Progress in Microbes and Molecular Biology

HH PUBLISHER

Review Article

Patient's Own Medication Use During Hospitalization

Hamimatul Hayat Abdul Nasir[1], Jagjit Singh Dhaliwal[1], Hui Poh Goh[1]*, Long Chiau Ming[1*], Daniel Vui Teck Wee[2], Khang Wen Goh[3], Ganesh Sritharan[4], Majid Ali[5], Yaman Walid Kassab[6]

Article History

Received: 5 March 2022;

Received in Revised Form: 8 April 2022;

Accepted: 18 April 2022;

Available Online: 22 April 2022

[1]PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Gadong, Brunei Darussalam; 18b3094@ubd.edu.bn (HHAN.); jagjit.dhaliwal@ubd.edu.bn (JSD)

[2]Pharmacy Department, Suri Seri Begawan Hospital, Ministry of Health, Belait, Brunei Darussalam; daniel.wee@moh.gov.bn (DVTW)

[3]Faculty of Data Science and Information Technology, INTI International University, Nilai, Malaysia; khangwen.goh@newinti.edu.my (KWG)

[4]School of Pharmacy, Faculty of Health and Medical Sciences, Taylor's University, Subang Jaya, Malaysia; ganesh_alei@hotmail.com (GS)

[5]School of Life and Medical Sciences University of Hertfordshire (hosted by Global Academic Foundation) New Cairo, Egypt; majid.ali@hotmail.com (MA)

[6]College of Pharmacy, National University of Science and Technology, Muscat, Oman; dryamankassab@yahoo.com (YWK)

*Corresponding authors: Hui Poh Goh and Long Chiau Ming, PAPRSB Institute of Health Sciences, Universiti Brunei Darussalam, Gadong, Brunei Darussalam; pohhui.goh@ubd.edu.bn (HPG); long.ming@ubd.edu.bn (LCM)

Abstract: Medication wasting has been adding to the cost burden on the healthcare system. Sustainable interventions such as using patients' own medications have been implemented to upgrade the medicine management system. This review aimed to describe the studies related to patients' own medication in hospital settings to explore its positive impacts. Current literature has studied the impact of using patients' own medicines from cost-effectiveness, clinical, and patient safety perspectives. The economic impact was represented by determining the cost saved after implementing the patient's own medications intervention. On the other hand, the efficacy of patient care was proven by reducing the frequency of medication error and prevalence of drug-drug interactions as the intervention was implemented. Patients' knowledge of their medications was also proven to be improved with their own medicines during hospitalization, improving their adherence to their medication treatment. Improving patients' adherence to and knowledge of their prescriptions during hospitalization may also aid in the reduction of hospital re-admissions, which could result in a net economic return.

Keywords: pharmacy; medicine management; patient safety; medication safety

1. Introduction

In recent years, many cost-saving medicine waste reduction interventions have been explored to mitigate the burden of escalating costs of prescription medications and the prevalence of unused medications at home[1]. Recent well-designed studies have confirmed that using patients' own medication during hospitalization is economically and ecologically friendly. A patient's own medication is defined as medications brought into a hospital during admission and obtained through hospital prescriptions or community settings[2]. This intervention could tone down the cost burden on the healthcare system or the patients[2]. Hence, the cost impact of a patient's own medication use in the in-patient setting is worth studying. Furthermore, this intervention exerted positive implications in patient care, thus making it significant to be explored more in terms of other beneficial impacts it may have to improve the patient-care system. This mini-review addresses the benefits of using a patient's own medication during admission and the possible solutions to any drawback it may have to optimize the use of finite resources and encourage the implementation of green alternatives for the existing healthcare systems.

2. The Conventional Hospitalization Routine

Most hospitals have not practiced the use of patients' own medication during their admission, and new medicines are supplied instead. Upon admission, patients' old medications may have been de-prescribed either to respond to an adverse effect or to evaluate the consequences of continuing versus stopping their current treatments. The term 'de-prescribe' refers to detecting the potential risks and terminating patients' medications if it outweighs the potential benefits[3]. Discontinuation of regular prescriptions during admission will lead to a major concern, such as the accumulation of unused medications at home, which results in medication waste and, as a result, monetary losses. According to a UK Audit Commission Report, medications worth £90 million were wasted from the disposal of patients' unused medications, and this wastage could be reduced if the medicines could be reused[4]. Medication waste has become a financial burden for healthcare systems in various parts of the world.

In many cases, financial losses due to drug waste might have been prevented if significant policy implications had been implemented, and the savings would have aided other healthcare services. This waste signifies a wasted chance of improving the health outcomes of the patients, as well as a loss of health budget allocations that should be better utilized for other healthcare expenses. Medication waste has significant economic and environmental consequences since it pollutes the environment without proper disposal, which can harm humans, animals, and plants.

Generally, an ideal healthcare system should aim to provide the utmost standard quality of care by optimizing the utilization of existing resources and minimizing wastage, especially finite resources such as medications[1]. The Audit Commission has recommended that the patient's own medicines during hospitalization should be considered[4]. In most countries, the use of a patient's own medications during patient's admission is acknowledged,

yet it has not been fully implemented. The healthcare professionals lack awareness of the value of encouraging the use of patients' own medication in the hospital settings.

3. Advantages and Disadvantages of Using Patient's Own Medication in Wards

Patients' medications are often de-prescribed and replaced with new ones during admission. Changing medications may also not be acceptable in some instances, mainly if they contain an inactive substance the consumer is allergic[7]. It was advised that if one version of the medication is functioning correctly, it should not be replaced with other medicines unless necessary to avoid the risk of having adverse drug effects. Hence, using the patient's own medication during admission is a safe choice unless necessary changes of medications are required to suit the patients' conditions[8, 9].

Using patients' own medication is one of the sustainable approaches implemented in many hospitals to improve the medical management system. This is especially true for multiple doses devices such as an inhaler, nasal sprays, or eye drops. Another pertinent point is the physician might replace the existing medication, and the whole newly supplied product by the inpatient ward supply will be squandered. Boachie-Ansah *et. al* described a patient's own medication as the drugs brought into a hospital during admission, in which these drugs are acquired via the hospital's prescriptions or from community settings[2]. The use of patient's own medication benefits in terms of convenience as the medicines are readily available, reducing the amount of missing and behind-scheduled doses[10]. More importantly, reducing the frequency of changing medications during admission contributed to a lower treatment cost during hospital admission by reducing the wastage of drug disposal of patients' medications[2, 4].

However, there are limitations in some hospitals as they have a policy where patient's own medications use is not encouraged, considering the hygiene and storage of the medicines are unknown[12]. Nevertheless, it is not entirely discouraged as patients can bring their own medication with the practitioner's authorization in charge. The medications should be checked for their eligibility[12]. If the patient's own medication is used, documentation should be made in the patient's health record. Due to that, a criteria checklist has been created to ensure that the patient's own medication is still within the standard[2]. The included assessments are tabulated in Table 1.

Some of the limitations include the problems of starting this protocol, as more staff is required to monitor and check the quality of the medications brought by patients[13]. This is crucial to perform risk management of this patient's own medication intervention so that minimum standard can be determined to ensure the smoothness of this intervention in the healthcare system[13].

Overall, the advantages of implementing this patient's own medication interventions outweigh the disadvantages. The limitations can be possibly overcome by the involvement of a pharmacist to inspect and identify the quality of the medications brought by the patients before their admission. Otherwise, if the medicines are not qualified for use, they can be appropriately disposed of as a step for proper management of medication waste. In order to

bring the economic and environmental implications of medicine wastage to the public's attention, public awareness initiatives are required. Hence, raising awareness for patients to bring their own medicines when hospitalized is crucial so that any unused medications can be disposed of properly or reused if they are still within standards.

Table 1. Criteria Checklist for Patient's own medication.

Labelling	Clear and clean label that must include the name, strength, quantity of the medications with a clear instruction.
Storage Box	The medicines brought must be kept in their original storage box.
Storage	Storage of the medicines must be according to the manufacturer's suggestions.
Expiry Date	The expiry date must be present.
Quality of Medications	The medications must be whole, for tablets, and clean.

4. Financial Impact of Using Patient's Own Medication

The introduction of the patient's own medication seemed to yield a positive result in general and beneficial, especially in cost-savings. The percentage of patient's own medicines used during hospitalization is quite significant in most studies. Hence, it supports the fact that this practice may contribute to cost savings. Thus, the patients and their guardians should be encouraged to bring their medicines[8].

Patient's own medication intervention has shown positive results where cost savings were observed. For instance, a total annual savings of the British pound of 24,213 was made after implementing a patient's own medication during hospitalization in eleven wards of a public hospital located in southern England[14]. A two-week study was done in one children's hospital in England to further evaluate this intervention. Half of the study cohort brought their drugs, and three-quarters used their own drugs during hospitalization [8]. Three-quarters of these patients were discharged with at least one or two medications, while half were released with the same medicines before they were hospitalized[8]. It was estimated that about the British pound 5,549 was saved within the two weeks[8]. Furthermore, another study conducted at four different wards of an Australian hospital concluded that 9.9% of annual savings were estimated using a patient's own medication alone[4]. On the other hand, a study at another hospital showed that half of the warded patients (n=152) brought their medications, and 38 of them brought their medications only after being asked[2]. The patients' reasons for bringing in the medications include saving money and the continuity of their treatments[2]. It was also reported that 60 of the patients left their medications at home because they had not

been told to bring their medications[2]. The findings reflected that some patients lack the awareness to get their own medications before admissions.

Literature has shown that the cost of introducing new treatment regimens does not necessarily benefit the patients but adds to the burden in terms of medication cost. A recent study had reported that 40% of new medications started during patients' admission were discontinued when they were discharged, and 71% of the patients had one of their medications discontinued before their discharge[15]. It was also reported that 10% of the patients had their medications replaced but still within the same class[15]. Unless the changes in the regiment are essential and dominant in improving patients' health, this may act as a deterrent to unnecessary addition and changes in the treatment, which might contribute as one of the sources of the cost burden to the healthcare systems. It is undeniable that excessive spending on medications leads to the potential cost burden of medication wastages[16]. Thus, adding new medications hastily should be avoided to prevent further economic burden in the healthcare sector.

Patient's own medication implementation has proven its positive financial impact across studies that evaluated this system[8]. If they are not used during hospitalization, returning the patients' medication to the pharmacy may also contribute to the cost impact of medication use either positively or negatively. Depending on how the returned medications were dealt with, either those have been reused or reused disposed[8]. Although the estimated cost of returned medications is not on par with newly dispensed medicines, the intervention still gives significant help to reduce medication wastage and cost[1]. Summarized details of the financial impact of patients' own medication use in hospital settings are outlined in Table 2.

Table 2. Summary of the financial impact of patient's own medication use in the hospital settings.

No	Population Type	Sample Size	Country/City	Year	Type of study	Cost Saved	Reference
1	General medical and surgical wards	N/A	London, United Kingdom	2000	Prospective	£24,213 annually	[14]
2	Pediatrics	33 patients	London, United Kingdom	2009	Prospective	£2,549 within two weeks of study	[8]
3	General medical wards	295 patients	Ghana	2008	Prospective	9.9% of annual hospital drug expenditure	[2]
4	Surgical wards	40 patients	Canada	2011	Prospective	$1601.85 within the three weeks of study (including pharmacists' labor cost)	[17]

5. Clinical and Safety Perspectives

Complete medicine reconciliation is essential to ensure effective patient care and reduce the prevalence of medication errors such as dosing errors, omissions, duplications, or drug interactions during hospitalization. Previous studies have proven that the use of patients' medication during hospitalization has been recognized for its value in completing medicine reconciliation, leading to a more precise drug profile. Bringing patients' own medicines during their hospitalization provides essential details such as patients' adherence to their medications by checking the pill count and the latest date of refilling their medications. At the same time, the use of patient's own medicines also requires monitoring by reviewing those medications during admission and discharge to ensure that unsuitable medications are omitted and not continued to be consumed at home[18]. Thus, omissions and duplications of crucial medicines can also be prevented if the patients bring their own medication for use, especially when they are on many medications.

The use of patient's own medication may be utilized to produce a precise patients' medical history to reduce errors such as the risk of misusing medications. It will also make patients' discharge process more efficient and reduce patients' confusion after their discharge by continuing familiar treatments[2, 4, 18]. It was found that treatment changes lead to discontinuance or abandonment of expired prescriptions, hence contributing to more wastage[1]. It was undeniable that starting a new regimen and disposing of the patients' old medications may also lead to error. As in one of the studies, it was observed that at least one error was detected in 12% of warded patients in their newly discharged prescriptions[19]. Some of the errors found were the discontinuation of crucial medications in chronic patients and dosing errors[4]. This highlighted the importance of using a patient's own medicines during admission before adding or changing drug treatments.

A study conducted at the surgical and medical ward of a teaching hospital in the United Kingdom concluded that the policy of using patients' own medication reduced medication administration error[20]. Similarly, another study conducted in an emergency department setting revealed that significantless errors were found among the patients who brought their own medications compared to those who left their medications[21].

Moura et al. also found a higher chance of having drug-drug interactions in hospitalized patients when more drugs are introduced[22]. Therefore, this urged the importance of using patients' own medicines first before changing their drugs regimen entirely. In addition, Beers et. al have suggested that some of the new medications introduced during patients' admission were not necessarily effective, especially when the medications are within the same drug class[15]. These errors should be prevented as they may increase hospital stay length, costs, and mortality[23]. According to studies, the application of a patient's own medication had an insignificant effect on medication administration errors; thus, the use of a patient's own medicines was worth to be applied and explored more to improve the medications management system as a whole[20].

Additionally, the use of patients' own medication had a good impact on patients' knowledge of their medications. More than 80% of the total of 731 patients showed more

understanding of their medication use during discharge associated with using their own medicines in the in-patient settings[24]. This might reduce the risk of re-admission to the hospital and thus give a net economic return to the healthcare systems[24]. Indirectly, the use of patient's medication will help enhance patients' knowledge and understanding of their regimens[24]. Concomitantly, it will impact patients' adherence to taking their medications, which was further believed to help optimize their treatment regimens. This can be demonstrated by a study within the diabetic population where their mean HbA1c showed a signification reduction and improved medication adherence by 87.20% with the implementation of patient's own medication[25]. Improving patients' compliance and understanding of their medications use during hospitalization might help in reducing hospital re-admissions[24, 26].

In one of the studies, the intervention was implemented in small hospitals; 90% of the pharmacy directors in the 300 small hospitals which were the members of American Hospital Association encouraged the use of patient's own medications, but under circumstances that the medications' quality was still exceptional and must be within the practitioners' order[27]. All these related studies seemed to have found more advantages in implementing sustainable intervention in their healthcare systems.

6. Conclusions

Introducing patient's own medication use in in-patient settings is to observe its benefits to the healthcare system and for the patients themselves. Many studies have shown an increasing trend of net economic saving and patients' knowledge of their medications with the implementation of patient's own medication use during hospitalization. The prevalence of medication errors showed a deflating trend, hence, offering a promising strategy to reduce the risk of preventable mistakes. Without a doubt, the accomplishments demonstrated in the studies might help reduce medication wastages and cost burden to the healthcare system. Its potential effects should be recognized and be considered as a future permanent intervention in the process of delivering healthcare to patients. Improving the other multidisciplinary teams' knowledge of the effectiveness of the patient's own medication use during hospitalization might also help develop an awareness of this intervention in cutting down medication wastages. Not only limited to applying patients' own medication use during hospitalization, but the continuance of research should also be done to explore further a more sustainable intervention to reduce the cost burden and, at the same time, helps improve the healthcare system.

Author Contributions: Conceptualization, HPG, DVTW; methodology, HHAN, HPG, LCM, DVTW; software, HHAN, HPG, LCM.; validation, GS, MA, YWK.; formal analysis, HHAN, KWG, HPG, LCM, DVTW; resources, HHAN, JSD, HPG, LCM, DVTW, GS, MA, YWK.; data curation, HHAN, GS, MA, YWK; writing—original draft preparation, HHAN, HPG, LCM; writing—review and editing, HHAN, KWG, JSD, HPG, LCM, DVTW.

Funding: No external funding was provided for this research.

Conflicts of Interest: The authors declare no conflict of interest.

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