Multidisciplinary Approach to Deprescribing Sedative-Hypnotic Medications in Geriatric Primary Care

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Abstract
Introduction/Objectives: Due to the risks associated with sedative hypnotic medications in older adults, our study evaluated the impact of a multidisciplinary approach to deprescribing in geriatric primary care clinics. Methods: The study was a retrospective review of older adults at 2 academic, geriatric primary care clinics who were prescribed sedative-hypnotic medications. Patients were mailed an education packet of information that included working with the clinical pharmacy team, behavioral health team, or both in order to deprescribe their sedative-hypnotic medication. The study assessed the rate of discontinuation of sedative-hypnotic medications between the different intervention groups. Results: The study included 93 older adults with a mean age of 81.3 years and 39.8% discontinuation rate of their medication. The number of falls decreased in patients who discontinued use compared to when previously using a sedative hypnotic medication. Conclusion: Patients are more likely to discontinue their sedative hypnotic medication with a multidisciplinary approach, specifically with primary care provider support.

Keywords
anxiety, behavioral health, geriatrics, focus groups, pharmacy

Introduction
Common conditions affecting older adults, such as insomnia or anxiety, are often treated with sedative-hypnotic medications.1 However, the most recent American Geriatrics Society Beers Criteria discourages prescribing sedative-hypnotic medications for older adults as a first-line treatment for these conditions due to increased risk for cognitive impairment, falls, motor vehicle accidents, hip fractures, and dependence.2 Several trials have demonstrated efficacious educational interventions for helping patients discontinue reliance on sedative-hypnotic medications.3-4 For example, the EMPOWER trial mailed educational materials directly to patients, informing of potential harms of sedative-hypnotic medications and providing self-directed tapering instructions.3 The EMPOWER trial demonstrated 6-month sustained reduction or discontinuation of use among older adults aged 65 to 95 years, with 27% of patients discontinuing use compared with 5% in the care as usual control group. The D-PRESCRIBING trial expanded the educational intervention to include education, not only for patients, but also for prescribing physicians, resulting in a higher discontinuation rate of approximately 43% compared to 12% in the control group.4

The following evaluation study aims to extend previous research by evaluating the impact of a multidisciplinary deprescribing intervention conducted within geriatric primary care. Geriatric primary care settings, especially those utilizing medical home models of care, are tasked with providing multidisciplinary and coordinated care as a matter of best practice for older adults.5 Primary care also routinely engages patients in long-term, established, and trusted relationships for medical care and guidance on health-related decision making.6 As such, primary care was chosen as the ideal setting for the current study.

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Methods

Study Design and Participants

Two academic, geriatric primary care clinics in Colorado served as the setting for the current evaluation study. The clinics are multidisciplinary and include 11 physicians, 1 nurse practitioner, 3 geriatric fellows, 3 clinical pharmacists, 2 psychologists, 3 nurses, 4 medical assistants, 2 schedulers, and 1 social worker. As documented in electronic medical records (EMR), all patients (n=160) with a prescription filled in the prior 12 months from October 2018 for a sedative-hypnotic medication, benzodiazepine or non-benzodiazepine sedative-hypnotic (ie, zolpidem, zaleplon, eszopiclone), were included. The following exclusion criteria was applied: patients with a current diagnosis of dementia with behaviors (benzodiazepine medications could be used to assist with managing behaviors), cancer-related nausea, or cancer; patients being seen in psychiatry, or patients diagnosed with anxiety disorders that were not prescribed an additional medication for anxiety, such as a selective serotonin reuptake inhibitor (SSRI), serotonin-norepinephrine reuptake inhibitor (SNRI), buspirone, or other atypical antidepressant; and patients who were no longer seen in the clinic (defined as no appointment in clinic for at least 12 months since the start of the study). There were 93 patients who met inclusion criteria. The current evaluation study was deemed to be exempt from human subjects research requirements by the Colorado Multiple Institutional Review Board (COMIRB).

Intervention

The study evaluated the outcome of a multidisciplinary intervention tailored to older adult patients and their primary care providers (PCP). In this intervention, PCPs received education from clinical pharmacy and behavioral health about the deprescribing project and patient recruitment strategy via a presentation during a clinic provider meeting and via distributing written materials. Specifically, PCPs were educated about potential risks associated with the use of sedative-hypnotic medications with older adult patients, deprescribing intervention outcomes, and alternative clinical pharmacy and behavioral health treatments available to their patients. Clinical consultation was also provided to PCPs by clinical pharmacy and behavioral health as needed and care coordination of patients was done either in-person or through EMR secure messaging. Patients were provided with education on risks associated with use of sedative-hypnotic medications and offered direct care from clinical pharmacy and behavioral health. Specifically, patients were mailed an educational packet comprised of a clinic flyer and the EMPOWER educational materials about sedative-hypnotic medications and the benefits of tapering to discontinue use. The clinic flyer included information on deprescribing services offered by the clinic and instructions for how to opt in to these services (ie, call the clinic’s deprescribing line). Deprescribing services included a pharmacy-driven taper plan and individual or group visits for behavior health treatment to learn alternative coping and health behaviors for management of symptoms. There were 4 patients who opted into the pharmacy-driven taper plan, 4 patients who opted into the behavioral health service, and 4 patients who opted into the combined pharmacy-driven taper plan and behavioral health group visits.

Patients who opted in and called the deprescribing line were connected to a clinical pharmacist, who reviewed the potential risks of the medication and obtained information on frequency of use, medication dosage, and previously tried therapies for their medical condition. With patients interested in proceeding with medication deprescribing, a clinical pharmacist discussed the pharmacy-driven taper plan, scheduled follow-up telephone care, and educated patients about the opportunity to attend behavioral health care (individual or group treatment) to assist with deprescribing and symptom management. Patients interested in behavioral health were connected to the behavioral health team and could enroll in group or individual care to learn about cognitive behavioral strategies to improve symptoms and learn new coping and health behaviors. All patient care provided by clinical pharmacy or behavioral health was documented within a clinic note in the patient’s EMR. The clinical pharmacy or behavioral health note was then sent to the PCP so they were aware of the information.

The behavioral health component of the intervention was comprised of an abbreviated version of cognitive behavioral therapy for insomnia via individual appointments or a 4-week group intervention. Patients were encouraged to bring sleep partners with them to behavioral health visits. All behavioral health visits included components of psychoeducation, skills building, and health coaching focused on personalized health and behavior goals related to symptoms (eg, insomnia, anxiety). Patients also received written educational information to take home after each appointment, designed to encourage use of newly learned skills and sleep routines consistently.

Outcomes

The study assessed discontinuation of sedative-hypnotic medication use. Discontinuation was assessed via chart review and by accessing the prescription drug monitoring program 9 months after educational packets were mailed to patients. Patients were classified as having discontinued the medication if there was documentation of discontinuation in the EMR, if the prescription expired and was not renewed by the provider, or if the patient discontinued their medication.
with clinical pharmacy or behavioral health services. Patients were classified as continuing their medication if their prescription was renewed or there was evidence of filling a sedative-hypnotic medication through the prescription drug monitoring program.

Data Analysis

Descriptive statistics were compared for the 2 outcome groups (patients who continued vs discontinued) on the following variables of interest: age, gender, PCP support, falls, anxiety, indication, and patient health questionnaire-2 score. All variables of interest were gathered from review of the EMR in December 2019. 9 months after educational materials were mailed to patients. PCP support was defined as a PCP documenting having a conversation with the patient about risks of sedative-hypnotic medications or discontinuation (at any level) in the EMR with a patient during a medical appointment. Falls was defined as number of falls within the 9 month post intervention period. Falls were assessed through chart review and using the search term “fall” within the EMR. This included patients who were seen in the emergency department for a fall or if a fall was documented within their EMR. For patients who discontinued their medication, the number of falls was assessed before and after discontinuation of the medication, through December 2019. Indication was defined as the primary reason for prescription. Logistic regression analyses were used to examine the association of categorical variables of type of intervention (model 1) and PCP support (model 2) on the outcome and variables of interest. All tests for statistical significance were 2-tailed, and a P-value of less than .05 was considered statistically significant. All statistical analyses were done using SAS version 9.4.

Results

Of the 93 patients who participated in the intervention, 71% were female, the mean age was 81.3 years, and 39.8% discontinued use of sedative-hypnotic medications (Table 1). Among those who discontinued the medication (n=37), 62% were female, 30% reported a history of falls, and 76% were prescribed the medication for symptoms of insomnia (Figure 1). PCP support was significantly more common in those who discontinued the medication compared to those who did not (30% vs 7%, P=.003). Moreover, 19% of patients who discontinued the medication reported experiencing anxiety to their PCP as compared to 2% of patients who continued medication (P=.0039). Of the 25 patients who reported a history of falls, the number of falls significantly decreased in those who discontinued the medication, compared to those who continued the medication (mean of 2.2 and 1.3 falls respectively, P=.004). Additionally, in patients who discontinued their medication, the number of falls reported after medication discontinuation was significantly lower than when patients were taking a sedative-hypnotic medication (mean of 1.9 and 0.6 falls respectively, P=.01).

Patients who opted to participate in the behavioral and/or clinical pharmacy intervention were 3.6 times more likely to discontinue their medication as compared to patients who only received educational material by mail (P=.05). Patients who received direct PCP support were 5.5 times more likely to discontinue medication use than those who did not receive PCP support (P=.006).

Discussion

Despite warnings against the use of sedative-hypnotic medications among older adults, these medications continue to be routinely prescribed to treat conditions such as insomnia and anxiety.1,2 This study extends previous research by evaluating the impact of a multidisciplinary deprescribing intervention in geriatric primary care clinics. The study demonstrated an overall 39.8% medication discontinuation rate at 9-months post intervention. This compares favorably to past studies, which previously demonstrated a 27% (patient education intervention) and 43.2% (patient and provider education intervention) discontinuation rate at 6-months, respectively.3,4 Among patients who discontinued the medication, there was an increased report of anxiety compared to those who did not. When discontinuing medications that may impact anxiety, it is important to have close patient follow-up and discuss alternative methods, such as behavioral therapies, or make medication adjustments, if warranted. Patients in the current study were 5.5 times more likely to discontinue their medication if PCPs documented support for discontinuation during a visit than if they did not. This continues to emphasize the important

Table 1. Demographic Characteristics by Outcome (N=93).

|                  | Continued N=56 | Discontinued N=37 |
|------------------|----------------|-------------------|
| Age Mean (SD)    | 81.1 (7.46)    | 81.6 (8.03)       | .73 |
| Patient Health Questionnaire-2 Mean (SD) | 0.52 (1.28) | 0.24 (1.04) | .25 |
| Female N (%)     | 43 (77)        | 23 (62)           | .12 |
| Received PCP support N (%) | 4 (7)      | 11 (30)           | .003* |
| Reported falls N (%) | 14 (25)   | 11 (30)           | .61 |
| Reported anxiety N (%) | 1 (2)      | 7 (19)            | .003* |

*indicates statistical significance.
influence of PCP education and support for successful patient discontinuation of sedative-hypnotic medications. Current findings also indicate that patients who engaged in the multidisciplinary intervention (ie, to receive direct care by clinical pharmacy, behavioral health, or both to support deprescribing), had a 3.6 greater chance of discontinuation than patients who did not.

Among patients who had experienced falls, current findings indicate that a higher number of falls historically was associated with discontinuation of sedative-hypnotic medications post-intervention. This suggests that falls may be an important motivating factor in patients’ decision to stop the medication and that falls screening could be an important strategy for advancing deprescribing among older adults. Furthermore, only a small number of patients had documentation of a fall in the EMR while they were taking the prescribed sedative-hypnotic. Of the patients who had a documented fall, a significantly lower number of falls occurred in patients who discontinued the medication versus continued, supporting past evidence that sedative-hypnotic medication use can have adverse consequences among older adults.2

Figure 1. Indication for medication by outcome.

Limitations of the study include reliance on EMR documentation as a primary data source and the small sample size of patients who opted in to participate in the clinical pharmacy or behavioral health components of the intervention. This study was reliant on EMR chart review and EMR provider documentation as a primary data source of variables of interest. It is possible that there may have been more patients who self-discontinued using prescriptive sedative-hypnotic medications but who were not captured due to lack of documentation in the EMR or related systems. The small sample size in the study may be due to the deprescribing educational materials being mailed versus being discussed during face-to-face office visits with the PCP. Of our 93 mailings, we had 12 (13%) patients who called the deprescribing line to inquire about additional support for discontinuation. Furthermore, the setting of an academic geriatric primary care clinic may have providers who are more attuned to the AGS Beers Criteria and risks associated with the use of sedative-hypnotic medications among older adults compared to other clinic settings. Therefore, the impact of this type of intervention may be greater in a non-geriatric clinic setting.

In addition to limitations, several challenges were noted during the implementation of the multidisciplinary intervention. One limitation is related to efficient use of time. Behavioral health providers spent approximately 1 h of preparation of patient materials, 1.5 to 2 h of clinical time running group visits, and 1 h of documentation time per group session. For this project, the behavioral health team conducted 2 groups of 4 sessions each for approximately 28 to 30 h of total time for the intervention. Clinical pharmacists spent approximately 30 min with each patient for the initial deprescribing telephone call and an additional 15 min during each follow-up call, which included discussion of the tapering plan and symptom assessment. Due to the relative low number of patients who participated in the
pharmacist-driven tapering plan (n=8), it was feasible for the clinical pharmacy team to successfully deliver part of this intervention despite multiple other competing clinical demands (eg, active involvement in transitional care management comprehensive reviews, diabetes management, hypertension management, pharmacotherapy consults). However, it is important to acknowledge that it would require time resources from the behavioral health and clinical pharmacy team to be appropriately allocated, potentially taking away from other demands, to properly scale the intervention to target a larger population. Future models could consider co-visits with the primary care provider. This visit would include discussion of the medication risks, plan for tapering, and follow-up. Furthermore, establishing community partnerships with local pharmacies would be beneficial for smaller primary care clinics where the medical home model may not be feasible.

Other challenges to note include patient scheduling and transportation barriers for face-to-face visits. The feasibility of older adults being able to participate in weekly face-to-face behavioral health group or individual visits also presented an important challenge. With an average age of 81 years, reliance by many patients on caregivers, family members, or other means of transportation resulted in some being unable to participate in behavioral health group visits despite an expressed interest. Additional barriers, such as other competing appointments or obligations and difficulty with making a weekly commitment to group appointments, were noted by some patients as why they were unable to participate in face-to-face behavioral health services. Despite these limitations and challenges, the current study contributes to the literature and demonstrates a statistically significant difference in patient discontinuation rate depending on PCP support and engagement in multidisciplinary care.

For future research, the unique relationship between PCPs and their patients may be an important factor that could be more fully leveraged to support deprescribing. For example, modifying the current intervention to have PCPs utilize the EMPOWER deprescribing educational materials more directly with patients, with optional clinical pharmacist and behavioral health support, may yield more robust results. Furthermore, our study did not include non-English speaking patients. Future research would also benefit from an evaluation project that targets non-English speaking patients with translated materials and involving telephonic or live language translation services. Additionally, behavioral health services may be more accessible to more patients by offering options for telephone-based interventions or with the use of virtual, video technology. Patients also may benefit from behavioral health care that directly addresses symptoms, such as anxiety, which were reported after discontinuation of sedative-hypnotic medications.

Conclusion

In conclusion, the current study demonstrates that patients were more likely to discontinue a sedative-hypnotic medication after receiving a mailed, educational intervention with the support of a multidisciplinary team lead by their PCP and supported by clinical pharmacy and behavioral health. Additionally, number of falls was significantly lower after patients discontinued sedative-hypnotic medication. Further research is needed to determine if there are more feasible methods for providing services for deprescribing high-risk medications in older adults.

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References

1. Markota M, Rummans TA, Bostwick JM, Lapid MI. Benzodiazepine use in older adults: dangers, management, and alternative therapies. Mayo Clin Proc. 2016;91(11):1632-1639.
2. By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. American Geriatrics Society 2019 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults. J Am Geriatr Soc. 2019;67(4):674-694.
3. Tannenbaum C, Martin P, Tamblyn R, Benedetti A, Ahmed S. Reduction of inappropriate benzodiazepine prescriptions among older adults through direct patient education: the EMPOWER cluster randomized trial. JAMA Intern Med. 2014;174(6):890-898.
4. Martin P, Tamblyn R, Benedetti A, Ahmed S, Tannenbaum C. Effect of a pharmacist-led educational intervention on inappropriate medication prescriptions in older adults: the D-PRESCRIBE randomized clinical trial. JAMA. 2018;320(18):1889-1898.
5. Agency for Healthcare Research and Quality. Defining the PCMH. Accessed May 1, 2022. https://www.ahrq.gov/ncepcr/tools/pemh/defining/index.html
6. Boyd CM, McNabney MK, Brandt N, et al. Guiding principles for the care of older adults with multimorbidity: an approach for clinicians. J Am Geriatr Soc. 2012;60(10):E1-E25.
7. Darker CD, Sweeney BP, Barry JM, Farrell MF, Donnelly-Swift E. Psychosocial interventions for benzodiazepine harmful use, abuse or dependence. Cochrane Database Syst Rev. 2015;5:CD009652.