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An Exploration of Home Care Nurse's Role in Deprescribing of Medications: A Qualitative Descriptive Study

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ABSTRACT:

Objectives: The aim of this study is to explore home care nurses' understanding of polypharmacy management and adoption of deprescribing approaches.

Methods: This study employed an exploratory qualitative descriptive research design, consisting of two focus groups with a total of eleven home care nurses in Ontario, Canada. Content analysis was used to derive themes about home care nurse's understanding and learning needs in relation to deprescribing approaches, and the opportunities for appropriate use of non-pharmacological measures.

Results: Home care nurse's identified challenges for managing polypharmacy in older adults in home care settings, including a lack of open communication and inconsistent medication reconciliation practices. Additionally, inadequate partnership and ineffective collaboration between inter-professional healthcare providers were identified as major barriers to safe deprescribing. Further, home care nurses identified that raising awareness about deprescribing in the community facilitated deprescribing, and they identified a need for a consistent and standardized approach into educating best practices in deprescribing among healthcare providers, informal caregivers, and older adults.

Conclusion: Targeted deprescribing approaches are important in home care for optimizing medication management and reducing polypharmacy in older adults. Nurses in home care play a vital role in medication management and, therefore, educational training must be developed to support the development of their awareness and understanding of deprescribing**.** Study findings highlight the need for the future development of programs about safer medication management which will foster a supportive and collaborative relationship between the home care team, frail elders and their informal caregivers.

Article Summary: Strengths and Limitations of This Study:

- This study explored a novel topic of research: deprescribing of medications and managing polypharmacy from the perspectives of nurses in home care settings.
- The use of qualitative description through focus group interviews allowed for the opportunity to gain in-depth insight into a wide range of perceptions and beliefs that home care nurses hold in relation to the topic of medication management for older adults.
- The current study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses from diverse healthcare settings (ie. primary health nurses) in order to gain a deeper understanding of their educational needs about deprescribing.

Keywords: Deprescribing; Home HealthCare; Nursing; Older Adults; Medications

BACKGROUND:

Polypharmacy, defined as the use of multiple medications or more medications than is medically necessary, is a growing concern for older adults [1]. With the increasing number of older adults with multiple chronic diseases, older adults are frequently prescribed five or more medications [2]. Nearly 50% of older adults take one or more medications that are medically unnecessary thus requiring a clinical medication review [3]. Polypharmacy is a growing concern for older adults in home care settings. Chronic conditions are common among older home care clients with 77% of people aged 65 years and over experiencing at least one chronic disease [4]. There are many negative consequences associated with polypharmacy, including increased healthcare costs; the risk for adverse drug events and drug interactions; medication non-adherence; reduced functional and cognitive status; and the risks for falls [5]. Increased prescription medication use has been associated with diminished ability to perform instrumental activities of daily living (IADL) among older adults with frailty (a syndrome of physiological decline in later life), including shopping; meal preparation; managing finances; driving or using public transportation; performing housework and medication management [6]. As a result of the prevalence of polypharmacy and the associated negative consequences, reducing complex medication regimens to those necessary should be central to the promotion of active and independent living of older adults in home care.

One important way of optimizing medication management and reducing polypharmacy for older adults in home care is through deprescribing. Deprescribing is considered to be an essential part of the prescribing process where healthcare providers reduce the dose and stop medications after carefully assessing the patient's goals of care and weighing the potential harm and benefit of the medication [5]. Deprescribing is a vital part of supporting older adults in the self-management of multiple chronic conditions, because it can reduce the risk of adverse effects and improve health related quality of life [7]. Research has indicated that educational training for nurses about deprescribing had the potential to improve the quality of life in clients of assisted living facilities by reducing the use of harmful medications [8]. Nurses in home care play a vital role in medication management and, therefore, educational training must be developed to support them in the development of their awareness and understanding of deprescribing approaches to help enable the opportunities for active and independent living of the frail elders at home [8]. To date, little is known about the perspectives of home care nurses in regard to their educational needs about appropriate deprescribing of medications for community-dwelling older adults.

Given this knowledge gap, our project focuses on the design of an educational intervention that would address the learning needs of home care nurses about safe deprescribing practices in the community. Specifically, the purpose of our current research project was to promote the awareness and the adoption of de-prescribing approaches among home care nurses through education using a scaling up approach. The process of scaling up was used which involved the deliberate effort to increase the impact of educational interventions to benefit the

target populations, and to promote future policy and program development on an ongoing basis [9]. This was achieved through a mixed methods research design using the following three phases of scaling up process: (1) Phase I Scalability assessment: conducting a focus group with home care nurses to assess their understanding and learning needs in relation to deprescribing approaches, and the opportunities for appropriate use of non-pharmacological measures. (2) Phase II Develop a scaling up plan: developing an educational plan for home care nurses about deprescribing based on feedback from the focus group sessions. (3) Phase III Implement the scale-up plan: conducting the scaling up of education about deprescribing and appropriate use of non-drug therapies with home care nurses to evaluate the appropriateness, acceptability and effectiveness of the educational intervention using questionnaire data.

Objectives:

This paper will report the findings of the first phase of the scalability study. The objectives of this study were to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing.

METHOD:

Study Design, Setting and Participants:

An exploratory qualitative descriptive research design was used to examine home care nurses' understanding of deprescribing, polypharmacy and non-pharmacological approaches for older adults in the community. Focus groups were held to generate qualitative descriptive data was collected to allow for a descriptive summary of the phenomenon of interest that could serve as entry points for further study [10]. Upon ethics approval from the Research Ethics Board at the University of Ontario Institute of Technology, our recruitment took place at one designated home care organization in Ontario, Canada. Home care nurses who met the following inclusion criteria were invited to participate in the focus group: 1) A Registered Nurse or Registered Practical Nurse with a casual/part-time/full-time status who has direct clinical contact with patients; 2) having experience in working with older adults in home care settings; and 3) over the age of 18 years old and having the ability to understand and speak English.

Data collection:

The first focus group session involved five home care nurses. and the second focus group interviewed six nurses. Focus groups were held, each lasting about 60 to 90 minutes. The questions were guided by the following four topic domains: a) Polypharmacy among frail older adults in home care; b) Learning and educational needs about deprescribing; c) Barriers and enablers to deprescribing approaches; and d) Exploration of non-pharmacological alternatives to medications. The focus groups were held iteratively until data saturation occurred. During each focus group session, the facilitator asked open-ended questions to ensure the relevant topics were

discussed and to allow all study participants to speak freely and openly. A research assistant was present to take field notes to make observations. The focus group interviews were audio-recorded with the permission from study participants and they were transcribed prior to the data analysis.

Data Analysis:

Conventional thematic analysis was used for analyzing the focus group data with the following steps being followed to generate the qualitative themes. The research team read and re-read the transcripts to immerse themselves in the dataset and to develop a general understanding of the focus group data with descriptive summaries. Coding process was used to group patterns and label ideas to reflect the broader perspectives of the research phenomenon [10]. Common themes from the focus groups were derived based on the thematic map to help us identify the relationships between the coding, emerging themes and the associated meanings. Finally, the identified themes and accompanying data extracts were reviewed to determine whether the data in the themes were related in an accurate, coherent and meaningful way in relation to our study purpose and research questions. Results are presented in a way that tells the story of the phenomenon as well as describing the interpreted findings that reflected the experiences of the study participants [10].

Patient and Public Involvement Statement:

There is no patient/public involvement in this research project.

RESULTS:

Focus groups were held in Ontario, Canada during October 2017. Fifteen Registered or Registered Practical Nurses from the designated home care organization met the eligibility criteria and were invited to participate. Of those, 73% (n=11) home care nurses provided informed consent to participate. The demographics of the participants are presented in Table 1. Participants were all female, with a mean age of 49.5 years and had in-depth nursing experiences in working with older adults in the field of home care. Data saturation occurred after two focus group sessions.

Table 1: Demographic characteristics of home care nurses (N=11)

Characteristics (N=11)	Mean (Range)
Age (years)	49.5 (30- 69)
	N(%)

Sex (female)	11 (100)
Nursing, years of experience (years)	18.72 (2-40)
Nursing, years of experience in home healthcare (years)	11.18 (2-20)
Nursing, experience working with older adults (years)	16.72 (2-40)

The focus group sessions developed a rich description on the concept of deprescribing from the perspectives of home care nurses, as well as providing in-depth insight into the learning needs of nurses in relation to deprescribing approaches in home care. The presentation of our qualitative findings focused on the following eight overarching themes: (1) Causes of polypharmacy among older adults in home care; (2) Challenges to the management of polypharmacy in the community; (3) Meaning of deprescribing; (4) Importance of deprescribing; (5) Potential barriers to raising awareness about deprescribing in home care; (6) Potential facilitators to promote deprescribing in home care; (7) Educational topics about deprescribing; and (8) Learning tools and resources about deprescribing.

(1) Causes of Polypharmacy among Older Adults:

Polypharmacy is a result of the lack of understanding about client's medical conditions:

Home care nurses indicated that polypharmacy in older adult is the primary reason for the need to deprescribe, and polypharmacy can be a result of the healthcare provider's lack of understanding about the client's medical conditions. Due to the involvement of multiple healthcare providers, it was often difficult to "track down" which medication had been prescribed for which medical condition and by which healthcare provider. Healthcare provider's lack of understanding about the clients' complete picture of their medical diagnosis can lead to the prescription of multiple medications that are redundant and inappropriate. The following statement illustrates this:

I (the nurse) was just out to a home visit today and he (the client) said "I think I'm on too many, too many medications". His daughter questioned: I wasn't exactly sure what diagnosis my father has…why he has many medications and who prescribed these and why he needed them? (FG2, P1)

Polypharmacy is a result of the lack of client follow-up by multiple healthcare providers:

Home care nurses acknowledged that there are usually multiple healthcare providers involved in client care and they often do not have proper follow-up with the client after

prescribing medications. Due to the lack of follow-up, clients are at risk of taking medications that are not no longer needed.

Numerous doctors ordered different medications and they don't usually follow-up on the medications that have been ordered. (FG2, P1)

Polypharmacy is a result of the client's lack of knowledge about medication management:

Home care nurses indicated that clients, particularly individuals with cognitive impairment are at the greatest risk for having a lack of understanding about the rationale and the need for medications. This could lead to medication errors, medication non-compliance, or incorrect medication dosages. The following statement illustrates this:

When you admit new clients, you asked them for their medications and they handed you over a grocery bag filled with medications… Often they're not even taking half of the medications found in this grocery bag but they keep these medication bottles just in case. They like to hold on to the old medications and not knowing why they need them… (FG2, P2)

(2) Challenges to the management of polypharmacy among older adults in home care

Lack of centralized and universal database related to client's health and medication information:

Participants shared their frustration towards the lack of a centralized and universal database to allow for timely access to client's health and medication information. Home care nurses highlighted this information is important as the following statement illustrates:

Nobody can access the same file for every client… There's the need for client's chart to be in one central place. When you complete the documentation, you can find out who this client has visited in the past. Even if it's for foot care or an ear doctor…Whatever it is, so that everybody knows exactly what each healthcare provider has done and who the clients have seen and what happened. (FG1, P5)

Lack of medication system that alerts at-risk older adults for deprescribing needs:

Similarly, participants continued to indicate that there is a need for a centralized medication system that cues/alerts or flags healthcare providers about clients' medication information. The participants shared that having a cueing or alert system can help identify older adults who are at risk for adverse outcomes due to polypharmacy, and can suggest the need for appropriate deprescribing. One respondent suggested the possibility of having such technology to help promote safety of medication management in home care:

It would be ideal if there's something (a system) to flag us when we type in client's information electronically, such as their medication list… A warning would pop up right away and will flag us about a potential problem about the medications. (FG2, P2)

Lack of time for medication review and reconciliation:

Participants expressed their concerns about their workload and how their overwhelming work schedule leaves little room for medication review and reconciliation. One participant shared that time constraint discourages nurses from engaging in a complete medication review and reconciliation process with their clients at home. The following statement illustrates that:

I am just thinking of some medication errors that we had… it just comes down to if medication reconciliation has ever been done properly… these errors wouldn't have happened. It's all because of workload and time constraint… (FG1, P3)

(3) The meaning of deprescribing:

Participants had different levels of understanding on the topic of deprescribing. Some participants were more aware of the concept than others. The following are sub-themes that emerged as home care nurses defined what deprescribing means to them in practice.

Deprescribing is about adjusting dosages of high-risk medication:

Home care nurses shared their concerns about the associated risks of certain types of medications such as: cardiac, anti-hypertensive, laxatives, anti-convulsant, and diuretics medications. One participant shared her clients' experience with high dosages of anti-hypertensive medication as follows:

When I got a referral that the patient was complaining about dizziness, I made a home visit and found out that they were on high dosages of anti-hypertensive... I have been communicating with the doctor to adjust the level of this medication. (FG1, P1)

Another participant added that medications are often being prescribed without proper evaluation or follow-up to assess for the appropriateness of the medication regimen.

When one medication is not successful, they (the doctors) added on something else instead of just working through and figuring out which medication is the most appropriate for that particular client. (FG1, P5)

Deprescribing is about finding the right medication:

Home care nurses responded that the meaning of deprescribing lies in the healthcare provider's ability in choosing the appropriate medication that is effective in managing their client's disease conditions. In particular, nurses indicated the benefit of deprescribing is the goal

of minimizing polypharmacy through having the least number of medications to treat the client's disease conditions. The following statement illustrates this idea:

I would say yes to deprescribing if we can find a medication that treats all three conditions and clients only have to take one pill instead of three…it's better for the clients. (FG 1, P2)

Deprescribing is about removing the inappropriate medication at the right time:

Participants emphasized that finding the right timing to deprescribe inappropriate and unnecessary medications is the essence of successful deprescribing. Home care nurses added that removing inappropriate and unnecessary medications require a proper schedule of tapering off medication dosages gradually over a period of time. They believe that a sudden and abrupt deprescribing approach would be harmful to client's health and well-being. The following statement illustrates this sub-theme:

You have to get rid of the right things (inappropriate medication) at the right time, you know what I mean. Like de-scaling (tapering) the dosages and not just stopping the medication right away… (FG1, P1)

(4) The importance of deprescribing:

The use of multiple pharmacies leading to multiple prescriptions:

Home care nurses indicated that pharmacist plays an important role in deprescribing. In particular, they shared that their clients tend to visit multiple pharmacies for their prescription of medications which contributes to the problem of polypharmacy.

When client came home from their hospitalization, they have filled the new prescription in the hospital and therefore the community pharmacy that client used to go to would not know about this new prescription. It is problematic when clients are getting multiple prescriptions from different pharmacies. (FG1, P5)

Non-compliance leading to medication under/over-dosage

Home care nurses indicated that medication non-compliance is a major issue for their clients in the community. As a result of the lack of understanding about medication management, clients are at risk of non-adherence to their medication regimen, which can lead to possible adverse events due to under or over-dosage of medications. The following statement illustrates this sub-theme:

You are right that they (the clients) don't get rid of their old prescriptions. They take both new and old prescriptions instead of wasting the old pills. When they go back to the pharmacy, the pharmacist will often find out that the clients are actually taking incorrect dosages of medication because they were having two bottles of the same medication (with different dosages). (FG1, P5)

Medication reconciliation to deprescribe unnecessary medications

Participants continued to describe the importance of deprescribing by highlighting the need for a timely and appropriate medication reconciliation process for their clients in the community. The challenge for home care nurses is that they would often conduct medication reconciliation upon client's admission, but there is a lack of follow-up process in place to allow for an on-going review and monitoring of the client's medication regimen. The respondent further described this sub-theme:

I would say that the medication review (reconciliation) is beneficial because sometimes they're on these medications for years and years, but they should have been on it for just a month or two. And the therapeutic ranges of medications? Nobody is even monitoring... So, I think deprescribing is very important in these situations. (FG2, P3)

(5) Potential barriers to raising awareness about deprescribing in-home care

Over-usage of over the counter (non-prescription) medications:

Home care nurses identified that the excessive use of over-the-counter medications can potentially be more difficult to deprescribe than prescription medications. They indicated that home care clients have easy access to a variety of non-prescription medications without proper education on their safety risks and concerns to their health and well-being. Some clients have the misunderstanding that non-prescription medications are considered as a "safer" alternative than prescription medications.

A lot of them (clients) considered that Tylenol and Antacids are over the counter so they don't count these as "real medications". (FG2, P3)

Lack of standardized process of medication reconciliation in home care

Another barrier to deprescribing in home care is the lack of standardized approach to medication reconciliation process in home care. Home care nurses shared their frustration towards the current medication reconciliation process is not considered user-friendly. They highlighted the need for a centralized and systematic approach to medication reconciliation that would help facilitate deprescribing effectively and in an efficient manner. In particular, it was suggested that the use of a single pharmacy by the client rather than the use of multiple pharmacies would help reduce the risk for a segregated and fragmented medication database.

A suggestion is to encourage client to use a single, centralized pharmacy; and nurses would have access to a centralized medication reconciliation database (to facilitate deprescribing). We need to make medication reconciliation process more user-friendly and less compartmentalized, so that deprescribing would be a simpler process. (FG1, P5)

(6) Potential facilitators to raising awareness about deprescribing in-home care

The need for inter-professional education and collaboration for deprescribing:

All home care nurses acknowledged that an important facilitator to raising awareness about deprescribing is through inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists etc. Nurses indicated their fears about the misunderstanding and communication gap arises from the lack of inter-professional education and collaboration will put client at greater risk for adverse medication problems:

Education and working together is important. The pharmacists know the medications better than the doctors and the nurses. So it is easier for them (pharmacists) to flag any problems right away, probably by just looking at the medication list. For us (home care nurses) we would have to look up every medication to determine the drug interactions whereas they (pharmacists) might already know this. So it is great if the pharmacist can work with us to alert us about any problems. (FG2, P2)

Consistency and continuity of care among healthcare providers:

Participants emphasized that there is a need for continuity of care to support safe deprescribing. Otherwise, different healthcare providers might have different pieces of advice for their clients, then it would be difficult to build a therapeutic relationship between the care providers and care recipients.

Consistency not redundancy among healthcare providers is important. When doctors, pharmacists and nurses are all telling the same story… then this should go over a lot better… we must send a consistent message, not a conflicting message. (FG2, P3)

Deprescribing must be part of health teaching in home care

Home care nurses identified that deprescribing must be incorporated as part of client's health teaching in home care. Participants indicated that older adults must be educated about their medication management and deprescribing needs in order to make informed decisions about their medication regimen.

I think deprescribing needs to be part of client health teaching…As a nurse you need to conduct thorough medication review, and provide the clients with important explanation and information regarding their medications. (FG1, P2)

Deprescribing must be based on accurate and reliable data sources:

Evidence-informed deprescribing is crucial to ensure safe medication management. Home care nurses indicated that an important facilitator to deprescribing is the utilization of accurate and

reliable sources of data, such as complete client history as well as centralized reports from a primary healthcare provider.

You don't want to deprescribe a medication that was actually a need. Yes, deprescribing is extremely crucial but only if you have reliable sources, reliable history, and complete data... you need to have direct contact with only one prescribing physician, so that all of the prescribing goes to this one physician. Even if they see a specialist, they have a card that says you need to refer this back to my family doctor, so that my family doctor can add the information to my medication list and only he can prescribe and give out a prescription. We need a thorough circle of care without breaches… (FG2, P5)

A strong circle of care network facilitates deprescribing:

In general, home care nurses suggested that a strong circle of care network that involves the clients, healthcare providers and informal caregivers is an important facilitating factor to safe deprescribing approaches. In particular, the lack of involvement from the clients, healthcare providers or informal caregivers within this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices. The following statement illustrates this theme:

If the "circle of care link" is pretty tight, then I can say to you that we could probably deprescribe the medications. Other than that, if you have a breach anywhere in this "circle of care", I would say it's not safe to deprescribe. (FG1, P5)

(7) Educational topics about deprescribing:

Best practices in medication reconciliation to promote safety in medication management:

Home care nurses recognized that there is a lack of guidelines for best practices in medication reconciliation. They acknowledged the importance of medication reconciliation to promote safe medication management but expressed concern about the existing knowledge gap on this topic.

The topic of medication reconciliation is huge. Our current policies and procedures about medication reconciliation are all over the place. We still aren't doing a good job of it. I don't think some healthcare providers realize that when clients come home from the hospital, we have the obligation to conduct medication reconciliation because clients are at high risk for medication errors. (FG2, P3)

Raising awareness about available community resources on deprescribing:

Study participants indicated that they have a lack of knowledge about the available community resources on deprescribing. Specifically, they strongly recommended involving community partners to promote and educate deprescribing approach among community-dwelling older adults. Some examples of potential community partners to support deprescribing

approaches for seniors include Alzheimer's Society, Seniors' Club, Community Care programs etc. They believe that future educational focus on deprescribing should include a description of the existing resources that would help mobilize deprescribing approaches in the community:

The nurses in the community and their supervisors must know what was out there to support them with deprescribing. (FG2, P3)

Basic principles and concepts about deprescribing for the commonly used medications:

Furthermore, home care nurses expressed their interests in learning more about the foundational concepts about deprescribing for the at-risk medications, including their side effects and drug interactions. The nurses believe that this knowledge would support safe deprescribing of medications for their clients in the community:

Reviewing some basic deprescribing principles for the most commonly used medications like blood pressure, bowel, and urinary medications etc. (FG1, P3)

(8) Learning tools and resources for nurses, older adults and their informal caregivers about deprescribing

Mixture of online/in-person educational training with print material and interactive information session

In regards to the development of educational training for deprescribing, study participants indicated their preference towards a variety of reading materials with case examples being presented as infographic, brochures and pamphlets in addition to the use of power-point presentation. Furthermore, they preferred a mixture of online and in-person educational session to provide a variety of learning platform to meet the scheduling needs of home care nurses.

I think in-person (educational training about deprescribing) is best if possible. However, it would probably be better to be a mix of online and in-person training. Because I don't think you would get all the nurses for in-person training. (FG2, P1)

Considering the different learning styles of individuals, participants suggested that interactive information session about deprescribing would be most beneficial for nurses, older adults or their informal caregivers to facilitate in-depth discussion and sharing of ideas.

Interactive information sessions are needed so that they (nurses/older adults/caregivers) can get an understanding of what deprescribing means, and they can ask questions and interact with the facilitators. (FG1, P5)

Non-drug therapies and non-pharmacological measures

Home care nurses indicated that deprescribing education must include the alternative approaches such as use of non-drug therapies and non-pharmacological approaches. Some examples of these alternative approaches may include: hydro therapy, music therapy, aromatherapy, therapeutic touch, acupuncture, reminiscence therapy and sleep therapy. In particular, home care nurses emphasized that lifestyle changes such as exercise and healthy nutrition are important non-pharmacological approaches to promote health and well-being. The following statement illustrates this theme:

Nutrition can facilitate deprescribing, especially for frail older adults… there's always a need for proper nutrition. (For example, adjusting fiber intake for constipation instead of using laxatives). (FG2, P1)

Family education about behavioral and symptoms management

Home care nurses raised concern that medications such as benzodiazepine are prescribed too often and in high dosages for frail older adults. If the family members of older adults are well-educated about behavioral and symptoms management, the need for unnecessary benzodiazepine and other psychotropic medication would likely be reduced in the community.

Family education about behavioral and symptoms management can help with deprescribing. Often times, family don't have the skill set to deal with behavioral problems because they don't have the education needed to respond to client's symptoms or behaviors (FG1, P5)

DISCUSSION:

Our findings about the meaning of deprescribing is parallel to the current literature where deprescribing is about medication optimization through the following approaches: adjusting the dosages of high risk medications; timely removal of inappropriate prescription and over the counter medications; as well as finding appropriate pharmacological or non-pharmacological alternatives [6]. Specifically, our study findings highlighted the complexity of managing polypharmacy among older adults in home care, as well as the facilitators and challenges that home care nurses face when undertaking deprescribing approaches. Our current findings are congruent with previous literature where multiple healthcare providers and pharmacy visits, contradicting treatments from multiple health providers, resource constraints, client's non-compliance and lack of knowledge about medication, as well as the lack of follow-up by healthcare providers are suggested to be barriers to medication management [11, 12,13,14]. In particular, home care nurses identified the time constraint for medication review and reconciliation as a major challenge to the management of polypharmacy.

Medication reconciliation is the process in which healthcare providers work together with clients, families and care providers to ensure accurate and comprehensive medication information is communicated consistently across transitions of care to provide continuity of care [15,16]. There is the need for the future development of educational training for home care nurses about the best practice guidelines in medication reconciliation using a standardized and systematic approach that would help facilitate deprescribing in an effective and efficient manner. Currently, there is a lack of centralized and universal database that allows for an on-line medication repository to provide seamless access to client's medication information by home care nurses. To overcome this barrier, it is suggested that future technological innovation should focus on the development of a centralized medication system that provide cues to alert healthcare providers of at-risk older adults with deprescribing needs. For example, the North Eastern Region Connect is a province-wide program funded by eHealth Ontario with the goal of providing healthcare providers timely access to electronic client health information across the care continuum [17]. This eHealth initiative helps improve efficiency of clinical decision-making and provide a more complete picture of client health information, including the medication profiles. In particular, future medication databases may develop built-in decision support system that could trigger deprescribing algorithms for certain high-risk medications to facilitate deprescribing.

Our study findings underscored the important enablers to help raise awareness about deprescribing in home care. Inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists can help facilitate deprescribing by promoting open communication, consistency and continuity of care within home care. Previous literature identified that nurse's communication with and receptivity of the physician is the key to facilitating successful deprescribing [13,18]. In particular, the multiple layers of communication gap within the health system hierarchy can contribute to potential medication errors and can act as major barriers to effectively deprescribe unnecessary and inappropriate medications [18]. Therefore, home care nurses recommended the involvement of community resources and partners to help facilitate open communication, raise awareness and mobilize deprescribing approaches in the community. Additionally, client and family members' lack of understanding towards medication regimen can create another layer of communication complexity in the community [15]. Our study findings suggested the need for deprescribing to be incorporated as part of client's health teaching by home care nurses. Older adults and their informal caregivers must be educated about their medication management in order to facilitate evidence-informed deprescribing [15].

Various tools have been developed to promote patient education (e.g. EMPOWER brochures available at www.Deprescribing.Network.ca) and evidence-based deprescribing guidelines and algorithms (available at www.Deprescribing.org) [19,20,21,22,23,24]. These communication aids and resources can help facilitate an open dialogue about deprescribing among clients, caregivers and prescribers. In addition to the utilization of educational resources,

home care nurses proposed the need for the development of deprescribing education with the emphasis on the exploration of client's alternatives to non-drug therapies. For instance, empowering the development of personal health practices and coping skills of older adults may involve the substitution of prescription medications with non-pharmacological approaches, such as the use of music or reminiscence therapy in lieu of anxiolytic medications [20]. Finally, our study findings highlighted the role for a strong circle of care network with the collaborative involvement of the older adults, informal caregivers and healthcare providers as an important enabler to safe deprescribing in home care. The breakdown of this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices in the community.

CONCLUSION:

Past literature focused on the experiences and perspectives of nurses on deprescribing is limited to long-term care settings [13]. The current study expanded our understanding of home care nurse's awareness and understanding of deprescribing approaches in the community. The exploration of qualitative description through focus group interviews allowed for the opportunity to gain in-depth insight into a wide range of perceptions and beliefs that home care nurses hold in relation to medication optimization for older adults. It should be noted that our study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses with different roles and from diverse healthcare settings in order to gain a deeper understanding of their educational needs about deprescribing that are role and context-specific. This paper reported the findings of our scalability assessment that focused on the examination of home care nurse's understanding about the concept of deprescribing, polypharmacy and non-pharmacological approaches to medication management for older adults in the community. Future phases of our project will focus on mobilizing our scale-up plan by implementing the evidence-based educational intervention targeted to address the learning needs of nurses about safe deprescribing practices for older adults in home care settings. Our research project will help lead the future development of programs about optimization of medication management which will foster a supportive and collaborative relationship between the home care team, frail elders and their informal caregivers.

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Competing Interests

The authors declare that they have no competing interests.

Data Sharing Statement

Additional unpublished data may be available for review upon request made to the primary author.

Author Statement

All authors (WS; FT; JAD; CBH; JPT; and CRH) provided input into the development of the manuscript, and have read and approved this manuscript.

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An Exploration of Home Care Nurse's Experiences in Deprescribing of Medications: A Qualitative Descriptive Study

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An Exploration of Home Care Nurse's Experiences in Deprescribing of Medications:

A Qualitative Descriptive Study

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ABSTRACT:

Objectives: The aim of this study is to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing.

Methods: This study employed an exploratory qualitative descriptive research design, using scalability assessment from two focus groups with a total of eleven home care nurses in Ontario, Canada. Thematic analysis was used to derive themes about home care nurse's perspectives about barriers and enablers of deprescribing, as well as learning needs in relation to deprescribing approaches.

Results: Home care nurse's identified challenges for managing polypharmacy in older adults in home care settings, including a lack of open communication and inconsistent medication reconciliation practices. Additionally, inadequate partnership and ineffective collaboration between inter-professional healthcare providers were identified as major barriers to safe deprescribing. Further, home care nurses highlighted the importance of raising awareness about deprescribing in the community, and they emphasized the need for a consistent and standardized approach into educating healthcare providers, informal caregivers, and older adults about the best practices of safe deprescribing.

Conclusion: Targeted deprescribing approaches are important in home care for optimizing medication management and reducing polypharmacy in older adults. Nurses in home care play a vital role in medication management and, therefore, educational programs must be developed to support their awareness and understanding of deprescribing**.** Study findings highlight the need for the future development of programs about safer medication management which will foster a supportive and collaborative relationship between the home care team, frail older adults and their informal caregivers.

Article Summary: Strengths and Limitations of This Study:

- This study explored a novel topic of research: deprescribing of medications and managing polypharmacy from the perspectives of nurses in home care settings.
- The use of qualitative description allowed for a descriptive summary of the experiences of home care nurses about deprescribing which could serve as entry points for further study.
- The current study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses from diverse healthcare settings (ie. primary health nurses) in order to gain a deeper understanding of their educational needs about deprescribing.

Keywords: Deprescribing; Home HealthCare; Nursing; Older Adults; Medications; Home Care Nurses

BACKGROUND:

Polypharmacy, defined as the use of multiple medications or more medications than is medically necessary, is a growing concern for older adults [1]. With the increasing number of older adults with multiple chronic diseases, older adults are frequently prescribed five or more medications [2]. Nearly 50% of older adults take one or more medications that are medically unnecessary thus requiring a clinical medication review [3]. Polypharmacy is a growing concern for older adults in home care settings. Chronic conditions are common among older home care clients with 77% of people aged 65 years and over experiencing at least one chronic disease [4; 5]. There are many negative consequences associated with polypharmacy, including increased healthcare costs; the risk for adverse drug events and drug interactions; medication non-adherence; reduced functional and cognitive status; and the risks for falls [3]. Increased prescription medication use has been associated with diminished ability to perform instrumental activities of daily living (IADL) among older adults with frailty (a syndrome of physiological decline in later life), including shopping; meal preparation; managing finances; driving or using public transportation; performing housework and medication management [6]. As a result of the prevalence of polypharmacy and the associated negative consequences, reducing complex medication regimens to those necessary should be central to the promotion of active and independent living of older adults in home care.

One important way of optimizing medication management and reducing polypharmacy for older adults in home care is through deprescribing. Deprescribing is the process of tapering, stopping, discontinuing, or withdrawing drugs, with the goal of managing polypharmacy and improving outcomes. [7] Deprescribing is considered to be an essential part of the prescribing process where healthcare providers reduce the dose and stop medications after carefully assessing the patient's goals of care and weighing the potential harm and benefit of the medication [8]. Deprescribing is a vital part of supporting older adults in the self-management of multiple chronic conditions, because it can reduce the risk of adverse events and improve health related quality of life [9;10]. Research has indicated that educational training for nurses about deprescribing had the potential to improve the quality of life in clients of assisted living facilities by reducing the use of harmful medications [13]. Nurses in home care play a vital role in medication management and, therefore, educational training must be developed to support them in the development of their awareness and understanding of deprescribing approaches to help enable the opportunities for active and independent living of the frail older adults at home [9]. To date, little is known about the perspectives of home care nurses in regard to their educational needs about appropriate deprescribing of medications for community-dwelling older adults.

Given this knowledge gap, our project focuses on the design of an educational intervention that would address the learning needs of home care nurses about safe deprescribing practices in the community. Specifically, the current project is one part of a larger body of research with the aim of promoting the awareness and the adoption of de-prescribing approaches among home care nurses through education using a scaling up approach. The process of scaling

up was used which involved the deliberate effort to increase the impact of educational interventions to benefit the target populations, and to promote future policy and program development on an ongoing basis [14]. This was achieved through a mixed methods research design using the following three phases of scaling up process: (1) Phase I Scalability assessment: conducting a focus group with home care nurses to assess their understanding and learning needs in relation to deprescribing approaches, and the opportunities for appropriate use of non-pharmacological measures. (2) Phase II Develop a scaling up plan: developing an educational plan for home care nurses about deprescribing based on feedback from the focus group sessions. (3) Phase III Implement the scale-up plan: conducting the scaling up of education about deprescribing and appropriate use of non-drug therapies with home care nurses to evaluate the appropriateness, acceptability and effectiveness of the educational intervention using questionnaire data.

Objectives:

This paper will report the findings of the first phase of the scalability study. The objectives of this study were to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing.

METHODS:

Study Design, Setting and Sampling (Inclusion/Exclusion):

An exploratory qualitative descriptive research design was used with the aim of generating qualitative descriptive data to allow for a descriptive summary of the phenomenon of interest which could serve as entry points for further study [11]. Qualitative descriptive studies tend to draw from the general tenets of naturalistic inquiry, without a priori commitment to any one theoretical view of a target phenomenon [11]. The goal of a qualitative descriptive design for this study was to provide a comprehensive summary of descriptions of the phenomena of interest: deprescribing in the context of home care. This study design allowed the researcher to conduct a scalability assessment using focus group sessions to examine home care nurse's perspectives about barriers and enablers of deprescribing, as well as learning needs in relation to deprescribing approaches. Focus groups have been widely used in the continuing health education field for assessment of learning needs among health care professionals[12], and therefore this was the chosen method of approach to achieve our research objectives.

Upon ethics approval from the Research Ethics Board at the University of Ontario Institute of Technology, study recruitment using purposive sampling took place at one designated home care organization in Ontario, Canada. The relationship with participants was not established prior to study commencement. Home care nurses who met the following inclusion criteria were invited to participate in the focus group: 1) A Registered Nurse or Registered Practical Nurse with a casual/part-time/full-time status who has direct clinical contact

with patients; 2) having experience in working with older adults in home care settings; and 3) over the age of 18 years and having the ability to understand and speak English. Eligible study participants were approached face-to-face and provided with informed consent, including the study purpose; procedure; potential risks and benefits; rights of the participants and confidentiality.

Data collection:

The first focus group session involved five home care nurses. and the second focus group interviewed six nurses, where none of the study participants withdrew from the study. Focus groups were interviewed with session lasted about 60 to 90 minutes. The questions were guided by the following four topic domains: a) Polypharmacy among frail older adults in home care; b) Learning and educational needs about deprescribing; c) Barriers and enablers to deprescribing approaches; and d) Exploration of non-pharmacological alternatives to medications. The focus groups were held iteratively until data saturation when there weren't any new patterns and themes emerged during the data collection [11]. During each focus group session, the facilitators (WS and FT) asked open-ended questions to ensure the relevant topics were discussed and to allow all study participants to speak freely and openly. A research assistant was present to take field notes to make observations. The focus group interviews were audio-recorded with the permission from study participants and they were transcribed prior to the data analysis.

Data Analysis:

Thematic analysis was used for analyzing the focus group data by identifying patterns and themes across the datasets that were important to the description of the phenomenon [11]. The research team began by reading and re-reading the transcripts to immerse themselves in the dataset and to develop a general understanding of the focus group data with descriptive summaries. Coding of the dataset was performed by two data coders (WS and FT) to categorize patterns and label ideas to describe the general perspectives of the research phenomenon. Common themes from the focus groups were derived based on the coding tree to help us identify the relationships between the emerging themes and the associated meanings. Finally, the identified themes and accompanying data extracts (quotes) were reviewed to determine whether the data in the themes were related in an accurate, coherent and meaningful way in relation to our study purpose and research questions. Results are presented in a way that tells the story of the phenomenon as well as describing the interpreted findings that reflected the experiences of the study participants [11]. The researchers reflected on their own assumptions to ensure that they did not color their views throughout the data analysis process. This process of reflexivity enabled the researchers to become sensitive to their own biases, as well as revealing their preconceptions to ensure the codes and themes of the analysis were data-derived.

Patient and Public Involvement Statement:

There is no patient/public involvement in this research project.

RESULTS:

Focus groups were held in Ontario, Canada during October 2017. Fifteen Registered or Registered Practical Nurses from the designated home care organization met the eligibility criteria and were invited to participate. Of those, 73% (n=11) home care nurses provided informed consent to participate. The demographics of the participants are presented in Table 1. Participants were all female, with a mean age of 49.5 years and had in-depth nursing experiences in working with older adults in the field of home care. Data saturation occurred after two focus group sessions.

Table 1: Demographic characteristics of home care nurses (N=11)

Characteristics (N=11)	Mean (Range)
Age (years)	49.5 (30- 69)
	N(%)
Sex (female)	11 (100)
Nursing, years of experience (years)	18.72 (2-40)
Nursing, years of experience in home healthcare (years)	11.18 (2-20)
Nursing, experience working with older adults (years)	16.72 (2-40)

The focus group sessions developed with participants provided a rich description of deprescribing from the perspectives of home care nurses, as well as providing in-depth insight into the learning needs of nurses in relation to deprescribing approaches in home care. The presentation of our qualitative findings focused on the following eight overarching themes: (1) Causes of polypharmacy among older adults in home care; (2) Challenges to the management of polypharmacy in the community; (3) Meaning of deprescribing; (4) Importance of deprescribing; (5) Potential barriers to raising awareness about deprescribing in home care; (6) Potential facilitators to promote deprescribing in home care; (7) Educational topics about deprescribing; and (8) Learning tools and resources about deprescribing.

(1) Causes of Polypharmacy among Older Adults:

Polypharmacy is a result of the lack of understanding about client's medical conditions:

Home care nurses indicated that polypharmacy in older adult is the primary reason for the need to deprescribe, and polypharmacy can be a result of the healthcare provider's lack of understanding about the client's medical conditions. Due to the involvement of multiple healthcare providers, it was often difficult to "track down" which medication had been prescribed for which medical condition and by which healthcare provider. Healthcare provider's lack of understanding about the clients' complete picture of their medical diagnosis can lead to the prescription of multiple medications that are redundant and inappropriate. The following statement illustrates this:

I (the nurse) was just out to a home visit today and he (the client) said "I think I'm on too many, too many medications". His daughter questioned: I wasn't exactly sure what diagnosis my father has…why he has many medications and who prescribed these and why he needed them? (FG2, P1)

Polypharmacy is a result of the lack of client follow-up by multiple healthcare providers:

Home care nurses acknowledged that there are usually multiple healthcare providers involved in client care and they often do not have proper follow-up with the client after prescribing medications. Due to the lack of follow-up, clients are at risk of taking medications that are no longer needed.

Numerous doctors ordered different medications and they don't usually follow-up on the medications that have been ordered. (FG2, P1)

Polypharmacy is a result of the client's lack of knowledge about medication management:

Home care nurses indicated that clients, particularly individuals with cognitive impairment are at the greatest risk for having a lack of understanding about the rationale and the need for medications. This could lead to medication errors, medication non-compliance, or incorrect medication dosages. The following statement illustrates this:

When you admit new clients, you asked them for their medications and they handed you over a grocery bag filled with medications… Often they're not even taking half of the medications found in this grocery bag but they keep these medication bottles just in case. They like to hold on to the old medications and not knowing why they need them… (FG2, P2)

(2) Challenges to the Management of Polypharmacy among Older Adults in Home Care

Lack of centralized and universal database related to client's health and medication information:

Participants shared their frustration towards the lack of a centralized and universal database that allowed for timely access to client's health and medication information. Home care nurses highlighted this information is important to medication management:

Nobody can access the same file for every client… There's the need for client's chart to be in one central place. When you complete the documentation, you can find out who this client has visited in the past. Even if it's for foot care or an ear doctor…Whatever it is, so that everybody knows exactly what each healthcare provider has done and who the clients have seen and what happened. (FG1, P5)

Lack of medication system that alerts healthcare providers re: polypharmacy of at-risk older adults:

Similarly, participants continued to indicate that there is a need for a centralized medication system that cues/alerts or flags healthcare providers about clients' medication information. The participants shared that having a cueing or alert system can help identify older adults who are at risk for adverse events due to polypharmacy, and can suggest the need for appropriate deprescribing. One respondent suggested the possibility of having such technology to help promote safety of medication management in home care:

It would be ideal if there's something (a system) to flag us when we type in client's information electronically, such as their medication list… A warning would pop up right away and will flag us about a potential problem about the medications. (FG2, P2)

Lack of time for medication review and reconciliation:

Participants expressed their concerns about their workload and how their overwhelming work schedule leaves little room for medication review and reconciliation. One participant shared that time constraint discouraged nurses from engaging in a complete medication review and reconciliation process with their clients at home. The following statement illustrates that:

I am just thinking of some medication errors that we had… it just comes down to if medication reconciliation has ever been done properly… these errors wouldn't have happened. It's all because of workload and time constraint… (FG1, P3)

(3) The Meaning of Deprescribing:

Participants had different levels of understanding on the topic of deprescribing. Some participants were more aware of the deprescribing approaches than others. The following are

sub-themes that emerged as home care nurses defined what deprescribing means to them in practice.

Deprescribing is about adjusting dosages of high-risk medication:

Home care nurses shared their concerns about the associated risks of certain types of medications such as: cardiac, anti-hypertensive, laxatives, anti-convulsant, and diuretics medications. One participant shared her clients' experience with high dosages of anti-hypertensive medication:

When I got a referral that the patient was complaining about dizziness, I made a home visit and found out that they were on high dosages of anti-hypertensive... I have been communicating with the doctor to adjust the level of this medication. (FG1, P1)

Another participant added that medications are often being prescribed without proper evaluation or follow-up to assess for the appropriateness of the medication regimen.

When one medication is not successful, they (the doctors) added on something else instead of just working through and figuring out which medication is the most appropriate for that particular client. (FG1, P5)

Deprescribing is about finding the right medication:

Home care nurses responded that the meaning of deprescribing lies in the healthcare provider's ability in choosing the appropriate medication that is effective in managing their client's disease conditions. In particular, nurses indicated that the goal of deprescribing is to minimize polypharmacy through having the least number of medications to treat the client's disease conditions. The following statement illustrates this idea:

I would say yes to deprescribing if we can find a medication that treats all three conditions and clients only have to take one pill instead of three…it's better for the clients. (FG 1, P2)

Deprescribing is about removing the inappropriate medication at the right time:

Participants emphasized that finding the right timing to deprescribe inappropriate and unnecessary medications is the essence of successful deprescribing. Home care nurses added that removing inappropriate and unnecessary medications require a proper schedule of tapering off medication dosages gradually over a period of time. They believe that a sudden and abrupt deprescribing approach would be harmful to client's health and well-being. The following statement illustrates this sub-theme:

You have to get rid of the right things (inappropriate medication) at the right time, you know what I mean. Like de-scaling (tapering) the dosages and not just stopping the medication right away… (FG1, P1)

(4) The Importance of Deprescribing:

The use of multiple pharmacies leading to multiple prescriptions:

Home care nurses indicated that pharmacist plays an important role in deprescribing. However, they shared that their clients tend to visit multiple pharmacies for their prescription of medications which contributes to the problem of polypharmacy.

When client came home from their hospitalization, they have filled the new prescription in the hospital and therefore the community pharmacy that client used to go to would not know about this new prescription. It is problematic when clients are getting multiple prescriptions from different pharmacies. (FG1, P5)

Non-compliance leading to medication under/over-dosage

Home care nurses indicated that medication non-compliance is a major issue for their clients in the community. As a result of the lack of understanding about medication management, clients are at risk of non-adherence to their medication regimen, which can lead to possible adverse events due to under or over-dosage of medications. The following statement illustrates this sub-theme:

You are right that they (the clients) don't get rid of their old prescriptions. They take both new and old prescriptions instead of wasting the old pills. When they go back to the pharmacy, the pharmacist will often find out that the clients are actually taking incorrect dosages of medication because they were having two bottles of the same medication (with different dosages). (FG1, P5)

Medication reconciliation to deprescribe unnecessary medications

Participants continued to describe the importance of deprescribing by highlighting the need for a timely and appropriate medication reconciliation process for their clients in the community. The challenge for home care nurses is that they would often conduct medication reconciliation upon client's admission, but there is a lack of follow-up process in place to allow for an on-going review and monitoring of the client's medication regimen. The respondent further described this sub-theme:

I would say that the medication review (reconciliation) is beneficial because sometimes they're on these medications for years and years, but they should have been on it for just a month or two. And the therapeutic ranges of medications? Nobody is even monitoring... So, I think deprescribing is very important in these situations. (FG2, P3)

(5) Potential Barriers to Raising Awareness about Deprescribing in Home Care

Over-usage of over the counter (non-prescription) medications:

Home care nurses identified that the excessive use of over-the-counter medications can potentially be more difficult to deprescribe than prescription medications. They indicated that home care clients have easy access to a variety of non-prescription medications without proper education about their safety risks and concerns to their health and well-being. Some clients have the misunderstanding that non-prescription medications are considered as a "safer" alternative than prescription medications.

A lot of them (clients) considered that Tylenol and Antacids are over the counter so they don't count these as "real medications". (FG2, P3)

Lack of standardized process of medication reconciliation in home care

Another barrier to deprescribing in home care is the lack of standardized approach to medication reconciliation process in home care. Home care nurses shared their frustration towards the current medication reconciliation process is not considered user-friendly. They highlighted the need for a centralized and systematic approach to medication reconciliation that would help facilitate deprescribing effectively and in an efficient manner. In particular, it was suggested that the use of a single pharmacy by the client rather than the use of multiple pharmacies would help reduce the risk for a segregated and fragmented medication database.

A suggestion is to encourage client to use a single, centralized pharmacy; and nurses would have access to a centralized medication reconciliation database (to facilitate deprescribing). We need to make medication reconciliation process more user-friendly and less compartmentalized, so that deprescribing would be a simpler process. (FG1, P5)

(6) Potential Facilitators to Raising Awareness about Deprescribing in Home Care

The need for inter-professional education and collaboration for deprescribing:

All home care nurses acknowledged that an important facilitator to raising awareness about deprescribing is through inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists etc. Nurses indicated their fears about the misunderstanding and communication gap that arises from the lack of inter-professional education and collaboration puts client at greater risk for adverse medication problems:

Education and working together is important. The pharmacists know the medications better than the doctors and the nurses. So it is easier for them (pharmacists) to flag any problems right away, probably by just looking at the medication list. For us (home care nurses) we would have to look up every medication to determine the drug interactions whereas they (pharmacists) might already know this. So it is great if the pharmacist can work with us to alert us about any problems. (FG2, P2)

Consistency and continuity of care among healthcare providers:

Participants emphasized that there is a need for continuity of care to support safe deprescribing. Otherwise, different healthcare providers might have different pieces of advice for their clients, then it would be difficult to build a therapeutic relationship between the care providers and care recipients.

Consistency not redundancy among healthcare providers is important. When doctors, pharmacists and nurses are all telling the same story… then this should go over a lot better… we must send a consistent message, not a conflicting message. (FG2, P3)

Deprescribing must be part of health teaching in home care

Home care nurses identified that deprescribing must be incorporated as part of client's health teaching in home care. Participants indicated that older adults must be educated about their medication management and deprescribing needs in order to make informed decisions about their medication regimen.

I think deprescribing needs to be part of client health teaching…As a nurse you need to conduct thorough medication review, and provide the clients with important explanation and information regarding their medications. (FG1, P2)

Deprescribing must be based on accurate and reliable data sources:

Evidence-informed deprescribing is crucial to ensure safe medication management. Home care nurses indicated that an important facilitator to deprescribing is the utilization of accurate and reliable sources of data, such as complete client history as well as centralized reports from a primary healthcare provider.

You don't want to deprescribe a medication that was actually a need. Yes, deprescribing is extremely crucial but only if you have reliable sources, reliable history, and complete data... you need to have direct contact with only one prescribing physician, so that all of the prescribing goes to this one physician. Even if they see a specialist, they have a card that says you need to refer this back to my family doctor, so that my family doctor can add the information to my medication list and only he can prescribe and give out the prescription. We need a thorough circle of care without breaches… (FG2, P5)

A strong circle of care network facilitates deprescribing:

In general, home care nurses suggested that a strong circle of care network that involves the clients, healthcare providers and informal caregivers is an important facilitating factor to safe deprescribing approaches. In particular, the lack of involvement from the clients, healthcare providers or informal caregivers within this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices. The following statement illustrates this theme:

If the "circle of care link" is pretty tight, then I can say to you that we could probably deprescribe the medications. Other than that, if you have a breach anywhere in this "circle of care", I would say it's not safe to deprescribe. (FG1, P5)

(7) Educational Topics about Deprescribing:

Best practices in medication reconciliation to promote safety in medication management:

Home care nurses recognized that there is a lack of guidelines for best practices in medication reconciliation. They acknowledged the importance of medication reconciliation to promote safe medication management but expressed concern about the existing knowledge gap on this topic.

The topic of medication reconciliation is huge. Our current policies and procedures about medication reconciliation are all over the place. We still aren't doing a good job of it. I don't think some healthcare providers realize that when clients come home from the hospital, we have the obligation to conduct medication reconciliation because clients are at high risk for medication errors. (FG2, P3)

Raising awareness about available community resources on deprescribing:

Study participants indicated that they have a lack of knowledge about the available community resources on deprescribing. Specifically, they strongly recommended involving community partners to promote and educate deprescribing approach among community-dwelling older adults. Some examples of potential community partners to support deprescribing approaches for seniors include Alzheimer's Society, Seniors' Club, Community Care programs etc. They believe that future educational focus on deprescribing should include a description of the existing resources that would help mobilize deprescribing approaches in the community:

The nurses in the community and their supervisors must know what is available out there to support them with deprescribing. (FG2, P3)

Basic principles and approaches about deprescribing for the commonly used medications:

Home care nurses expressed their interests in learning more about the foundational approaches about deprescribing for the at-risk medications, including their side effects and drug interactions. The nurses believe that this knowledge would support safe deprescribing of medications for their clients in the community:

Reviewing some basic deprescribing principles for the most commonly used medications like blood pressure, bowel, and urinary medications etc. (FG1, P3)

(8) Learning Tools and Resources for Nurses, Older Adults and their Informal Caregivers about Deprescribing

Mixture of online/in-person educational training with print material and interactive information session

In regards to the development of educational training for deprescribing, study participants indicated their preference towards a variety of reading materials with case examples being presented as infographic, brochures and pamphlets in addition to the use of power-point presentation. Furthermore, they preferred a mixture of online and in-person educational session to provide a variety of learning platform to meet the scheduling needs of home care nurses.

I think in-person (educational training about deprescribing) is best if possible. However, it would probably be better with a mix of online and in-person training. Because I don't think you would get all the nurses for in-person training. (FG2, P1)

Considering the different learning styles of individuals, study participants suggested that interactive information session about deprescribing would be most beneficial for nurses, older adults or their informal caregivers in order to facilitate in-depth discussion and sharing of ideas.

Interactive information sessions are needed so that they (nurses/older adults/caregivers) can get an understanding of what deprescribing means, and they can ask questions and interact with the facilitators. (FG1, P5)

Non-drug therapies and non-pharmacological measures

Home care nurses indicated that deprescribing education must include the alternative approaches such as the use of non-drug therapies and non-pharmacological approaches. Some examples of these alternative approaches may include: hydro therapy, music therapy, aromatherapy, therapeutic touch, acupuncture, reminiscence therapy and sleep therapy. In particular, home care nurses emphasized that lifestyle changes such as exercise and healthy nutrition are important non-pharmacological approaches to promote health and well-being. The following statement illustrates this theme:

Nutrition can facilitate deprescribing, especially for frail older adults… there's always a need for proper nutrition. (For example, adjusting fiber intake for constipation instead of using laxatives). (FG2, P1)

Family education about behavioral and symptoms management

Home care nurses raised concern that medications such as benzodiazepine are prescribed too often and in high dosages for frail older adults. If the family members of older adults are well-educated about behavioral and symptoms management, the need for unnecessary benzodiazepine and other psychotropic medication would likely be reduced in the community.

Family education about behavioral and symptoms management can help with deprescribing. Often times, family members don't have the skill to deal with behavioral problems because they don't have the education needed to respond to client's symptoms or behaviors (FG1, P5)

DISCUSSION:

The purpose of this study was to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing. Our study findings revealed that home care nurse's perspectives on deprescribing is parallel to the current literature where deprescribing is about medication optimization through the following approaches: adjusting the dosages of high risk medications; timely removal of inappropriate prescription and over the counter medications; as well as finding appropriate pharmacological or non-pharmacological alternatives [6]. Specifically, our study findings highlighted the complexity of managing polypharmacy among older adults in home care, as well as the facilitators and challenges that home care nurses face when undertaking deprescribing approaches. Our current findings are congruent with previous literature where multiple healthcare providers and pharmacy visits, contradicting treatments from multiple health providers, resource constraints, client's non-compliance and lack of knowledge about medication, as well as the lack of follow-up by healthcare providers are suggested to be barriers to medication management [13,15,16]. In particular, home care nurses identified the time constraint for medication review and reconciliation as a major challenge to the management of polypharmacy.

Medication reconciliation is the process in which healthcare providers work together with clients, families and care providers to ensure accurate and comprehensive medication information is communicated consistently across transitions of care to provide continuity of care [17,18]. There is the need for the future development of educational training for home care nurses about the best practice guidelines in medication reconciliation using a standardized and systematic approach that would facilitate deprescribing in an effective and efficient manner. Currently, there is a lack of centralized and universal database that allows for an on-line medication repository to provide seamless access to client's medication information by home care nurses. To overcome this barrier, it is suggested that future technological innovation should focus on the development of a centralized medication system that provide cues to alert healthcare providers of at-risk older adults with deprescribing needs. For example, the North Eastern Region Connect is a province-wide program funded by eHealth Ontario with the goal of providing healthcare providers timely access to electronic client health information across the care continuum [19]. This eHealth initiative helps improve efficiency of clinical decision-making and provide a more complete picture of client health information, including the medication profiles. In particular, future medication databases may develop built-in decision

support system that could trigger deprescribing algorithms for certain high-risk medications to facilitate deprescribing.

Our study findings underscored the important enablers to help raise awareness about deprescribing in home care. Inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists can help facilitate deprescribing by promoting open communication, consistency and continuity of care within home care. Previous literature identified that nurse's communication with and receptivity of the physician is the key to facilitating successful deprescribing [15, 20]. In particular, the multiple layers of communication gap within the health system hierarchy can contribute to potential medication errors and can act as major barriers to effectively deprescribe unnecessary and inappropriate medications [20]. Therefore, home care nurses recommended the involvement of community resources and partners to help facilitate open communication, raise awareness and mobilize deprescribing approaches in the community. Additionally, client and family members' lack of understanding towards medication regimen can create another layer of communication complexity in the community [17]. Our study findings suggested the need for deprescribing to be incorporated as part of client's health teaching by home care nurses. Older adults and their informal caregivers must be educated about their medication management in order to facilitate evidence-informed deprescribing [17].

Various tools have been developed to promote patient education (e.g. EMPOWER brochures available at www.Deprescribing.Network.ca) and evidence-based deprescribing guidelines and algorithms (available at www.Deprescribing.org) [21,22,23,24,25,26]. These communication aids and resources can help facilitate an open dialogue about deprescribing among clients, caregivers and prescribers. In addition to the utilization of educational resources, home care nurses proposed the need for the development of deprescribing education with the emphasis on the exploration of client's alternatives to non-drug therapies. For instance, empowering the development of personal health practices and coping skills of older adults may involve the substitution of prescription medications with non-pharmacological approaches, such as the use of music or reminiscence therapy in lieu of anxiolytic medications [20]. Finally, our study findings highlighted the role for a strong circle of care network with the collaborative involvement of the older adults, informal caregivers and healthcare providers as an important enabler to safe deprescribing in home care. The breakdown of this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices in the community.

CONCLUSION:

This paper reported the findings of our scalability assessment that focused on the examination of home care nurse's understanding about deprescribing approaches, polypharmacy and non-pharmacological measures to medication management for older adults in the

community. Past literature about the experiences and perspectives of nurses on deprescribing focused primarily in long-term care settings [15]. The current study expanded our understanding of home care nurse's awareness and understanding of deprescribing approaches in the community. The exploration of qualitative description through focus group interviews allowed for the opportunity to gain valuable insight into a wide range of perceptions and beliefs that home care nurses hold in relation to medication optimization for older adults. It should be noted that our study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses with different roles and from diverse healthcare settings in order to gain a deeper understanding about their educational needs of deprescribing that are role and context-specific. Future phases of our project will focus on mobilizing our scale-up plan by implementing the evidence-based educational intervention targeted to address the learning needs of nurses about safe deprescribing practices for older adults in home care settings. Our research project will help lead the future development of programs about optimization of medication management which will foster a supportive and collaborative relationship between the home care team, frail older adults and their informal caregivers.

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Competing Interests

The authors declare that they have no competing interests.

Data Sharing Statement

Additional unpublished data may be available for review upon request made to the primary author.

Author Statement

All authors (WS; FT; JAD; CBH; JPT; and CRH) provided input into the development of the manuscript, and have read and approved this manuscript. WS; FT; JAD; CBH and CRH are female researchers while JPT is a male researcher for this research study.

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COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	5
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	1
Occupation	3	What was their occupation at the time of the study?	1
Gender	4	Was the researcher male or female?	17
Experience and training	5	What experience or training did the researcher have?	1
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	4
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	5
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	5
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	4
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	4
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	4
Sample size	12	How many participants were in the study?	5
Non-participation	13	How many people refused to participate or dropped out? Reasons?	6
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	4
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	5
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	6
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Additional File
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	N/A
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	5
Field notes	20	Were field notes made during and/or after the inter view or focus group?	5
Duration	21	What was the duration of the inter views or focus group?	5
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or	N/A

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	5
Description of the coding tree	25	Did authors provide a description of the coding tree?	5
Derivation of themes	26	Were themes identified in advance or derived from the data?	5
Software	27	What software, if applicable, was used to manage the data?	N/A
Participant checking	28	Did participants provide feedback on the findings?	N/A
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	6 to 15
Data and findings consistent	30	Was there consistency between the data presented and the findings?	15
Clarity of major themes	31	Were major themes clearly presented in the findings?	7 to 15
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	7 to 15

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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An Exploration of Home Care Nurse's Experiences in Deprescribing of Medications: A Qualitative Descriptive Study

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An Exploration of Home Care Nurse's Experiences in Deprescribing of Medications:

A Qualitative Descriptive Study

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ABSTRACT:

Objectives: The aim of this study is to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing.

Methods: This study employed an exploratory qualitative descriptive research design, using scalability assessment from two focus groups with a total of eleven home care nurses in Ontario, Canada. Thematic analysis was used to derive themes about home care nurse's perspectives about barriers and enablers of deprescribing, as well as learning needs in relation to deprescribing approaches.

Results: Home care nurse's identified challenges for managing polypharmacy in older adults in home care settings, including a lack of open communication and inconsistent medication reconciliation practices. Additionally, inadequate partnership and ineffective collaboration between inter-professional healthcare providers were identified as major barriers to safe deprescribing. Further, home care nurses highlighted the importance of raising awareness about deprescribing in the community, and they emphasized the need for a consistent and standardized approach in educating healthcare providers, informal caregivers, and older adults about the best practices of safe deprescribing.

Conclusion: Targeted deprescribing approaches are important in home care for optimizing medication management and reducing polypharmacy in older adults. Nurses in home care play a vital role in medication management and, therefore, educational programs must be developed to support their awareness and understanding of deprescribing**.** Study findings highlighted the need for the future improvement of existing programs about safer medication management through the development of a supportive and collaborative relationship among the home care team, frail older adults and their informal caregivers.

Article Summary: Strengths and Limitations of This Study:

- This study explored a novel topic of research: deprescribing of medications and managing polypharmacy from the perspectives of nurses in home care settings.
- The use of qualitative description allowed for a descriptive summary of the experiences of home care nurses about deprescribing which could serve as entry points for further study.
- The current study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses from diverse healthcare settings (ie. primary care nurses) to gain a deeper understanding of their educational needs about deprescribing.

Keywords: Deprescribing; Home HealthCare; Nursing; Older Adults; Medications; Home Care Nurses

BACKGROUND:

Polypharmacy, defined as the use of multiple medications or more medications than is medically necessary, is a growing concern for older adults [1]. With the increasing number of older adults with multiple chronic diseases, older adults are frequently prescribed five or more medications [2]. Nearly 50% of older adults take one or more medications that are medically unnecessary thus requiring a clinical medication review [3]. Polypharmacy is a growing concern for older adults in home care settings. Chronic conditions are common among older home care clients with 77% of people aged 65 years and over experiencing at least one chronic disease [4; 5]. There are many negative consequences associated with polypharmacy, including increased healthcare costs; the risk for adverse drug events and drug interactions; medication non-adherence; reduced functional and cognitive status; and the risks for falls [3]. Increased prescription medication use has been associated with diminished ability to perform instrumental activities of daily living (IADL) among older adults with frailty (a syndrome of physiological decline in later life), including shopping; meal preparation; managing finances; driving or using public transportation; performing housework and medication management [6]. As a result of the prevalence of polypharmacy and the associated negative consequences, reducing complex medication regimens to those necessary should be central to the promotion of active and independent living of older adults in home care.

One important way of optimizing medication management and reducing polypharmacy for older adults in home care is through deprescribing. Deprescribing is the process of tapering, stopping, discontinuing, or withdrawing drugs, with the goal of managing polypharmacy and improving patient outcomes. [7] Deprescribing is considered to be an essential part of the prescribing process where healthcare providers reduce the dose and stop medications after carefully assessing the patient's goals of care and weighing the potential harm and benefit of the medication [8]. Deprescribing is a vital part of supporting older adults in the self-management of multiple chronic conditions, because it can reduce the risk of adverse events and improve health related quality of life [9;10]. Research has indicated that educational training for nurses about deprescribing had the potential to improve the quality of life in clients of assisted living facilities by reducing the use of harmful medications [13]. Nurses in home care play a vital role in medication management and, therefore, educational training must be developed to support them in the development of their awareness and understanding of deprescribing approaches to help enable the opportunities for active and independent living of the frail older adults at home [9]. To date, little is known about the perspectives of home care nurses in regards to their educational needs about appropriate deprescribing of medications for community-dwelling older adults.

Given this knowledge gap, our project focuses on the design of an educational intervention that would address the barriers and enablers encountered by home care nurses about safe deprescribing practices in the community. Specifically, the current project is one part of a larger body of research with the aim of promoting the awareness and the adoption of deprescribing approaches among home care nurses through education using a scaling up

approach. The process of scaling up was used which involved the deliberate effort to increase the impact of educational interventions to benefit the target populations, and to promote future policy and program development on an ongoing basis [14]. This was achieved using the following three phases of scaling up process: (1) Phase I Scalability assessment: conducting a focus group with home care nurses to assess their barriers and enablers in relation to deprescribing approaches, and the opportunities for appropriate use of non-pharmacological measures. (2) Phase II Develop a scaling up plan: developing an educational plan for home care nurses about deprescribing based on feedback from the focus group sessions. (3) Phase III Implement the scale-up plan: conducting the scaling up of education about deprescribing and appropriate use of non-drug therapies with home care nurses to evaluate the appropriateness, acceptability and effectiveness of the educational intervention using questionnaire data.

Objectives:

The objectives of this study were to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing.

METHODS:

Study Design, Setting and Sampling (Inclusion/Exclusion):

An exploratory qualitative descriptive research design was used with the aim of generating qualitative descriptive data to allow for a descriptive summary of the phenomenon of interest [11]. Qualitative descriptive studies are underpinned by the general tenets of naturalistic inquiry, without a priori commitment to any one theoretical view of a target phenomenon [11]. The goal of a qualitative descriptive design for this study was to provide a comprehensive summary of descriptions of the phenomenon of interest: deprescribing in the context of home care. This study design allowed the researcher to conduct a scalability assessment using focus group sessions to examine home care nurse's perspectives about barriers and enablers of deprescribing, as well as learning needs in relation to deprescribing approaches. Focus groups have been widely used in the continuing health education field for assessment of learning needs among health care professionals[12], and therefore this was the chosen method to achieve our research objectives.

Upon ethics approval from the Research Ethics Board at the University of Ontario Institute of Technology, study recruitment using purposive sampling took place at one designated home care organization in Ontario, Canada. The relationship with participants was not established prior to study commencement. Home care nurses who met the following inclusion criteria were invited to participate in the focus group: 1) A Registered Nurse or Registered Practical Nurse with a casual/part-time/full-time status who has direct clinical contact with patients; 2) having experience (2 years and above) in working with older adults in home care settings; and 3) over the age of 18 years and having the ability to understand and speak

English. Eligible study participants within the home care organization were informed consent face-to-face by the research assistant, including the study purpose; procedure; potential risks and benefits; rights of the participants and confidentiality.

Data collection:

The first focus group session involved five home care nurses. and the second focus group session included six nurses. Focus groups lasted about 60 to 90 minutes. The questions were guided by the following four topic domains: a) Polypharmacy among frail older adults in home care; b) Learning and educational needs about deprescribing; c) Barriers and enablers to deprescribing approaches; and d) Exploration of non-pharmacological alternatives to medications. The focus groups were held iteratively until data saturation when there weren't any new themes emerged during the data collection [11]. During each focus group session, the facilitators (WS and FT) asked open-ended questions to ensure the relevant topics were discussed and to allow all study participants to speak freely and openly. A research assistant was present to take field notes to make observations. The focus group interviews were audio-recorded with the permission from study participants and they were transcribed prior to the data analysis.

Data Analysis:

Thematic analysis was used for analyzing the focus group data by identifying themes across the datasets that described the phenomenon [11]. The research team began by reading and re-reading the transcripts to immerse themselves in the dataset and to develop a general understanding of the focus group data with descriptive summaries. Coding of the dataset was performed by two data coders (WS and FT). Common themes from the focus groups were derived based on the coding tree to help us identify the relationships between the emerging themes and the associated meanings. Finally, the identified themes and accompanying data extracts (quotes) were reviewed to determine whether the data in the themes were related in an accurate, coherent and meaningful way in relation to our study purpose and research questions. Results are presented in a way that tells the story of the phenomenon as well as describing the interpreted findings that reflected the experiences of the study participants [11]. The researchers engaged in reflexivity, where this process enabled the researchers to become sensitive to their own biases, as well as revealing their preconceptions to ensure the codes and themes of the analysis were data-derived.

Patient and Public Involvement Statement:

There is no patient/public involvement in this research project.

RESULTS:

Focus groups were held in Ontario, Canada during October 2017. Fifteen Registered or Registered Practical Nurses from the designated home care organization met the eligibility criteria and were invited to participate. Of those, 73% (n=11) home care nurses provided informed consent to participate. There was no participant who dropped out from the study. The demographics of the participants are presented in Table 1. Participants were all female, with a mean age of 49.5 years and had in-depth nursing experiences in working with older adults in the field of home care.

Table 1: Demographic characteristics of home care nurses (N=11)

Characteristics (N=11)	Mean (Range)
Age (years)	49.5 (30- 69)
	N(%)
Gender (female)	11 (100)
Nursing, years of experience (years)	18.72 (2-40)
Nursing, years of experience in home healthcare (years)	11.18 (2-20)
Nursing, experience working with older adults (years)	16.72 (2-40)

The focus group sessions held with participants provided a rich description of deprescribing from the perspectives of home care nurses, as well as providing in-depth insight into the learning needs of nurses in relation to deprescribing approaches in home care. The presentation of our qualitative findings focused on the following eight overarching themes: (1) Causes of polypharmacy among older adults in home care; (2) Challenges to the management of polypharmacy in the community; (3) Meaning of deprescribing; (4) Importance of deprescribing; (5) Potential barriers to raising awareness about deprescribing in home care; (6) Potential facilitators to promote deprescribing in home care; (7) Educational topics about deprescribing; and (8) Learning tools and resources about deprescribing.

(1) Causes of Polypharmacy among Older Adults:

Polypharmacy is a result of the lack of understanding about client's medical conditions:

Home care nurses indicated that polypharmacy in older adults is the primary reason for the need to deprescribe, and polypharmacy can be a result of the healthcare provider's lack of understanding about the client's medical conditions. Due to the involvement of multiple healthcare providers, it was often difficult to "track down" which medication had been prescribed for which medical condition and by which healthcare provider. Healthcare provider's lack of understanding about the clients' complete picture of their medical diagnosis can lead to the prescription of multiple medications that are redundant and inappropriate. The following statement illustrates this:

I (the nurse) was just out to a home visit today and he (the client) said "I think I'm on too many, too many medications". His daughter questioned: I wasn't exactly sure what diagnosis my father has…why he has many medications and who prescribed these and why he needed them? (FG2, P1)

Polypharmacy is a result of the lack of client follow-up by multiple healthcare providers:

Home care nurses acknowledged that there are usually multiple healthcare providers involved in client care and they often do not have proper follow-up with the client after prescribing medications. Due to the lack of follow-up, clients are at risk of taking medications that are no longer needed.

Numerous doctors ordered different medications and they don't usually follow-up on the medications that have been ordered. (FG2, P1)

Polypharmacy is a result of the client's lack of knowledge about medication management:

Home care nurses indicated that clients, particularly individuals with cognitive impairment are at the greatest risk for having a lack of understanding about the rationale and the need for medications. This could lead to medication errors, medication non-adherence, or incorrect medication dosages. The following statement illustrates this:

When you admit new clients, you asked them for their medications and they handed you over a grocery bag filled with medications… Often they're not even taking half of the medications found in this grocery bag but they keep these medication bottles just in case. They like to hold on to the old medications and not knowing why they need them… (FG2, P2)

(2) Challenges to the Management of Polypharmacy among Older Adults in Home Care

Lack of centralized and universal database related to client's health and medication information:

Participants shared their frustration towards the lack of a centralized and universal database that allowed for timely access to client's health and medication information. Home care nurses highlighted this information is important to medication management:

Nobody can access the same file for every client… There's the need for the client's chart to be in one central place. When you complete the documentation, you can find out who this client has visited in the past. Even if it's for foot care or an ear doctor…Whatever it is, so that everybody knows exactly what each healthcare provider has done and who the clients have seen and what happened. (FG1, P5)

Lack of medication system that alerts healthcare providers re: polypharmacy of at-risk older adults:

Similarly, participants continued to indicate that there is a need for a centralized medication system that cues/alerts or flags healthcare providers about clients' medication information. The participants shared that having a cueing or alert system can help identify older adults who are at risk for adverse events due to polypharmacy, and can suggest the need for appropriate deprescribing. One respondent suggested the possibility of having such technology to help promote safety of medication management in home care:

It would be ideal if there's something (a system) to flag us when we type in client's information electronically, such as their medication list… A warning would pop up right away and will flag us about a potential problem about the medications. (FG2, P2)

Lack of time for medication review and reconciliation:

Participants expressed their concerns about their workload and how their overwhelming work schedule leaves little room for medication review and reconciliation. One participant shared that time constraint discouraged nurses from engaging in a complete medication review and reconciliation process with their clients at home. The following statement illustrates that:

I am just thinking of some medication errors that we had… it just comes down to if medication reconciliation has ever been done properly… these errors wouldn't have happened. It's all because of workload and time constraint… (FG1, P3)

(3) The Meaning of Deprescribing:

Participants had different levels of understanding on the topic of deprescribing. Some participants were more aware of the deprescribing approaches than others. The following are sub-themes that emerged as home care nurses defined what deprescribing means to them in practice.

Deprescribing is about adjusting dosages of high-risk medication:

Home care nurses shared their concerns about the associated risks of certain types of medications such as: cardiac, anti-hypertensive, laxatives, anti-convulsant, and diuretics medications. One participant shared her clients' experience with high dosages of anti-hypertensive medication:

When I got a referral that the patient was complaining about dizziness, I made a home visit and found out that they were on high dosages of anti-hypertensive... I have been communicating with the doctor to adjust the level of this medication. (FG1, P1)

Another participant added that medications are often being prescribed without proper evaluation or follow-up to assess for the appropriateness of the medication regimen.

When one medication is not successful, they (the doctors) added on something else instead of just working through and figuring out which medication is the most appropriate for that particular client. (FG1, P5)

Deprescribing is about finding the right medication:

Home care nurses responded that the meaning of deprescribing lies in the healthcare provider's ability in choosing the appropriate medication that is effective in managing their client's disease conditions. In particular, nurses indicated that the goal of deprescribing is to minimize polypharmacy through having the least number of medications to treat the client's disease conditions. The following statement illustrates this idea:

I would say yes to deprescribing if we can find a medication that treats all three conditions and clients only have to take one pill instead of three…it's better for the clients. (FG 1, P2)

Deprescribing is about removing the inappropriate medication at the right time:

Participants emphasized that finding the right timing to deprescribe inappropriate and unnecessary medications is the essence of successful deprescribing. Home care nurses added that removing inappropriate and unnecessary medications require a proper schedule of tapering off medication dosages gradually over a period of time. They believe that a sudden and abrupt deprescribing approach would be harmful to the client's health and well-being. The following statement illustrates this sub-theme:

You have to get rid of the right things (inappropriate medication) at the right time, you know what I mean. Like scaling down (tapering) the dosages and not just stopping the medication right away… (FG1, P1)

(4) The Importance of Deprescribing:

The use of multiple pharmacies leading to multiple prescriptions:

Home care nurses indicated that the pharmacist plays an important role in deprescribing. However, they shared that their clients tend to visit multiple pharmacies for their prescriptions which contributes to the problem of polypharmacy.

When the client came home from their hospitalization, they filled the new prescription in the hospital and therefore the community pharmacy that client used to go to would not know about this new prescription. It is problematic when clients are getting multiple prescriptions from different pharmacies. (FG1, P5)

Non-adherence leading to medication under/over-dosage

Home care nurses indicated that medication non-adherence is a major issue for their clients in the community. As a result of the lack of understanding about medication management, clients are at risk of non-adherence to their medication regimen, which can lead to possible adverse events due to under or over-dosage of medications. The following statement illustrates this sub-theme:

You are right that they (the clients) don't get rid of their old prescriptions. They take both new and old prescriptions instead of wasting the old pills. When they go back to the pharmacy, the pharmacist will often find out that the clients are actually taking incorrect dosages of medication because they were having two bottles of the same medication (with different dosages). (FG1, P5)

Medication reconciliation to deprescribe unnecessary medications

Participants continued to describe the importance of deprescribing by highlighting the need for a timely and appropriate medication reconciliation process for their clients in the community. The challenge for home care nurses is that they would often conduct medication reconciliation upon the client's admission, but there is a lack of follow-up in place to allow for an on-going review and monitoring of the client's medication regimen. The respondent further described this sub-theme:

I would say that the medication review (reconciliation) is beneficial because sometimes they're on these medications for years and years, but they should have been on it for just a month or two. And the therapeutic ranges of medications? Nobody is even monitoring... So, I think deprescribing is very important in these situations. (FG2, P3)

(5) Potential Barriers to Raising Awareness about Deprescribing in Home Care

Over-usage of over the counter (non-prescription) medications:

Home care nurses identified that the excessive use of over-the-counter medications can potentially be more difficult to deprescribe than prescription medications. They indicated that home care clients have easy access to a variety of non-prescription medications without proper

education about their safety risks and concerns to their health and well-being. Some clients have the misunderstanding that non-prescription medications are considered as a "safer" alternative than prescription medications.

A lot of them (clients) considered that Tylenol and Antacids are over the counter so they don't count these as "real medications". (FG2, P3)

Lack of standardized process of medication reconciliation in home care

Another barrier to deprescribing in home care is the lack of a standardized approach to the medication reconciliation process in home care. Home care nurses shared their frustration that the current medication reconciliation process is not considered user-friendly. They highlighted the need for a centralized and systematic approach to medication reconciliation that would help facilitate deprescribing effectively and in an efficient manner. In particular, it was suggested that the use of a single pharmacy by the client rather than the use of multiple pharmacies would help reduce the risk for a segregated and fragmented medication database.

A suggestion is to encourage client to use a single, centralized pharmacy; and nurses would have access to a centralized medication reconciliation database (to facilitate deprescribing). We need to make the medication reconciliation process more user-friendly and less compartmentalized, so that deprescribing would be a simpler process. (FG1, P5)

(6) Potential Facilitators to Raising Awareness about Deprescribing in Home Care

The need for inter-professional education and collaboration for deprescribing:

All home care nurses acknowledged that an important facilitator to raising awareness about deprescribing is through inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists. Nurses indicated their fears about the misunderstanding and communication gap that arises from the lack of inter-professional education and collaboration puts clients at greater risk for adverse medication problems:

Education and working together is important. The pharmacists know the medications better than the doctors and the nurses. So it is easier for them (pharmacists) to flag any problems right away, probably by just looking at the medication list. For us (home care nurses) we would have to look up every medication to determine the drug interactions whereas they (pharmacists) might already know this. So it is great if the pharmacist can work with us to alert us about any problems. (FG2, P2)

Consistency and continuity of care among healthcare providers:

Participants emphasized that there is a need for continuity of care to support safe deprescribing. Otherwise, different healthcare providers might have different pieces of advice for their clients, then it would be difficult to build a therapeutic relationship between the care providers and care recipients.

Consistency not redundancy among healthcare providers is important. When doctors, pharmacists and nurses are all telling the same story… then this should go over a lot better… we must send a consistent message, not a conflicting message. (FG2, P3)

Deprescribing must be part of health teaching in home care

Home care nurses identified that deprescribing must be incorporated as part of client's health teaching in home care. Participants indicated that older adults must be educated about their medication management and deprescribing needs in order to make informed decisions about their medication regimen.

I think deprescribing needs to be part of client health teaching…As a nurse you need to conduct thorough medication review, and provide the clients with important explanation and information regarding their medications. (FG1, P2)

Deprescribing must be based on accurate and reliable data sources:

Evidence-informed deprescribing is crucial to ensure safe medication management. Home care nurses indicated that an important facilitator to deprescribing is the utilization of accurate and reliable sources of data, such as complete client history as well as centralized reports from a primary healthcare provider.

You don't want to deprescribe a medication that was actually a need. Yes, deprescribing is extremely crucial but only if you have reliable sources, reliable history, and complete data... you need to have direct contact with only one prescribing physician, so that all of the prescribing goes to this one physician. Even if they see a specialist, they have a card that says you need to refer this back to my family doctor, so that my family doctor can add the information to my medication list and only he can prescribe and give out the prescription. We need a thorough circle of care without breaches… (FG2, P5)

A strong circle of care network facilitates deprescribing:

In general, home care nurses suggested that a strong circle of care network that involves the clients, healthcare providers and informal caregivers is an important facilitating factor to safe deprescribing approaches. In particular, the lack of involvement from the clients, healthcare providers or informal caregivers within this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices. The following statement illustrates this theme:

If the "circle of care link" is pretty tight, then I can say to you that we could probably deprescribe the medications. Other than that, if you have a breach anywhere in this "circle of care", I would say it's not safe to deprescribe. (FG1, P5)

(7) Educational Topics about Deprescribing:

Best practices in medication reconciliation to promote safety in medication management:

Home care nurses recognized that there is a lack of guidelines for best practices in medication reconciliation. They acknowledged the importance of medication reconciliation to promote safe medication management but expressed concern about the existing knowledge gap on this topic.

The topic of medication reconciliation is huge. Our current policies and procedures about medication reconciliation are all over the place. We still aren't doing a good job of it. I don't think some healthcare providers realize that when clients come home from the hospital, we have the obligation to conduct medication reconciliation because clients are at high risk for medication errors. (FG2, P3)

Raising awareness about available community resources on deprescribing:

Study participants indicated that they have a lack of knowledge about the available community resources on deprescribing. Specifically, they strongly recommended involving community partners to promote and educate deprescribing approach among community-dwelling older adults. Some examples of potential community partners to support deprescribing approaches for seniors include Alzheimer's Society, Seniors' Club, Community Care programs etc. They believe that future educational focus on deprescribing should include a description of the existing resources that would help mobilize deprescribing approaches in the community:

The nurses in the community and their supervisors must know what is available out there to support them with deprescribing. (FG2, P3)

Basic principles and approaches about deprescribing for the commonly used medications:

Home care nurses expressed their interests in learning more about the foundational approaches about deprescribing for the at-risk medications, including their side effects and drug interactions. The nurses believe that this knowledge would support safe deprescribing of medications for their clients in the community:

Reviewing some basic deprescribing principles for the most commonly used medications like blood pressure, bowel, and urinary medications etc. (FG1, P3)

(8) Learning Tools and Resources for Nurses, Older Adults and their Informal Caregivers about Deprescribing

Mixture of online/in-person educational training with print material and interactive information session

In regards to the development of educational training for deprescribing, study participants indicated their preference towards a variety of reading materials with case examples being presented as infographic, brochures and pamphlets in addition to the use of power-point presentation. Furthermore, they preferred a mixture of online and in-person educational session to provide a variety of learning platform to meet the scheduling needs of home care nurses.

I think in-person (educational training about deprescribing) is best if possible. However, it would probably be better with a mix of online and in-person training. Because I don't think you would get all the nurses for in-person training. (FG2, P1)

Considering the different learning styles of individuals, study participants suggested that interactive information sessions about deprescribing would be most beneficial for nurses, older adults or their informal caregivers to facilitate in-depth discussion and sharing of ideas.

Interactive information sessions are needed so that they (nurses/older adults/caregivers) can get an understanding of what deprescribing means, and they can ask questions and interact with the facilitators. (FG1, P5)

Non-drug therapies and non-pharmacological measures

Home care nurses indicated that deprescribing education must include the alternative approaches such as the use of non-drug therapies and non-pharmacological approaches. Some examples of these alternative approaches may include: hydro therapy, music therapy, aromatherapy, therapeutic touch, acupuncture, reminiscence therapy and sleep therapy. In particular, home care nurses emphasized that lifestyle changes such as exercise and healthy nutrition are important non-pharmacological approaches to promote health and well-being. The following statement illustrates this theme:

Nutrition can facilitate deprescribing, especially for frail older adults… there's always a need for proper nutrition. (For example, adjusting fiber intake for constipation instead of using laxatives). (FG2, P1)

Family education about behavioral and symptoms management

Home care nurses raised concern that medications such as benzodiazepine are prescribed too often and in high dosages for frail older adults. If the family members of older adults are well-educated about behavioral and symptoms management, the need for unnecessary benzodiazepine and other psychotropic medication would likely be reduced in the community.

Family education about behavioral and symptoms management can help with deprescribing. Often times, family members don't have the skill to deal with behavioral problems because they don't have the education needed to respond to client's symptoms or behaviors (FG1, P5)

DISCUSSION:

The objectives of this study were to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing. Our study findings revealed that home care nurse's perspectives on deprescribing reflected the current literature where deprescribing is about medication optimization through the following approaches: adjusting the dosages of high risk medications; timely removal of inappropriate prescriptions and over the counter medications; as well as finding appropriate pharmacological or non-pharmacological alternatives [6]. Specifically, our study findings highlighted the complexity of managing polypharmacy among older adults in home care, as well as the facilitators and challenges that home care nurses face when undertaking deprescribing approaches. Our current findings are congruent with previous literature where multiple healthcare providers and pharmacy visits, contradicting treatments from multiple health providers, resource constraints, client's non-adherence and lack of knowledge about medication, as well as the lack of follow-up by healthcare providers are suggested to be barriers to medication management [13,15,16]. In particular, home care nurses identified the time constraint for medication review and reconciliation as a major challenge to the management of polypharmacy.

Medication reconciliation is the process in which healthcare providers work together with clients, families and care providers to ensure accurate and comprehensive medication information is communicated consistently across transitions of care to provide continuity of care [17,18]. There is the need for the future development of educational training for home care nurses about the best practice guidelines in medication reconciliation using a standardized and systematic approach that would facilitate deprescribing in an effective and efficient manner. Currently, there is a lack of a centralized and universal database that allows for an on-line medication repository to provide seamless access to client's medication information by home care nurses. To overcome this barrier, it is suggested that future technological innovation should focus on the development of a centralized medication system that provide cues to alert healthcare providers of at-risk older adults with deprescribing needs. For example, the North Eastern Region Connect is a province-wide program funded by eHealth Ontario with the goal of providing healthcare providers timely access to electronic client health information across the care continuum [19]. This eHealth initiative helps improve efficiency of clinical decision-making and provides a more complete picture of client health information, including the medication profiles. In particular, future medication databases may develop built-in decision

support systems that could trigger deprescribing algorithms for certain high-risk medications to facilitate deprescribing.

Our study findings underscored the important enablers to help raise awareness about deprescribing in home care. Inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists can help facilitate deprescribing by promoting open communication, consistency and continuity of care within home care. Previous literature identified that nurse's communication with and receptivity of the physician is the key to facilitating successful deprescribing [15, 20]. In particular, the multiple layered communication gap within the health system hierarchy can contribute to potential medication errors and can act as a major barrier to effectively deprescribing unnecessary and inappropriate medications [20]. Therefore, home care nurses recommended the involvement of community resources and partners to help facilitate open communication, raise awareness and mobilize deprescribing approaches in the community. Additionally, client and family members' lack of understanding about medication regimens can create another layer of communication complexity in the community [17]. Our study findings suggested the need for deprescribing to be incorporated as part of the client's health teaching by home care nurses. Older adults and their informal caregivers must be educated about their medication management to facilitate evidence-informed deprescribing [17].

Various tools have been developed to promote patient education (e.g. EMPOWER brochures available at www.Deprescribing.Network.ca) and evidence-based deprescribing guidelines and algorithms (available at www.Deprescribing.org) [21,22,23,24,25,26]. These communication aids and resources can help facilitate an open dialogue about deprescribing among clients, caregivers and prescribers. In addition to the utilization of educational resources, home care nurses proposed the need for the development of deprescribing education with the emphasis on the exploration of client's alternatives to non-drug therapies. For instance, enabling the development of personal health practices and coping skills of older adults may involve the substitution of prescription medications with non-pharmacological approaches, such as the use of music or reminiscence therapy in lieu of anxiolytic medications [20]. Finally, our study findings highlighted the role of a strong circle of care network with the collaborative involvement of the older adults, informal caregivers and healthcare providers as an important enabler to safe deprescribing in home care. The breakdown of this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices in the community.

CONCLUSION:

This paper reported the findings of our scalability assessment that focused on the examination of home care nurse's understanding about deprescribing approaches, polypharmacy and non-pharmacological measures to medication management for older adults in the

community. Past literature about the experiences and perspectives of nurses on deprescribing focused primarily in long-term care settings [15]. The current study expanded our understanding of home care nurse's awareness and understanding of deprescribing approaches in the community. This study using focus group interviews allowed the researchers to gain valuable insight into a wide range of perceptions and beliefs that home care nurses hold in relation to medication optimization for older adults. It should be noted that our study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses with different roles and from diverse healthcare settings in order to gain a deeper understanding about their educational needs regarding deprescribing that are role and context-specific. Future phases of our project will focus on mobilizing the scale-up plan by implementing the evidence-based educational intervention targeted to address the learning needs of nurses about safe deprescribing practices for older adults in home care settings. Findings from this research project will help lead the future development of programs about optimization of medication management which will foster a supportive and collaborative relationship among the home care team, frail older adults and their informal caregivers.

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Competing Interests

The authors declare that they have no competing interests.

Data Sharing Statement

Additional unpublished data may be available for review upon request made to the primary author.

Author Statement

All authors (WS; FT; JAD; CBH; JPT; and CRH) provided input into the development of the manuscript, and have read and approved this manuscript. WS; FT; JAD; CBH and CRH are female researchers while JPT is a male researcher for this research study.

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COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	5
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	1
Occupation	3	What was their occupation at the time of the study?	1
Gender	4	Was the researcher male or female?	17
Experience and training	5	What experience or training did the researcher have?	1
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	4
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	5
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	5
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	4
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	4
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	4
Sample size	12	How many participants were in the study?	5
Non-participation	13	How many people refused to participate or dropped out? Reasons?	6
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	4
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	5
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	6
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Additional File
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	N/A
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	5
Field notes	20	Were field notes made during and/or after the inter view or focus group?	5
Duration	21	What was the duration of the inter views or focus group?	5
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or	N/A

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	5
Description of the coding tree	25	Did authors provide a description of the coding tree?	5
Derivation of themes	26	Were themes identified in advance or derived from the data?	5
Software	27	What software, if applicable, was used to manage the data?	N/A
Participant checking	28	Did participants provide feedback on the findings?	N/A
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	6 to 15
Data and findings consistent	30	Was there consistency between the data presented and the findings?	15
Clarity of major themes	31	Were major themes clearly presented in the findings?	7 to 15
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	7 to 15

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An Exploration of Home Care Nurse's Experiences in Deprescribing of Medications: A Qualitative Descriptive Study

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An Exploration of Home Care Nurse's Experiences in Deprescribing of Medications:

A Qualitative Descriptive Study

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ABSTRACT:

Objectives: The aim of this study is to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing.

Methods: This study employed an exploratory qualitative descriptive research design, using scalability assessment from two focus groups with a total of eleven home care nurses in Ontario, Canada. Thematic analysis was used to derive themes about home care nurse's perspectives about barriers and enablers of deprescribing, as well as learning needs in relation to deprescribing approaches.

Results: Home care nurse's identified challenges for managing polypharmacy in older adults in home care settings, including a lack of open communication and inconsistent medication reconciliation practices. Additionally, inadequate partnership and ineffective collaboration between inter-professional healthcare providers were identified as major barriers to safe deprescribing. Further, home care nurses highlighted the importance of raising awareness about deprescribing in the community, and they emphasized the need for a consistent and standardized approach in educating healthcare providers, informal caregivers, and older adults about the best practices of safe deprescribing.

Conclusion: Targeted deprescribing approaches are important in home care for optimizing medication management and reducing polypharmacy in older adults. Nurses in home care play a vital role in medication management and, therefore, educational programs must be developed to support their awareness and understanding of deprescribing**.** Study findings highlighted the need for the future improvement of existing programs about safer medication management through the development of a supportive and collaborative relationship among the home care team, frail older adults and their informal caregivers.

Article Summary: Strengths and Limitations of This Study:

- This study explored a novel topic of research: deprescribing of medications and managing polypharmacy from the perspectives of nurses in home care settings.
- The use of qualitative description allowed for a descriptive summary of the experiences of home care nurses about deprescribing which could serve as entry points for further study.
- The current study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses from diverse healthcare settings (ie. primary care nurses) to gain a deeper understanding of their educational needs about deprescribing.

Keywords: Deprescribing; Home HealthCare; Nursing; Older Adults; Medications; Home Care Nurses

BACKGROUND:

Polypharmacy, defined as the use of multiple medications or more medications than is medically necessary, is a growing concern for older adults [1]. With the increasing number of older adults with multiple chronic diseases, older adults are frequently prescribed five or more medications [2]. Nearly 50% of older adults take one or more medications that are medically unnecessary thus requiring a clinical medication review [3]. Polypharmacy is a growing concern for older adults in home care settings. Chronic conditions are common among older home care clients with 77% of people aged 65 years and over experiencing at least one chronic disease [4; 5]. There are many negative consequences associated with polypharmacy, including increased healthcare costs; the risk for adverse drug events and drug interactions; medication non-adherence; reduced functional and cognitive status; and the risks for falls [3]. Increased prescription medication use has been associated with diminished ability to perform instrumental activities of daily living (IADL) among older adults with frailty (a syndrome of physiological decline in later life), including shopping; meal preparation; managing finances; driving or using public transportation; performing housework and medication management [6]. As a result of the prevalence of polypharmacy and the associated negative consequences, reducing complex medication regimens to those necessary should be central to the promotion of active and independent living of older adults in home care.

One important way of optimizing medication management and reducing polypharmacy for older adults in home care is through deprescribing. Deprescribing is the process of tapering, stopping, discontinuing, or withdrawing drugs, with the goal of managing polypharmacy and improving patient outcomes. [7] Deprescribing is considered to be an essential part of the prescribing process where healthcare providers reduce the dose and stop medications after carefully assessing the patient's goals of care and weighing the potential harm and benefit of the medication [8]. Deprescribing is a vital part of supporting older adults in the self-management of multiple chronic conditions, because it can reduce the risk of adverse events and improve health related quality of life [9;10]. Research has indicated that educational training for nurses about deprescribing had the potential to improve the quality of life in clients of assisted living facilities by reducing the use of harmful medications [11]. Nurses in home care play a vital role in medication management and, therefore, educational training must be developed to support them in the development of their awareness and understanding of deprescribing approaches to help enable the opportunities for active and independent living of the frail older adults at home [11]. To date, little is known about the perspectives of home care nurses in regards to their educational needs about appropriate deprescribing of medications for community-dwelling older adults.

Given this knowledge gap, our project focuses on the exploration of the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as the development of an educational plan to address the learning needs of home care nurses about deprescribing. Specifically, the current project is one part of a larger body of research with the aim of promoting the awareness and the adoption of deprescribing approaches among home care nurses

through education using a scaling up approach. The process of scaling up was used which involved the deliberate effort to increase the impact of educational interventions to benefit the target populations, and to promote future policy and program development on an ongoing basis [12]. This was achieved using the following three phases of scaling up process: (1) Phase I Scalability assessment: conducting a focus group with home care nurses to assess their barriers and enablers in relation to deprescribing approaches, and the opportunities for appropriate use of non-pharmacological measures. (2) Phase II Develop a scaling up plan: developing an educational plan for home care nurses about deprescribing based on feedback from the focus group sessions. (3) Phase III Implement the scale-up plan: conducting the scaling up of education about deprescribing and appropriate use of non-drug therapies with home care nurses to evaluate the appropriateness, acceptability and effectiveness of the educational intervention using questionnaire data.

Objectives:

The objectives of this study were to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing.

METHODS:

Study Design, Setting and Sampling (Inclusion/Exclusion):

An exploratory qualitative descriptive research design was used with the aim of generating qualitative descriptive data to allow for a descriptive summary of the phenomenon of interest [13]. Qualitative descriptive studies are underpinned by the general tenets of naturalistic inquiry, without a priori commitment to any one theoretical view of a target phenomenon [13]. The goal of a qualitative descriptive design for this study was to provide a comprehensive summary of descriptions of the phenomenon of interest: deprescribing in the context of home care. This study design allowed the researcher to conduct a scalability assessment using focus group sessions to examine home care nurse's perspectives about barriers and enablers of deprescribing, as well as learning needs in relation to deprescribing approaches. Focus groups have been widely used in the continuing health education field for assessment of learning needs among health care professionals[14], and therefore this was the chosen method to achieve our research objectives.

Upon ethics approval from the Research Ethics Board at the University of Ontario Institute of Technology, study recruitment using purposive sampling took place at one designated home care organization in Ontario, Canada. The relationship with participants was not established prior to study commencement. Home care nurses who met the following inclusion criteria were invited to participate in the focus group: 1) A Registered Nurse or Registered Practical Nurse with a casual/part-time/full-time status who has direct clinical contact with patients; 2) having experience (2 years and above) in working with older adults in home

care settings; and 3) over the age of 18 years and having the ability to understand and speak English. Eligible study participants were provided with informed consent via face-to-face meeting with the research assistant. The informed consent included information about the study purpose; procedure; potential risks and benefits; rights of the participants and confidentiality.

Data collection:

The first focus group session involved five home care nurses. and the second focus group session included six nurses. Focus groups lasted about 60 to 90 minutes. The questions were guided by the following four topic domains: a) Polypharmacy among frail older adults in home care; b) Learning and educational needs about deprescribing; c) Barriers and enablers to deprescribing approaches; and d) Exploration of non-pharmacological alternatives to medications. During each focus group session, the facilitators (WS and FT) asked open-ended questions to ensure the relevant topics were discussed and to allow all study participants to speak freely and openly. A research assistant was present to take field notes to make observations. The focus group interviews were audio-recorded with the permission from study participants and they were transcribed prior to the data analysis.

Data Analysis:

Thematic analysis was used for analyzing the focus group data by identifying themes across the datasets that described the phenomenon [14]. The research team began by reading and re-reading the transcripts to immerse themselves in the dataset and to develop a general understanding of the focus group data with descriptive summaries. Coding of the dataset was performed by two data coders (WS and FT). Common themes from the focus groups were derived based on the coding tree to help us identify the relationships between the emerging themes and the associated meanings. Finally, the identified themes and accompanying data extracts (quotes) were reviewed to determine whether the data in the themes were related in an accurate, coherent and meaningful way in relation to our study purpose and research questions. Results are presented in a way that tells the story of the phenomenon as well as describing the interpreted findings that reflected the experiences of the study participants [14]. The researchers engaged in reflexivity, where this process enabled the researchers to become sensitive to their own biases, as well as revealing their preconceptions to ensure the codes and themes of the analysis were data-derived.

Patient and Public Involvement Statement:

There is no patient/public involvement in this research project.

Study Findings:

Focus groups were held in Ontario, Canada during October 2017. Fifteen Registered or Registered Practical Nurses from the designated home care organization met the eligibility criteria and were invited to participate. Of those, 73% (n=11) home care nurses provided informed consent to participate. There was no participant who dropped out from the study. The demographics of the participants are presented in Table 1. Participants were all female, with a mean age of 49.5 years and had in-depth nursing experiences in working with older adults in the field of home care.

Table 1: Demographic characteristics of home care nurses (N=11)

Characteristics (N=11)	Mean (Range)
Age (years)	49.5 (30- 69)
	N(%)
Gender (female)	11 (100)
Nursing, years of experience (years)	18.72 (2-40)
Nursing, years of experience in home healthcare (years)	11.18 (2-20)
Nursing, experience working with older adults (years)	16.72 (2-40)

The focus group sessions held with participants provided a rich description of deprescribing from the perspectives of home care nurses, as well as providing in-depth insight into the learning needs of nurses in relation to deprescribing approaches in home care. The presentation of our qualitative findings focused on the following eight overarching themes: (1) Causes of polypharmacy among older adults in home care; (2) Challenges to the management of polypharmacy in the community; (3) Meaning of deprescribing; (4) Importance of deprescribing; (5) Potential barriers to raising awareness about deprescribing in home care; (6) Potential facilitators to promote deprescribing in home care; (7) Educational topics about deprescribing; and (8) Learning tools and resources about deprescribing.

(1) Causes of Polypharmacy among Older Adults:

Polypharmacy is a result of the lack of understanding about client's medical conditions:

Home care nurses indicated that polypharmacy in older adults is the primary reason for the need to deprescribe, and polypharmacy can be a result of the healthcare provider's lack of understanding about the client's medical conditions. Due to the involvement of multiple healthcare providers, it was often difficult to "track down" which medication had been prescribed for which medical condition and by which healthcare provider. Healthcare provider's lack of understanding about the clients' complete picture of their medical diagnosis can lead to the prescription of multiple medications that are redundant and inappropriate. The following statement illustrates this:

I (the nurse) was just out to a home visit today and he (the client) said "I think I'm on too many, too many medications". His daughter questioned: I wasn't exactly sure what diagnosis my father has…why he has many medications and who prescribed these and why he needed them? (FG2, P1)

Polypharmacy is a result of the lack of client follow-up by multiple healthcare providers:

Home care nurses acknowledged that there are usually multiple healthcare providers involved in client care and they often do not have proper follow-up with the client after prescribing medications. Due to the lack of follow-up, clients are at risk of taking medications that are no longer needed.

Numerous doctors ordered different medications and they don't usually follow-up on the medications that have been ordered. (FG2, P1)

Polypharmacy is a result of the client's lack of knowledge about medication management:

Home care nurses indicated that clients, particularly individuals with cognitive impairment are at the greatest risk for having a lack of understanding about the rationale and the need for medications. This could lead to medication errors, medication non-adherence, or incorrect medication dosages. The following statement illustrates this:

When you admit new clients, you asked them for their medications and they handed you over a grocery bag filled with medications… Often they're not even taking half of the medications found in this grocery bag but they keep these medication bottles just in case. They like to hold on to the old medications and not knowing why they need them… (FG2, P2)

(2) Challenges to the Management of Polypharmacy among Older Adults in Home Care

Lack of centralized and universal database related to client's health and medication information:

Participants shared their frustration towards the lack of a centralized and universal database that allowed for timely access to client's health and medication information. Home care nurses highlighted this information is important to medication management:

Nobody can access the same file for every client… There's the need for the client's chart to be in one central place. When you complete the documentation, you can find out who this client has visited in the past. Even if it's for foot care or an ear doctor…Whatever it is, so that everybody knows exactly what each healthcare provider has done and who the clients have seen and what happened. (FG1, P5)

Lack of medication system that alerts healthcare providers re: polypharmacy of at-risk older adults:

Similarly, participants continued to indicate that there is a need for a centralized medication system that cues/alerts or flags healthcare providers about clients' medication information. The participants shared that having a cueing or alert system can help identify older adults who are at risk for adverse events due to polypharmacy, and can suggest the need for appropriate deprescribing. One respondent suggested the possibility of having such technology to help promote safety of medication management in home care:

It would be ideal if there's something (a system) to flag us when we type in client's information electronically, such as their medication list… A warning would pop up right away and will flag us about a potential problem about the medications. (FG2, P2)

Lack of time for medication review and reconciliation:

Participants expressed their concerns about their workload and how their overwhelming work schedule leaves little room for medication review and reconciliation. One participant shared that time constraint discouraged nurses from engaging in a complete medication review and reconciliation process with their clients at home. The following statement illustrates that:

I am just thinking of some medication errors that we had… it just comes down to if medication reconciliation has ever been done properly… these errors wouldn't have happened. It's all because of workload and time constraint… (FG1, P3)

(3) The Meaning of Deprescribing:

Participants had different levels of understanding on the topic of deprescribing. Some participants were more aware of the deprescribing approaches than others. The following are sub-themes that emerged as home care nurses defined what deprescribing means to them in practice.

Deprescribing is about adjusting dosages of high-risk medication:

Home care nurses shared their concerns about the associated risks of certain types of medications such as: cardiac, anti-hypertensive, laxatives, anti-convulsant, and diuretics medications. One participant shared her clients' experience with high dosages of anti-hypertensive medication:

When I got a referral that the patient was complaining about dizziness, I made a home visit and found out that they were on high dosages of anti-hypertensive... I have been communicating with the doctor to adjust the level of this medication. (FG1, P1)

Another participant added that medications are often being prescribed without proper evaluation or follow-up to assess for the appropriateness of the medication regimen.

When one medication is not successful, they (the doctors) added on something else instead of just working through and figuring out which medication is the most appropriate for that particular client. (FG1, P5)

Deprescribing is about finding the right medication:

Home care nurses responded that the meaning of deprescribing lies in the healthcare provider's ability in choosing the appropriate medication that is effective in managing their client's disease conditions. In particular, nurses indicated that the goal of deprescribing is to minimize polypharmacy through having the least number of medications to treat the client's disease conditions. The following statement illustrates this idea:

I would say yes to deprescribing if we can find a medication that treats all three conditions and clients only have to take one pill instead of three…it's better for the clients. (FG 1, P2)

Deprescribing is about removing the inappropriate medication at the right time:

Participants emphasized that finding the right timing to deprescribe inappropriate and unnecessary medications is the essence of successful deprescribing. Home care nurses added that removing inappropriate and unnecessary medications require a proper schedule of tapering off medication dosages gradually over a period of time. They believe that a sudden and abrupt deprescribing approach would be harmful to the client's health and well-being. The following statement illustrates this sub-theme:

You have to get rid of the right things (inappropriate medication) at the right time, you know what I mean. Like scaling down (tapering) the dosages and not just stopping the medication right away… (FG1, P1)

(4) The Importance of Deprescribing:

The use of multiple pharmacies leading to multiple prescriptions:

Home care nurses indicated that the pharmacist plays an important role in deprescribing. However, they shared that their clients tend to visit multiple pharmacies for their prescriptions which contributes to the problem of polypharmacy.

When the client came home from their hospitalization, they filled the new prescription in the hospital and therefore the community pharmacy that client used to go to would not know about this new prescription. It is problematic when clients are getting multiple prescriptions from different pharmacies. (FG1, P5)

Non-adherence leading to medication under/over-dosage

Home care nurses indicated that medication non-adherence is a major issue for their clients in the community. As a result of the lack of understanding about medication management, clients are at risk of non-adherence to their medication regimen, which can lead to possible adverse events due to under or over-dosage of medications. The following statement illustrates this sub-theme:

You are right that they (the clients) don't get rid of their old prescriptions. They take both new and old prescriptions instead of wasting the old pills. When they go back to the pharmacy, the pharmacist will often find out that the clients are actually taking incorrect dosages of medication because they were having two bottles of the same medication (with different dosages). (FG1, P5)

Medication reconciliation to deprescribe unnecessary medications

Participants continued to describe the importance of deprescribing by highlighting the need for a timely and appropriate medication reconciliation process for their clients in the community. The challenge for home care nurses is that they would often conduct medication reconciliation upon the client's admission, but there is a lack of follow-up in place to allow for an on-going review and monitoring of the client's medication regimen. The respondent further described this sub-theme:

I would say that the medication review (reconciliation) is beneficial because sometimes they're on these medications for years and years, but they should have been on it for just a month or two. And the therapeutic ranges of medications? Nobody is even monitoring... So, I think deprescribing is very important in these situations. (FG2, P3)

(5) Potential Barriers to Raising Awareness about Deprescribing in Home Care

Over-usage of over the counter (non-prescription) medications:

Home care nurses identified that the excessive use of over-the-counter medications can potentially be more difficult to deprescribe than prescription medications. They indicated that home care clients have easy access to a variety of non-prescription medications without proper

education about their safety risks and concerns to their health and well-being. Some clients have the misunderstanding that non-prescription medications are considered as a "safer" alternative than prescription medications.

A lot of them (clients) considered that Tylenol and Antacids are over the counter so they don't count these as "real medications". (FG2, P3)

Lack of standardized process of medication reconciliation in home care

Another barrier to deprescribing in home care is the lack of a standardized approach to the medication reconciliation process in home care. Home care nurses shared their frustration that the current medication reconciliation process is not considered user-friendly. They highlighted the need for a centralized and systematic approach to medication reconciliation that would help facilitate deprescribing effectively and in an efficient manner. In particular, it was suggested that the use of a single pharmacy by the client rather than the use of multiple pharmacies would help reduce the risk for a segregated and fragmented medication database.

A suggestion is to encourage client to use a single, centralized pharmacy; and nurses would have access to a centralized medication reconciliation database (to facilitate deprescribing). We need to make the medication reconciliation process more user-friendly and less compartmentalized, so that deprescribing would be a simpler process. (FG1, P5)

(6) Potential Facilitators to Raising Awareness about Deprescribing in Home Care

The need for inter-professional education and collaboration for deprescribing:

All home care nurses acknowledged that an important facilitator to raising awareness about deprescribing is through inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists. Nurses indicated their fears about the misunderstanding and communication gap that arises from the lack of inter-professional education and collaboration puts clients at greater risk for adverse medication problems:

Education and working together is important. The pharmacists know the medications better than the doctors and the nurses. So it is easier for them (pharmacists) to flag any problems right away, probably by just looking at the medication list. For us (home care nurses) we would have to look up every medication to determine the drug interactions whereas they (pharmacists) might already know this. So it is great if the pharmacist can work with us to alert us about any problems. (FG2, P2)

Consistency and continuity of care among healthcare providers:

Participants emphasized that there is a need for continuity of care to support safe deprescribing. Otherwise, different healthcare providers might have different pieces of advice for their clients, then it would be difficult to build a therapeutic relationship between the care providers and care recipients.

Consistency not redundancy among healthcare providers is important. When doctors, pharmacists and nurses are all telling the same story… then this should go over a lot better… we must send a consistent message, not a conflicting message. (FG2, P3)

Deprescribing must be part of health teaching in home care

Home care nurses identified that deprescribing must be incorporated as part of client's health teaching in home care. Participants indicated that older adults must be educated about their medication management and deprescribing needs in order to make informed decisions about their medication regimen.

I think deprescribing needs to be part of client health teaching…As a nurse you need to conduct thorough medication review, and provide the clients with important explanation and information regarding their medications. (FG1, P2)

Deprescribing must be based on accurate and reliable data sources:

Evidence-informed deprescribing is crucial to ensure safe medication management. Home care nurses indicated that an important facilitator to deprescribing is the utilization of accurate and reliable sources of data, such as complete client history as well as centralized reports from a primary healthcare provider.

You don't want to deprescribe a medication that was actually a need. Yes, deprescribing is extremely crucial but only if you have reliable sources, reliable history, and complete data... you need to have direct contact with only one prescribing physician, so that all of the prescribing goes to this one physician. Even if they see a specialist, they have a card that says you need to refer this back to my family doctor, so that my family doctor can add the information to my medication list and only he can prescribe and give out the prescription. We need a thorough circle of care without breaches… (FG2, P5)

A strong circle of care network facilitates deprescribing:

In general, home care nurses suggested that a strong circle of care network that involves the clients, healthcare providers and informal caregivers is an important facilitating factor to safe deprescribing approaches. In particular, the lack of involvement from the clients, healthcare providers or informal caregivers within this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices. The following statement illustrates this theme:

If the "circle of care link" is pretty tight, then I can say to you that we could probably deprescribe the medications. Other than that, if you have a breach anywhere in this "circle of care", I would say it's not safe to deprescribe. (FG1, P5)

(7) Educational Topics about Deprescribing:

Best practices in medication reconciliation to promote safety in medication management:

Home care nurses recognized that there is a lack of guidelines for best practices in medication reconciliation. They acknowledged the importance of medication reconciliation to promote safe medication management but expressed concern about the existing knowledge gap on this topic.

The topic of medication reconciliation is huge. Our current policies and procedures about medication reconciliation are all over the place. We still aren't doing a good job of it. I don't think some healthcare providers realize that when clients come home from the hospital, we have the obligation to conduct medication reconciliation because clients are at high risk for medication errors. (FG2, P3)

Raising awareness about available community resources on deprescribing:

Study participants indicated that they have a lack of knowledge about the available community resources on deprescribing. Specifically, they strongly recommended involving community partners to promote and educate deprescribing approach among community-dwelling older adults. Some examples of potential community partners to support deprescribing approaches for seniors include Alzheimer's Society, Seniors' Club, Community Care programs etc. They believe that future educational focus on deprescribing should include a description of the existing resources that would help mobilize deprescribing approaches in the community:

The nurses in the community and their supervisors must know what is available out there to support them with deprescribing. (FG2, P3)

Basic principles and approaches about deprescribing for the commonly used medications:

Home care nurses expressed their interests in learning more about the foundational approaches about deprescribing for the at-risk medications, including their side effects and drug interactions. The nurses believe that this knowledge would support safe deprescribing of medications for their clients in the community:

Reviewing some basic deprescribing principles for the most commonly used medications like blood pressure, bowel, and urinary medications etc. (FG1, P3)

(8) Learning Tools and Resources for Nurses, Older Adults and their Informal Caregivers about Deprescribing

Mixture of online/in-person educational training with print material and interactive information session

In regards to the development of educational training for deprescribing, study participants indicated their preference towards a variety of reading materials with case examples being presented as infographic, brochures and pamphlets in addition to the use of power-point presentation. Furthermore, they preferred a mixture of online and in-person educational session to provide a variety of learning platform to meet the scheduling needs of home care nurses.

I think in-person (educational training about deprescribing) is best if possible. However, it would probably be better with a mix of online and in-person training. Because I don't think you would get all the nurses for in-person training. (FG2, P1)

Considering the different learning styles of individuals, study participants suggested that interactive information sessions about deprescribing would be most beneficial for nurses, older adults or their informal caregivers to facilitate in-depth discussion and sharing of ideas.

Interactive information sessions are needed so that they (nurses/older adults/caregivers) can get an understanding of what deprescribing means, and they can ask questions and interact with the facilitators. (FG1, P5)

Non-drug therapies and non-pharmacological measures

Home care nurses indicated that deprescribing education must include the alternative approaches such as the use of non-drug therapies and non-pharmacological approaches. Some examples of these alternative approaches may include: hydro therapy, music therapy, aromatherapy, therapeutic touch, acupuncture, reminiscence therapy and sleep therapy. In particular, home care nurses emphasized that lifestyle changes such as exercise and healthy nutrition are important non-pharmacological approaches to promote health and well-being. The following statement illustrates this theme:

Nutrition can facilitate deprescribing, especially for frail older adults… there's always a need for proper nutrition. (For example, adjusting fiber intake for constipation instead of using laxatives). (FG2, P1)

Family education about behavioral and symptoms management

Home care nurses raised concern that medications such as benzodiazepine are prescribed too often and in high dosages for frail older adults. If the family members of older adults are well-educated about behavioral and symptoms management, the need for unnecessary benzodiazepine and other psychotropic medication would likely be reduced in the community.

Family education about behavioral and symptoms management can help with deprescribing. Often times, family members don't have the skill to deal with behavioral problems because they don't have the education needed to respond to client's symptoms or behaviors (FG1, P5)

DISCUSSION:

The objectives of this study were to explore the barriers and enablers of deprescribing from the perspectives of home care nurses, as well as to conduct a scalability assessment of an educational plan to address the learning needs of home care nurses about deprescribing. Our study findings revealed that home care nurse's perspectives on deprescribing reflected the current literature where deprescribing is about medication optimization through the following approaches: adjusting the dosages of high risk medications; timely removal of inappropriate prescriptions and over the counter medications; as well as finding appropriate pharmacological or non-pharmacological alternatives [6]. Specifically, our study findings highlighted the complexity of managing polypharmacy among older adults in home care, as well as the facilitators and challenges that home care nurses face when undertaking deprescribing approaches. Our current findings are congruent with previous literature where multiple healthcare providers and pharmacy visits, contradicting treatments from multiple health providers, resource constraints, client's non-adherence and lack of knowledge about medication, as well as the lack of follow-up by healthcare providers are suggested to be barriers to medication management [11,15,16]. In particular, home care nurses identified the time constraint for medication review and reconciliation as a major challenge to the management of polypharmacy.

Medication reconciliation is the process in which healthcare providers work together with clients, families and care providers to ensure accurate and comprehensive medication information is communicated consistently across transitions of care to provide continuity of care [17,18]. There is the need for the future development of educational training for home care nurses about the best practice guidelines in medication reconciliation using a standardized and systematic approach that would facilitate deprescribing in an effective and efficient manner. Currently, there is a lack of a centralized and universal database that allows for an on-line medication repository to provide seamless access to client's medication information by home care nurses. To overcome this barrier, it is suggested that future technological innovation should focus on the development of a centralized medication system that provide cues to alert healthcare providers of at-risk older adults with deprescribing needs. For example, the North Eastern Region Connect is a province-wide program funded by eHealth Ontario with the goal of providing healthcare providers timely access to electronic client health information across the care continuum [19]. This eHealth initiative helps improve efficiency of clinical decision-making and provides a more complete picture of client health information, including the medication profiles. In particular, future medication databases may develop built-in decision

support systems that could trigger deprescribing algorithms for certain high-risk medications to facilitate deprescribing.

Our study findings underscored the important enablers to help raise awareness about deprescribing in home care. Inter-professional education and collaboration among the healthcare team, including the nurses, home support workers, nurse practitioners, physicians and pharmacists can help facilitate deprescribing by promoting open communication, consistency and continuity of care within home care. Previous literature identified that nurse's communication with and receptivity of the physician is the key to facilitating successful deprescribing [15, 20]. In particular, the multiple layered communication gap within the health system hierarchy can contribute to potential medication errors and can act as a major barrier to effectively deprescribing unnecessary and inappropriate medications [20]. Therefore, home care nurses recommended the involvement of community resources and partners to help facilitate open communication, raise awareness and mobilize deprescribing approaches in the community. Additionally, client and family members' lack of understanding about medication regimens can create another layer of communication complexity in the community [17]. Our study findings suggested the need for deprescribing to be incorporated as part of the client's health teaching by home care nurses. Older adults and their informal caregivers must be educated about their medication management to facilitate evidence-informed deprescribing [17].

Various tools have been developed to promote patient education (e.g. EMPOWER brochures available at www.Deprescribing.Network.ca) and evidence-based deprescribing guidelines and algorithms (available at www.Deprescribing.org) [21,22,23,24,25,26,27]. These communication aids and resources can help facilitate an open dialogue about deprescribing among clients, caregivers and prescribers. In addition to the utilization of educational resources, home care nurses proposed the need for the development of deprescribing education with the emphasis on the exploration of client's alternatives to non-drug therapies. For instance, enabling the development of personal health practices and coping skills of older adults may involve the substitution of prescription medications with non-pharmacological approaches, such as the use of music or reminiscence therapy in lieu of anxiolytic medications [20]. Finally, our study findings highlighted the role of a strong circle of care network with the collaborative involvement of the older adults, informal caregivers and healthcare providers as an important enabler to safe deprescribing in home care. The breakdown of this circle of care network can potentially contribute to inappropriate and unsafe deprescribing practices in the community.

CONCLUSION:

This paper reported the findings of our scalability assessment that focused on the examination of home care nurse's understanding about deprescribing approaches, polypharmacy and non-pharmacological measures to medication management for older adults in the

community. Past literature about the experiences and perspectives of nurses on deprescribing focused primarily in long-term care settings [15]. The current study expanded our understanding of home care nurse's awareness and understanding of deprescribing approaches in the community. This study using focus group interviews allowed the researchers to gain valuable insight into a wide range of perceptions and beliefs that home care nurses hold in relation to medication optimization for older adults. It should be noted that our study explored the perspectives of deprescribing from a small sample of home care nurses, therefore future research would benefit from broadening the sample size to include nurses with different roles and from diverse healthcare settings in order to gain a deeper understanding about their educational needs regarding deprescribing that are role and context-specific. Future phases of our project will focus on mobilizing the scale-up plan by implementing the evidence-based educational intervention targeted to address the learning needs of nurses about safe deprescribing practices for older adults in home care settings. Findings from this research project will help lead the future development of programs about optimization of medication management which will foster a supportive and collaborative relationship among the home care team, frail older adults and their informal caregivers.

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Competing Interests

The authors declare that they have no competing interests.

Data Sharing Statement

Additional unpublished data may be available for review upon request made to the primary author.

Author Statement

All authors (WS; FT; JAD; CBH; JPT; and CRH) provided input into the development of the manuscript, and have read and approved this manuscript. WS; FT; JAD; CBH and CRH are female researchers while JPT is a male researcher for this research study.

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COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	5
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	1
Occupation	3	What was their occupation at the time of the study?	1
Gender	4	Was the researcher male or female?	17
Experience and training	5	What experience or training did the researcher have?	1
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	4
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	5
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	5
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	4
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	4
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	4
Sample size	12	How many participants were in the study?	5
Non-participation	13	How many people refused to participate or dropped out? Reasons?	6
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	4
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	5
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	6
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Additional File
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	N/A
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	5
Field notes	20	Were field notes made during and/or after the inter view or focus group?	5
Duration	21	What was the duration of the inter views or focus group?	5
Data saturation	22	Was data saturation discussed?	5
Transcripts returned	23	Were transcripts returned to participants for comment and/or	N/A

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	5
Description of the coding tree	25	Did authors provide a description of the coding tree?	5
Derivation of themes	26	Were themes identified in advance or derived from the data?	5
Software	27	What software, if applicable, was used to manage the data?	N/A
Participant checking	28	Did participants provide feedback on the findings?	N/A
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	6 to 15
Data and findings consistent	30	Was there consistency between the data presented and the findings?	15
Clarity of major themes	31	Were major themes clearly presented in the findings?	7 to 15
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	7 to 15

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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