based on their feedback. The final survey instrument consisted of 31 questions (Appendix 1, available in the online version of the article). Question formats included item-specific scales, multiple-choice questions, Likert scales and open text entry. The estimated time to complete the survey was 15 to 20 minutes.

#### Data collection

Pharmacists were invited to participate by a notice shared June 8, 2018, through (1) the Canadian Pharmacists Association and affiliated provincial pharmacist associations, (2) 2 pharmacy conferences (Canadian Pharmacists Association Annual Meeting, Canadian Pharmacy Education and Research Conference [CPERC]) and (3) social media platforms (LinkedIn, Twitter, Facebook). The notice described the survey and its objectives and included a link to the anonymous questionnaire housed on Qualtrics. The survey remained open for a total of 6 weeks, closing on July 20, 2018. No study incentive was offered. The anonymity of survey participants was ensured by collecting no personal identifying information and categorizing the data collected.

#### Measures

Respondents' sociodemographic and other practice-related characteristics were collapsed into categorical variables based on the initial distribution of survey item responses (to avoid small cells) and clinical relevance.

For pharmacists' practice setting(s), we created a 3-level categorical variable: (1) practised in community pharmacies only (reference group), (2) primarily practised in hospital and/or long-term care (LTC) setting(s) and (3) primarily practised in other (non-hospital or LTC) settings, such as in a primary care team, an academic setting or a specialized clinic. A small proportion of respondents in (2) or (3) also reported working in a community pharmacy.

Respondents were asked to indicate their level of agreement with the following statements: (1) It is important for a pharmacist to *know* a patient's frailty status, and (2) It is important for a pharmacist to *assess* a patient's frailty status. For both items, responses were collapsed into a binary measure coded as disagree/neither agree nor disagree/somewhat agree/don't know

vs agree/strongly agree. They were also asked to indicate from a list of 13 health-related items (capturing patient's functional, cognitive, health and social well-being) the ones they believed were related to frailty.

To capture pharmacists' assessment practices, respondents were asked to indicate how frequently they assessed specific clinical areas/domains (including physical, cognitive and psychosocial items) when care planning for more complex or vulnerable patients. Responses were collapsed as never/sometimes/about half the time vs always/most of the time. They were also asked directly whether they assessed frailty in their pharmacy practice. Responses to this item (coded as yes vs no/don't know) formed the dependent variable of interest used for analyses.

Finally, pharmacists were asked to indicate any assessment methods or tools that they were aware of or had used when care planning for more complex or vulnerable patients. Since respondents often listed multiple measures, responses were coded in a hierarchical manner according to the highest level where at least 1 method or tool was mentioned (Frailty Scales > Clinical Scales > Interview > Medication Use/Profile > Observation/Clinical Judgment > Conferring with Other Professions > None/Don't Know > Missing). Frailty scales could include those reviewed by Walston et al.<sup>29</sup> or found in the British Geriatrics Society best practice frailty guidelines.<sup>25</sup>

#### Data analysis

Descriptive analyses summarized respondents' characteristics and survey responses overall and by practice setting. Cross-tabulations and chi-square tests of statistical significance were used to compare respondents' characteristics and beliefs/perceptions by practice setting and the dependent variable of interest (assessing frailty in their practice, yes vs no).

Unadjusted and multivariable logistic regression models were conducted to examine the crude and adjusted associations (odds ratios with 95% confidence intervals) between key respondent characteristics and beliefs and whether they reported assessing frailty in practice (yes vs no).

All analyses were conducted using SAS version 9.4 (SAS Institute Inc., Cary, NC) and Excel. In view of our overall sample size and the presence of relatively small cell sizes for some variables, we used an  $\alpha = 0.1$  for statistical significance.

## Results

A total of 510 eligible respondents started the online survey. After excluding duplicate surveys (surveys completed over 2+ sessions) and incomplete surveys, the final sample consisted of 349 respondents (0.8%–1% of all licensed pharmacists in Canada during 2018). Respondents came from all 10 provinces, with half (50.1%) practising in Ontario.

#### Respondent characteristics

Among respondents, 60.2% reported working solely in a community pharmacy, 22.3% in a hospital and/or LTC practice

**TABLE 1** Characteristics of survey respondents, overall and by practice setting, column % (n)

Characteristic	Overall N = 349	Practice setting		
		Community pharmacy only, 60.2% (210)	Hospital and/or LTC (± community pharmacy), 22.3% (78)	Other settings (± community pharmacy), 17.5% (61)
Age group, years				
≤34	46.7 (163)	42.9 (90)	57.7 (45)	45.9 (28)
35-44	22.9 (80)	23.3 (49)	21.8 (17)	23 (14)
≥45	30.4 (106)	33.8 (71)	20.5 (16)	31.2 (61)
Gender				
Male/prefer not to answer	30.1 (105)	34.8 (73)**	23.1 (18)	23 (14)
Female	69.9 (244)	65.2 (137)	76.9 (60)	77.1 (47)
Education (highest level) <sup>†</sup>				
BSc (Pharm)/other	68.8 (240)	83.8 (176)*	42.3 (33)	50.8 (31)
PharmD/residency	31.2 (109)	16.2 (34)	57.7 (45)	49.2 (30)
Undergraduate pharmacy degree				
Canada	83.1 (290)	77.1 (162)*	91 (71)	93.4 (57)
United States/other country	16.9 (59)	22.9 (48)	9 (7)	6.6 (4)
Certifications completed				
None	47 (164)	46.7 (98)**	47.4 (37)	47.5 (29)
Geriatric/diabetes/respiratory	20.6 (72)	16.7 (35)	29.5 (23)	23 (14)
All others <sup>‡</sup>	32.4 (113)	36.7 (77)	23.1 (18)	29.5 (18)
Continuous years in practice: Canada				
≤5	31.5 (110)	32.9 (69)**	34.6 (27)	23 (14)
6-15	33.2 (116)	29.5 (62)	42.3 (33)	34.4 (21)
≥16	35.2 (123)	37.6 (79)	23.1 (18)	42.6 (26)
Province of current practice				
British Columbia/Alberta	11.5 (40)	11.9 (25)	14.1 (11)	6.6 (4)
Manitoba/Saskatchewan	27.2 (95)	31.9 (67)	18 (14)	23 (14)
Ontario/Quebec	51.3 (179)	47.1 (99)	55.1 (43)	60.7 (37)
New Brunswick/Newfoundland-Labrador/Nova Scotia/Prince Edward Island	10 (35)	9.1 (19)	12.8 (10)	9.8 (6)
Population size–practice location				
Large urban centre (100,000+)	57.6 (201)	51.4 (108)*	66.7 (52)	67.2 (41)
Smaller population centre/rural	42.4 (148)	48.6 (102)	33.3 (26)	32.8 (20)

(continued)

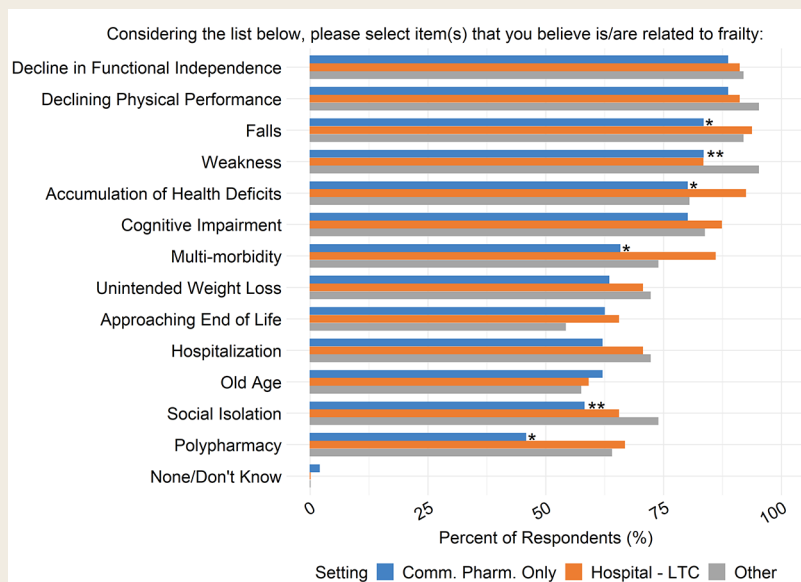
TABLE 1 (continued)

Characteristic	Overall N = 349	Practice setting		
		Community pharmacy only, 60.2% (210)	Hospital and/or LTC (± community pharmacy), 22.3% (78)	Other settings (± community pharmacy), 17.5% (61)
Average days/week practice <sup>†</sup>				
1-2	18.1 (63)	8.6 (18)*	25.6 (20)	41 (25)
3-4	26.9 (94)	31.4 (66)	19.2 (15)	21.3 (13)
≥5	55 (192)	60 (126)	55.1 (43)	37.7 (23)
Primary method of contact with physicians <sup>†</sup>				
Fax/other/none	69.3 (242)	91 (191)*	34.6 (27)	39.3 (24)
Phone/in person	30.7 (107)	9.1 (19)	65.4 (51)	60.7 (37)
Average proportion of patients (65+ years) with impaired physical functioning <sup>†</sup>				
Some/minority/none/don't know	74.2 (259)	83.8 (176)*	55.1 (43)	65.6 (40)
All/majority	25.8 (90)	16.2 (34)	44.9 (35)	34.4 (21)
Average proportion of patients (65+ years) with impaired cognitive functioning <sup>†</sup>				
Some/minority/none/don't know	89.7 (313)	95.2 (200)*	71.8 (56)	93.4 (57)
All/majority	10.3 (36)	4.8 (10)	28.2 (22)	6.6 (4)
Average proportion of patients (65+ years) living with frailty				
Some/minority/none/don't know	77.9 (272)	82.4 (173)*	66.7 (52)	77.1 (47)
All/majority	22.1 (77)	17.6 (37)	33.3 (26)	23 (14)
Belief: Important for pharmacist to <i>know</i> patient's frailty status				
Disagree/neither agree or Disagree/somewhat agree/don't know	20.3 (71)	24.8 (52)*	14.1 (11)	13.1 (8)
Strongly agree/agree	79.7 (278)	75.2 (158)	85.9 (67)	86.9 (53)
Belief: Important for pharmacist to <i>assess</i> patient's frailty status				
Disagree/neither agree or Disagree/somewhat agree/don't know	43.8 (153)	51.4 (108)*	29.5 (23)	36.1 (22)
Strongly agree/agree	56.2 (196)	48.6 (102)	70.5 (55)	63.9 (39)
Assess for frailty in pharmacy practice <sup>†</sup>				
No/Don't know	64.2 (224)	72.4 (152)*	51.3 (40)	52.5 (32)
Yes	35.8 (125)	27.6 (58)	48.7 (38)	47.5 (29)

<sup>†</sup>Variables highly correlated with practice setting.

<sup>‡</sup>"All other" certifications included injection, smoking cessation, minor ailment prescribing, anticoagulation management, methadone management and opioid additions treatment certifications.

\* $p < 0.05$ ; \*\* $p < 0.1$ .

**FIGURE 1** Items believed to be related to frailty, by practice setting (could select all that apply)

\* $p < 0.05$ ; \*\* $p < 0.01$ .

setting (19/78 also worked in a community pharmacy) and 17.5% in other settings (23/61 also worked in a community pharmacy) (Table 1). Approximately half or more respondents were female (69.9%), aged  $\leq 34$  years (46.7%), without a PharmD or equivalent degree (68.8%) and Canadian graduates (83.1%). Just over half reported working in large urban centres for  $\geq 5$  days/week on average. Additional certifications related to geriatrics and/or chronic disease management were reported by 20.6%. About one-quarter stated that most of their practice consisted of patients with impaired physical functioning or frailty, and 10% reported that a majority of their patients had impaired cognition.

Respondents who reported working only in a community pharmacy were more likely to be male, have a bachelor of pharmacy as their highest degree, have obtained their degree outside of Canada, have completed other (i.e., not geriatric or chronic disease) certifications, practice in rural or smaller population centres and work a higher number of days/week. This group of respondents was less likely to indicate that their primary method of contact with physicians was by phone or in person and to report that a majority of their practice included patients with impaired physical functioning, frailty or impaired cognition.

#### Knowledge, perceptions and practices

Among all respondents, 79.7% agreed or strongly agreed that it is important for a pharmacist to know a patient's frailty status, and 56.2% agreed or strongly agreed that it is important for a pharmacist to assess a patient's frailty status, although only 35.8% reported assessing frailty in their practice (Table 1). Community pharmacy-only respondents were less likely to

agree/strongly agree that it is important for a pharmacist to know (75.2% vs 86% for other 2 categories combined) or assess (48.6% vs 70.5% [hospital and/or LTC] and 63.9% [other]) frailty. They were also less likely to assess frailty in their practice (27.6% vs 48% for other 2 combined).

Most respondents ( $>80\%$ ) believed health items related to function (i.e., decline in functional independence or physical performance, falls, weakness, accumulation of health deficits, cognitive impairment) were related to frailty (Figure 1; Appendix 2, available in the online version of the article). A lower proportion of respondents believed other health-related items were related to frailty (e.g., multimorbidity, unintended weight loss, end of life, hospitalization, old age, social isolation, polypharmacy). Those working only in community pharmacies were less likely to believe that falls, weakness, an accumulation of health deficits, multimorbidity, social isolation and polypharmacy were related to frailty.

Beyond practice setting, other characteristics significantly associated with an increased likelihood for assessing frailty in practice were higher education, region (British Columbia/Alberta and Ontario/Quebec vs others), more direct primary mode of contact with physicians (in person or by phone vs others) and reporting that most patients in their practice had impaired physical or cognitive functioning (Table 2). The 2 belief statements regarding frailty showed the strongest association with an increased likelihood for assessing frailty in practice (e.g., 42.5% of respondents who agreed/strongly agreed that it is important to know a patient's frailty status assessed frailty in their practice vs 9.9% for those who did not agree/strongly agree).

Unadjusted and adjusted associations between pharmacists' characteristics and assessing patient frailty in practice are

**TABLE 2** Characteristics of survey respondents, by whether they report assessing for frailty in pharmacy practice, row % (n)

Characteristic	Overall N = 349	Assess frailty in pharmacy practice	
		Yes, 35.8% (125)	No/Don't Know, 64.2% (224)
Age group, years			
≤34	46.7 (163)	36.8 (60)	63.2 (103)
35-44	22.9 (80)	31.3 (25)	68.8 (55)
≥45	30.4 (106)	37.7 (40)	62.3 (66)
Gender			
Male/prefer not to answer	30.1 (105)	32.4 (34)	67.6 (71)
Female	69.9 (244)	37.3 (91)	62.7 (153)
Education (highest level) <sup>†</sup>			
BSc (Pharm)/other	68.8 (240)	29.6 (71)*	70.4 (169)
PharmD/residency	31.2 (109)	49.5 (54)	50.5 (55)
Undergraduate pharmacy degree			
Canada	83.1 (290)	37.9 (110)**	62.1 (180)
United States/other country	16.9 (59)	25.4 (15)	74.6 (44)
Certifications completed			
None	47 (164)	34.8 (57)	65.2 (107)
Geriatric/diabetes/respiratory	20.6 (72)	45.8 (33)	54.2 (39)
All others	32.4 (113)	31 (35)	69 (78)
Continuous years in practice: Canada			
≤5	31.5 (110)	30.9 (34)	69.1 (76)
6-15	33.2 (116)	40.5 (47)	59.5 (69)
≥16	35.2 (123)	35.8 (44)	64.2 (79)
Province of current practice			
British Columbia/Alberta	11.5 (40)	55 (22)*	45 (18)
Manitoba/Saskatchewan	27.2 (95)	22.1 (21)	77.9 (74)
Ontario/Quebec	51.3 (179)	40.2 (72)	59.8 (107)
New Brunswick/Newfoundland-Labrador/Nova Scotia/Prince Edward Island	10 (35)	28.6 (10)	71.4 (25)
Population size—practice location			
Large urban centre (100,000+)	57.6 (201)	38.3 (77)	61.7 (124)
Smaller pop centre/rural	42.4 (148)	32.4 (48)	67.6 (100)

(continued)

TABLE 2 (continued)

Characteristic	Overall N = 349	Assess frailty in pharmacy practice	
		Yes, 35.8% (125)	No/Don't Know, 64.2% (224)
Average days/week practice <sup>†</sup>			
1-2	18.1 (63)	38.1 (24)	61.9 (39)
3-4	26.9 (94)	43.6 (41)	56.4 (53)
≥5	55 (192)	31.3 (60)	68.8 (132)
Primary method of contact with physicians <sup>†</sup>			
Fax/other/none	69.3 (242)	30.2 (73)*	69.8 (169)
Phone/in person	30.7 (107)	48.6 (52)	51.4 (55)
Average proportion of patients (65+) with impaired physical functioning <sup>†</sup>			
Some/minority/none/don't know	74.2 (259)	30.9 (80)*	69.1 (179)
All/majority	25.8 (90)	50 (45)	50 (45)
Average proportion of patients (65+) with impaired cognitive functioning <sup>†</sup>			
Some/minority/none/don't know	89.7 (313)	32.9 (103)*	67.1 (210)
All/majority	10.3 (36)	61.1 (22)	38.9 (14)
Belief: Important for pharmacist to <i>know</i> patient's frailty status			
Disagree/neither agree or Disagree/somewhat agree/don't know	20.3 (71)	9.9 (7)*	90.1 (64)
Strongly agree/agree	79.7 (278)	42.5 (118)	57.6 (160)
Belief: Important for pharmacist to <i>assess</i> patient's frailty status			
Disagree/neither agree or Disagree/somewhat agree/don't know	43.8 (153)	15.7 (24)*	84.3 (129)
Strongly agree/agree	56.2 (196)	51.5 (101)	48.5 (95)

<sup>†</sup>Variables highly correlated with practice setting.

\* $p < 0.05$ ; \*\* $p < 0.1$ .

presented in Table 3. As a result of high correlations between some variables and practice setting, not all characteristics significant at the bivariate level were included in the final model. After adjusting for underlying differences between the groups (including beliefs about the importance of pharmacists knowing frailty status), pharmacists primarily working in hospital and/or LTC or other settings were significantly more likely than those working only in community pharmacies to report assessing frailty in their practice (adjusted odds ratios [adjOR] = 1.88, 95% confidence interval [CI] = 1.02–3.47 for hospital and/or LTC pharmacists; adjOR = 2.19, 95% CI = 1.17–4.10 for other settings). Positive beliefs about the importance of knowing and assessing frailty showed the strongest associations with

assessing it in practice after adjusting for covariates (adjOR = 6.03, 95% CI = 2.58–14.11 and adjOR = 5.57, 95% CI = 3.21–9.65) for those who agreed/strongly agreed that it is important to know and assess a patient's frailty status, respectively). Both belief statements were highly correlated with each other and could not be retained in the same model.

Approximately 50% or more of respondents reported they always/often assessed appearance and cognitive status when caring for more complex or vulnerable patients (Figure 2). A smaller proportion ( $\leq 40\%$ ) of respondents reported that they always/often assessed weakness, gait speed, unintended weight loss, exhaustion, emotional or social vulnerability. Respondents who worked only in community pharmacies were less



**TABLE 3** Associations between respondent characteristics and assessment of frailty in pharmacy practice (N = 349)

Characteristic	Unadjusted odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Age group, years (ref = ≤34)	1	1
35-44	0.78 (0.44-1.38)	0.99 (0.52-1.89)
≥45	1.04 (0.63-1.73)	1.11 (0.62-1.99)
Gender (ref = male/prefer not to answer)	1	1
Female	1.24 (0.77-2.02)	1.07 (0.62-1.85)
Certifications completed		
None	1	1
Geriatric/diabetes/respiratory	1.59 (0.90-2.79)	1.5 (0.79-2.83)
All others	0.84 (0.51-1.41)	1.38 (0.74-2.56)
Province of current practice		
British Columbia/Alberta	1.82 (0.91-3.62)	1.9 (0.89-4.05)**
Manitoba/Saskatchewan	0.42 (0.24-0.75)*	0.45 (0.23-0.87)*
Ontario/Quebec	1	1
New Brunswick/Newfoundland-Labrador/Nova Scotia/Prince Edward Island	0.59 (0.27-1.31)	0.53 (0.22-1.30)
Average proportion of patients (65+ years) with impaired cognitive functioning		
Some/minority/none/don't know	1	1
All/majority	3.2 (1.58-6.52)*	1.96 (0.90-4.27)**
Belief: Important for pharmacist to know patient's frailty status <sup>†</sup>		
Disagree/neither agree or Disagree/somewhat agree/don't know	1	1
Strongly agree/agree	6.74 (2.98-15.24)*	6.03 (2.58-14.11)*
Practice setting		
Community pharmacy only	1	1
Hospital and/or LTC	2.49 (1.46-4.26)*	1.88 (1.02-3.47)*
Other settings	2.38 (1.32-4.27)*	2.19 (1.17-4.10)*

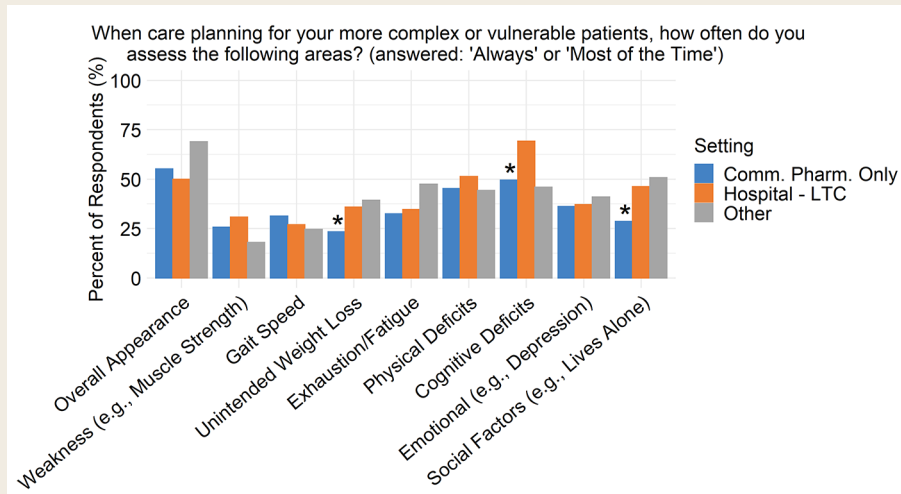
<sup>†</sup>When this measure was substituted with the belief statement about the importance of pharmacists assessing patient frailty in the same model, the adjusted association was adjOR 5.57 (3.21-9.65).\*

\* $p < 0.05$ ; \*\* $p < 0.1$

likely to report that they always/often assessed unintended weight loss or social vulnerability. Those working in hospital and/or LTC settings were more likely than those working only in community pharmacies and other settings to report always/often assessing cognitive deficits.

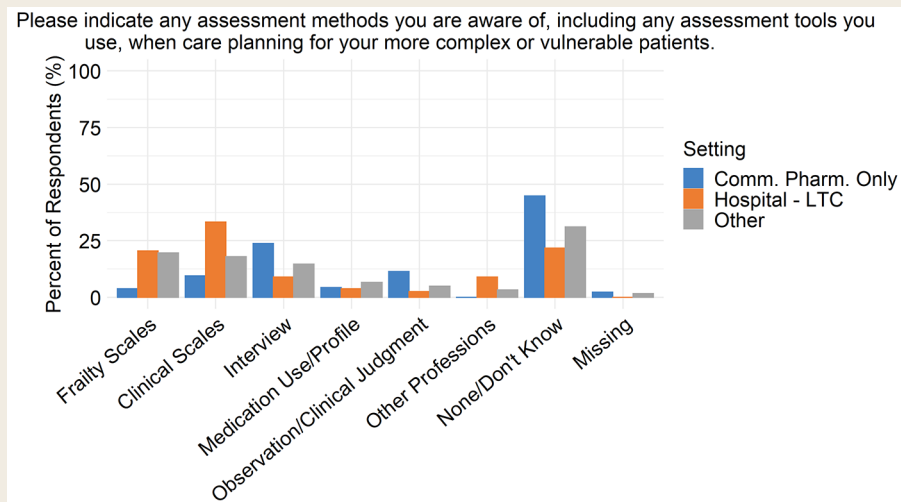
Only 10.3% (36/349) of respondents reported being aware of or using a frailty scale in their assessment of complex or vulnerable patients. Commonly mentioned frailty scales were the Clinical Frailty Scale<sup>30,31</sup> or a frailty index. Respondents working only in community pharmacies were less likely than other

**FIGURE 2** Percentage of respondents reporting they assess the clinical domain always or most of the time when care planning for more complex/vulnerable patients, by practice setting



\* $p < 0.05$ .

**FIGURE 3** Percentage of respondents reporting they are aware of or use the following types of assessment methods when care planning for more complex/vulnerable patients, by practice setting



Clinical scales were any method or tool that assessed 1 clinical element of a comprehensive frailty measure. A patient interview could be a standardized assessment (such as an Ontario Medscheck) or an informal dialogue. Reviewing medication use to assess frailty included appraising aspects of polypharmacy, medication compliance, use of medicines not recommended in older adults (e.g., the Beers criteria) and more but did not involve speaking with the patient. The Other Professions code was applied when the respondent indicated that they referred to the assessments from allied health care professionals but did not mention any specific methods or tools that they were aware of.

groups to report being aware of or using a frailty scale. When caring for complex or vulnerable patients they relied on interviews, observations and clinical judgment (Figure 3).

**Discussion**

Our study results indicate general agreement among pharmacists about the worth of knowing (80%) and assessing (56%) frailty as it relates to managing medication therapy, although fewer actually assessed it (36%). Those working only in community

pharmacies were significantly less likely to agree with the clinical utility of knowing a patient’s frailty status and to assess it. Other factors associated with a greater likelihood of assessing frailty in practice included positive beliefs about its importance and looking after a larger proportion of older patients with cognitive and/or functional impairments. Overall, there was consensus among pharmacists (>80%) that certain health items primarily related to function were components of frailty, but fewer believed that sociological, emotional and medication items (including

polypharmacy) were relevant. Community pharmacists generally limited their definition of frailty to fewer domains, most often functional or physical. When care planning for complex or vulnerable patients, most pharmacists assessed appearance and cognitive status. Few reported assessing weakness, gait speed, unintended weight loss, exhaustion, emotional or social vulnerability. Only 10% of respondents were aware of or using a frailty scale in practice, the most common being the Clinical Frailty Scale<sup>30,31</sup> or a frailty index.

The difference in beliefs about the importance of *knowing* a patient's frailty status vs the importance of *assessing* it may be related to pharmacists' scope of practice. An assessment of frailty may be considered diagnostic in nature, falling in the jurisdiction of physicians or other health professionals. There may also be concerns that the available tools are not feasible for a pharmacy setting or should not be used with certain patients. Nevertheless, a relatively brief interview-based assessment of frailty could become an integral component of a pharmacist's medication review, including in the community.<sup>32</sup> Since frailty is associated with a heightened risk for ADEs and intolerance of stressors,<sup>33</sup> its measurement could be of high importance when evaluating the risk-benefit ratio for each medication in a patient's regimen.<sup>18</sup>

While pharmacists are well positioned to assess frailty and make meaningful medication interventions for vulnerable patients (such as deprescribing<sup>19</sup>), there are several potential barriers to implementing a frailty assessment in routine patient care. An exploratory qualitative interview study of pharmacists in Northern Ireland<sup>34</sup> found that pharmacists were accessible and involved in the care of frail older adults, but if frailty was assessed, it was most often done informally or limited to physical factors. An obstacle was the lack of a readily available and standardized assessment instrument or approach. Assessing frailty in a community pharmacy may be particularly problematic. Common barriers to implementing innovations in community pharmacies include ensuring adequate time and compensation for these services.

Some literature exists to describe the implementation of frailty assessments in community pharmacy practice. A study in France described the use of the Short Emergency Geriatric Assessment (SEGA) grid for assessing frailty in 218 pharmacies.<sup>32</sup> The SEGA grid includes 13 patient interview items, each scored 0 to 2 (reflecting impairment). Patients are classified by total score as "not very frail" (score < 8), "frail" (score between 8 and 12), or "very frail" (score > 12).<sup>35,36</sup> Other assessment instruments that might be feasible for a community pharmacy

practice in Canada were reviewed by Blain and Flanagan<sup>37</sup> and included the Clinical Frailty Scale.<sup>30,31,38</sup> Prior to incorporation into clinical pharmacy guidelines, further research is needed on prioritizing (and/or refining) the available screening tools that could be used to identify candidates for frailty-based medication-related interventions.

Overall, our findings reveal the opportunity for an improved understanding among pharmacists of the multidimensional nature of frailty, its associated outcomes, identification and what can be done about it. Pharmacists had a good understanding of the physical and cognitive components of frailty but were less aware of other important frailty domains such as multimorbidity, social isolation and polypharmacy. This was particularly so among community pharmacists. A surprising finding was that, despite their role as medication experts, polypharmacy was the lowest ranked factor believed by pharmacists to be related to frailty.

#### Limitations

This study is not without limitations. Compared with individuals who responded to the survey, those who did not are likely to have less interest, experience and knowledge of frailty. This survey may overestimate the priority and degree of consensus about frailty among pharmacists. Further, while respondents were included from all 10 provinces, the survey was offered only in English, and most respondents were from Ontario (50.1%). Results may not be generalizable across the country or within provinces, given the low response rate.

#### Conclusion

This study adds to the limited body of research that exists in this area. While pharmacists showed positive attitudes toward knowing and assessing frailty status, the implementation of such an assessment has been done in only a minority of practices. This offers an opportunity to improve pharmaceutical care for older frail patients. The success of a pharmacist-led framework for assessing frailty and modifying medication regimens accordingly will require a broadly accepted definition for frailty, as well as evidence elucidating health outcomes resulting from targeted interventions (that fall within pharmacists' scope of practice). Future research should (1) identify barriers to assessing frailty in different pharmacy practice settings, (2) prioritize (and possibly refine) available screening tools that could be used to identify candidates for frailty-based medication interventions and (3) determine the impact on health outcomes when frailty-based medication interventions are applied. ■

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made substantial contributions to the interpretation of data, critically reviewed the manuscript for important intellectual content and approved the final manuscript submitted for consideration. N. Nakhla is the guarantor of the content of the manuscript, including the data and analysis.

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