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ORIGINAL RESEARCH ARTICLE

Primary-Care Prescribers' Perspectives on Deprescribing Opioids and Benzodiazepines in Older Adults

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Abstract

Purpose Opioids and benzodiazepines (BZDs) are frequently implicated as contributing to falls in older adults. Deprescribing of these medications continues to be challenging. This study evaluated primary-care prescribers' confidence in and perceptions of deprescribing opioids and BZDs for older adults.

Methods For this study, we conducted a quantitative analysis of survey data combined with an analysis of qualitative data from a focus group. A survey evaluating prescriber confidence in deprescribing opioids and BZDs was distributed to providers at 15 primary-care clinics in North Carolina between March-December 2020. Average confidence (scale 0–100) for deprescribing opioids, deprescribing BZDs, and deprescribing under impeding circumstances were reported. A virtual focus group was conducted in March 2020 to identify specific barriers and facilitators to deprescribing opioids and BZDs. Audio recordings and transcripts were analyzed using inductive coding.

Results We evaluated 61 survey responses (69.3% response rate). Respondents were predominantly physicians (54.8%), but also included nurse practitioners (24.6%) and physician assistants (19.4%). Average overall confidence in deprescribing was comparable for opioids (64.5) and BZDs (65.9), but was lower for deprescribing under impeding circumstances (53.7). In the focus group, prescribers noted they met more resistance when deprescribing BZDs and that issues such as lack of time, availability of mental health resources, and patients seeing multiple prescribers were barriers to deprescribing.

Conclusion Findings from quantitative and qualitative analyses identified that prescribers were moderately confident in their ability to deprescribe both opioids and BZDs in older adults, but less confident under potentially impeding circumstances. Future studies are needed to evaluate policies and interventions to overcome barriers to deprescribing opioids and BZDs in primary care.

Key Points

Opioids and benzodiazepines are a logical target for deprescribing, but may pose unique challenges regarding potential dependency, risk for adverse withdrawal events, and limited safe, available treatment alternatives.

Primary-care prescribers feel that deprescribing opioids and benzodiazepines is particularly difficult when these medications are initiated by other prescribers and when mental health resources are not available for referral.

Future research to reduce opioid and benzodiazepine prescribing in primary care should evaluate the effectiveness of policies and other interventions targeted at systems-level barriers to deprescribing.

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1 Introduction

Nearly two-thirds of older adults are prescribed high-risk medications that may contribute to falls, with opioids and benzodiazepines (BZDs) being among the most problematic [1–3]. Under careful monitoring and supervision, opioids can be appropriate for the management of acute and chronic pain and BZDs have utility for anxiety and other medical conditions. However, the benefits of such high-risk medications may be outweighed by the risks for adverse events, including sedation and respiratory arrest, which are increased in older adults due to aging-related changes [4, 5] and increasing rates of comorbidities and frailty.

Deprescribing, the reduction of medications for which the potential harms outweigh the likelihood for benefit [6], is a solution for mitigating medication-related harms, such as falls, by aligning prescribing with goals of care and prognosis. Studies have shown that numerous older adults are prescribed opioids or BZDs in the time leading up to a

serious fall [2, 3, 7–9], making these medications an obvious priority for deprescribing. Unfortunately, a number of barriers prevent prescribers' ability to deprescribe medications in routine clinical practice in primary care, including lack of time, insufficient safety data, and having multiple prescribers [10–14]. For opioids and BZDs, specifically, there may be additional challenges including the need for slow gradual tapering, potential for dependency, and risk for adverse withdrawal events, and limited safe, available treatment alternatives [15, 16]. Prior studies have highlighted the perceived difficulty in reducing BZD use from the perspectives of physicians, particularly in the face of prior failed attempts at drug withdrawal and anticipated resistance from patients and families [17, 18]. Prescribers also perceive opioid deprescribing to be difficult, given the complexities of managing chronic pain conditions, combined with the lack of evidence-based guidelines that incorporate multimodal strategies to address patients' psychosocial needs through non-pharmacologic approaches, such as cognitive behavioral therapy [19, 20].

To our knowledge, few studies evaluating prescribers' perceptions of deprescribing medications have focused on deprescribing both opioids and BZDs for older adults. This study sought to evaluate primary-care prescribers' self-confidence in deprescribing opioids and BZDs for older adults and characterize potential barriers or challenges to deprescribing these medications. The findings from this research will inform the development of targeted interventions to facilitate deprescribing of these medications in older adults.

2 Methods

This study was conducted as part of an ongoing pragmatic randomized trial of a pharmacist intervention to deprescribe opioids and BZDs for older adults seen in primary-care practices in North Carolina (registered at clinicaltrials.gov (NCT04272671)). Briefly, the objective of the trial was to evaluate the effectiveness of a clinical pharmacist intervention to identify patients aged ≥ 65 years at risk for falls, based on chronic opioid and/or BZD use, and subsequently provide targeted deprescribing recommendations to primary-care prescribers. Primary-care practices enrolled in the trial were affiliated with the physicians' network of an academic healthcare system in North Carolina, consisting of over 90 outpatient primary-care sites in 14 counties across the state. Fifteen clinics agreed to participate in the trial—ten were in rural counties and five were in suburban or urban counties. Prior to the start of the intervention, we distributed surveys and conducted a virtual focus group among prescribers (i.e., physicians, nurse practitioners, physician assistants) to evaluate their confidence in and perceptions about deprescribing opioids and BZDs at baseline and to develop educational resources for the intervention. For the present study, we synthesized quantitative survey findings with qualitative focus group findings.

2.1 Deprescribing Self-Efficacy Survey

2.1.1 Design

We adapted a validated survey of self-efficacy for deprescribing [21] to address deprescribing of opioids and BZDs with the permission of the original authors (Online Supplementary Materials (OSM) S1). The original survey was designed for evaluating confidence in deprescribing proton pump inhibitors, BZD receptor agonists, and antipsychotics as well as a section on deprescribing under potential impeding circumstances (e.g., time constraints, lack of evidence, family/caregiver resistance, multiple prescribers). The adapted survey contained 35 Likert scale questions divided into three sections: confidence in deprescribing opioids, confidence in deprescribing BZDs, and confidence in deprescribing under potentially impeding circumstances. The sections on deprescribing opioids and BZDs asked the same questions as the original survey with an additional question asking about prescribers' ability to "Determine whether using a non-controlled medication would facilitate deprescribing...". Within each section, respondents were asked to rate their confidence in performing certain tasks on a scale of 0–100. A composite score of prescriber confidence was calculated based on the average response within each section. Other information collected included: clinical role (physician, nurse practitioner, physician assistant), and years of experience working with patients aged 65 years or older, sex, and age.

Preliminary analyses of the reliability and validity of the modified survey were conducted prior to distribution, using a convenience sample of 22 prescribers not affiliated with the trial from a peer academic institution. We used a crossover design in which respondents were asked to complete both the original and the modified versions of the survey (see OSM S2 for full details). Content validity of survey items was assessed by the study team. Construct validity was analyzed using principal components analysis and by evaluating correlations between items. Criterion validity was established by evaluating the correlation between the original and modified survey responses for average scores and individual responses. Reliability analyses evaluated internal consistency using Cronbach alpha coefficients.

The survey was found to have sufficient construct validity with a three-factor solution. Deprescribing of opioids self-efficacy loaded well into its own factor (all loadings > 0.58), with the exception of one question relating to considering the patient's preference in deprescribing (which aligned better with the deprescribing of BZD factor), suggesting that

self-efficacy in considering patient preference by providers is not necessarily drug specific. Deprescribing of BZDs self-efficacy also loaded well into its own factor (all loadings > 0.63), with the exception of two questions relating to whether non-pharmacological intervention of non-controlled medication would facilitate prescribing (which loaded with the deprescribing opioids self-efficacy factor), suggesting that self-efficacy in considering alternatives is more consistent across drugs. Deprescribing under potentially impeding circumstances was unidimensional, loading into its own factor (all loadings > 0.44). Although analyses suggested there may actually be only two subscales for the instrument (i.e., deprescribing opioids/BZDs self-efficacy and deprescribing under difficult circumstances self-efficacy), we believed that reporting data for each class separately was of value, given the unique challenges in deprescribing each class of medications, including different indications for use, differing risk for adverse events, and alternative treatment options available to assist with deprescribing. Criterion validity was also found to be sufficient between the original and modified instruments. Though the instruments differed in some of the drugs considered and the addition of a question on non-controlled medications, the two instruments showed strong correlations of the average self-efficacy scores for deprescribing ($r = 0.83$, $p < 0.0001$). A strong correlation was also seen for deprescribing in potentially impeding circumstances across both instruments ($r = 0.88$, $p < 0.0001$). Regarding reliability, the adapted instrument yielded an alpha of 0.95, suggesting excellent internal consistency. Alphas for subdomains were also excellent, with deprescribing opioids self-efficacy at 0.94, deprescribing BZDs self-efficacy at 0.92, and deprescribing under potentially impeding circumstances self-efficacy at 0.92. These alphas compare well with those of the original instrument when administered to the same subjects.

Following preliminary analyses, we distributed the survey via e-mail to all prescribers affiliated with the 15 primary-care practices enrolled in the study ($n = 88$ potential respondents) and offered a $50 incentive for completion. Surveys were completed between March 2020 and December 2020.

2.1.2 Analysis

Summary statistics were tabulated for respondent characteristics. Within each section, we evaluated individual questions to identify areas of higher and lower confidence in deprescribing. We considered areas of high confidence as those with an average self-efficacy rating > 70, those with a rating < 50 were considered areas of low confidence, and those in between (i.e., 50–70) as areas of moderate confidence. Averaged responses for items in each of the three sections of the survey (deprescribing opioids, deprescribing BZDs, and deprescribing under impeding circumstances) were reported.

2.2 Focus Group

2.2.1 Design

In March 2020, we conducted a 90-min focus group via videoconferencing among primary-care prescribers [22]. The overarching goals were to identify barriers and facilitators to deprescribing opioids and BZDs and to optimize training materials for the intervention. The development of our intervention and focus group questions were guided by the COM-B system [23], which is a framework used to understand behavior. The framework proposes that behavioral change can be achieved through interventions that address an individual's capability, opportunity, and/or motivation. Capability includes knowledge and skills, motivation includes factors that energize and activate behaviors, and opportunity includes factors external to an individual that act as barriers or facilitator behaviors. The focus group guide was comprised of 20 open-ended questions addressing the following: considerations for prescribing opioids and BZDs for older adults (capability); experiences with deprescribing opioids and BZDs (motivation, opportunity); advice to share with prescribers (capability); utility of the electronic health record to facilitate deprescribing (opportunity); and pharmacologic and non-pharmacologic alternatives to opioids and BZDs (opportunity). Questions and probes were designed with input from an interdisciplinary team comprised of physicians, pharmacists, health services researchers, and research staff. The focus group was moderated by a member of the study team with expertise in public health education and qualitative research. The focus group was conducted using Zoom with audio and video recording. The parent intervention study used a phased approach for recruitment and randomization, in which clinics were recruited on a rolling basis and randomized to control or intervention. We recruited prescribers from the first two clinics randomized to the intervention arm of the study and offered a $100 incentive for participation. We originally intended to conduct two focus groups, but due to the onset of the COVID-19 pandemic during recruitment, we were only able to complete the first.

2.2.2 Analysis

We analyzed responses of seven prescribers from two primary-care clinics. An audio recording of the focus group was transcribed using an online service. Two members of the study team (CK, CS) reviewed the transcript

independently and developed preliminary codebooks using inductive coding, rather than using a specific framework or a list of a priori themes or codes. The coders met with another member of the study team (ER) to review initial codes, resolve potential discrepancies, and develop a final consensus codebook with emerging themes. The two coders reviewed the transcripts again, applied codes from the consensus codebook, and met with the third team member to resolve final discrepancies. Codes were entered into NVivo Version 12 (QSR International, Melbourne, VIC, Australia) to be summarized and collapsed into major categories or themes.

3 Results

3.1 Surveys

Characteristics of survey respondents are presented in Table 1. Sixty-one prescribers responded to the survey (69.3% response rate). Respondents were predominantly physicians (54.8%), followed by nurse practitioners (24.6%), and physician assistants (19.4%). Most were female (67.2%), about half (52.5%) were age 45 years or older, and more than half (57.4%) had 10 or more years of practice experience with older adults.

Average responses for deprescribing self-efficacy in each of the three main categories are presented in Tables 2 and 3. Confidence in deprescribing self-efficacy was comparable across opioids (average = 64.5) and BZDs (average = 65.9). Prescribers were less confident in their ability to deprescribe under potentially impeding circumstances (average = 53.7). Areas of high confidence (> 70) included: weighing risks versus benefits of prescribing and deprescribing opioids/BZDs; and considering patient preferences, goals of therapy, and life expectancy in deciding whether to continue or deprescribe. Conversely, areas of low confidence (< 50) included: deprescribing when a medication was prescribed by another prescriber or specialist; deprescribing with no guidance on how to stop or taper the medication; and deprescribing when there is no evidence for the potential effects of stopping a medication.

3.2 Focus Groups

Among focus group participants ($n = 7$), all were White, non-Hispanic, and three were women. Three participants were physicians, three were physician assistants, and one was a nurse practitioner. Most participants ($n = 5$) were between 45 and 54 years old, but represented a wide range of years in practice, with at least one respondent in each 5-year increment from < 5 years up to 25+ years in practice.

Analysis of transcripts identified three overarching themes: prescribing considerations, barriers and facilitators to deprescribing, and alternative therapies. A summary of overarching themes along with corresponding codes and subcodes is presented in Table 4.

3.2.1 Prescribing Considerations

Prescribers noted that appropriate prescribing and monitoring of opioids and BZDs in older adults comes with challenges. In deciding whether to initiate or continue prescribing opioids and BZDs, three considerations were raised: patient goals, safety and concerns, and patient-provider communication.

Prescribers noted that pain control and quality of life were goals associated with using opioids while reduced anxiety and sleep were goals associated with use of BZDs. When addressing safety, prescribers consistently mentioned fall risk and sedation as important considerations for prescribing both opioids and BZDs. One prescriber said:

> "…I try to explain to them that if they're sedated at night and have to get up, you're more likely to break a bone…."

The only opioid-specific safety consideration was constipation. Prescribers noted that they were often more

Table 1 Survey respondent characteristics ($n = 61$)

Category	*n* (%)
Age, years	
< 34	8 (13.1%)
35–44	21 (34.4%)
45–54	19 (31.1%)
55–64	12 (19.7%)
65+	1 (1.6%)
Sex	
Male	20 (32.8%)
Female	41 (67.2%)
Clinician role	
Physician	34 (54.8%)
Nurse practitioner	15 (24.6%)
Physician assistant	12 (19.4%)
Years of experience	
< 5	9 (14.8%)
5–9	17 (27.9%)
10–14	9 (14.8%)
15–19	10 (16.4%)
20–24	8 (13.1%)
25+	8 (13.1%)

Table 2 Primary-care prescribers' self-efficacy for deprescribing opioids and benzodiazepines

Question: For a patient 65 years of age and older who is taking an opioid/benzodiazepine, I am able to…	Opioids Mean (SD)	Benzodiazepines Mean (SD)
Weigh the benefits vs. harms of continuing…	76.9 (19.5)	77.7 (17.0)
Weigh the benefits vs. harms of deprescribing…	74.9 (20.1)	74.4 (18.5)
Consider the patient's preferences, goals of therapy and life expectancy in deciding whether to continue or deprescribe…	76.6 (18.2)	75.7 (18.0)
Determine whether a non-pharmacological intervention would facilitate deprescribing…	67.2 (22.9)	65.7 (21.4)
Determine whether using a non-controlled medication would facilitate deprescribing…	70.3 (20.6)	65.9 (21.9)
Determine the best dosing approach to deprescribing…	54.6 (21.9)	58.5 (22.5)
Develop a monitoring plan to determine the outcome of deprescribing…	55.2 (23.9)	59.8 (23.9)
Negotiate a deprescribing plan for … with the patient and his/her caregivers.	54.9 (20.7)	59.0 (21.9)
Monitor and follow up to determine the outcome of deprescribing…	63.3 (23.6)	63.3 (23.3)
Determine if… tapering should stop, or if the… should be restarted.	52.5 (22.4)	58.7 (23.8)
Overall	64.5 (9.3)	65.9 (7.1)

Participants were asked to rate their confidence on a scale from 0 to 100 (0 = cannot do at all; 50 = moderately certain can do; 100 = highly certain can do)

Table 3 Primary-care prescribers' self-efficacy for deprescribing under potentially impeding circumstances

Question: For a patient 65 years of age and older, I am able to deprescribe a medication…	Mean (SD)
When I am concerned about adverse drug withdrawal events	63.8 (21.8)
When I am concerned about exacerbations of the underlying condition the drug is being used to treat	62.8 (24.1)
When disease-specific clinical guidelines recommend the use of a medication	64.2 (23.1)
When the medication is coupled to outcome metrics	60.8 (23.0)
When I receive little support from colleagues for stopping or reducing medications	53.7 (24.4)
When I have too much work to do	51.3 (23.2)
When I am concerned about damage to my provider-patient relationship	57.8 (23.1)
When the patient is resistant to change	50.2 (23.2)
When the patient's family/caregivers are resistant to change	50.7 (23.7)
When there is no literature describing the effects of medication tapering or discontinuation	46.7 (21.8)
When there is no guidance on how to taper or stop a medication	45.0 (21.8)
When I am not the original prescriber of the medication	47.2 (22.7)
When the medication was prescribed by a specialist	43.2 (24.0)
When I am unsure why the medication was started originally	53.3 (23.8)
When the medication is being used to treat an adverse effect of another medication	54.2 (23.9)
Overall	53.2 (6.7)

Participants were asked to rate their confidence on a scale from 0 to 100 (0 = cannot do at all; 50 = moderately certain can do; 100 = highly certain can do)

hesitant to start BZDs than opioids. One prescriber comment stood out:

> "I would be very, very, very hesitant to start a geriatric patient on a benzo. I've certainly got a few that have been on them for decades… the benzos really keep me up at night in the geriatric population."

Key areas for patient-provider communication about opioids and BZDs were potential for sedation, falls risk, reviewing directions, and assessing continued effectiveness. For opioids, other important information included the potential for dependency, history of substance abuse or mental health issues, not sharing medication, consent forms for treatment, and establishing treatment parameters and duration. For example, one prescriber said:

> "I try to establish a period of time that we will use them for and have a kind of a clear goal in mind of when we'll be stopping or tapering them. And I stress

Table 4 Overarching themes, codes, and sub-codes from focus group

Overarching theme	Codes	General subcodes (common to both)	Opioid-specific subcodes	Benzodiazepine-specific subcodes
Prescribing considerations	Patient goals	–	Pain control Quality of life	Reduce anxiety Sleep Wean if not effective
	Safety concerns	Fall risk Sedation	Constipation	Hesitant to start
	Patient-provider communication	Sedation Fall risk Review directions Assess effectiveness	Addictive potential Substance abuse Mental health issues Establish treatment duration Do not share Consent form Parameters for fills	Not for daily usage
Barriers and facilitators of deprescribing	Barriers	'Inherited' patients Lack of time to discuss Liability Lack of mental health resources	Higher dosages Not tolerant of other options	Long, drawn-out process More difficult than opioids
	Facilitators	Patient-provider trust Patient buy-in Patient initiating discussion	Patients on lower dosages Extending the refill period Negotiated patient-provider agreement Discuss usage with patient (i.e., how many pills per day) Don't prescribe more than once per month Meet frequently to discuss how to reduce dose	Opioid crisis has made the conversation easier Using alternative medications Slow taper Existing tapering guides/materials
Alternative treatments	Pharmacologic	–	Tylenol Topicals	Selective serotonin reuptake inhibitors Serotonin and norepinephrine reuptake inhibitors Bupropion Melatonin Low-dose trazodone Mirtazapine
	Non-pharmacologic	Yoga Tai Chi Exercise	Turmeric Mindfulness/meditation Acupuncture	Cognitive behavioral therapy Social engagement Sleep hygiene Music Artificial sunlight

to them that starting them is pretty easy and stopping can be quite difficult."

For BZDs, prescribers mentioned that it was important to communicate to patients that BZDs are not intended for daily use, with one prescriber noting:

"…They're used for short term. We have other better treatments for whatever specifically, usually it's for anxiety, and try to get them involved in some counseling or trying something else."

3.2.2 Barriers and Facilitators to Deprescribing

Barriers and facilitators to deprescribing followed a similar pattern to prescribing considerations, with some comments being relevant to both opioids and BZDs and others being class specific.

Barriers to deprescribing both opioids and BZDs included having '*inherited*' patients who were prescribed one of these medications previously by another prescriber, lack of time to discuss deprescribing during a regular clinic visit, and

liability for any adverse events. One prescriber described their experiences trying to deprescribe for patients they inherited from other providers:

> "I've been continuously chronically trying to wean patients for years. Some, it's been almost impossible. Almost entirely, it's been a group of people that I didn't start their medication on, and they've ended up in our clinic."

Another interesting barrier that was raised was a lack of availability of mental health resources to address underlying psychiatric or substance abuse issues. One prescriber noted:

> "…I'm not sure there's a psychiatrist in our whole county. That's not an exaggeration. I think there might be the ability to do teleconferencing with a psychiatrist based out of [city name], but we can't say, 'This is inappropriate. You're going to need to see a psychiatrist for other options.' That's really not a realistic possibility."

Prescribers mentioned that it may be more difficult to deprescribe opioids for patients who are receiving higher dosages and those who have not tolerated other therapies. Prescribers also suggested that BZDs were more difficult to deprescribe than opioids, and that the long, drawn-out process of tapering may be another barrier to deprescribing.

> "It's a long-term issue. It takes weeks, sometimes even months to go through the withdrawal, which you go through if you've been on the drugs for a long time. Even short-acting benzos."

One prescriber also stated that pharmacies seem to be more proactive in trying to refill prescriptions for BZDs, than for opioids, making it more difficult to restrict use.

Facilitators to deprescribing opioids and BZDs included having an established patient-provider trust with patient buy-in or patient-initiated conversations about deprescribing. One prescriber expressed:

> "…if you come on too aggressively, they'll find somebody else. I think if you have known them for a while and they feel that you sincerely have this in their best interests, I think you've got a fighting chance."

Other strategies that were helpful for deprescribing opioids were extending refill time periods, having a negotiated patient-provider agreement or treatment plan, and having an honest discussion about daily usage. Prescribers also mentioned that frequently re-engaging with patients in discussions about deprescribing was also helpful, for example:

> "…I think what you have to do is have a combined effort, and try to figure out where they may be interested in working with you about trying to get down the dose."

Prescribers also mentioned that the availability of tapering guides and educational materials for BZDs were helpful. Finally, prescribers noted that the increasing awareness of the opioid epidemic has made these conversations easier:

> "[The] opioid crisis has made these conversations a lot easier. I'm not going to lie."

3.2.3 Alternative Treatments

Prescribers acknowledged the utility of several alternative treatments to assist with deprescribing opioids and BZDs. Pharmacologic alternatives for opioids included acetaminophen or topical analgesics. A larger number of alternative pharmacologic therapies were mentioned for BZDs, including selective serotonin reuptake inhibitors (SSRIs), serotonin and norepinephrine reuptake inhibitors (SNRIs), bupropion, melatonin, low-dose trazodone, and mirtazapine.

Prescribers also recognized the utility of non-pharmacologic alternatives to aid in deprescribing. These included exercise programs, such as yoga and tai chi. Specifically for opioids, non-pharmacologic therapies that prescribers would recommend included turmeric, mindfulness and meditation, and acupuncture. For BZDs, non-pharmacologic alternatives included cognitive behavioral therapy, social engagement, artificial sunlight during the day, music, and sleep hygiene. One prescriber mentioned:

> "So I just try to get people to get outside and be active during the day and try to get more natural light. I think that really helps with kind of getting back on a circadian rhythm."

4 Discussion

Findings from both quantitative and qualitative analyses confirmed that prescribers were overall moderately confident in their ability to deprescribe both opioids and BZDs in older adults. Several areas of higher confidence were noted, including weighing risks and benefits, and considering preferences, goals, and life expectancy when prescribing. Prescribers were less confident in their ability to deprescribe medications under potentially impeding circumstances, such as when medications are initiated by other prescribers. Finally, prescribers noted greater resistance from patients when deprescribing BZDs compared to opioids and lack of mental health resources as a major barrier to deprescribing both opioids and BZDs.

In an anonymous survey [15], VA healthcare providers were asked to provide their thoughts on opioid and BZD

co-prescribing for any patients, not specific to older adults. Barriers and facilitators for reducing use were similar to those identified in our study. Providers identified that tapering/discontinuing is difficult without guidance, sufficient time to discuss with patients, and when medications are prescribed by another provider. Potential facilitators of deprescribing included availability of materials to guide interactions with patients, more time with patients, availability of alternative behavioral interventions, and improved ability to identify high-risk patients. In a focus group study conducted by the same group of investigators [16], barriers to deprescribing opioids and BZDs fell into three main categories—inertia, prescriber self-efficacy, and feasibility.

Prescribers' self-efficacy for deprescribing opioids and BZDs was generally comparable across medication classes. However, their self-efficacy in deprescribing medications under potentially impeding circumstances was significantly lower, specifically for deprescribing medications initiated by another prescriber and deprescribing with little guidance or evidence. Other studies evaluating provider perceptions of deprescribing report similar challenges across medication classes [10–14]. In the original development of the survey instrument by Farrell and colleagues [21], average baseline self-efficacy scores for deprescribing benzodiazepine receptor agonists and antipsychotics were slightly higher, but still comparable to what was identified in our study. Taken together, these findings suggest that providers face comparable challenges in deprescribing opioids and BZDs to what they do with other medications, with the lack of evidence or guidance, time constraints, and devolved responsibility being paramount.

One challenge specific to deprescribing opioids and BZDs in our study was the availability of mental health resources to address underlying psychiatric conditions or potential dependency. Inadequate access to mental health services has been mentioned as a barrier to deprescribing BZDs in at least one other study [17]. Specialized psychiatric care or cognitive behavioral therapy would likely have use in facilitating reductions in opioid and BZD use, particularly in the absence of alternative treatment options that do not also confer a similar risk for adverse events. However, it is uncommon for primary-care practices to have embedded practitioners with the specialized training to address underlying psychiatric conditions or to provide non-pharmacologic behavioral treatment. Future interventions aimed at deprescribing of opioids, BZDs, and other CNS-active medications research could integrate practitioners with expertise in non-pharmacologic treatment options, perhaps through a telehealth consultant model. However, policy changes at the healthcare system level may be required to integrate these services into primary care or address barriers in access.

Another challenge worth discussing is the utility of alternative pharmacologic treatments. For opioids, providers mentioned treatments such as acetaminophen and topical analgesics, which are agreed upon as generally safe alternatives with a much lower risk for adverse effects, if any. For BZDs, pharmacologic alternatives discussed included several classes of CNS-active medications (e.g., antidepressants). Although certain CNS medications may be perceived as being lower-risk agents compared to BZDs, they still do carry a risk for sedation, falls, and even cognitive impairment. It is possible that while this type of approach to deprescribing may facilitate a reduction in BZD use, it may inadvertently result in a net null result when considering overall potentially inappropriate prescribing and risk for medication-induced falls. Thus, studies seeking to evaluate targeted deprescribing interventions should be vigilant in exploring this potential downstream consequence. This also underscores the utility of consultant pharmacists for deprescribing in primary care, as they would be more acutely aware of the potential adverse consequences of alternative medications.

An established relationship of patient-provider trust was identified as one of the main facilitators of deprescribing, with several prescribers mentioning that patient-initiated discussions most often led to successful deprescribing. Prescribers also mentioned that frequently re-engaging in discussions about medication use may be effective for building trust in patients who may be resistant to deprescribing. The importance of patient-provider trust has been emphasized in countless studies in the medical literature [24]. Thus, it should not come as a surprise that patient engagement plays a key role in deprescribing. This finding was highly informative for our intervention and led to the development of a resource of 'conversation starters' for deprescribing that was disseminated to prescribers in intervention clinics enrolled in the study.

Systems-level barriers to deprescribing (e.g., lack of time and devolved responsibility) are difficult to overcome and may require organizational-level policy changes or the development of innovative practice models to facilitate deprescribing. A recent review highlighted opportunities for pharmacists to facilitate deprescribing of opioids and BZDs in older adults [25], which may alleviate the time-intensive processes of developing individualized tapering plans and identifying alternate therapies. The potential beneficial role of a pharmacist was mentioned briefly by prescribers in our focus group, but having a dedicated clinical pharmacist may not be financially sustainable for many practices. Policy changes that advance pharmacist reimbursement, or implementation of quality metrics that reward or incentivize medication optimization through deprescribing, could help to justify the added value of pharmacists in primary-care practices. Otherwise, a novel model of care described by Armistead et al. [26] that utilizes a centralized consultant pharmacist team across primary-care clinics may be a more

sustainable approach. Future studies should seek to evaluate other novel approaches to overcome barriers to deprescribing medications in primary care. The fact that providers expressed an appreciation for pharmacist support in deprescribing was reassuring and underscored that our consultant pharmacist intervention would be positively received by practices in the study.

4.1 Limitations

Our study has several limitations. Our survey of self-efficacy for deprescribing was conducted in a small sample of prescribers from a limited number of clinics in North Carolina, and thus may not be generalizable to all providers and practices. However, our survey did have a high response rate (approximately 70%), and the clinics participating in the survey were geographically representative of the state. Although we conducted several analyses of construct and criterion validity, we did not conduct any analyses of internal consistency between groups. Prescribers participating in the focus group were from two practices. We recognize that other practices may have more diverse prescribers and patient populations and thus different experiences with deprescribing. We also cannot say with certainty that we achieved thematic saturation. However, it should be noted that the codes and themes identified in our focus group echoed what was reported by prescribers in the survey.

5 Conclusion

In this study, we identified that prescribers in primary care were overall moderately confident in their ability to deprescribe opioids and BZDs in older adults, but less confident in their abilities to deprescribe medications when faced with time constraints, lack of evidence, and devolved responsibility. Future studies are needed to evaluate policies and interventions that may help to overcome systems-level barriers to deprescribing opioids and BZDs in primary-care practice.

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Declarations

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Conflict of interest The authors have no conflicts of interest or other disclosures to report.

Ethics approval This study was reviewed and approved by the institutional review board of the University of North Carolina at Chapel Hill.

Consent to participate Informed consent was obtained from all individual participants included in the focus group and all survey respondents.

Consent for publication No identifying information is contained in this article and all participants signed informed consent regarding the potential publication of de-identified responses.

Availability of data and materials De-identified data are available upon reasonable request to the corresponding author and principal investigator.

Code availability Not applicable.

Author contributions Study concept and design: Niznik, Ferreri, Armistead, Henage, Busby-Whitehead, Roberts. Data collection and management: Niznik, Armistead, Kelley, Schlusser, Roberts. Analysis and interpretation: Niznik, Kelley, Roberts. Manuscript writing: Niznik, Kelley, Roberts. Critical review of manuscript: Niznik, Ferreri, Armistead, Kelley, Schlusser, Hughes, Henage, Busby-Whitehead, Roberts.

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