

HOME MEDICATION MANAGEMENT PRACTICES AND ITS ASSOCIATED FACTORS AMONG COMMUNITY PEOPLE WITH SELECTED CHRONIC DISEASES IN NEPAL

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ABSTRACT

Background: Medication management is an important aspect of maintaining good health and avoiding potential complications or adverse reactions. However, many individuals struggle with properly managing their medications at home, leading to issues such as missed doses, incorrect dosing, and adverse reactions. This study was carried out to assess home medication management practices and associated factors among community people with hypertension or diabetes or both in Budhanilkantha Municipality, Kathmandu, Nepal. **Methods:** A community based quantitative cross-sectional analytical study was conducted in all 13 wards of Budhanilkantha Municipality of Kathmandu district. A total of 385 patients above 18 years of age with hypertension or diabetes or both were included. A semi-structured questionnaire was used for data collection. The appropriateness of medication management practice (MMP) was evaluated utilizing an interviewing procedure and a variety of questions. The appropriateness of MMP was assessed using six questions that covered drug administration, use of expired medicine, route of administration, storage condition, and discontinuity of drugs. Each correct answer was scored one. A total score of six was considered appropriate MMP whereas below score six MMP was considered inappropriate. Descriptive statistics was performed for all variables and the association of MMP with other study variables was assessed using the Chi-square test and Mann-Whitney U test where appropriate. Data was analysed using IBM-SPSS. **Results:** Of the 385 patients, males were predominant (210, 54.5%) and patients of age group 41–60 years were higher in number (220, 57.1%). Most of the patients (383, 99.5%) were ever married. Majority of them were suffering from hypertension (223, 57.9%), diabetes (82, 21.3%) and both (80, 20.8%). Patients suffering from chronic disease for more than one year were 340 (88.3%). Most of the patients had followed inappropriate medication management practice (196, 50.9%), while the number of patients following appropriate medication management practice was 189 (49.1%). Administration of drug as per prescription was seen in 233 (60.5%) patients, medicine hoarding in 31 (8.1%), expired medicine in 2 (0.5%), correct route of administration in 382 (99.2%), proper storage in 379 (98.4%), and discontinuity of drugs without physician consultation in 91 (23.6%). There was a significant association between the level of formal education and MMP ($\chi^2 = 14.89$, $p = 0.005$) and between duration of disease and MMP ($\chi^2 = 4.81$, $p = 0.028$). No statistically significant association was found between age, gender, marital status and types of disease with MMP. **Conclusions:** Among 385 samples majority of the patient practicing home medication follows inappropriate methods. Duration of disease and education were predictors of home medication management practice in our study.

KEYWORDS: Medication adherence, Medication management programs, Medication management systems, Medication safety, Hypertension and Diabetes Mellitus.

BACKGROUND

Medicine is the science and art of providing for a patient's needs, including their diagnosis, prognosis, management of their injury or disease, prevention, treatment, and palliation, as well as the promotion of their health. Since the beginning of time, people have practiced medicine, and for the most of that time it was an art (a field requiring skill and knowledge), frequently connected to the religious and philosophical beliefs of the local society.

Medication management^[1] is a strategy for engaging with patients and caregivers to create a complete and accurate medication. A complete and accurate medication list is the foundation for addressing medication reconciliation^[2,3] and medication management issues.

The administration method of medications at home by an individual or family is referred to as "home medication management methods".^[4] This can involve keeping track of when to take your meds, organizing and storing them, and knowing how to use them. It is a crucial part of healthcare because improper medicine use can have detrimental effects including hospital stays or life-threatening health issues. The efficacy of home medication management techniques can be affected by a number of factors. The person's level of health literacy or their knowledge of their health and capacity to make wise decisions about it, is a significant determinant. People with lower health literacy may struggle to understand instructions for taking their medications or to recognize the importance of adhering to their treatment plan.^[5,6]

Poor home management of medicines includes poor drug storage practices, lack of medication administration schedule, use of drugs from multiple prescribers, use of discontinued medicines, expired medications or medicines that are no longer needed and the use of over-the-counter medications which are not suitable for their condition.^[1] Studies have identified a number of factors associated with these practices including gender, age, confusion between trade and generic names. Other factors that can affect home medication management practices include access to healthcare and medication resources, the complexity of the medication regimen, and social and environmental factors such as the presence of a supportive network or access to transportation.^[7] There are several strategies that can be used to improve home medication management practices. These include providing patient education, simplifying medication regimens, utilizing technology such as medication reminders, and involving caregivers and family members in the management process.^[8]

Prescribers often have incomplete knowledge of the drugs being used by their patients and this is a major barrier to achieving QUM.^[9] When patients move in and out of hospital there is potential for prescribing errors,

and much of this is due to prescribers' lack of awareness of patients' drug use. This occurs because of poor transfer of information between healthcare settings. Australian studies have reported that only 38% of GPs provided medication information to the hospital when their patient was admitted, and an average of 0.5 to 1.0 drug per patient (range 0–5) was inadvertently omitted on admission. On discharge, GPs frequently fail to receive timely medication information from the hospital, and discharge summaries contain errors in 73% of cases.^[10]

Currently, errors in medication administration and compliance are persistence in problem in home medication. Common errors include skipped dosage confusion over what pill to take at an appropriate time and miss interpretation medication instructions.^[11] Inappropriate MMP can lead to several complications such as worsening of underlying condition, increased healthcare costs, adverse drug reactions, psychological distress, emergence of new health issues.^[12] Causes of these complications limited patient education, complex medication regimens, lack of communication and coordination, limited access to health care, cost issues, cognitive or psychological issues, limited or lack of social support, socio economic and cultural factors.^[13] Despite the availability of medication management tools and resources many individual struggle to adhere to their medication regimen at home leading to negative health outcomes such as hospital readmission and preventable adverse drug events.^[14]

Hypertension, also known as high blood pressure, is a significant public health issue in Nepal. According to a study published the prevalence of hypertension was 28.4% (22.4–34.7), 25.5% (21.4–29.8), and 24.4% (17.9–31.6) among urban, suburban, and rural populations, respectively. Moreover, rates of hypertension were found to be substantially higher in male (31.6%, 27.3–36.1) compared to female (20.0%, 14.2–26.6), and significantly higher among the middle-aged (≥ 40 years; 36.8%, 29.4–44.5) than among younger adults (< 40 years; 13.2%, 9.2–17.7).^[12] Hypertension is a major risk factor for cardiovascular disease, and its prevalence is increased in diabetes mellitus. According to the study published in BMJ prevalence of DM was found to be 8.5%. The prevalence of occurrence were higher in the upper age group (40–59 years).

Proper medication management is essential for the efficient use of pharmaceuticals because improper medication use can result in adverse effects like hospitalizations and major health issues. However, a variety of factors, such as health literacy, access to healthcare resources, and social and environmental factors, might affect people's or families' capacity to manage their prescriptions at home. The aging population and increasing chronic disease prevalence are driving demand for home-based care and medication management solutions. We can learn more about the

difficulties and possibilities for enhancing home medication management practices by researching these practices in a particular demographic. Therefore, this study was carried out to assess home medication management practices and associated factors among community people with hypertension or diabetes or both of Budhanilkantha Municipality.

METHODS

Study design and setting

The study was community based quantitative cross-sectional analytical study. The study was conducted in all 13 wards of Budhanilkantha municipality of Kathmandu district. The study was conducted for six months. Community people of the Budhanilkantha Municipality were the study population.

Participants

Patients were included in the study if they were above 18 yrs of age, willing to give informed consent, were hypertensive patient or diabetic patient or both, and were residents of Budhanilkantha Municipality. Those who were mentally disordered, had disease other than hypertension or diabetes, were not willing to participate, had inability to speak, cognitive disorder, or visual impairment were excluded.

All the household in Budhanilkantha municipality was the source of population whereas selected household in the all the 13 wards of the municipality was the study population.

Sample size and sampling technique

The formula below was used to determine the sample size.

$$n = (z^2 \cdot p \cdot q) / e^{2[15]}$$

Where, n = the desired sample size; z = the standard normal deviate at the required confidence level in this case 1.96; p = fraction of population (as percentage) that displays the attribute; q = 1 – p; e = the level of accuracy of the statistics being measured.

Assuming the prevalence of the study be 50%, value of p = 0.5, so q = 0.5; z = 1.96; e = 0.05. Putting all above values we get sample size n = 385.

After sample size determination, the total sample size, 384, was proportionally allocated to the all the seven wards based on the size of the household (Table 1).

Accordingly, the interval of house to be taken was determined through dividing the total households to the total sample size. All the thirteen wards were selected for the data collection. Based on the proportionate sampling, sample was taken as mentioned in Table 1. The required home from each ward was taken through simple random sampling which met the inclusive criteria by the researcher from the midpoint of ward. If sample was not found then adjacent home was taken. From the midpoint

of ward required home from each direction (north, south, west and east) was taken from the ward. Additionally, for more than one patients in the selected home the participant was selected by the lottery method.

Data collection tools and technique

A semi-structured questionnaire was used as the data collection tools in this study. The questionnaire was divided into following parts. Part I: Socio-demographic information of patient. Part II: Illness characteristics. Part III: Medication Management.

The appropriateness of MMP was evaluated utilizing an interviewing procedure and a variety of questions. The appropriateness of MMP was assessed using the six questions covered drug administration, use of expired medicine, route of administration, storage condition, discontinuity of drugs. Each correct answer will be scored one. A total score of six was considered appropriate MMP whereas below score six MMP was considered in appropriate.

Pretesting, validity and reliability

Pre-testing was done for 10% of sample. The house hold included in the pre-testing was not included in the data collection process. After pre-test, according to the need of study, the suitable modification was done in the questionnaire.

The questionnaire was prepared in English language and then translated in Nepali Language so that study population can understand easily. Also back translation to English was done to maintain validity.

Reliability was established by cross checking or rechecking the patient medication card that are required for data collection and suitable consultation done with the supervisor.

Study variables

Independent variables were age, gender, marital status, education, disease condition and duration of disease. The dependent variable was medication management practice.

Data management and analysis

Printed questionnaire was used for data collection. Microsoft Excel will be used for data storage and entry. All the collected data was reviewed, checked and organized daily for the completeness and accuracy. Coding and organizing will was done and was consulted with supervisor with all raw data before data entry.

Descriptive statistics was performed for all variables and the association of MMP with other study variables was assessed using the Chi-square test and Mann-Whitney U test where appropriate. Data was analysed using IBM-SPSS.

Ethical considerations

Ethical approval was taken from the institutional review committee of Central institute of Science and Technology (IRC-CiST). Participants were informed about all the aspects of the study before data collection. Written/Verbal informed consent was obtained from the participants after detail explanation of research purpose and assurance of maintaining privacy and confidentiality. The participants were known about self-medication practice and their impact on health. There was no any risk involved in the study. Confidentiality of the information provided by the participants was maintained throughout the study period. The data retrieved was only for the research purpose. Participants were voluntary and were given full right not to take participation in the study process. Participants were primarily informed about the objectives and purpose of the study.

RESULTS

Socio demographic characteristics of the patient

The sociodemographic characteristics of the patients have been depicted in Table 2. Age of patients ranged from 22 years to 94 years. Males were predominant (210, 54.5%) in this study. Patients of age group (41–60) years were higher in number and patients of age group (81–100) were in least number. 46% never had any formal education, 22.3 went to primary school, 15.3% went to secondary school, 9.6 went to higher secondary school and 6.8 had graduation level of education. Most of the patients (383, 99.5%) were married and (2, 0.5%) were unmarried.

Illness characteristics of patients

Of the 385 patients, majority of them were suffering from the hypertension (223, 57.9%), diabetes (82, 21.3%) and then patients suffering from both were (80, 20.8%). Patients suffering from chronic diseases for more than one year were (340, 88.3%), and patients suffering from more than one year were (45, 11.7%) (Table 3).

Medication management of the patient

Significant number of patients had proper administration of drug as per prescription (233, 60.5%), (152, 39.5%) didn't follow proper prescription. Fewer patients were found (31, 8.1%) having medicine hoarding. Almost all the patients didn't possess any expired medicine (382, 99.2%) were following correct route of administration. (379, 98.4%) Patients were correctly storing their medicine. (91, 23.6%) were found discontinuity of drugs without physician consultation (Table 4).

Medication management practice result

Most of the patients had followed inappropriate medication management practice (50.9%). While the number of patients following appropriate medication management practice is 49.1% (Table 5).

Association between various variables

There was no statistically significant association found between age, gender and marital status. It was found that there was significant association between the level of formal education they had taken and Home Medication Management Practice (Table 6).

Among the MMP 60.3% of hypertensive, 21.2% of diabetic and 18.5% of patients with both conditions had followed appropriate method of medication management practice. Table 7 illustrates there is significant association between the duration of disease and the medication management practice (95% CI, $P = <0.028$). There is no significant association between the types of diseases and MMP.

DISCUSSION

The art of medication management is finding the perfect balance of structure and flexibility, adapting to change while achieving therapeutic goals. The medication management is an important process of direct patient care and is defined as “a spectrum of patient-centered, pharmacist provided, collaborative services that focus on medication appropriateness, effectiveness, safety, and adherence with the goal of improving health outcomes”.^[16]

Proper home medication management plays a role in improving medication adherence, preserving drug efficacy and ensuring safe medication practices, which is crucial to establish positive treatment outcomes. Medication are most often neglected due to stigma, poor family support, inadequate knowledge as well as the impairment caused by the progression of the illness. A total of 205 home visits were conducted with 229 home medication management problems identified; inappropriate medication storage and lack of medication administration schedule topped the list. Inappropriate medication storage was significantly associated with low income, alcohol consumption, poor insight. Lack of administration schedule was significantly associated with low income smoking, poor insight.^[17]

The factors associated to poor medication management may include low health literacy, confusion over the drug name, inability of the patients to read the storage and drug use instruction or unaffordability of patient to own refrigerators that are required for storage of certain drugs.^[18]

From the perspective of people with chronic conditions, the main challenge in everyday medication management was to develop, maintain, and adjust routines. Routines were affected by the chronic illness trajectory and a variety of barriers. Developing and adjusting routines was further complicated by inadequate information and counselling, asymmetric relationships and communication with healthcare professionals, restrictive healthcare conditions, increasing complexities in medication regimens as well as healthcare professionals'

lack of interest in the problems of chronically ill people balancing their chronic condition and medication regimen in everyday life. Self-management of chronic illness requires long-term (i.e. lifelong), regular engagement in multiple treatment-related behaviors, such as taking medications and regular physical activity.^[19] Non-adherence to these behavioral recommendations for chronic illness self-management is pervasive and the main cause of poor patient outcomes and high healthcare cost.^[20]

Knowledge and understanding of patient's perspectives about their health, the impact on their lives and family, and their attitudes towards medication, will enable a better, more patient-centered approach to the management. This in turn will lead to better patient care and hopefully better outcomes, specific to the Nepal context. This study supports that in Nepal there are generally very good social and family support systems. Poor economy and financial issues are major concerns for patients. Family and social support help patients to cope with the disease but the financial burden imposed on the family by the disease caused emotional stress to the patient.^[21]

According to the systematic scoping review overall the prevalence of DM (4.4–18.8%) and HTN (17.2–70.0%) was reported. Co-morbid status of the HTN and DM was found to be (5.7–20.2%).^[22] Individuals with metabolic disorders, including insulin resistance, diabetes, and cardio metabolic syndrome, have a high prevalence of hypertension, a powerful risk factor for cardiovascular disease (CVD), kidney disease, stroke, and microvascular complications. Not only is hypertension more common in patients with diabetes but also diabetes is also more common in hypertensives than in the general population. Therefore, there is a chicken-egg relationship between hypertension and diabetes.^[22]

In the total of 385 chronically ill patient included in this study we found that 223 (57.9%) hypertensive, 82 (21.3%) diabetes, 80 (20.8%) patient with both condition out of which 196 (50.9%) were found to be following inappropriate medication management practice, whereas 189 (49.1%) were appropriately following medication management practice. Different sociodemographic characteristics like age education gender, illness characteristics were the variables that were associated with the medication management practices.

The appropriateness and inappropriateness of medication management practice was studied and compared to study by Shrestha et al. which was found to be more appropriate. Majority of the patients on this study were between 41–60 yrs. of age 220 (57.1%). There was no significant association between age and MMP. The age of the patients were divided into four groups. But none of the groups were statistically significant to the MMP. The greatest age group that were following proper MMP was 20–40 years old.

In this study Male patients were higher than Female patient but the appropriate to inappropriate ratio was higher in female than male, $n = 175$ (47.6%). There is no significant association between gender and MMP. In our study we found that the number of ever married patient $n = 383$ (99.5%). There was no significant association between marital status and MMP. In our study we have found out ever married patients to be following slightly more inappropriate MMP than the appropriate MMP. Married individuals believed to have better support and collaboration in medication management. Single individuals may rely more on personal responsibility and self-management. The study of our findings suggest that the marital status related in-inappropriateness may be due to the increase of responsibility to fulfill the basic family needs rather than the health needs of itself.

This study reveal that education is significantly associated to the medication management practice (95% CI, p -value = 0.005). The education levels were separated in five group, never went to school, primary school, secondary school, higher secondary school, graduation. Within the MMP percentage patients who never went to school were found having more appropriate MMP. Education affects learning process. The higher a person's education, the easier it is for that person to receive information. The more information that comes in, the more knowledge is gained. Knowledge is very closely related to education where a person with higher education will have wider knowledge. However, it should be emphasized that a person with low education does not necessarily mean that he has low knowledge.^[23] The possible reasons behind the finding of our study is that the uneducated people rely on the caregiver for support, high trust in the medical person and follow the instructions.

This study considered the chronic disease like hypertension, diabetes. During this study we found out that majority of the patient were hypertensive patient $n = 223$ (57.9%) diabetes $n = 82$ (21.3%) and patient with both condition $n = 80$ (20.8%). Duration of chronic disease of patient was divided into two groups less than 1 year $n = 45$ (11.7%), greater 1 year $n = 340$ (88.3%) there was no significant association between types of disease and medication management practice. This study shows that there is the significant statistical association between the duration of disease and MMP (95% CI, p -value = 0.028). Other studies also had shown that with the increase in the duration of the chronic diseases the medication adherence and medication management are inappropriate. Living with a chronic disease encompasses multiple and complex behaviors that patients must incorporate in their daily routine and are determined by multiple factors and modifiers. Long-term treatment is sometimes perceived by chronic patients as a burden and loss. The most important modifiers for the patients were: their health beliefs, the patient–prescriber relationship, their motivation, and their perception of illness control.^[24]

In our study 39.5% didn't administered drug as per prescription, presence of medicine hoarding was also seen 8.1%, only 0.5% had expired medicine with them. Almost all the patient 99.2% followed correct route of administration 98.4% had properly stored their medicine. It was also seen that 23.6% of the patient discontinued their drug without physician consultation. However different study had showed that 15% didn't have drug schedule, drug hoarding was found to be 38 (18.4%), number of expired medicine was found to be 3 (1.4%). Total inappropriate of this study was found to be 70%.^[25]

Limitations

The study variable did not include certain variables such as health facility availability, financial status, government policy which could be a associating factors in our study. (a) Health Facility Availability (access to healthcare professionals, medicine availability, medical attention, emergency care). (b) Financial Status (limited affordability of medications, inability to access necessary healthcare services, and difficulties in obtaining essential medicines). (c) Government Policy (limited availability of coverage for medications, insufficient funding for home healthcare services).

CONCLUSIONS

It was a community based cross sectional study designed to find out the Home Medication Management Practices

of chronic diseases such as Hypertension and Diabetes and its associated factors in which 385 patients were interviewed using structured questionnaire.

Among 385 samples majority of the patient practicing home medication follows inappropriate methods. Duration of disease and Educations were predictor of home medication management practice in our study.

Health Camp should be done to those wards with the highest number of inappropriately practicing home medication. Medication adherence strategies to implement reminders to the patients practicing home medication. Life style modification to the patient practicing home medication. Self monitoring of regular blood pressure and blood glucose at home to the patient practicing home medication. Proper communication and decision sharing between patient and caregivers. Counseling should be focused to the group of people practicing home medication. Healthcare providers policymakers and researchers should all counsel and collaborate to develop strategies for effective Home Medication Management Practice during their health care visit.

Table 1: Sample estimation of each selected ward.

Name of Ward	Ward	Household No.	Proportion	Sample size
Chappali	1	1121	0.042	16
Bhadrakali	2	1453	0.054	21
Budhanilkantha	3	1231	0.046	18
	4	1230	0.046	18
	5	1264	0.047	18
Bhadrakali	6	1171	0.044	17
	7	1411	0.053	20
Mahankal	8	2267	0.085	33
	9	2154	0.081	31
Aakhshedhara	10	6246	0.235	91
Kapan	11	2011	0.075	29
	12	4067	0.153	59
Chunikhel	13	859	0.032	12
Total		26482	1	385

Table 2: Socio demographic characteristics of the patient.

Variables	Categories	Frequency	Percentage%
Age	20-40	48	12.5%
	41-60	220	57.1%
	61-80	102	26.5%
	81-100	15	3.9%
Gender	Male	210	54.5%
	Female	175	45.5%
Marital status	Ever Married	383	99.5%
	Never Married	2	0.5%
Education	Never went to school	177	46.0%
	Primary school	86	22.3%
	Secondary school	59	15.3%

Variables	Categories	Frequency	Percentage%
	Higher secondary	37	9.6%
	Graduation	26	6.8%

Table 3: Illness characteristics of patient.

Variables	Categories	Frequency	Percentage%
Types of diseases	Hypertension	223	57.9%
	Diabetes	82	21.3%
	Both	80	20.8%
Duration of disease	<1 YEAR	45	11.7%
	>1 YEAR	340	88.3%

Table 4: Medication management of the patient.

Characteristics	YES Frequency	YES Percentage	NO Frequency	NO Percentage
Administration Of Drug as Per Prescription	233	60.5%	152	39.5%
Presence of Medicine Hoarding	31	8.1%	354	91.9%
Presence of Expire Medicine	2	0.5%	383	99.5%
Correct Route of Administration	382	99.2%	3	0.8%
Properly Stored	379	98.4%	6	1.6%
Discontinuity of Drugs Without Physician Consultation	91	23.6%	294	76.4%

Table 5: Medication management practice results.

Category	Frequency	Percentage
Inappropriate	196	50.9%
Appropriate	189	49.1%
Total	385	100%

Table 6: Association between medication management practice with sociodemographic characteristics.

Variables	Categories	MMP Appropriate	MMP Inappropriate	χ^2	P-value
Age	20-40	26(13.8%)	22(11.2%)	0.59	0.89
	41-60	107(56.6%)	113(57.7%)		
	61-80	49(25.9%)	53(27%)		
	81-100	7(3.7%)	8(4.1)		
Gender	Male	99 (52.4%)	111(56.6%)	0.70	0.40
	Female	90(47.6%)	85(43.4%)		
Marital status	Ever married	188(99.5%)	195(99.5%)		1.00
	un-married	1(0.5%)	1(0.5%)		
Education	Never went to school	69(36.5%)	108(55.1%)	14.89	0.005*
	Primary school	51(27.0%)	35(17.9%)		
	Secondary school	33(17.5%)	26(13.3%)		
	Higher secondary	19(10.1%)	18(9.2%)		
	Graduation	17(9.0%)	9(4.6%)		

*p-value < 0.05, statistically significant

Table 7: Association between medication management practice with illness characteristics.

	Categories	MMP APPROPRIATE	MMP INAPPROPRIATE	χ^2	P VALUE
Types of disease	Hypertension	114(60.3%)	109(56.6%)	1.28	0.53
	Diabetes	40(21.2%)	42(21.4%)		
	Both	35(18.5%)	45(23.0%)		
Duration of disease	<1 Year	29(15.3%)	16(8.2%)	4.81	0.028*
	>1 Year	160(84.7%)	180(91.8%)		

*p-value < 0.05, statistically significant

Abbreviations

CD: Communicable Disease; DM: Diabetes Mellitus;
GP: Geriatric Patient; MMP: Medication Management

Practice; NCD: Non Communicable Disease; PD:
Pediatrics Patients; QUM: Quality Use of Medicine;
SPSS: Statistical Package for Social Science.

Declarations

Ethics approval and consent to participate: Ethical approval was taken from the institutional review committee of Central institute of Science and Technology (IRC-CiST). Written/Verbal informed consent was obtained from the participants after detail explanation of research purpose and assurance of maintaining privacy and confidentiality.

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REFERENCES

- Shrestha S, Poudel RS, Pradhan S, Adhikari A, Giri A, Poudel A. Factors predicting home medication management practices among chronically ill older population of selected districts of Nepal. *BMC Geriatr*, 2019 Dec; 19(1): 55. doi:10.1186/s12877-019-1081-7
- Rose AJ, Fischer SH, Paasche-Orlow MK. Beyond Medication Reconciliation: The Correct Medication List. *JAMA*, 2017 May 23; 317(20): 2057–8. doi:10.1001/jama.2017.4628 PubMed PMID: 28426844.
- Kwan JL, Lo L, Sampson M, Shojania KG. Medication Reconciliation During Transitions of Care as a Patient Safety Strategy. *Ann Intern Med*, 2013 Mar 5; 158(5_Part_2): 397–403. doi:10.7326/0003-4819-158-5-201303051-00006
- Doucette WR, Vinel S, Pennathur P. Initial development of the Systems Approach to Home Medication Management (SAHMM) model. *Res Soc Adm Pharm RSAP*, 2017; 13(1): 39–47. doi:10.1016/j.sapharm.2015.12.013 PubMed PMID: 26853834.
- Franchi C, Ardoino I, Ludergrani M, Cukay G, Merlino L, Nobili A. Medication adherence in community-dwelling older people exposed to chronic polypharmacy. *J Epidemiol Community Health*, 2021 Sep; 75(9): 854–9. doi:10.1136/jech-2020-214238 PubMed PMID: 33500324.
- Murray L, Elmer S, Breen J, Nash R. Distributive health literacy and medication management: A longitudinal qualitative study with Bhutanese former refugees in Tasmania. *Health Promot J Aust Off J Aust Assoc Health Promot Prof*, 2022 Apr; 33(2): 403–11. doi:10.1002/hpja.501 PubMed PMID: 33973315.
- Papastergiou J, Luen M, Tencaliuc S, Li W, van den Bemt B, Houle S. Medication management issues identified during home medication reviews for ambulatory community pharmacy patients. *Can Pharm J CPJ*, 2019 Jul 29; 152(5): 334–42. doi:10.1177/1715163519861420 PubMed PMID: 31534588; PubMed Central PMCID: PMC6739651.
- Laufs U, Böhm M, Kroemer HK, Schüssel K, Griesse N, Schulz M. [Strategies to improve medication adherence]. *Dtsch Med Wochenschr*, 2011 Aug; 136(31–32): 1616–21. doi:10.1055/s-0031-1281566 PubMed PMID: 21809255.
- Garfield S, Barber N, Walley P, Willson A, Eliasson L. Quality of medication use in primary care - mapping the problem, working to a solution: a systematic review of the literature. *BMC Med*, 2009 Sep 21; 7: 50. doi:10.1186/1741-7015-7-50 PubMed PMID: 19772551; PubMed Central PMCID: PMC2758894.
- Elliott RA. Problems with medication use in the elderly: an Australian perspective. *J Pharm Pract Res [Internet]*. 2006 [cited 2026 Sep 8]; 36(1): 58–66. Available from: <https://research.monash.edu/en/publications/problem-s-with-medication-use-in-the-elderly-an-australian-perspec/>
- Yin HS, Neuspiel DR, Paul IM, Franklin W, Tieder JS, Adirim T, et al. Preventing Home Medication Administration Errors. *Pediatrics*, 2021 Dec 1; 148(6): e2021054666. doi:10.1542/peds.2021-054666 PubMed PMID: 34851406.
- Hyttinen V, Jyrkkä J, Valtonen H. A Systematic Review of the Impact of Potentially Inappropriate Medication on Health Care Utilization and Costs Among Older Adults. *Med Care*, 2016 Oct; 54(10): 950–64. doi:10.1097/MLR.0000000000000587 PubMed PMID: 27367864.
- Hyttinen V, Jyrkkä J, Saastamoinen LK, Vartiainen AK, Valtonen H. Patient- and health care-related factors associated with initiation of potentially inappropriate medication in community-dwelling older persons. *Basic Clin Pharmacol Toxicol*, 2019 Jan; 124(1): 74–83. doi:10.1111/bcpt.13096 PubMed PMID: 30003664.
- Straub L, Thekkekandam M. Chronic Disease Self-Management. In: Daaleman TP, Helton MR, editors. *Chronic Illness Care: Principles and Practice [Internet]*. Cham: Springer International Publishing; 2023 [cited 2026 Sep 9]. p. 61–9. Available from: https://doi.org/10.1007/978-3-031-29171-5_5 doi:10.1007/978-3-031-29171-5_5
- Sigdel N, Bhusal A, Neupane K, Adhikari P, Thapa R, Pant P. Drug utilization pattern and cost analysis of anticancer drugs among cancer patients attending a tertiary cancer hospital in Nepal: A cross-sectional study [Internet]. *medRxiv*; 2026 [cited 2026 Sep 12]. p. 2026.07.29.26359297. Available from:

- <https://www.medrxiv.org/content/10.64898/2026.07.29.26359297v1> doi:10.64898/2026.07.29.26359297
16. Lima T de M, Aguiar PM, Storpirtis S. Development and validation of key performance indicators for medication management services provided for outpatients. *Res Soc Adm Pharm RSAP.*, 2019 Sep; 15(9): 1080–7. doi:10.1016/j.sapharm.2018.09.010 PubMed PMID: 30262211.
 17. Lau CLL, Hor CY, Ong ST, Roslan MF, Beh XY, Permal D, et al. Home medication management problems and associated factors among psychiatric patients using home care pharmacy services at government hospitals in western Malaysia. *BMC Health Serv Res.*, 2022 Jun 1; 22: 726. doi:10.1186/s12913-022-08069-0 PubMed PMID: 35650614; PubMed Central PMCID: PMC9157038.
 18. Home medication management problems and associated factors among psychiatric patients under home care pharmacy services at government hospitals in west Malaysia | Research Square [Internet]. [cited 2026 Sep 9]. Available from: <https://www.researchsquare.com/article/rs-1045987/v1>
 19. García-Pérez LE, Álvarez M, Dilla T, Gil-Guillén V, Orozco-Beltrán D. Adherence to Therapies in Patients with Type 2 Diabetes. *Diabetes Ther.*, 2013 Dec; 4(2): 175–94. doi:10.1007/s13300-013-0034-y PubMed PMID: 23990497; PubMed Central PMCID: PMC3889324.
 20. Phillips LA, Cohen J, Burns E, Abrams J, Renninger S. Self-management of chronic illness: the role of “habit” versus reflective factors in exercise and medication adherence. *J Behav Med.*, 2016 Dec; 39(6): 1076–91. doi:10.1007/s10865-016-9732-z PubMed PMID: 26980098.
 21. (PDF) Patient perspectives on health in chronic illness. ResearchGate. 2026 Jul 9. doi:10.3126/jpahs.v5i2.23989
 22. McEvoy JW, Yang WY, Thijs L, Zhang ZY, Melgarejo JD, Boggia J, et al. Isolated Diastolic Hypertension in the IDACO Study: An Age-Stratified Analysis Using 24-Hour Ambulatory Blood Pressure Measurements. *Hypertens Dallas Tex.*, 1979. 2021 Nov; 78(5): 1222–31. doi:10.1161/HYPERTENSIONAHA.121.17766 PubMed PMID: 34601965; PubMed Central PMCID: PMC8516806.
 23. Raghupathi V, Raghupathi W. The influence of education on health: an empirical assessment of OECD countries for the period 1995–2015. *Arch Public Health.*, 2020 Apr 6; 78: 20. doi:10.1186/s13690-020-00402-5 PubMed PMID: 32280462; PubMed Central PMCID: PMC7133023.
 24. Pagès-Puigdemont N, Mangues MA, Masip M, Gabriele G, Fernández-Maldonado L, Blancafort S, et al. Patients’ Perspective of Medication Adherence in Chronic Conditions: A Qualitative Study. *Adv Ther.*, 2016; 33(10): 1740–54. doi:10.1007/s12325-016-0394-6 PubMed PMID: 27503082; PubMed Central PMCID: PMC5055556.
 25. Kalyango JN, Hall M, Karamagi C. Home medication management practices and associated factors among patients with selected chronic diseases in a community pharmacy in Uganda. *BMC Health Serv Res.*, 2012 Sep 18; 12: 323. doi:10.1186/1472-6963-12-323 PubMed PMID: 22988920; PubMed Central PMCID: PMC3512480.