LITERATURE REVIEW   **Open Access**

Psychotropic medication use patterns in home-based primary care: A scoping review

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Abstract

Introduction: Up to a third of patients seen by home-based primary care (HBPC) providers suffer from mental health problems. These conditions tend to be underrecognized and undertreated for patients receiving HBPC. The purpose of this scoping review is to evaluate current psychotropic use patterns for patients receiving HBPC services.

Methods: The following databases were searched for articles reporting on studies conducted in HBPC settings that identified patterns of psychotropic medication prescription and use: Ovid/MEDLINE, Cochrane Library, Embase, Scopus, Web of Science, CINAHL, and PsycInfo. Studies that only reported on patients in hospice, rehabilitation, or long-term care facilities were excluded as were drug trials, opinion pieces, case studies, case series, meeting abstracts, and other reviews.

Results: Of 4542 articles initially identified, 74 were selected for full text screening. Of these, only 2 met full criteria and were included in the data extraction and analysis. In 1 study, 41.7% patients enrolled were prescribed an antidepressant, 21.5% were prescribed an antipsychotic (12.7% prescribed both), and 5% to 7% of patients were prescribed benzodiazepines/hypnotics. In the other study, 9% of patients were prescribed an antipsychotic, and 7% were prescribed a benzodiazepine.

Discussion: There are extremely limited data on psychotropic prescribing patterns in HBPC in published studies. Because a significant number of HBPC patients suffer from mental health conditions in addition to other chronic illnesses, treatment can be complex. More studies are needed on current psychotropic prescribing trends to help determine what type of interventions are needed to promote patient safety in this setting.

Keywords: home-based primary care, psychotropic, prescribing, scoping review

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Introduction

Home-based primary care (HBPC) is a program provided to chronically ill or disabled patients with complex medical, social, and behavioral conditions.[1] On average, HBPC teams consist of 9 interdisciplinary members other than the designated physician, including social workers, registered nurses, registered dieticians, nurse practitioners/physician assistants, pharmacists, administrative per-

sonnel, psychologists, occupational therapists, and physical therapists.[2] The program mainly targets homebound older adults and medically isolated patients who would benefit from comprehensive interdisciplinary primary care services in the home.[3] Mental health disorders, such as depression, anxiety, posttraumatic stress disorder, substance use disorder, and schizophrenia, are among the top 10 diagnoses in the HBPC population.[1]

A recent qualitative study by Gillepsie et al[4] revealed gaps in providing mental health care by Veterans Affairs (VA) HBPC teams due to a lack of team psychiatrists and/or need for specialized medication management for psychiatric illness. According to this study, medication management is particularly challenging—at times exceeding HBPC interdisciplinary team members' skill levels and resources. One team member voiced the need for psychiatric services being greatest in veterans with more serious mental illness, such as bipolar disorder and schizophrenia spectrum disorders. Even when consultative care by a psychiatrist was available for establishing a diagnosis and treatment plan, the ability to provide ongoing follow-up and access to certain nonpharmacologic therapies (eg, counseling) was limited.[4]

Limitations in implementing nonpharmacologic treatment may, in turn, lead to overreliance on pharmacologic treatment for behavioral issues.[5] Because the patient population with mental health conditions who receive HBPC services is particularly vulnerable, it is concerning that HBPC providers have expressed low confidence with psychiatric medication management.[5] An additional concern is that many medications used to manage psychiatric disorders are included in the *American Geriatrics Society Beers Criteria for Potentially Inappropriate Medication Use in Older Adults*.[6] Although a psychiatrist would ideally be the one to manage medications for mental health treatment, national surveys of HBPC mental health providers and program directors reveal that few HBPC sites report having an integrated psychiatrist (11%) on the team, and most reported having a nonprescribing psychologist available as their mental health provider (89%).[2,7] Given the gaps identified in providing mental health care to older patients receiving HBPC services, the purpose of this study is to evaluate psychotropic medication use patterns in HBPC.

Methods

Search Methodology

A scoping methodology was utilized to discover to what extent adults receiving HBPC received pharmacologic treatment for mental health disorders and to uncover patterns of that treatment. Unlike systematic reviews, which focus on narrowly defined questions, scoping reviews are useful for mapping the literature and uncovering knowledge, practice, and research gaps. We used recommendations for scoping studies outlined by Arskey[8] and refined by Levac,[9] which, briefly, included five steps: (1) identifying the research question; (2) identifying relevant studies; (3) selecting studies; (4) charting the data; and (5) collating, summarizing, and reporting the results using PRISMA (preferred reporting items for systematic reviews and meta-analyses) guidelines, now adapted specifically for scoping reviews.[10]

Using controlled vocabulary terms (eg, MeSH [medical subject headings], Emtree) and keywords, a medical librarian (C.L.H.) conducted systematic literature searches in the following 7 databases: Ovid/MEDLINE, Wiley/Cochrane Library, Elsevier/Embase, Elsevier/Scopus, Clarivate/Web of Science, EBSCO/CINAHL, and EBSCO/PsycInfo. Articles of interest were limited to those published between January 1, 2007, and June 3, 2020—the date that all searches were completed. An English language filter was applied. Because there are so few publications that specifically address HBPC, the search strategy was limited to only HBPC terms without combining these with psychotropic medication terms. The rationale for this is to avoid missing any publication that mentions any psychotropic medication by individual name (generic or brand-specific) or by class, which is specifically studied in the context of HBPC. Because there are so few publications about HBPC in any context, this was logistically possible. Keywords for the search were *home care services, hospital-based*; *hospital based home*; *hospital at home*; *home based hospital*; *home based primary*; *integrated comprehensive care*; *hospital level care*; or *HBPC*. References to and from the final selected articles and reference lists within key review articles were also individually searched. All results were imported into Endnote and then deduplicated.

Data Extraction

Two independent reviewers (N.V. and J.K.L.) screened all titles and abstracts retrieved during the first of 2 (original and updated) searches in January 2018 and resolved differences by consensus. Two reviewers (N.V. and B.Z.) independently screened the full text of all publications selected during that title/abstract screening phase. Differences were resolved by consensus and through arbitration with a third reviewer (J.K.L.). To ensure the currency of this review, searches were reconducted on June 3, 2020. The titles and abstracts of those articles newly retrieved in the second search were screened by 1 reviewer (C.L.H.), and titles/abstracts of possible relevance were checked by a second reviewer (N.V.). No newly retrieved references from the second search were identified as warranting full text screening.
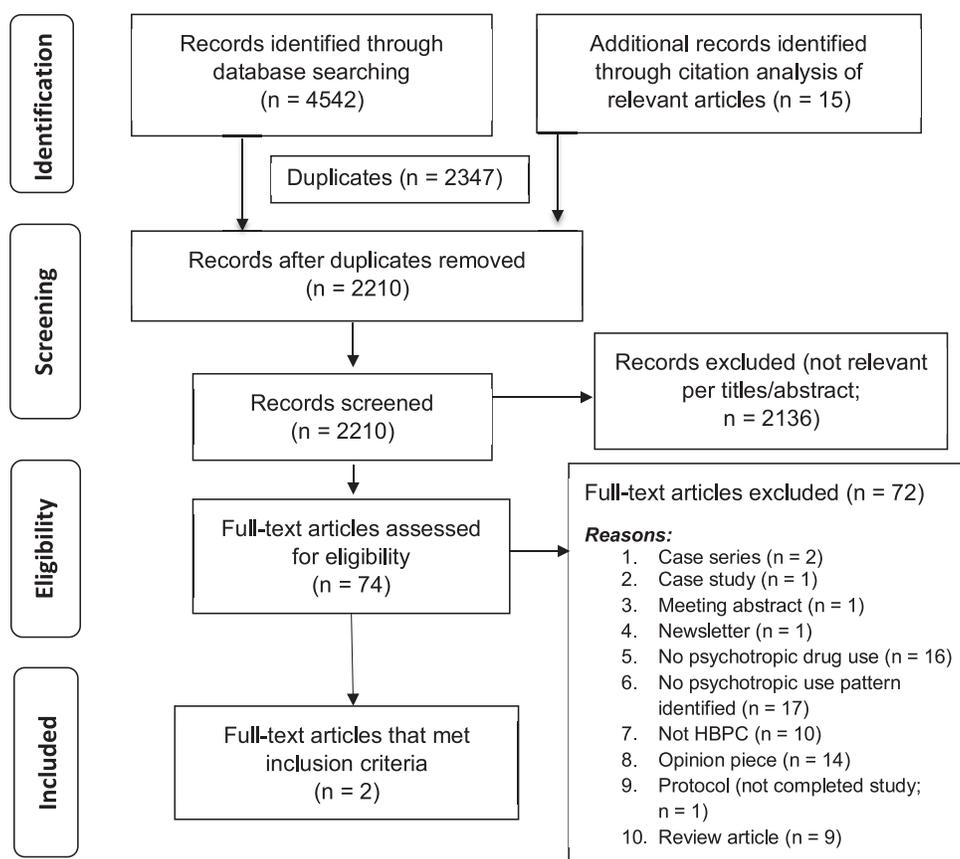
Identification

Records identified through
database searching
(n = 4542)

Additional records identified
through citation analysis of
relevant articles (n = 15)

Duplicates (n = 2347)

Screening

Records after duplicates removed
(n = 2210)

Records screened
(n = 2210)

Records excluded (not relevant
per titles/abstract;
n = 2136)

Eligibility

Full-text articles assessed
for eligibility
(n = 74)

Full-text articles excluded (n = 72)

Reasons:
1. Case series (n = 2)
2. Case study (n = 1)
3. Meeting abstract (n = 1)
4. Newsletter (n = 1)
5. No psychotropic drug use (n = 16)
6. No psychotropic use pattern identified (n = 17)
7. Not HBPC (n = 10)
8. Opinion piece (n = 14)
9. Protocol (not completed study; n = 1)
10. Review article (n = 9)

Included

Full-text articles that met
inclusion criteria
(n = 2)

FIGURE: **Study flow diagram (HBPC = home-based primary care)**

Studies were selected if they (1) were conducted in HBPC settings and (2) reported psychotropic use/prescription patterns. We specifically excluded studies that were limited to patients in hospice care or nursing or rehabilitation facilities. Studies were also excluded if they were not available in English or were drug trials, limited to pediatric patients, opinion pieces, case studies, case series, meeting abstracts, reviews, systematic reviews, or meta-analyses.

Data collection was conducted independently by two sets of reviewers (N.V. and B.Z., J.K.L. and N.L.) who met to resolve differences by consensus. A previously tested data extraction form was modified for the purposes of the current study and used to collect the data. The following data was extracted from each publication: country of origin, study design, study duration, primary objective, interprofessional team members, total number of patients enrolled, age, psychiatric disorders, medical comorbidities, outcomes measured, number of medications, nonpharmacologic treatment, and list and prevalence of psychotropic drug use.

Results

Of the 4542 publications identified through the 7 database searches, 2195 articles remained after duplicates were removed (Figure). An additional 15 articles were identified through citation checking of relevant articles and reviews, making a total of 2210 records that were screened at title/abstract level. Of these, 2136 were eliminated due to irrelevance to the research topic, and 74 were selected for full text screening. Of these, 2 studies met full selection criteria[5,11] and are included in the data extraction and report.

Both of our included articles are pre-post studies conducted in the United States. With the exception of the average age of participants (both focusing on patients older than 80 years), there are notable differences between the two studies (Table). For example, Reckrey et al[5] provided data on diagnosed psychiatric disorders and medical comorbidities, and Brahmbhatt et al[11] did not. Brahmbhatt et al[11] reported psychotropic prescribing prevalence for only 3 medication classes. The study by Reckrey et al,[5] on the other hand, included four times as many participants (n = 802 vs n = 200) and collected data on psychotropic drug use patterns and nonpharmacologic treatment. Neither study[5,11] documented mean number of total medications used. Additional study details for the 2 included articles are reported in the Table.

TABLE: Study characteristics of 2 studies[5,11]

	Reckrey et al[5] (2015)	Brahmbhatt et al[11] (2013)
Country of origin	United States	United States
Study design	Pre-post	Pre-post
Primary objective	To better understand patients' psychiatric illness burden and current mental health treatments	To evaluate appropriateness of medication prescribing using STOPP/START criteria
Interdisciplinary team members	Physicians, nurse practitioners, psychologist, social workers, clerical staff	Physician, geriatrician, pharmacist, nursing, other (not disclosed)
Total No. of patients enrolled	802	200
Mean age, y	81	82
Psychiatric disorder category (n, %)	Depression (209, 26) Anxiety (83, 10) Bipolar (8, 1) Psychosis (20, 2.5) Neurocognitive disorder (473, 59) Personality disorder (12, 1.5)	NR
Medical comorbidities	Diabetes; asthma/COPD; coronary artery disease; heart failure; stroke; incontinence	NR
Outcomes measured	No direct measures	Change in STOPP/START criteria scores
Study duration, mo	16	4
Mean No. of medications	NR	NR
Nonpharmacologic treatment	Psychotherapy, PT, OT, substance abuse, nutrition counseling, home improvements, ergonomics	None
Prevalence of psychotropic drug use (n, %)	Antidepressants (335, 41.7) SSRIs (213, 26.5) TCAs (13, 1.6) Other (161, 20) Anxiolytics (94, 11.7) Hypnotic/BZD (43, 5.4) Other (56, 7) Anti-mania agents (10, 1.2) Antipsychotics (173, 21.5) Alzheimer medication[a] (110, 13.7) Antidepressant + antipsychotic (102, 12.7) Antidepressant + anxiolytic (59, 7.4) Alzheimer medication[a] + mood stabilizer (49, 6.1)	Benzodiazepines (14, 7) Antipsychotics (18, 9) Opiates (11, 6)
Study results and conclusions	Neurocognitive and psychiatric disorders were among the most common reasons for referral to HBPC, thus underlying the need for more integration of psychiatric care into HBPC programs.	There was a statistically significant improvement in STOPP scores after pharmacist intervention. Benzodiazepines and neuroleptics were among the top 5 medications that pharmacists recommend to stop or adjust. There was not a significant change in START scores. Pharmacists on the HBPC team had a significant impact on deprescribing medications included in START/STOPP criteria. Future studies should examine pharmacist impact on medications outside of this scope.

BZD = benzodiazepine; COPD = chronic obstructive pulmonary disease; HBPC = home-based primary care; NR = not reported; OT = occupational therapy; PT = physical therapy; SSRIs = selective serotonin reuptake inhibitors; STOPP/START = screening tool of older people's prescriptions/screening tool to alert to right treatment; TCAs = tricyclic antidepressants.

[a]Alzheimer medication: N-methyl-d-aspartate receptor antagonist/acetylcholinesterase inhibitor.

The first included study by Reckrey et al[5] described the development of a psychiatric in-home consultation service pilot that was designed to address unmet psychiatric needs at an academic HBPC program in New York City, New York (Mount Sinai Visiting Doctors Program). The primary objective of this study was to better understand HBPC patients' psychiatric illness burden and current mental health treatments. The psychiatry attending physician and the geriatric psychiatry fellow delivering psychiatric consultations found that HBPC providers routinely treat psychiatric illnesses with 44.8% of homebound patients at Mount Sinai Visiting Doctors Program having a mental health diagnosis. The most common mental health diagnosis was neurocognitive disorder (59%), followed by depression (26%). Prior to development of the in-home consultation service, antidepressants were the most frequently prescribed psychotropic class (41.7%), followed by antipsychotics (21.5%). Medications for Alzheimer disease (N-methyl-d-aspartate [NMDA] receptor antagonists and acetylcholinesterase inhibitors) were prescribed for 13.7% of patients (Table).

The second included study by Brahmbhatt et al[11] evaluated the appropriateness of medication prescribing using the screening tool of older people's prescriptions (STOPP) and screening tool to alert to right treatment (START) criteria in the HBPC program at Edward Hines, Jr VA Hospital.[12] The STOPP/START criteria were used to identify potentially inappropriate medications and potential prescribing omissions in older adults.[6,12] These criteria, when utilized, were shown to improve prescribing appropriateness among older adults[13] and are, therefore, used to minimize the risk of adverse drug events in clinical practice. The included study was a retrospective chart review conducted by pharmacists who make medication recommendations based on the STOPP/START criteria. Seven percent of enrolled patients were prescribed benzodiazepines, and 9% were prescribed antipsychotics. Six percent of patients with a history of recurrent falls were prescribed long-term opiates (Table).

Discussion

The most important finding of this scoping review is that there is a large gap in current research regarding psychotropic medication use patterns in HBPC programs. Only 2 pre-post studies[5,11] met our inclusion criteria, highlighting the extreme lack of information available. Both HBPC programs in the included studies focused on older adults with mean age of participants being older than 80 years. Of the 2 articles identified, the study by Reckrey et al[5] reported more information regarding psychotropic use patterns.

Reckrey et al[5] (n = 802) highlighted that patients receiving HBPC are routinely treated for psychiatric illness by primary care providers (with no mention if these providers are family physicians, internists, geriatricians, or allied health professionals). The most important factor identified in contributing to the success of the pilot program described in this study was how closely the consultant psychiatrists worked with primary care providers in developing both effective and realistic treatment plans. Homebound patients often have multiple medical illnesses, polypharmacy use, and complex care regimens that impact medication choices. As such, expanded partnerships between psychiatry and primary care would be helpful in caring for this uniquely underserved group. Reckrey et al[5] demonstrated that such partnerships are feasible, although consulting psychiatrists may not always have the staff or resources necessary for intensive follow-up. Although data was not collected on changes in psychotropic prescribing patterns after implementing the psychiatric consultation service, it is interesting to note how prevalent the use of psychotropic medications was even before the pilot began. Future studies should investigate the impact on psychotropic prescribing in HBPC when psychiatric providers and pharmacists are part of the team.

As noted, consulting psychiatrists are not always logistically able to provide intensive follow-up. One possible solution was suggested in Gillepsie et al,[4] who described HBPC programs that include a pharmacist with psychiatric medication–management experience. Clinical pharmacy specialists (CPSs) within HBPC provide comprehensive medication management services under a VA scope of practice, including medication prescriptive authority.[14] Additional core functions of the CPS include providing patient and caregiver education.[14] This practice increases veteran access to care and has demonstrated an increase in appropriate prescribing practices and improved medication use when CPSs work in collaboration with the HBPC team.[15] Pharmacist-provided comprehensive medication management in other primary care settings was also shown to optimize medication use in patients with psychiatric disorders.[16-19] Considering pharmacists' proven benefit in the primary care setting, a randomized controlled trial in the United Kingdom is underway to evaluate the effectiveness and cost-effectiveness of a pharmacist-independent prescribing service compared to usual general practitioner–led care in the home care setting.[20] Although psychiatric pharmacists do not currently have independent prescriptive authority outside of collaborative practice agreements, they are able to assist with medication management follow-up appointments, particularly once initial diagnoses and treatment plans have been developed by a consulting psychiatrist. As such, expanding partnerships to board-certified psychiatric pharmacists with expertise in psychiatric medication management could help address the shortage of psychiatric specialty care support in HBPC settings.

In the study by Brahmbhatt et al[11] (n = 200), benzodiazepine use was among the top 5 most common STOPP criteria medications identified (7% of enrolled participants). Much attention has been paid to reducing central nervous system depressant use in older patients to avoid falls and worsening cognition. Despite these risks,[21,22] the rate of benzodiazepine use was highest in adults ages 50 to 64 (14.3%) and ages 65 years and older (12.9%).[23] Although these rates were higher than what was reported in the study by Brahmbhatt et al,[11] another study by Agarwal and Landon[24] reported similar rates of benzodiazepine use in adults ages 65 years and older (6.4%) using 2015 data from the National Ambulatory Medical Care Survey, which is an annual cross-sectional survey of nonfederal ambulatory care visits in the United States. This suggests that benzodiazepine use in HBPC may be similar to other primary care settings although more studies evaluating benzodiazepine use in HBPC are needed.

Maust et al[23] found that the presence of mental illness in the past year was associated with increased odds of benzodiazepine use among US adults, as was overall worse health by self-report. This is noteworthy given that complex health issues, including mental health disorders, are common in the HBPC population. Additionally, a study[25] investigating differences in benzodiazepine prescribing among Medicare patients in primary care settings in multiple counties in the United States found that higher rates of prescribing occurred in more socioeconomically disadvantaged counties. These counties shared a striking overlap with county opioid use, indicating that those suffering from poor mental health, disability, and socioeconomic challenges may be at higher risk of being prescribed both benzodiazepines and opioids together. A recent study[26] using Medical Expenditure Panel Survey data from 2011, 2013, and 2015 observed that 1.8% of adults ages 65 years and older in the United States reported concurrent benzodiazepine and opioid use. Understanding how benzodiazepine and opiate prescribing in HBPC compares to other primary care settings would help with designing and targeting interventions to reduce the use of these potentially harmful agents in the high-risk homebound population. This is another area in which psychiatric pharmacists can be of assistance as studies[27-29] have demonstrated the feasibility and success of pharmacist-led deprescribing services.

It should be noted that neither study included in this scoping review reported the mean number of overall medications patients were using. This is an important variable to include in future studies because polypharmacy is both more prevalent and more problematic among older adults.[30] Additionally, neither of the included studies provided information on dosing, frequency of medication changes (eg, dose adjustments, medication switches, side effects and treatment), or total number of psychotropics used. Although the study by Reckrey et al[5] reported on psychiatric disorders of enrolled participants, indications for the prescribed psychotropics were not included. For instance, 21.5% of participants were prescribed an antipsychotic medication, but only 2.5% of participants had a diagnosis of psychosis, and only 1% had a diagnosis of bipolar disorder, indicating that antipsychotics were often prescribed for off-label indications.[5] Because 59% of the participants had a diagnosis of neurocognitive disorder, it is likely that antipsychotics were used more often for treatment of behavioral disturbances than psychiatric illnesses, although it is possible they were being used for other off-label indications (eg, depression treatment augmentation, anxiety, sleep). Using antipsychotics to treat behavioral and psychological symptoms of dementia is included in the Beers criteria as potentially inappropriate due to an increased risk of stroke and mortality as noted by the US boxed warning.[6,31] Including psychiatric pharmacists on HBPC teams could also help address the ubiquitous problem associated with polypharmacy use among older adults and tracking psychotropic medication use overall for appropriate versus inappropriate indications.

Although first-line treatment of behavioral disturbances in neurocognitive disorders is nonpharmacologic treatment,[32-35] this is often costly, time-intensive, and difficult to implement if resources are scarce. First-line pharmacologic treatment of disruptive behaviors in dementia includes acetylcholinesterase inhibitors (eg, donepezil, rivastigmine, galantamine) and memantine because they have been shown to reduce behavioral symptoms and have a more favorable safety profile than antipsychotics.[36-39] When acetylcholinesterase inhibitors and memantine fail, second-generation antipsychotics, such as aripiprazole, olanzapine, quetiapine, and risperidone, are recommended next.[35,40] Antipsychotic medications may improve neuropsychiatric symptom domains although functional abilities and quality of life do not seem to improve.[41,42] Acetylcholinesterase inhibitors and memantine are considered to be safer than antipsychotics; however, the lag time for improvement is longer. This may explain why acetylcholinesterase inhibitors and NMDA receptor antagonists were used only 13.7% of the time in the study by Reckrey et al[5] despite 59% of patients having a diagnosis of neurocognitive disorder and more patients being prescribed antipsychotics.[5] An additional explanation might be that patients prescribed an antipsychotic had previously failed a trial of an acetylcholinesterase inhibitor/NMDA receptor antagonist for behavioral symptom reduction. Reporting on indications for use in addition to psychotropic use patterns would help elucidate what higher risk agents are being used for (eg, antipsychotics/mood stabilizers in neurocognitive disorder) and whether they are being appropriately managed

(eg, what doses are being used, how frequently, what type of monitoring is being conducted).

Given the high prevalence of psychotropic medication use reported in both studies, it is important to question how often recommended monitoring of these medications is being conducted. For example, it is recommended that patients prescribed an atypical antipsychotic have their weight checked every month and their fasting plasma glucose and lipid levels monitored 12 weeks after initiation and yearly thereafter (or more frequently depending on metabolic disorder severity).[43,44] Additionally, the boxed warning for antipsychotic use in elderly patients with dementia stems partially from a higher risk of cerebrovascular and cardiovascular events.[39,45] Some of the more common medical comorbidities identified in the study by Reckrey et al[5] were, in fact, stroke, diabetes, and coronary artery disease. In addition, older adults are more sensitive to certain antipsychotic-induced movement disorders (eg, parkinsonism, tardive dyskinesia).[46] Therefore, the HBPC population is at particularly high risk for adverse effects related to antipsychotic usage and need more frequent monitoring. A previous prospective study[47] investigating monitoring practices for metabolic disease in antipsychotic-treated community psychiatric patients reported poor monitoring rates despite evidence-based recommendations regarding screening in this population. Similar studies evaluating monitoring practices in patients treated with antipsychotics in HBPC settings are needed to fully understand whether medications are being managed safely in this population.

Our scoping review is limited at 2 levels: 1 inherent in our methods and the second inherent within the eligible studies themselves. For logistical reasons, we elected to consider only English-language articles. We, thus, undoubtedly missed opportunities to compare practice patterns within the United States and other English-speaking countries to those that might exist in the care of homebound patients receiving primary care within non-English-speaking countries. Additionally, by excluding conference and meeting abstracts, we may have missed early or ongoing research related to medication prescribing within HBPC populations. By limiting our study to the HBPC population, we were also unable to evaluate psychotropic medication use patterns in patients who are considered homebound while still receiving primary care in the outpatient clinic setting.

The second limitation is at the level of the studies themselves. Of approximately 2210 screened publications, only 2 studies met our selection criteria. Even within these 2 publications, there was a general paucity of information. Granular data about total number of medications, interactions between medications, adverse effects, dosing and dosing changes, changes in medications, extent of off-label prescribing, and monitoring patterns were all spotty or missing. There were also large gaps in how accurately and completely psychiatric diagnoses and medical comorbidities were documented. In summary, although we aimed to analyze patterns of psychotropic medication use, our primary finding is also the primary limitation of our review, namely the general absence of data and analysis of medication use in a population so underrepresented in the literature that the search strategy consisted solely of terms defining that population without having to add any qualifying terms.

Conclusion

There is extremely limited data on psychotropic use patterns in HBPC programs. Because a significant portion of this population is older, suffers from mental health issues, and receives complex medication treatment, more studies are needed on current psychotropic prescribing trends to help determine what type of interventions are needed to promote patient safety in this setting.

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