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The Critical Review of Overuse of Medication in the Geriatric Population

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THE CRITICAL REVIEW OF OVERUSE OF MEDICATION IN THE GERIATRIC POPULATION

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Abstract

Background: The overuse of medications is of concern among the geriatric population, especially in various settings including in-home and community-based (assisted living and independent living). This review found that older individuals take nine or more medications daily. The overuse of medications has an increased tendency to cause problems for older patients and creates adverse consequences. The adverse consequences cause problems and injuries, such as broken bones, head trauma, and death.

Purpose: The purpose of this critical review of the literature is to investigate the issues related to the overuse of medication in the geriatric population and the negative impact of this crucial issue on their quality of life.

Results: The review of literature includes 13 articles analyzed using the Johns Hopkins Nursing Evidenced-Based Practice Model. The Health Belief Model (HBM) was used as a framework for critical review of the literature. The findings identified the prevalent overuse of medications in the geriatric population. The review found a variety of factors related to the overuse of medications including medical provider related issues, lack of medication knowledge, physical and social constraints, cognitive impairment issues, and medication noncompliance.

Conclusion: The literature reviewed revealed that many older adults have multiple chronic conditions and mediation are an essential part of their everyday existence. However, a significant number of older adults have difficulty managing their medication appropriately. It is vital for nurses and the healthcare system to provide educational resources and simplification strategies of medication management for the elderly individual, but most importantly reduction of the number of medications prescribed to elderly population.

Implications/Recommendations: Nurses and all healthcare professionals play an important role in helping older adults manage their medications. When older adults correctly manage medications, their health and well-being are more likely to remain stable, which allows for a fulfilled life and maintained independence. Additional research needs to be done to further study overuse of medication in the geriatric population, and nurses should continue to collaborate with other disciplines to adapt and test current interventions related to overuse of medication. The nursing profession as a whole should strive to make reduction of medication overuse a top priority, in practice and evidenced-based research to promote a healthier environment for older adults.

Keywords: elderly people, epidemiology, mortality, polypharmacy, overuse.

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Chapter One: Introduction

This chapter will present background on the overuse of medication by the elderly, a statement of the purpose of the critical review of the literature, a description of the need for the review, along with its significance to nursing, and the theoretical framework used to review the literature.

Medication Overuse Background

Medication plays an important role in improving the quality of life for many elderly people. However, when the elderly are unable to manage their medications, their quality of life is greatly affected. A study by Bryne, Gallagher, Hamilton, O'Mahony, and Ryan (2011) indicated that the problem of inappropriate use of medication is highly prevalent in older adults, affecting 24% of individuals in community-based dwellings and 40% of nursing home residents in the United States. The study also found that 58% of older individuals do not receive one or more of their daily medications. There are many causes of medication problems in the elderly population, and it is not only a problem involving the providers, but the health care system, the patients' families, and the government as well.

A study by Chakraborty, Patil, Rambhade, Rambhade and Shrivastava (2012) found polypharmacy is associated with inappropriate prescribing of medication. Many medications have an increased tendency to cause problems for older patients and create adverse consequences. These adverse consequences also range from falls and injuries to disease exacerbation, hospitalizations, and death. These adverse consequences also cause problems and injuries, such as broken bones, head trauma, and death. This is a significant problem for the profession of nursing due to factors like lack of education with medication management, provider issues, and the healthcare system's lack of accountability with this issue of overuse of

medication in the geriatric population. The study also discussed other factors triggered by inappropriate use of medication, such as cognitive and physical impairment, social isolation, adverse side effects, and drug-seeking behaviors. The problem with overuse of drugs among the geriatric population can be seen in different settings, including in-home and community-based (assisted living and independent living), nursing homes, and hospitals (Boland, Dalleur, Hendrard, Spinewine & Speybroeck, 2012).

The purpose of this literature review is to identify both the primary reasons for the increase in medication overuse and subsequently, the most appropriate, evidence-based interventions to address the issue within clinical practice and in education of students in pre-licensure nursing programs. The literature review will demonstrate the history of this problem and the research about the environment and age groups most affected by the issues.

Artz et al. (2002) conducted research on in-home, community-based, and residential care settings, and identified that individuals age 65 years and older often overused medication. Community-based data revealed that older people daily take an average of nine or more medications beyond the prescribed limit. From the study, it was identified that inappropriate overuse is of concern along with its adverse health outcomes. Therefore, choosing the best interventions to improve appropriate use is a priority for both the geriatric population and health care provider.

Statement of Purpose

This critical review of the literature will investigate the issues related to the overuse of medication in the geriatric population and the negative impact of this essential issue on their quality of life. This review will study systems that could be implemented to promote a positive outcome for geriatric individuals. The critical review will provide an analysis of the negative

factors that predispose an individual to a decrease in physical function secondary to adverse consequences related to the overuse of medications.

The review will also consider the influence of concepts such as the frequency of hospitalizations, the number of falls with injuries, and the cost of admission to the healthcare system due to the overuse of medication (Classen, Mann, Tomita, & Wu, 2004). The positive outcome of decreased use of drugs may be due to the implementation of assessment tools, the number of medicine management programs, and the increase in oversight of geriatric patients who reside in the home and community-based settings.

The objective of the review of the literature is to determine the best way to address the problem of overuse of medication in the elderly and provide recommendations for effective medication management. When the elderly individual can correctly manage their medications, their quality of life is improved.

Need for Critical Review of a Nursing Problem

The need for a critical review of the healthcare literature is to answer the questions that are relevant to the topic. The questions to be answered are as follows:

1. What is the effect of medication overuse on the elderly person's health outcome?
2. How can evidence-based practice be applied as it relates to the overuse of medications?
3. What systems could be put in place to safeguard the elderly population from injuries?
4. What is the impact on the nursing profession regarding improving medication management?

A recent study conducted by Kim, Koncilja and Nielsen (2018) indicates that older adults tend to have multiple illnesses, which leads to prescribed medications and the possibility of overuse resulting in the risk of poor outcomes. The prevalence of overuse of medications

increased from an estimated 8.2% in 1999 to 15% in 2011, based on the National Health and Nutrition Examination Survey.

The United States Administration on Aging (2010), predicted a rapid increase in individuals 85 and older receiving in-home and community-based care between 2030 and 2050. Thus, the home and community-based setting will meet the needs of families and geriatric individuals who choose not to be in an institutional environment, such as a skilled nursing facility. These settings will provide health services, including optional services such as medication management.

Bierman et al. (2001) reviewed the 1996 Medical Expenditure Panel Survey, to assess trends over ten years, categorize inappropriate medication use according to explicit criteria, and to examine risk factors for inappropriate medication use in the community-dwelling population. Their findings at that time were that 23% of community-dwelling elderly patients in the United States received at least 1 to 33 potentially inappropriate medications.

The demographic shift to the community-dwelling environments necessitates the adjustment of services in response to changing needs. The resident-centered promotion of care includes medication safety that can be established through the education of physicians and other healthcare professionals, in addition to computer-based medication assessment tools that would track an individual's medications. This tracking system would allow another care provider to review medications before new medications can be ordered.

Another reason a critical review of the healthcare literature is needed, is to examine the perceived lack of control over prescribed medications, the excessive costs of care, and the unnecessary hospitalization due to the overuse of medications. Goulding (2004) conducted a study to examine the trend in the prevalence of potentially inappropriate medication prescribing

at ambulatory care visits by elderly persons from 1995 to 2000. The data examined were from office-based physicians in the National Ambulatory Medical Care Survey and from hospital outpatient departments. Explicit criteria were used to identify potentially inappropriate prescribing. Multivariate regression was used to identify related factors (Goulding, 2004). The geriatric population is living longer, independently, and with minimal assistance with their health care. Thus, the need for oversight of medication is an important concept to promote. The study outcome demonstrates concerns for the independence of the elderly individual and the process of communication with the providers on their medication management.

The Centers for Medicare and Medicaid Services (CMS, 2015) promotes aging well at home, and for this to be possible, the focus on medication reduction and safety is essential. Although some studies emphasize outcomes of security and modification, the ability to implement this concept would require collaboration between the physicians, the families, the system, the environment, and the individual to manage the care of the older adult (Basger, Chen, & Moles, 2008).

The focus on medication reduction and safety through evidence-based practice (EBP) has become an expectation in nursing and healthcare in general. Using an evidence-based approach for nursing is an essential aspect of the health care system relevant to medications and elderly and is of great help.

Significance to Nursing

Through working daily with the geriatric population and becoming more aware of the potential medication overuse, nurses are better prepared to develop their skills through assessment, teaching, and advocacy while caring and managing medications for the elderly. This

increased awareness provides nurses with the tools to promote drug safety. Also, nurses will be prepared to identify the risk factors of the overuse of medication among the elderly.

Medication overuse has an impact on the nursing profession because of potential patient injuries or death and increased out-of-pocket costs to the healthcare system. The one significant concern is the rehospitalization following a fall or injury at home after an elderly patient is discharged. De Jong, Van der Elst, and Hartholt (2013) believe several types of medications are associated with an increased risk of falls.

Fridman, Pevnick, Rosen, Rosen, and Shane (2017) conducted a retrospective cohort study to test whether patient medication adherence related to all chronic illnesses. The 4-item Morisky Medication Adherence Scale was administered by pharmacists at the hospital admission. The result predicted rehospitalization by 30 days. The patients with low and intermediate adherence had a readmission rate of 20.0% compared to a readmission rate of 9.3% for patients with higher adherence (p=0.005). Additionally, re-admissions are not reimbursed by CMS and therefore are costly to healthcare systems. Thus, it is important that nurses understand the resident-centered promotion to better advocate for the education of physicians and other healthcare professionals, and use of medication assessment tools, and computer-based systems that would track patient medications.

For the healthcare system to help this population of clients to live well, the nurse, the families, and the individuals need to work with the system - the doctors, pharmaceutical professionals, and legislators. Hamilton, Gallagher, and O'Mahony (2009) examined the falls and severe injuries that result from improper use of medications to monitor medication for geriatric patients. The information from this literature review can be applied by a nurse who

works in a healthcare facility and home care; the information could be used as a guide for medication management.

Conceptual Model/Theoretical Framework

According to Beck and Polit (2017), Marshall Becker, an associate professor at Johns Hopkins University School of Medicine first reviewed the health belief model (HBM) used for this literature review in 1976. However, the model was first developed in the 1950s by social psychologists, Hochbaum, Kegals, and Rosenstock working in public health services. Brown et al. (2015) who discussed the Health Belief Model (HBM), stated it is based on the premise that an individual's health-seeking behavior is influenced by the perception of a threat posed by a health problem and the associated action aimed at reducing the danger.

One primary focus of this health belief model is that an individual's psychological health behavior tends to bring about changes. The behavioral change could be negative or positive; in this review, the behavioral change is negative by evidence of the literature review of the problem of poor medication management.

This review will look at how the Hochbaum, Kegals and Rosenstock (as cited in Brown et al. (2015) theory of health belief applies to the topic of overuse of medication and its relevance demonstrated through several behavioral factors. Examples of application of the HBM include drug-seeking behavior confirmed through social isolation, cognitive and functional impairment, and the over-prescribing of medication by a physician. The HBM can be applied to the research study when identifying the prevalent overuse of inappropriate medication use in the geriatric population (Bennett et al., 2012).

Ha et al. (2010) completed a study which included 108 diabetic patients older than 65 years treated at one tertiary hospital and 157 patients older than 65 years treated at two private

clinics. The interview study shows 23.0% of the participants demonstrated inappropriate use of medication due to factors such as financial and self-efficacy problems.

The HBM is aligned with the geriatric behavior of drug seeking. The action of drug seeking could arise from exposure to promotions on television or elsewhere, wherein patients become convinced the new drug will solve their pain, depression, sleep, or other health issues.

Summary

While the review of overuse of mediation is complex and multi-faceted, it is essential for the nursing profession to safeguard the older population from harm. The ability for elderly persons to effectively manage their medications has an impact not only on the individual, but also on the families, the nurses, and the overall healthcare system. The purpose of the critical review of the literature is to investigate the issues related to the overuse of medication in the geriatric population and the negative impact of this issue on their quality of life.

The quality of life for elderly individuals is improved when they receive medications safely. The need for an explanation of the problem was determined through a review of the research, an analysis of the significant impact on nursing and geriatric individuals, and a review of the theoretical models such as the health belief model, that support medication management for the geriatric population. Chapter two presents the method, search strategies, and criteria for inclusion and exclusion of articles in the critical review of the literature.

Chapter Two: Methods

The purpose of this chapter is to discuss the methodology used in this literature review on the overuse of medication in the geriatric population, the search strategies used, the inclusion and exclusion criteria, and the criteria used for evaluation of the sources. Research articles were analyzed based on quality, level, strength, and limitations. The articles are presented in a matrix format (Appendix A) to simplify comparison of the different studies and to present the recommendations based on the study.

Search Strategies

The literature review process included a review of several research journals and articles regarding overuse of medication in the elderly population and interventions needed to combat this problem. The CINAHL, PubMed, and Medscape databases were searched using these keywords: elderly people, epidemiology, mortality, polypharmacy, and overuse. Search objectives and strategies included full-text articles that were of national and international acclaim within the last 18 years. The objective review sought to determine which interventions, alone or in combination, were effective in improving the inappropriate use of medication and reducing the medication-related problem in older people (Artz et al., 2002).

Criteria for Including or Excluding Research Studies

Articles for the literature review were reviewed utilizing the Johns Hopkins Nursing Evidence-Base Practice Model and Guidelines (Dang & Dearholt, 2018). The Johns Hopkins Model places the strength of the articles into five categories, on a scale from I to V. Studies considered Level I are experimental, randomized controlled trials; Level II are quasi-experimental studies with Level III being evidence from non-experimental studies or qualitative studies. The final, Level V, includes historical cohort or case control studies with no experiential

evidence. The research quality rating A is high, B is good, and C is low. The quality rating A is consistent with the generalized results with definitive conclusions and recommendations while quality rating B demonstrates reasonably consistent results with definitive conclusions and recommendations. The quality rating C indicates little evidence with inconsistent results that do not produce conclusions. Articles chosen for inclusion were published as early as 1998, with most of the articles published between 2002 and 2018. The materials studied were investigated in different settings which related to relevancy and the inappropriateness of prescribing of medications. The articles discussing training, education, and interventions were also included.

There were articles included that demonstrate the topic is a concern in other countries such as Germany, the United Kingdom, Italy, and Spain. Exclusion of articles included those from 1996-1997, those focused more on the pharmacology and occupational therapy settings, as opposed to facility-based settings those which investigated the cost of overuse of medication, and those that explored the alternative methods of meeting the needs of the geriatric individual behavior pattern as it relates to drug seeking.

Number and Types of Studies Selected

The initial search resulted in the consideration of 20 articles. Seven were eliminated because of the level and quality or the focus not being aligned with the purpose of the literature review. The 13 studies included in this review focused on various other aspects of overuse of medication such as method of collecting information from the home and community-based population, nursing perceptions of the overuse of medications, and health impact in older adults. The designs of the 13 selected studies included randomized controlled, cross-sectional, and survey research. Also, researchers found survey research to be an effective and efficient method of data collection for information from various elderly environment. The critical review of the

literature included two studies that are Level I, one study that is Level II, and 10 studies that are Level III. Four studies are high quality and nine studies are good quality.

Data Collection Procedure

The data collection instruments used in the 13 articles included medication records data from the Neurological Disorders and International Classification of Disease (ICD) 9th revision, questionnaires, interviews, and web-based data survey such as Omnibus Budget Reconciliation Act of 1990. The researcher examined assessment tools to identify the risk of overuse of medication. The assessment tools reviewed included comprehensive geriatric assessment, and medical screening assessment tools including Identification of Seniors at Risk (ISAR), Screening Tool of Older Person's Prescriptions (STOPP), and the Screening to Alert Doctors to Right Treatment (START) (Boland et al., 2012). Finally, three theoretical articles (Beck & Polit, 2017; Bennett et al., 2012; Brown et al., 2015) were used to analyze and discuss the conceptual framework of this paper.

Criteria for Evaluating Research Studies

The evaluation of articles for the literature review was implemented in a matrix format, which includes the citation, level and quality of the article, purpose, sample, setting, design, instruments, results, and recommendations (Appendix A). The Johns Hopkins Nursing Evidence-Based Practice Model (Dang & Dearholt, 2018) was a guide to determine the level and quality of each article of the reviewed literature.

Summary

This chapter outlined the search methods and criteria used to locate and accept articles for the literature review. The chapter also included the review of the Johns Hopkins Nursing Evidence-Based Practice Model as it applied to the selected articles. The inclusion and exclusion

criteria were explained along with the search strategies used to obtain the articles. The settings of the studies included healthcare, hospital-based, clinics, and community-dwelling living. The sample population were individuals over the age of 65 years with different diagnoses and prognoses of end-stage illnesses.

Chapter Three: Synthesis of Findings

The literature review is organized first to provide a brief background about the medication use and the elderly population, with a specific focus on the overuse of prescriptions. There are many problems associated with the elderly and their medication use, such as overuse, cognitive impairment (dementia and depression), physical limitation, and provider-related issues. The review continues with descriptions of interventions and evidence-based practice used to help with medication management. Finally, the review examines the use of evidence-based practice and the individual outcomes as they relate to the healthcare settings, the healthcare clinical practice, and the strategies used to help older adults to safely manage their medications.

Overuse of Medication and the Elderly

A research study using nationally representative data from the National Health and Nutrition Examination Survey (NHANES), indicated an increase in the use of prescription drugs among older adults between 1999 and 2012 with an estimated 51% of U.S. adults reporting use of five or more medications (Chan, Giovannucci, Haas, Kantor, & Rehm 2015). Beers (2001), noted that the elderly population is the nation's largest consumers of prescription medications. As their bodies undergo biological changes due to aging and their physical aspects and physiology decline, their consumption of medication increases. Older people are more likely to suffer hospitalizations or psychiatric problems because of adverse medication reactions. They are at a higher risk of memory loss, hip fractures, and visual impairment, all of which can combine with social constraints and lack of caregiver supervision to create an environment conducive to medications overuse.

Major Findings

Medication Noncompliance Problems and the Elderly

Medication safe practice is one problem area that affects a senior's ability to manage his or her medications appropriately. According to Demiris, Marek, and Reeder (2013), medication noncompliance generally refers to the inappropriate administration of prescribed drugs and the patients' lack of ability to control medication regimens.

The common forms of drug treatment noncompliance found in the elderly include overuse and abuse, forgetting to take medication, and alteration of schedules and doses. Some older individuals who are acutely ill may take more than the prescribed dose of medication in the mistaken belief that more of the drug will speed up their recovery from an illness.

Forgetting to take medication is a common problem in older people as evidenced by the review of individual medication assessment data in two assisted living facilities in Minnesota. More than four years of elderly individuals' electronic medication records were examined, and the results showed that out of 100 individuals (n=100) approximately 50% of the older adults missed or doubled dosed on their medications. The patterns identified included lack of understanding of medication management and noncompliance especially, when elderly individuals were experiencing an acute change in health. Other noncompliance medication problems may arise when dementia or depression is present, which may interfere with memory, as well as other related issues, including physical and social constraints, lack of medication knowledge, and uninformed medical providers.

Dementia and Depression Issues

Dementia and depression are problems with a significant impact on an individual's ability to manage their medications. Beanland, Elliot, Goeman, and Koch (2015) found that cognitive

impairment limits the ability of an elderly person to execute medication management tasks, leading to an increased risk of unintentional non-adherence, medication errors, preventable medication-related hospital admissions and dependence on family or community nursing services to assist with medication management.

Depression is a common mental disorder that presents with symptoms of depressed mood, loss of interest, decreased energy and feelings of guilt or low self-worth. Depression problems can become chronic or recurrent and lead to inappropriate management of medications (Chisholm, Marcus, Ommeren, Saxon, & Yasamy, 2012). Depression may be the cause of or worsen the nonadherence to medication control; additionally, seniors with depression may find it difficult to determine the starting point of the daily medication administration.

Physical and Social Constraints

A review of the literature found that physical constraints such as fine and gross motor deficits can limit daily activities of elderly person; they can also affect ability to manage medications correctly. Brandt, Gruber-Baldini, and Orwig (2006) used the Medication Management Instruction for Deficiencies in the Elderly assessment, based on observations and questionnaires to address potential issues surrounding medication compliance and management issues in the home and in community-based settings. The instrument consisted of 20 items covering three areas that are considered essential for proper medication management. The three-areas covered were reduction, simplification, and assessment of the patient's functional ability to manage their medication. This study's results showed that most of the individuals required help with one or more tasks including medication management.

Social constraint was another identifier found in the literature reviews. According to Seegert (2017), older adults experience social isolation and loneliness, which contribute to

adverse health effects, including dementia, increased risk for hospital readmission, and increased risk of falls. However, research consistently showed that feeling connected involved benefits in both mental and physical health.

Lack of Medication Knowledge

For an older adult to manage medication effectively, they need to understand the drugs, their benefits, and the potential side effects of the medication. Jin, Kim, and Rhie conducted a cross-sectional survey with 160 participants age 65 years and older from three tertiary care hospitals, outpatient clinics, six community pharmacies, and two senior centers (Jin, Kim, & Rhie, 2016).

The participants were measured using the Korean Functional Health Literacy Test, which consists of 15 items, including eight numerical and seven reading comprehension items. Adherence to medication protocols was measured with the adherence to refills and the 4-item Morisky Medication Adherence Scale (MMAS-4) administered by a pharmacist at the time of hospital admission. In the study, the subjects' lack of knowledge and understanding of medication guidelines, was associated with their education level, health-related problems, how well they understood dosing frequency, and whether they comprehended the instructions regarding their medication. If older adults do not recognize their medicine, they will have difficulty administering them correctly. Thus, the medical provider needs to use a tool that may make it easier for individuals to understand how to manage their own medication.

Medical Provider Related Issues

The medical providers were also found to be part of the problem with elderly person compliancy with medication management. The unsafe use of medication was attributed to inappropriate prescribing of medication, poor instructions on its use, and lack of knowledge

about patients' health history. Hill-Smith, Jackson, and Milton (2008) indicated that inappropriate prescribing of medication including unnecessary medication and duplication of prescriptions is a common occurrence that affected the elderly. Older people are often prescribed unnecessary drugs that were contraindicated for their age group, or which were prescribed at the wrong dose for their age. Misconceptions about age may have prevented them from being given drugs based on specific indications and clear evidence. The study found that several strategies could be implemented to avoid issues like unsafe use of medications. Strategies include education on safe use of medication, and assessment of the elderly's ability to manage medications, especially those dealing with memory loss.

Strategies

Safe Use of Medication

Recommendations for helping older adults comply and appropriately manage their medication, include appropriate prescriptions and continuous assessment of safe practice by a qualified nurse. Hill-Smith, Jackson, and Milton (2008) conducted a randomized controlled trial focused on older patients' management of their medications. The results of the study identified that older adults with multiple health conditions take many drugs. The study's recommendation for good, safe medication management is to consider non-pharmacological treatments if appropriate, and where possible avoid treating adverse drug reactions with further drugs.

Assessment of the Elderly's Ability to Manage Medication

Obtaining accurate information about prescribed medications and actual medication-taking behavior is challenging for various reasons. Several studies (Beanland et al., 2015; Brandt, Gruber-Baldini, & Orwig, 2006; Chan et al., 2015; Chisholm et al., 2012; Jin et al., 2016; Kim et al., 2018) described using comprehensive data from the assessment tool such as a

comprehensive geriatric assessment and medical screening assessment including Identification of Seniors at Risk (ISAR), Screening Tool of Older Persons' Prescriptions (STOPP), and Screening Tool to Alert Doctors to Right Treatment (START). These tools should be used to alert providers of issues of medication misuse.

According to Kim et al. (2018) these tools should be used as a monitoring guide to demonstrate compliance with medication management. The authors could not provide evidence that the assessment tools decreased the unsafe medication practices, but the studies offered strategies that healthcare professionals can use to assist the elderly in reducing inappropriate use of medication. The study authors identified that providing education on proper techniques for medication management can help with the practice related problems.

Elderly Individual Education on the Proper Use of Medication

For older adults to correctly manage their medication, they need to understand how to appropriately take the medication. Cohen and Ward (2015) conducted a quasi-experimental study in a senior living community with residents age 65 and older in an ambulatory clinic setting. The study identified the importance of coordinating care, especially medication-related care, to avoid preventable harm that occurs for a variety of reasons.

The study found that inappropriate medication use occurred for 12% to 40% of seniors living in the communities and that improper use increased as the number of medications increased. Collaboration among established organizations such as Meals on Wheels (MOW) was cited as one strategy to improve effective use of medications. Many seniors use MOW services; so, pharmacists' medication safety resources and counseling could be provided to MOW participants.

Monane, Monane and Selma (1998) explained that pharmacotherapy is one critical way of decreasing the overuse of medication. The proper use of these medications can lead to more cost-effective strategies in achieving optimal health. One cost-effective approach is monitoring polypharmacy, which results in frequent and unnecessary hospitalization.

Another study by Kim et al., (2018) found that nurse intervention is most effective when both written and verbal direction for medication management were given to older adults. In addition to providing education aimed at correcting and changing the attitudes of elderly people, nurses must provide training to eliminate or minimize the effects of inappropriate use of medications.

Strategies to Assist Older Adults with a Memory Deficit

Edelman and Ficorelli (2012) found that with age-related changes, older adults are more susceptible to memory deficits and require interventions to address those deficits. For example, direction such as make a list of medications and keep a copy in the medicine cabinet or use a memory aide, and a weekly pill box help patients take medications on the right day and at the right time. While memory aids helped the older adult, the study highlighted the distinct needs and problems with medication management.

Bierman et al. (2001) identified one distinct strategy is holding health professionals and families accountable for safeguarding the medication for the elderly population. Other strategies included helping older adults to remember their medications and decreasing the number of drugs being taken. Additionally, the study recommended making medication schedules revolve around mealtimes and routine activities, such as reading the newspaper or while having coffee or tea to remind the individuals to take their medications.

Collaboration

Pereira, Roux, Santiago-Delefosse, and Verloo (2018) used a feasibility study tool to identify and leverage improved adherence to medication management treatment that would keep the patients from rehospitalization after discharge from hospital. The study incorporated the points of view of older adults and the different stakeholders involved in the management of their medication and the development of tangible solutions to encourage treatment adherence following their hospital stay. The study's findings showed the collaboration of healthcare professionals, such as the associations between nurses and physicians, also improved patient outcomes. The study also, discussed the importance of physician-nurse teamwork related to improved patient outcomes with medication appropriateness.

Strengths and Weaknesses of the Salient Studies

The overuse of medication continues to be of great concern in the geriatric population. The problem remains unchanged, but the studies contributed to a better understanding of what it takes to improve the safe use of medication. The strength of the studies reviewed included identification of strategies to address the problem of overuse of medications by the elderly. These included medication reduction, simplification, and promotion of education for older adults through implementation of evidence-based nursing practice.

The weakness of the salient studies was that they were conducted in various settings and not in controlled trial environments. The study results were not intended to be generalized even though they provided an insight into the overuse of medications in the geriatric population. Further research needs to be conducted to explore the way elderly persons manage their medication in controlled trial environments.

Summary

Medication management compliancy is a complex issue for the elderly, their families, the system, and the healthcare profession. Nevertheless, of the countless pathophysiologic tools and settings of care, the most common therapeutic intervention for medical care is the writing of a prescription. Older individuals take about three times as many prescription medications as younger patients do, mainly because of the increased prevalence of chronic medical conditions. The need for ongoing advances in biomedical research has led to new and better prescription drugs, and over 24 million Americans aged 65 years or older are overprescribed each year (Kim et al., 2018).

It requires a comprehensive approach to ensure the elderly have safe medication management experiences, and the approach must consider the relationship between the medication assessment and the overall needs of the patient. The strategies and interventions mentioned in the literature review are key elements of collaboration among healthcare professionals including physicians, pharmacists, nurses, and people in other health disciplines. Evidenced-based practice includes the coordination of care between healthcare settings, and patient education to ensure successful patient outcomes and proper medication management among the elderly.

Chapter Four: Discussion, Recommendations, and Conclusion

The critical review of the literature found a variety of factors related to the overuse of medications in the elderly population. This chapter will discuss trends that were discovered and identify recommendations based on the review of the literature. The chapter will include recommendations for further research, the implications for nursing education and nursing practice, and conclude with an analysis of the overuse of medications. The purpose of this literature review was to identify both the primary reasons for the increase in medication overuse and subsequently, the most appropriate, evidence-based interventions to address the issue within clinical practice and in education of students in pre-licensure nursing programs.

Trends and Gaps Identified within the Literature

The major trend discovered in the articles reviewed was the strategies used in the studies to decrease the overuse of medications in the elderly populations. It was essential that the articles were able to confirm the current reality of the problem, such as overuse of medications, and that interventions are being put in place to combat the problem of overuse of medications among the elderly.

Another trend demonstrated in the critical review is the implementation of interventions such as using pill organizers to decrease the overuse of medications, as well as development of more oversight on medication management by nurses and providers. The oversight of medication management includes the reduction of medication being prescribed and discrepancies in medication management. The reduction of medication simplifies the medication regimen.

Another trend found in the literature is the effectiveness of the interventions used to decrease the overuse of medication; such strategies have been implemented to improve compliance. The approaches shown to be effective in the past included the promotion of

compliance and use of the right assessment tools to alert doctors, nurses, and pharmacists when polypharmacy was notable. The impact of improving compliance depends on the actions of not only the physician and the patient but also those in the elderly person's support system (for example, caregivers). The major gap found in the review of the literature was the absence of studies related to the impact of patient education on medication management and studies on how social isolation may increase drug-seeking behavior.

The literature also showed the use of policy implications for improving medication use to be another key to success. According to Monane et al. (1998), a surveillance system to track medications across several pharmacies is needed, and further integration of healthcare systems will lead to more coordinated care and improve prescription in this vulnerable population. The surveillance system to track medication can be done using evidence-based practice by the healthcare system; this can, in turn, improve the quality of patient outcomes.

Studies by Bierman et al. (2001) and Pereira et al. (2018) supported these strategies and their effect on patient outcomes and the use of evidence-based practice. As the Centers for Medicare and Medicaid Services (CMS) began to promote aging in place and medication stewardship, elderly patient outcomes have become essential for saving lives. The studies found expressed that the use of evidence-based practice helped the healthcare system avoid the repetition of bad behaviors that were ineffective and promoted the best clinical outcome for the elderly patients.

Studies identified that healthcare organizations were willing to make changes to improve patient outcomes and use evidenced-based practices related to managing medications via an extensive literature search and review, and data collected from the National Health Services interview questions from the screening tool for older individuals' prescriptions. The use of

evidence-based practice has been associated with good and improved patient outcomes and is strongly supported in the literature (Beanland et al., 2015; Bennett et al., 2012; Boland et al., 2012; Classen, Mann, Tomita, & Wu, 2004). Frank and Weir (2014) expressed that the use of evidence-based practice helped clinicians avoid ineffective activities and promoted the implementation of best clinical practice.

The focus on medication reduction and safety through evidence-based practice has become an expectation in healthcare systems, so the results of the studies did answer the overall questions. To explain this finding, the research question is discussed: the question on the overuse of medication in the elderly population. Healthcare professionals can give support and show understanding for older people's existential uncertainties by creating good relationships and continuity in care by offering appropriate information.

The results of the literature review show the clear reduction in medication overuse; the findings focused on quality and intentionally working on the medication outcomes. All the studies had similar evidence showing the overuse of prescriptions is a prevalent problem in developed countries. The best clinical practices included the use of reminder strategies, a repeat of patients' education about their medications during future nurse visits, and the use of medication simplification strategies for patients on multiple medications.

The findings regarding the specific evidence-based practices were supported in multiple studies related to helping individuals manage their medications when they have memory problems. Beanland et al. (2015) found that when one strategy, the medication reminder system, was used with patients having moderate cognitive functions, their adherence rate increased. Chisholm et al. (2012) pointed out that strategies to help individuals remember to take their medications improved their medication regimens.

The Brandt et al. (2006) and Seegert (2017) studies supported the use of the Medication Management Instruction for Deficiencies in Elderly assessment and the alert for doctors about the right way to treat and assess patients' safe use of medications. These tools allow the physician, the nurse, and the pharmacists to follow-up with patients who are considered to be at high- risk for medication problems. When it was determined that patient comprehension regarding medication teaching was poor, additional instructions were recommended by other research studies (Brandt et al., 2006; Chan et al., 2015; Kim et al., 2018). The integration of theoretical frameworks like the Health Belief Model supports the review of the literature by identifying attributes that have been associated with behavior change. The behavior change targets social and emotional health challenges including physical, cognitive, drug use, and safety with the attribute overuse of medication.

Recommendations

There were several research studies involving medication management for the elderly population. The literature showed how to improve medication management in the home and community. Use of the assessment tools, simplification, and reduction of medication resulted in good patient outcomes. These studies have played a role in enhancing the understanding of what it takes to improve medication management in elderly patients and how to improve education and communication across the healthcare system. Further research is needed to build on the foundation of knowledge that began with the studies reviewed. The findings of this review of the literature suggest the need for future research in additional areas. The first recommendation would be to use policy implementation to reduce the number of prescribed medications.

One health policy could be the use of a data bank system that providers use for medication history. This could minimize discrepancies between providers and pharmacists and

allow for safer medication management. Another recommendation for further research is to determine who is responsible for ensuring high-quality care with regards to pharmaceuticals. The government could implement a policy that would ensure stronger surveillance of the practices of pharmaceutical managers and their accountability for the problems such as overprescribing medications.

Implications for Nursing Education and Nursing Practice

This critical review of the literature followed the objective for this capstone, which was to determine strategies to decrease the overuse of medication in the elderly population. The literature reviewed has demonstrated that nurse educators have evidence-based interventions that can be implemented to combat this problem. To assist the elderly patient in improving medication use, nurse educators could teach the pre-licensure students to assess the patient's ability to manage their medication. Also, nurse educators could stress the importance for students to seek information from their patients by being attentive to their needs, and advocate on their behalf when they identify non-compliance with medication management. Every medication regimen must be tailored to an individual patient's needs, and nurses can help monitor compliance.

The critical review examined many practical interventions that can potentially decrease the overuse of medication in the elderly population. The review successfully demonstrated the nurse's role in safeguarding elderly patients from significant harm due to non-compliance with medication management. The nurse's care may include sparing a moment to talk with the elderly person, to listen, and offer validation. Other specific nursing actions to help mitigate the stress of medication management include providing information about the adverse side effects of the overuse of medication, and helping patients understand the injuries that can occur from the

inappropriate use of medication, such as falls, fractures, and death. The nurse plays a significant role in achieving successful medication compliance through clinical judgement, evidence-based practice, and the nursing process of assessment, implementation, and evaluation of patient outcomes.

Conclusion

Many older adults have multiple chronic conditions and medications are an important part of their everyday existence; in the lives of elderly individuals with chronic diseases, medication is used to control the symptoms and progression of the disease. However, a significant number of elderly people have difficulty managing their medications appropriately. The overuse of medication is of great concern in the healthcare system, and the reduction of injuries, hospitalization, and readmittance can positively affect patient health and longevity. It is important for the nurses, the families, the pharmacists, the system, and the providers to consistently promote, educate, and simplify elderly people's medication management. The focus on medication reduction and simplification should be the priority for all, and this can be done through implementation of evidence-based practice.

The Centers for Medicare and Medicaid Services (CMS) promotes aging well whether at home or in a community setting. For this to be possible, policies must be put in place that hold providers and pharmaceutical companies accountable for overprescribing medications to elderly patients in addition to the potential overuse of those medications.

The purpose of the critical review of the literature was achieved. The findings revealed that older adults tended to have multiple illnesses and therefore took more drugs, and polypharmacy increased the risk of poor outcomes. The number of medications used by elderly people was found to be a risk factor for adverse drug reactions, nonadherence, financial burden,

drug-to-drug interactions, and even worse outcomes. The positive findings of the review of the literature and evidence-based practices were associated with better outcomes related to the overuse of medication. The elderly patients appeared to improve medication adherence through better intervention by implementing defined strategies, such as repeated patient education, the use of medication pillboxes with an electronic reminder, and simplification of the process for elderly persons on multiple medications.

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Appendix A

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Artz, M. B., Boult, C., Fillenbaum, G., Garrard, J., Gross C. R., Hanlon, J. T., Ruby, C. M. & Schmader, K.E. (2002). Use of inappropriate prescription drugs by older people. *Journal of American Geriatrics Society, 50*(01), 26-34. doi: 10.1046/j.1532-5415.2002.50004.x Level: III Quality: Good	To determine the prevalence and predictors of inappropriate drug prescribing defined by expert national consensus panel drug utilization review criteria for community-dwelling older people.	3234 Elderly patients receiving home care. Setting: Five adjacent urban and rural counties in the Piedmont area of North Carolina	Survey Research Study	Survey Analytical approach Statistical Analyis	Seven days frequency of medication usage was evaluated. The results showed 95% of patients studied takes at least one or more medications over the limit required.	Recommendation: Longitudinal studies in older people are needed to examine the impact of inappropriate drug prescribing on healthcare system Limitation: Study focused on individuals with three drug-disease interactions due to lack of clinical information.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Bennett, K., Bradley, M., Cahir, C., Fahey, T., Hugh, C., O'Reilly, D., & Parsons, C. (2012). Potentially inappropriate prescribing and cost outcome for older people. *Journal of Clinical Pharmacology, 68* (10), 1425-143. doi:10.1007/s00228-012-1249-y Level: III Quality: Good	To estimate the prevalence of potentially inappropriate prescribing of medication in a population in Northern Ireland.	The subjects of this study were elderly individuals 70 years old and older. Setting: The elderly individual was in a primary care setting such as a clinic.	A Retrospective Cross-Sectional Population Study.	-Statistical data analysis from the patients' health data. - Data information collected from the National Health Services - Interview questions from the Screening tool of older individuals' prescriptions (STOPP) criteria	The overall study shows at least one participant was inappropriately prescribed one medication while others were potentially prescribed 2 or more inappropriate medications.	Recommended further research to establish health interventions that can result in good health outcomes to decrease the morbidity/mortality as it relates to overuse and/or inappropriate use of medication. Limitation: Study focused on older individuals primary care setting in a clinic

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Bierman, A. S., Friedman, B., Meyer, G. S., Miller M., Sangl J., Wickizer S. W., & Zhan C, (2001). Potentially inappropriate medication use in the community-dwelling elderly: Findings from the 1996 medical expenditure panel survey. *JAMA, 286*(22), 2823–2829. doi:10.1001/jama.286.22.2823 Level: III Quality: High	To determine the prevalence of potentially inappropriate medication use in community-dwelling setting	2455 people aged 65 years and older. Setting: Community-dwelling in United States	Medical Study expenditure panel survey	Questionnaire Sampling Survey of the US noninstitutional population	In 1996, 21.3% of community-dwelling people received at least 1 of 33 potential inappropriate medications. Also, 11% of the elderly people used at least 11 medications or more daily.	Recommendation: Doctors should ask their elderly patient about the usage of non-prescribed medication and explain the risk and benefits of mixing medication. Limitation: Sample size of 2455 people cannot represent all elderly individuals in community-dwelling settings.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Boland, B., Dalleur, O., Henrard C., Spinewine A. & Speybroeck N. (2012). Inappropriate prescribing and related hospital admission in frail older persons according to the stopp and start. *Drug Aging, 29,* 829-837. doi:10.1007/s40266-012-0016-1 Level: III Quality: Good	To review the challenges such as increase of multimorbidity within the geriatric population due to polypharmacy. The problem of polypharmacy is a growing concern in the geriatric community.	1846 patients 65 years and older. Setting: The public hospital in Germany	Mixed-method study consisting of three different research studies combined.	-Semi-standard analysis of patient medication records. - A qualitative interview questionnaire - Statistical analysis of patients' medical records through the database. - US National Survey data	The overall study shows an indicator that n=1241 mean age: 76 females showed evidence of overuse of medication. 24% of an elderly patient at least received one or more inappropriate prescribing of medications. Also, there was a patient who experienced overuse of medication due to their own choice of doing.	Recommendation: Primary doctors have screening tool or process that could flag the higher-risk patients with multiple chronic diseases. Limitation: The evaluation of the link between inappropriate prescribing events and hospitalization was based on clinical judgement.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Brandt, N., Gruber-Baldini, A. L., & Orwig, D. (2006). Medication management assessment for older adults in the community. *The Journal of Gerontologist, 46*(5), 661-668. Level: III Quality: Good	To describe the medication management instrument for deficiencies in the elderly population and the reliability and validity of the instrument.	50 elderly patients Setting: High risk senior apartment complexes in Baltimore area.	Panel of experts who have experience with and knowledge of the elderly population in community setting.	-Review of medication and medical records - Observation of medication administration -Data Collection through interviews and observation -Statistical Analysis of patients' health chronic diseases	The Medication Management Instrument for Deficiencies in the Elderly (MedMaIDE) appears to be a reliable and valid instrument to determine if an older adult has deficiencies in managing medications. Participants average 7 or more prescription drugs. Only 30% demonstrate compliancy with medication management	Recommendation: To provide older adults and the people who care for them with the necessary tools to minimize adverse events attributable to poor medication compliance. Limitation: The method used to measure compliancy was the use of pill count. Many other methods are available to measure medication compliancy.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Chakarborty, A., Patil, U. K., Rambhade, S. Rambhade, A., & Shrivastava, A. (2012). A survey on polypharmacy and use of inappropriate medications. *Toxicology International, 19*(1), 68–73. doi:10.4103/0971-6580.94506 Level: III Quality: Good	To estimate the prevalence of potentially inappropriate prescribing of medication.	Sample: Elderly patients attending the clinics. Setting: Bhopal district Capital of Madhya Pradesh. India	Retrospective Study.	Questionnaire, Health and medication records, interviews	The overall study showed over prescribing of drugs, repetitive drug use, inappropriate drug combinations, and food drug interactions. Failure to report OTC products used.	Recommendations: Promotion of periodic evaluation of drugs for efficacy. Reduction of medications. Heighten awareness of health professionals regarding principles of geriatric prescriptions. Limitation: It remains to be determined whether detecting and lowering extent of polypharmacy could improve the health risks of elderly persons.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Chan, A. T., Giovannucci, E. L., Haas, J. S., Kantor, E. D., & Rehm, C. D. (2015). Trends in prescription drug use among adults in the United States from 1999-2012. *JAMA, 317*(17), 1818-1831. doi:10.1001/jama.2015.13766 Level: III Quality: Good	To evaluate trends in prescription drug use among adults living in the United States	4861 elderly individuals aged 65 years and older Setting: Non-institutional setting.	Cross-sectional study from a stratified, complex multistage probability-based survey	-Review of National-representative data from the National Health and Nutrition Examination Survey (NHANES). Statistical analysis uses to assess the prevalence of overuse of prescription drug.	There were 4681 adults and the study concluded 55% of adults used multiple prescriptions. 39% of persons age 65 and older reported polypharmacy. .	Recommendations: Education of patient and family. Reduction in the numbers of prescribed medications and review of medications use for the same disease. Limitation: The study was conducted among non-institutional adults; thus, results capture use among adults living in home and community-based settings.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Classen, S., Mann, W., Tomita, M. R. & Wu, S. S. (2004). Relationship of a number of medications to functional status, health, and quality of life for the frail home-based older adult. *OTJR: Occupation, Participation & Health, 24*(4), 151-160. Level: III Quality: Good	To assess polypharmacy usage of medication as it relates to adults in a home-based setting with at least one impairment with ADL & IADL functional status, and quality of life. .	1099 older adults 65 years and older home-based with at least one impairment with ADLs & IADLs. Setting: Rehabilitation Hospital Program in Northern Florida and Western New York.	General Linear Model	Data from consumer assessment study. Data collection & management occupational nurse data & home -in structured erviewsint Analytical approach Statistical Analys is SPP software Version 11	The results show a correlation between participants in the studies who have a cognitive and functional impairment. The participants with some cognitive impairment did have an increase of overuse of medication while the participants with functional impairment with ADLs had multiple medication usage. This problem would be related to social isolation and a decrease of mobility function.	Recommendation: The increase of cognitive and functional impairment of participants in the home-based setting, it would be beneficial for the older adult to utilize the occupational therapy program, which could assist with medication management. This would improve the older individual's quality of life and quality of health and wellness. Limitation: The study participants had cognitive functional deficit so self-reporting nature of the data may be biased.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Cohen, L .B., & Ward, K. E. (2015). Promoting safe use of medications: Providing medication education to seniors receiving meals on wheels. *The Journal of the American Society of Consultant Pharmacists, 30*(10), 616–622. doi:10.4140/TCP.n.2015.616 Level: II Quality: Good	To assess pharmacist provided medication education and counseling to older adults.	100 people age 60 years and older. Underserved minority. Setting: Ambulatory congregate dining provided by Meals on Wheels in a Rhode Island	Prospective, quasi-experiment	A comprehensive review of the participants' medication list and pertinent medical history. Morisky scale data.	Adherence to prescribed medication regimens continues to pose challenges. Morisky score from baseline to six months showed medication related harm was not significantly reduced from baseline to study end.	Recommendation: Larger studies are needed to confirm the medication education source promotes safe use of medications. Limitation: 5 patients never completed the initial study and inability to recruit enough participants to meet sample size requirements.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Demiris G., Marek K. D., & Reeder, B. (2013). Older adults' satisfaction with a medication dispensing device in home care. *Informatics for Health & Social Care, 38*(3), 211–222. doi:10.3109/17538157.2012.74108 Level: I Quality: High	To determine the reliability of medication dispensing device in home care. .	Sample: 96 frail older adult participants who used medication dispensing device for 12 months Medicare as primary payer for health services Setting: Medicare-certified home health care services	Prospective, longitudinal, three-arm randomized controlled trial (RCT).	urse data N home -in structured wrvieinte Medication Dispensing data Electronic Medication Record Impaired Cognitive Functioning Assessment Tool	Results show that nearly all participants perceived the medication dispensing device as very easy to use, very reliable and helpful in management of their medications.	Recommendation: The use of dispensing device can safeguard overuse of medication. Limitation: The results may not generalize to other populations with chronic disease or other medication management solutions.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Fridman R., Pevnick J. M., Rosen B. T., Rosen O. Z., & Shane R. (2017). Medication adherence as a predictor of 30-day hospital readmissions. *Patient Preference and Adherence, 11*, 801–810. doi:10.2147/PPA.S125672 Level: III Quality: Good	To explore whether patient medication adherence and risk factor is obtainable at hospital admission and then predicts readmission within 30 days due to non-compliancy	Sample: Patients age 65 or older with 10 or more medications readmitted to the hospital within 30 days after first discharge. Setting: Cedars-Sinai Medical Center (CSMC) non-profit, tertiary teaching hospital in Los Angeles, California	A Retrospective cohort Study.	Data collected includes demographic, previous healthcare utilization, primary provider, chronic conditions, electronic health record, and 4-item Moriksy Medication Adherence Scale (MMAS-4).	The overall study showed patients with low and intermediate adherence had readmission rates of 20.0%, comparison to a readmission rate of 9.3% for patient with high adherence.	Recommendations: Consulting with pharmacists, Education Medication review and reduction. Limitation: Study focused on rehospitalized patients single site study. Further study of the CSMC would be necessary to confirm generalizations.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Goulding, M. R. (2004). Inappropriate medication prescribing for elderly ambulatory care patients. *Arch Intern Med, 164*(3), 305–312. doi:10.1001/archinte.164.3.305 Level: I Quality: High	To examine the effectiveness of applying an appropriate method of prescribing medications to an elderly person who would be discharged to their home. One goal of this examination of the effectiveness, the author developed a medication criteria tool based on most frequent medications prescribed. Also, criteria were categories such as PIM, PPO, and misuse of medications	592 elderly patients Control n=102 Randomly assigned (n=216 Setting: Private hospital and home in Sydney, Australia	Randomized Controlled Trial Study	-Review of medication and medical records - Observation of medication administration -Data Collection through interviews and observation -Statistical Analysis of patients' health chronic diseases	592 elderly patients were discharged from the hospital with the recommendation to follow-up with the primary doctor. All their medications were reviewed and criteria set updated. After 3 months of follow-up, the study concluded there were no significant changes in criteria set tool between the control and randomly assigned groups. Also, no significant change in health -related quality of life.	Recommendation: More studies are needed to gather information and to recruit a larger group of participants to get a better outcome of the effective usage of criteria set appropriateness tool.

Citation/Level & Quality	Purpose of Study	Sample/Setting	Design Methodology	Design Instruments	Results	Recommendations/ Limitations
Pereira F., Roux P., Santiago-Delefosse M., & Verloo H. (2018). Medication practices and experiences of older adults discharged home from hospital: A feasibility study protocol. *Patient Preference and Adherence, 12*, 1055–1063. doi:10.2147/PPA.S160990 Level: III Quality: High	To examine older adults' experiences of change in their medication on discharge from hospital .	Sample 75-year old patients returned home from a hospital stay Setting: Nursing Home, Valais Switzerland	Qualitative Study Design	Pharmacy data Electronic Medication Record Interviews of nursing staff Survey Analytical approach Statistical Analysis	The study contributes to a better understanding of the as-yet poorly evaluated reasons why vulnerable older adults living at home do or do not adhere to their medication. It will enable an exploration of the tools to assess medication management.	Recommendation The findings will help to avoid future negative consequences such as falls, acute confusion, or rehospitalization due to implementation of better medication monitoring tool.