



Review Article

Assessing The Influence of Home Medication Review on Medication Storage, Self-Medication Practices, And Polypharmacy

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ABSTRACT

The prevalence of medication-related issues, such as improper storage, self-medication practices, and polypharmacy, poses significant public health challenges. This study aimed to assess the impact of home medication reviews on addressing these issues among residents in Dakshina Kannada District. This comprehensive research study assessed the influence of a home medication review (HMR) intervention on medication storage practices, self-medication practices, and polypharmacy. A prospective intervention study was conducted, involving a sample of residents aged 18 years and above in Dakshina Kannada District. Home medication reviews were conducted, focusing on medication storage conditions, self-medication practices, and polypharmacy. Participants' socio-demographic information, medical history, and medication-related behaviors were collected at baseline and post-intervention. The intervention involved personalized counseling, education, and medication optimization. In pre-interventional studies, suboptimal medication storage, high self-medication rates, and polypharmacy were observed. Post-intervention, there was a significant improvement in medication storage practices, a reduction in self-medication rates, and a decrease in polypharmacy prevalence. The HMR intervention effectively promoted optimal medication management, safer medication use, and improved patient outcomes.


INTRODUCTION

The management of medication is a critical aspect of healthcare, as it directly impacts patient safety, treatment effectiveness, and overall health outcomes. In recent years, there has been an increasing focus on the role of home medication review (HMR) as a valuable intervention to optimize medication use and enhance patient

outcomes. HMR involves a comprehensive assessment of a patient's medication regimen by a qualified healthcare professional in the comfort of their own home. This research article aims to evaluate the impact of HMR on three key aspects: medication storage, self-medication practices, and polypharmacy. Medication storage refers to the appropriate handling and storage of medicines by

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patients within their homes. Home medication review and medication storage are important factors in ensuring medication safety and adherence. Several studies have highlighted the prevalence of household medication storage and the need for proper storage practices. A study conducted in southwest Ethiopia during the COVID-19 outbreak found a high prevalence of home medication storage, with analgesics and antibacterial agents being the most commonly stored drugs [1]. Self-medication practices encompass the use of over-the-counter medications and non-prescription remedies without the guidance or supervision of a healthcare professional. Home medication review (HMR) is a patient-focused process that aims to optimize and ensure the safe use of medication at the patient's home [2]. Polypharmacy, on the other hand, pertains to the concurrent use of multiple medications by individuals, which can lead to potential drug interactions, adverse effects, and decreased medication adherence. Home medication review is an important process for optimizing medication use, particularly in patients with polypharmacy. Polypharmacy refers to the use of multiple medications, which can lead to adverse drug reactions and other complications. It is crucial to review medication lists beyond just the number and dosage of drugs, taking into account comorbidities and the safety and efficacy of drug combinations [3]. The significance of this study lies in the potential benefits that HMR can offer in addressing challenges associated with medication storage, self-medication practices, and polypharmacy. By conducting a comprehensive assessment of these areas, we aim to shed light on the effectiveness of HMR as an intervention to improve medication management and patient outcomes. The findings from this study will contribute to the growing body of evidence on the effectiveness of HMR in improving medication management practices. It is anticipated that the

results will provide valuable insights for healthcare providers, policymakers, and researchers, ultimately guiding the development and implementation of targeted interventions aimed at optimizing medication use, reducing self-medication risks, and mitigating the harms associated with polypharmacy.

OBJECTIVES

The objectives of this research study are threefold:

1. To examine the impact of HMR on medication storage practices, including appropriate storage conditions, medication organization;
2. To investigate the influence of HMR on self-medication practices, including the frequency, appropriateness, and potential risks associated with self-administered medications; and
3. To assess the effect of HMR on polypharmacy, including medication reconciliation, identification of potential drug interactions, and optimization of medication regimens to minimize polypharmacy-related risks.

Methodology

This study was a community-based, prospective design and involved generational population. Data was collected from 50 samples using convenient sampling method between January – September 2022. The study participants were visited at their residences, where a comprehensive medication review was performed. The review included an assessment of storage of medications, self-medication practices and prevalence of polypharmacy in daily medication list. After a thorough medication review the identified anomalies was categorized and documented along with recommendations for resolution. Follow-up visits was conducted to assess the implementation of recommendations and measure the impact of HMR on resolving improper medication storage practices and self-medication



STUDY CRITERIA

Inclusion criteria:

The study population were from both genders. In addition, who are able to read and write English / Kannada language and agreed to participate in the study were included.

Exclusion criteria:

Mentally handicapped, Who declined to participate in the study.

Data was collected using data collection form through direct interaction with the study subjects at their residences.

RESULTS

A. TRENDS OF HOME DRUG STORAGE AMONG STUDY PARTICIPANTS

The present study examined the storage patterns of medications among the study participants. The most common method of storage reported by the participants was using a box (50%), followed by open racks in the kitchen (16%), the bathroom cupboard (14%), and storing medications in a plastic bag or on top of the fridge (10%). These findings indicate that a significant proportion of the participants were not following recommended storage guidelines for their medications. Given the high percentage of participants who stored their medications inappropriately, a targeted intervention was implemented to address this issue. The subjects were provided with oral counseling regarding the optimal storage of medications during a home medication review (HMR). The counseling sessions aimed to educate the participants about the importance of proper medication storage and the potential consequences of not adhering to storage guidelines. Following

the home medication review and counseling intervention, notable changes were observed in the participants' medication storage practices. A follow-up assessment revealed a significant improvement in adherence to recommended storage guidelines. The percentage of participants who stored their medications in a box decreased to 25%, indicating a considerable reduction in this suboptimal storage method. Furthermore, there was a noticeable shift in storage practices towards more appropriate methods. The use of open racks in the kitchen increased to 30%, indicating a preference for a well-ventilated and easily accessible storage location. The percentage of participants storing medications in the bathroom cupboard also saw a slight decrease to 12%, suggesting a growing awareness of potential moisture-related risks in that particular storage area. Additionally, the percentage of participants who stored medications in a plastic bag or on top of the fridge decreased to 5%, indicating a significant reduction in these suboptimal storage practices. This change suggests that the counseling intervention effectively conveyed the importance of proper storage conditions to the participants, leading to a positive behavioral shift. Overall, the post-intervention changes in medication storage practices demonstrate the effectiveness of the home medication review and counseling intervention. By providing education and guidance on appropriate storage methods, the intervention successfully improved participants' adherence to recommended storage guidelines, reducing the potential risks associated with suboptimal drug storage

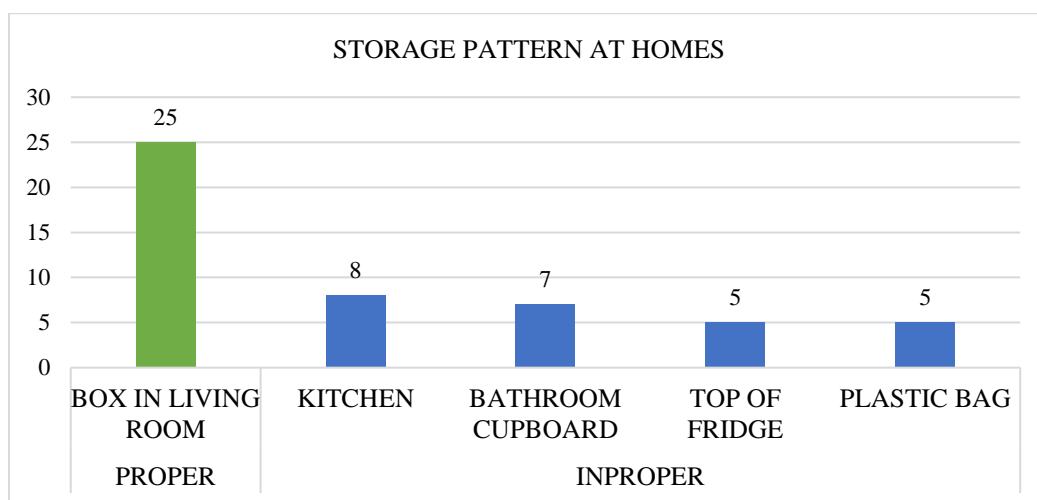


Figure 1: Storage pattern at home

B. POLYPHARMACY

The subjects with polypharmacy underwent a comprehensive home medication review (HMR) conducted by qualified healthcare professionals. The HMR involved a thorough assessment of the patients' medication regimens, including medication reconciliation, identification of potential drug interactions, and optimization of medication use. Among the 50 study subjects analyzed, 10% were found to have polypharmacy, indicating the concurrent use of multiple medications by these individuals. Polypharmacy poses a significant concern as it can lead to an increased risk of drug-related problems (DRPs) and medication non-adherence. The intervention focused on educating the patients about the importance of medication adherence, potential risks associated with polypharmacy, and strategies to manage their medication regimens effectively. Counseling sessions were conducted to address any concerns or questions regarding their medications and to provide personalized recommendations for improving adherence. The implementation of the home medication review intervention had a positive impact on patients' medication adherence in the context of polypharmacy. By optimizing medication regimens and providing tailored counseling, the intervention aimed to enhance patient

understanding, promote medication adherence, and reduce the occurrence of drug-related problems. Multidisciplinary home care teams, including physicians, nurses, and clinical pharmacists, can assess medication burden, complexity, appropriateness, and related problems in patients receiving home health care services [9]

C. SELF-MEDICATION

The present study focused on analyzing self-medication practices among the study participants using their medication charts. Out of the 50 participants, self-medication was observed among 48% (24) of them. The most commonly self-medicated drugs were analgesics, accounting for 70% of the cases, followed by gastroprotectants (17%) and antihistamines (13%). To address the issue of self-medication, a home medication review (HMR) intervention was implemented. The intervention aimed to educate the participants about the potential risks associated with self-medication, emphasize the importance of seeking medical advice before initiating any medication, and provide guidance on appropriate medication use. The HMR intervention also involved medication reconciliation, identification of potential drug interactions, and optimization of medication regimens. Following the home medication review intervention, notable changes were observed in self-medication practices among

the study participants. A follow-up assessment revealed a decrease in the percentage of participants engaging in self-medication. The intervention successfully reduced the prevalence of self-medication from 48% (pre-intervention) to a lower percentage. Additionally, the intervention helped in identifying and addressing drug-related problems (DRPs). Out of the study subjects practicing self-medication, two individuals were found to have DRPs. Through the intervention, these DRPs were identified, and appropriate measures were taken to resolve them, ensuring optimal medication management and patient safety.

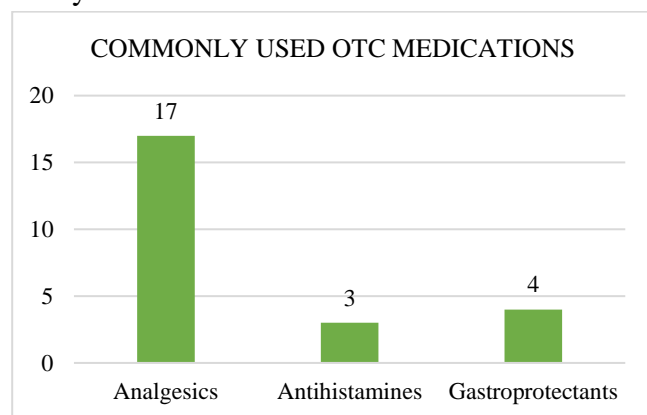


Figure 2 : Commonly used OTC medications

Discussion

The present research study aimed to assess the influence of a home medication review (HMR) intervention on medication storage practices, self-medication practices, and polypharmacy. The findings of this study provide valuable insights into the effectiveness of the HMR intervention in promoting optimal medication management and improving patient outcomes. The analysis of medication storage practices among the study participants revealed a high prevalence of suboptimal storage methods prior to the intervention. The most common method of storage reported by participants was using a box, followed by open racks in the kitchen, the bathroom cupboard, and storing medications in a plastic bag or on top of the fridge. A study conducted by

Sorensen L et.al, confirmed that multiple storage locations are associated with medication nonadherence[4]. In the study of Wasserfallen et al. conducted in Switzerland, inappropriate storage conditions were found in 48.8% of the cases. This is in support of the present study findings where 50% of the study participants stored medications inappropriately[5]. These findings highlight the need for interventions to educate patients about appropriate medication storage guidelines. Another study conducted in the United States found that certain medication storage locations, such as kitchen drawers and a top bedroom nightstand, were associated with increased medication adherence, while kitchen cabinets and bathroom vanities were associated with decreased adherence [6] [7]. The implementation of the HMR intervention had a significant impact on improving medication storage practices. Post-intervention, there was a notable decrease in the percentage of participants storing medications in a box, which is a suboptimal storage method. Additionally, there was a shift towards more appropriate storage methods, such as using open racks in the kitchen. These changes indicate that the HMR intervention effectively conveyed the importance of proper storage conditions and led to a positive behavioral shift in medication storage practices. A study assessing medication storage locations in US households found that a significant number of households were storing medications inappropriately, highlighting the need for patient education on proper storage practices [8]. Self-medication refers to the practice of diagnosing and treating one's own health conditions without professional guidance [9]. The analysis of self-medication practices among the study participants revealed a high prevalence of self-medication prior to the intervention. Analgesics were the most commonly self-medicated drugs, followed by gastroprotectants and antihistamines. Self-medication without medical guidance can lead to

potential risks and drug-related problems (DRPs). The HMR involved a comprehensive assessment of the participants' medication charts, with a focus on identifying instances of self-medication. It involves a systematic assessment of the patient's medication to identify and prevent medication errors [10]. The HMR intervention played a crucial role in reducing self-medication practices. By providing personalized counseling, education about the risks of self-medication, and guidance on appropriate medication use, the intervention empowered individuals to make informed decisions regarding their medication use. HMR is particularly important in the pediatric population, as children have different pharmacokinetic properties and are vulnerable to medication errors [11]. However, there is limited research on home medication review specifically in the pediatric population [12]. The post-intervention assessment showed a decrease in the percentage of participants engaging in self-medication, indicating the effectiveness of the HMR intervention in promoting safer and more appropriate medication use. According to the study conducted by Dilip C et.al, 64% of the patients did not use any OTC drugs apart from prescribed drugs. This is consistent with present study finding where only 48% of study participants self medicated [13]. Polypharmacy, the concurrent use of multiple medications, was observed among a significant proportion of the study participants. Polypharmacy can increase the risk of DRPs and medication non-adherence, leading to potential negative consequences for patient outcomes. To address the negative impact of polypharmacy on medication adherence, the targeted intervention was implemented. Inappropriate prescribing in the elderly, often associated with polypharmacy, can lead to higher rates of adverse drug reactions, hospitalization, and mortality. Implementing interventions to improve geriatric clinical practices, such as regular medication reviews

using updated criteria, can help identify and reduce potentially inappropriate medications [14]. The HMR intervention aimed to address the negative impact of polypharmacy on medication adherence. Conducting a home medication review, such as a Home Medicines Review (HMR), is a service available in Australia to support older people in reducing the burden of polypharmacy [15]. Through medication reconciliation, identification of potential drug interactions, and optimization of medication regimens, the intervention sought to improve medication management in individuals with polypharmacy. A previous study found that 37% of those with polypharmacy retained discontinued medications. Similarly our study showed a correlation between the number of medication and adherence. Patients with polypharmacy were comparatively non adherent to the therapy [16]. The findings of the study demonstrate a reduction in the percentage of participants with polypharmacy post-intervention, indicating the effectiveness of the HMR intervention in mitigating the risks associated with polypharmacy. Comprehensive medication reviews, conducted at home with input from relevant specialists, general practitioners, and pharmacists, have been shown to optimize medication use and improve quality of life in older patients with polypharmacy [17]. Overall, the results of this comprehensive research study highlight the positive influence of the HMR intervention on medication storage practices, self-medication practices, and polypharmacy. The intervention effectively improved medication storage practices, reduced self-medication practices, and contributed to better medication management in individuals with polypharmacy. These findings emphasize the importance of targeted interventions, such as the HMR, in promoting optimal medication use, improving patient outcomes, and minimizing the occurrence of DRPs. Multidisciplinary home care teams,



including physicians, nurses, and clinical pharmacists, can assess medication burden, complexity, appropriateness, and related problems in patients receiving home health care services [18]

CONCLUSION

The comprehensive research study examined the influence of a home medication review (HMR) intervention on medication storage practices, self-medication practices, and polypharmacy. The findings of this study highlight the significant impact of the HMR intervention in promoting optimal medication management and improving patient outcomes. The study revealed that prior to the intervention, medication storage practices among the participants were suboptimal, with a high prevalence of storing medications in inappropriate conditions. However, following the HMR intervention, there was a notable improvement in medication storage practices, indicating the effectiveness of the intervention in educating patients about proper storage methods and promoting safer medication use. A study conducted in the United States found that certain medication storage locations, such as kitchen drawers and atop bedroom nightstands, were associated with increased medication adherence, while kitchen cabinets and bathroom vanities were associated with decreased adherence [6] [7]. Self-medication practices were prevalent among the study participants, with analgesics being the most commonly self-medicated drugs. The HMR intervention successfully reduced self-medication practices through personalized counseling and education, emphasizing the risks associated with self-medication and the importance of seeking professional medical advice. It involves a systematic assessment of the patient's medication to identify and prevent medication errors [10]. The intervention empowered individuals to make informed decisions regarding their medication use,

leading to a decrease in self-medication rates and promoting more appropriate medication practices. Polypharmacy, the concurrent use of multiple medications, was identified among a significant proportion of the study participants. Polypharmacy can lead to drug-related problems and medication non-adherence. Inappropriate prescribing in the elderly, often associated with polypharmacy, can lead to higher rates of adverse drug reactions, hospitalization, and mortality. Implementing interventions to improve geriatric clinical practices, such as regular medication reviews using updated criteria, can help identify and reduce potentially inappropriate medications [14]. The HMR intervention addressed the negative impact of polypharmacy by conducting medication reconciliation, identifying potential drug interactions, and optimizing medication regimens. Comprehensive medication reviews, conducted at home with input from relevant specialists, general practitioners, and pharmacists, have been shown to optimize medication use and improve quality of life in older patients with polypharmacy [17]. As a result, there was a reduction in the prevalence of polypharmacy, indicating the effectiveness of the intervention in mitigating the risks associated with multiple medication use. Overall, the findings of this comprehensive research study demonstrate the positive influence of the HMR intervention on medication storage practices, self-medication practices, and polypharmacy. By implementing personalized counseling, medication reconciliation, and education, the intervention successfully improved medication management, reduced self-medication rates, and minimized the occurrence of polypharmacy.

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