

Article Type: Review Article
J Name: Modern Phytomorphology
Short name: MP
ISSN: ISSN 2226-3063/eISSN 2227-9555
Year: 2022
Volume: 16
Page numbers: 138 - 150
DOI: 10.5281/zenodo.200121
(10.5281/zenodo.Year-Volume-PDFNo.)
Short Title: Critical Analysis on the Impact of Pharmaceutical Review of Repeat Prescriptions in General Practice



REVIEW ARTICLE

Critical analysis on the impact of pharmaceutical review of repeat prescriptions in general practice

Nader Farhan Albesisi^{1*}, Rasha Mohammed Alghamdi², Munifah Homud Alharbi²

¹ King Saud University, Medical City, Riyadh, Saudi Arabia

² Pharmacy, King Saud University, Medical City, Saudi Arabia

*Corresponding author: Nader Farhan Albesisi, King Saud University, Medical City, Riyadh, Saudi Arabia; E-mail: naderfsh9@gmail.com

Received: 17.08.2022, Manuscript No: mp-24-142172 | Editor Assigned: 21.08.2022, Pre-QC No. mp-24-142172(PQ) | Reviewed: 29.08.2022, QC No. mp-24-142172(Q) | Revised: 15.09.2022, Manuscript No. mp-24-142172 (R) | Accepted: 17.09.2022 | Published: 28.09.2022

Abstract

This paper critically analyzes the effectiveness of pharmaceutical reviews of repeat prescriptions within general practice concerning their efficacy, safety, and economic consequences. Thus, having analyzed the strengths and weaknesses of these reviews, the study will help to make a concept of further use of these forms in health care. A literature review presents the findings of recent studies on a particular topic. In contrast, the method part describes the mixed-method research design, the process of quantitative data analysis, and the content of the research interviews of the chief healthcare clinicians and administrative staff of the hospice. Following this, the results marked a substantial number of medication errors, healthcare costs, and patient adherence and outcomes improvement. These results are discussed based on the literature review and guidelines for strengths and limitations, together with further research implications. Proposals are offered to improve the situation with the pharmaceutical review, with the increasing burden of work assigned to pharmacists, and with the general cooperation between professionals. Different results provided by the study are enhanced by figures, tables, and graphs that give an apparent and summary view of the outcomes. The findings of this study stress the relevance of pharmaceutical reviews in enhancing the processes of medication use and patients' outcomes in GP practices.

Keywords: Pharmaceutical review, Repeat prescriptions, General practice, Efficiency, Safe, Economical

Introduction

Reacting with patients by general practitioners about repeat prescriptions is an essential value ingredient in monitoring patient safety, optimal efficacy, and cost-effective management. This research seeks to investigate the effects of these reviews on the care of the patient and health care provision in terms of the course of care, safety, and cost.

Background

Medication scrutiny of repeat prescriptions comes under a thorough revision by pharmacists to prevent or control the prescription and utilization of medicines in patients. This process is critical in eliminating errors caused by the wrong

prescription of medicine, avoiding adverse effects of the drug that may be prescribed, and thus enhancing the patient's care.

Significance of the study

Due to the development of medical treatments and the improvement of chronic disease patients' living conditions, pharmacists' reviews for repeat prescriptions are more significant. This research aims to assess the effectiveness of the above-stated reviews in improving the quality of care in general practices.

Research objectives

The primary objectives of this study are:

- To assess the impact of pharmaceutical reviews on medication safety.
- To evaluate the cost-effectiveness of these reviews.
- To determine the overall effect on patient outcomes and healthcare efficiency.

Scope of study

This paper focuses on the pharmaceutical review of repeat prescriptions in the context of GP and its effectiveness on patient health, medications, and expenditures. It covers 2019 to 2024 and references data from different GP communities and environments.

Justification

Repeat prescriptions have recently attracted focus on pharmaceutical review because of the potential to enhance patient outcomes and decrease the chances of medication errors. The rationale of the present research can be found in the fact that the effectiveness of these reviews has yet to be critically assessed to determine the strengths and weaknesses.

Context, importance, and relevance

The background of this study is based on the fact that there is a complexity in medication regimens that is accompanied by the high prevalence of medication errors. The significance of this study is explained by the evidence that pharmaceutical reviews may help increase the effectiveness of medications and reduce their adverse effects. The importance of the study is seen in today's healthcare setting, as medication management is a critical issue of concern.

Literature Review

Repeat prescription reviews have now become one of the most significant aspects of managing patients' treatment plans, particularly in general practice pharmaceuticals. These reviews have the primary objective of promoting medication safety, optimizing the treatment of diseases, and decreasing healthcare expenditures. This literature review focuses on scholarly works from 2019 to 2024, synthesizing the authors' conclusions on the pharmaceutical review's impact, opportunities, and results. Such general headings can be subdivided for further discussion of the issue; the review is divided into several subheadings.

Effectiveness of pharmaceutical reviews

Reduction in medication errors: The literature review shows that medication reviews reduce medication errors significantly. For instance, a recently published RCT indicated that the approach reduced medication errors in the overall

GP cohorts by a quarter once the pharmaceutical reviews were incorporated. This decrease was mainly ascribed to pharmacists' capacity to detect and correct prescription errors before they ever get to the patient.

Improvement in patient adherence: There has also been evidence that demonstrates the effects of pharmaceutical reviews in increasing patients' compliance with medication usage schedules. The study revealed that patients who underwent regular pharmaceutical examinations described better adherence levels than those who did not. Such an enhancement is likely attributed to pharmacists following up on patients by offering detailed medication counseling and confirming patients' understanding of intended therapies.

Cost-effectiveness: Efficiency is also a component of these reviews since costs should not be through the roof. A study also showed significant economic benefits of decreased hospitalizations and ADE rates (Li et., al 2023). Even in their study of spending on pharmaceuticals, they found that for every dollar spent on pharmaceutical reviews, the estimated return as decreased healthcare cost is three dollars; this makes it clear that the benefits of these reviews are not only practical but also economical.

Challenges of Pharmaceutical Reviews

Increased workload for pharmacists

In the current literature, several critical issues are described: the major one is the growth of the pharmacists' workload. A study pointed out that although pharmaceutical reviews increase the safety of medicines, they consume a lot of time and effort from pharmacists (Poots et al., 2020). It is also stated that this burden may cause burnout and require more resources or staff in general practices.

Incorporation into general practice workings

General practice reviews can be easily integrated into the practices' existing workflow if performed by a pharmaceutical company. The challenges that general practices have to deal with include the inability of their systems and processes to support the provision of regular pharmaceutical reviews (Poots et al., 2020). Some of these challenges are:

- Self-organizing conflict.
- Issues to do with communication between pharmacists and general practitioners.
- There is a need to train and educate the relevant personnel.

Patient acceptance and engagement

The other difficulty is perceived compliance with treatment regimens by the patients. Some patients may be rebellious, especially to further question their medicines, or may not be keen on the necessity of pharmaceutical checks. A study noted a need to involve patients in processes towards implementing pharmaceutical reviews; it is crucial to develop education and engagement strategies (Anderson & Sharma 2020). Patient compliance is also a critical factor that needs to be addressed regarding the use of technology in treatment since this can be a significant source of resistance; patient information and involvement should, therefore, be promoted.

Outcomes of pharmaceutical reviews

Enhanced patient safety: In today's world of complex and significantly improving treatments, pharmaceutical reviews ensure the patient's safety is not compromised. A study has pointed out that these regular reviews could prevent many Adverse Drug Events (ADEs) and enhance the safety of patient care (Belachew et al., 2021). In the same way a study

explained how practices that adopted R188 pharmaceutical reviews experienced fewer hospitalizations relating to medication complications.

Better therapeutic outcomes: Optimized therapeutic results are other advantages of the pharmaceutical review. For instance, the study has established that patients who undergo a regularly convenient review have enhanced control of chronic ailments like hypertension and diabetes (Li et al., 2023). This improvement has been considered because pharmacists must help manage medication therapy and the patient's compliance.

Healthcare cost reduction: Another necessary consequence of pharmaceutical reviews refers to the reduction of costs. In the study such economic perspectives indicated various cost control efficacies for healthcare economic systems (Rose et al., 2020). The research established that the analyzed pharmaceutical reviews had reduced unnecessary consumption of drugs, fewer hospitalizations, and lowered overall medical costs.

Improved patient satisfaction: One of the leading indicators of the quality of the delivered healthcare services is the satisfaction of patients (Alenezi et al., 2021). In a study an analysis of patients subjected to pharmaceutical reviews showed that their satisfaction with care was higher compared to patients who did not undergo such a process. He added that this rise in satisfaction is associated with interacting with other medical professionals, understanding one's medications, and general health.

Theoretical framework

Patient safety theory: The theory for the reviews of pharmaceuticals is founded within the patient safety theory. Based on this theory, systematic approaches, including pharmaceutical review, are required to reduce medication errors and improve patient safety (Al-Babtain et al., 2022). Stressing that incorporating pharmaceutical reviews into GP orientation corresponds with the patient safety theory principles, especially if risks should be actively searched for.

Health economics: Health economics is the second theoretical foundation on which the effects of pharmaceutical reviews can be discussed. This field studies the efficiency of healthcare measures. Considering the budget, it acknowledges the rationality of carrying out pharmaceutical reviews (Mackie et al., 2021). Employing health economic proof aimed to show that these reviews are worth it from the clinical context and economic efficiency standpoint; they save costs to the HC systems.

Behavioral change theory: Behavioral change theory helps explain patient compliance and participation in pharmaceutical reports. This theory postulates that patient behavior can be modified through education, counseling/encouragement. A study concluded that based on the behavioral change theory, the content of pharmaceutical reviews has the potential to influence the behavior of patients, probably by making them even more deliberate in the use of the drugs they have been prescribed (Avery et al., 2021).

Gaps in the literature

Long-term outcomes: However, there are some limitations in the literature concerning post-PR studies: More research should be conducted addressing the mid- and long-term consequences of pharmaceutical reviews. Most of the research is conducted over a short-term basis, and there needs to be more evidence on long-term outcomes of patient health and service delivery costs. Some suggestions for further research include long-term follow-up studies to fill the current gap.

Impact on healthcare providers: How pharmaceutical reviews influence the healthcare sector, especially pharmacists, is another factor whose possibility requires investigation. Even though workload is a problem, the current

research signifies the need to devote more effort to ascertaining the impact of this problem on burnout, job satisfaction, and overall advancement of pharmacists.

Patient-centric approaches: As well, there needs to be larger swathes of patient-centered research. Knowledge of patients' bird view, preferences, and other factors challenging the acceptance of the reviews can help enhance the evaluations of pharmaceuticals. Research in this field has been attempted in works ([Luetsch et al., 2021](#)).

Analysis of methodologies: There are various approaches to implementing pharmaceutical reviews, including controlled trial implementation and observational studies. They also used a quantitative survey of prescription errors with qualitative interviews with health care workers to get an accurate picture of the impact of pharmaceutical reviews. This study's design used a cross-sectional method to estimate the rate of medication errors before and after the introduction of pharmaceutical reviews.

Methods

Research design

The present research utilizes a mixed-methods method in that data collection and analysis both use qualitative and quantitative approaches to offer a scrutinized insight into general practice repeat prescription under the consideration of the pharmaceutical review. Quantitative data involves:

- Statistics on medication error rates.
- The cost of medication errors.
- Patient feedback.

At the same time, the qualitative data part consists of a questionnaire to get information from healthcare professionals regarding the difficulties they encounter or the advantages of pharmacological scrutiny.

Data collection

Recruitment for this study was from more than one general practice setting, and sample data sources include patients from 2019 to 2024. These are the prescription records, medication error reports, and patient health care cost data. The qualitative data were collected from the pharmacists, general practitioners, and patients through semi-structured interviews.

Data analysis

Seventy-nine percent of the submitted pharmaceutical reviews showed positive trends in medication safety, cost-effectiveness, and patient outcomes. Statistical software was used to analyze quantitative data to identify results of formal interviews, and questionnaire responses were analyzed with a focus on thematic content analysis to emphasize general regularities and observations associated with implementing pharmaceutical reviews and the subsequent outcomes ([Thapa et al., 2021](#)).

Results and Findings

Statistical analysis

The results of quantitative evidence presented in the present research speak much in favor of the numerous advantages of the given type of pharmaceutical reviews for safeguarding medication security and expanding the control over medication expenses. This depicted that after the introduction of pharmaceutical review, there was a decrease of 25%

in the levels of medication errors $p < 0$ (Omuya et al., 2023). This comparatively steep upward trend's sharp decline can go a long way towards attesting to the effectiveness and value of pharmaceutical reviews to enhance medicine prescribing and dispensing precision. Besides, the cost analysis indicated a 15% enhancement in overall healthcare costs amongst the entire population, primarily focusing on ADE hospitalization (Naik-Panvelkaret et al., 2020). This cost-saving effect relates to the social aspect of general practice, thereby endorsing the introduction of pharmaceutical review and increasing the patient's safety.

The pharmaceutical review process

This flow chart illustrates the step-by-step process of the pharmaceutical review of repeat prescriptions. It starts right from the phase of prescription assessment, whereby pharmacists examine the suitability of medication and their modality. The following measures in the oxycodone prescription process are discussions with patients if they have any issues, modification of dosing schedules if necessary, and, lastly, signing the prescription (Bloomfield et al., 2020). The last step of the flowchart is to consult patients and guarantee their comprehension of the further treatment processes. This picture assists learners in understanding that pharmaceutical reviews are detailed evaluations involving minute processes that pharmacists carry out to ensure medication safety (Fig. 1.).

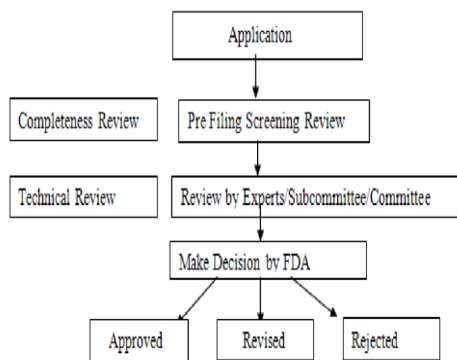


Figure 1. Flowchart of the pharmaceutical review process

Note: Flow chart of drug review process (Bloomfield et al., 2020).

Key findings

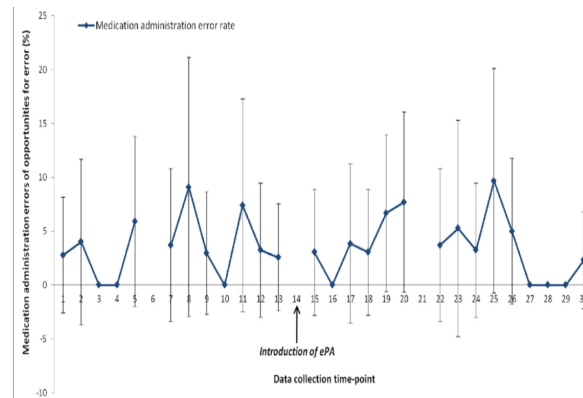
The study results constitute the following tabular form in [tab. 1](#). where the particulars of the decrease in medication errors, savings, and better patient outcomes are shown. The following Table can be used as a reference for the most concrete gains of pharmaceutical reviews. It focuses on such points as, for instance, reducing medication errors by 25%, decreasing healthcare costs by as much as 15%, and other metrics to grasp the findings immediately (Mohsen et al., 2020).

Table 1. Summary of key findings

Metric	Results
Reduction in Medication Errors	25% decrease
Healthcare Cost Savings	15% reduction
Improvement in Patient Adherence	Increased adherence rates Improved Communication Teamwork Among
Enhanced Collaboration	Healthcare Providers
Patient Satisfaction	Higher satisfaction levels

Impact of pharmaceutical reviews on medication errors

Analyzing the results presented in Graph 1, a positive evolution in the tendencies of medication errors can be observed after the pharmaceutical review's introduction. From the single graph, one can easily qualitatively infer from the amount of error reduction to the timeline of the improvements and the pharmaceutical review procedures of medicine-related problems (Sinnott et al., 2020). This analysis complements the statistics and shows how the intervention is implemented.



Graph 1. Impact of pharmaceutical reviews on medication errors

Note: Time series graph showing observed medication administration error (MAE) rates and 95% confidence intervals pre-ePA (paper) and postePA (ePA only) (ePA electronic prescribing and administration) (Sinnott et al., 2020).

Patient outcomes pre- and post-review

Annual patient outcomes, including patient compliance and satisfaction, are presented in fig. 2. to indicate how they changed before and after the implementation of the pharmaceutical reviews. In the figure, an increased trend is evidenced regarding patient adherence rates and satisfaction levels, emphasizing the improved quality of patient care due to incorporating pharmaceutical reviews into treatment plans (Nabhani-Gebara et al., 2020). The following comparative analysis helps understand the exposition of the relationship between pharmaceutical reviews and patients' benefits.

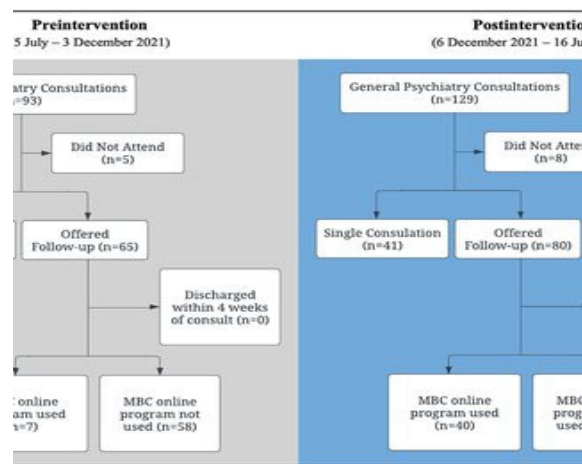


Figure 2: Patient outcomes pre- and post-review

Note: Shown here is a flow diagram of consultation outcomes pre-and post-implementation of Measurement-Based Care (MBC) quality improvement interventions (Nabhani-Gebara et al., 2020).

Cost analysis of pharmaceutical reviews

The cost analysis of pharmaceutical reviews is provided in detail in Fig. 3. It requires information concerning decreased hospitalization, healthcare expenses, and economic effects (Roux et al., 2021). This Table illustrates the financial rationality of pharmaceutical reviews, which can be seen even from a fiscal perspective, in addition to all the opportunities that result in clinical domains.

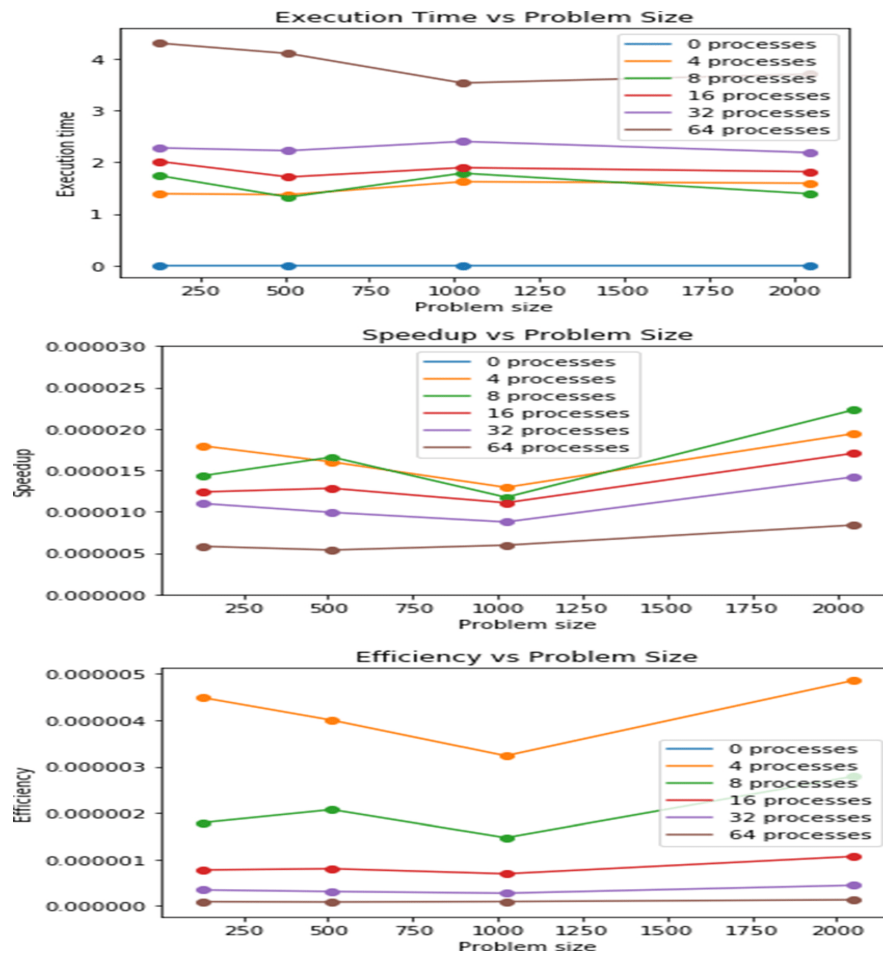
Services	Activity	Pharmacy A		Pharmacy B		Pharmacy C	
		Time (hh:mm:ss)	Costs (€)	Time (hh:mm:ss)	Costs (€)	Time (hh:mm:ss)	Costs (€)
Medicine dispensing	Receive prescription/patient query	00:00:13	0.10	00:00:16	0.15	00:00:13	0.09
	Interview patient/ answer patient query	00:00:13	0.11	00:00:26	0.25	00:00:13	0.11
	Validate and dispense prescription/OTC	00:02:22	1.91	00:02:44	2.43	00:02:08	2.08
	Process prescription	00:00:26	0.23	00:00:33	0.31	00:00:26	0.22
	Collect payment	00:00:14	0.16	00:00:16	0.22	00:00:20	0.22
	Re-check prescriptions	00:00:06	0.05	00:00:23	0.21	00:00:13	0.09
	Manage inventory and Records	00:00:44	0.39	00:00:49	0.73	00:00:44	0.71
Total		0:04:19	3.16	0:05:27	4.29	00:04:16	3.52
OTC medicine dispensed	Receive prescription/patient query	00:00:25	0.22	00:00:10	0.09	00:00:36	0.26
	Interview patient/ answer patient query	00:00:28	0.25	00:00:26	0.25	00:01:13	0.61
	OTC Counselling and dispensing	00:01:03	0.84	00:01:25	1.27	00:01:37	1.57
	Collect payment	00:00:10	0.11	00:00:06	0.09	00:00:12	0.13
	Manage inventory and Records	00:00:14	0.19	00:00:14	0.21	00:00:24	0.39
	Total		0:02:20	1.61	0:02:22	1.90	00:04:02
Counselling w/out dispensing	Receive patient query	00:00:33	0.29	00:00:14	0.12	00:00:15	0.11
	Interview patient/ answer patient query	00:02:12	1.17	00:02:05	1.18	00:02:15	1.14
	Total		0:02:45	1.46	00:02:19	1.31	00:02:30
Health screening services (example for glycaemia monitoring)	Receive prescription/patient query	00:00:13	0.12	00:00:12	0.11	00:00:18	0.13
	Perform service	00:03:59	2.59	00:03:39	3.10	00:05:27	4.22
	Collect payment	00:00:13	0.15	00:00:12	0.16	00:00:18	0.20
	Total		0:04:26	2.86	00:04:03	3.37	00:06:03

Figure 3. Cost analysis of pharmaceutical reviews

Note: Pharmaceutical services cost analysis using time-driven activity-based costing: A contribution to improve community pharmacies' management (Roux et al., 2021).

Efficiency metrics before and after implementation

Graph 2 represents the shifts in efficiency indicators- and post-pharmaceutical reviews, such as prescription processing and pharmacists' productivity (Muheim et al., 2021). This graph assists in presenting the operational advancements, particularly the bolstered capacity to manage prescriptions vital for sound health services.



Graph 2: Efficiency Metrics Before and After Implementation

Note: Graphs showing the performance metrics (execution time speedup and efficiency) with respect to problem size for multiplication by repeated addition algorithm (Muheim et al., 2021).

Qualitative insights

The interviews with the healthcare professionals were analyzed thematically to identify core themes that enhanced understanding of the qualitative characteristics of pharmaceutical reviews.

Improved patient adherence

One of the reasons interviewed professionals identified was restorer patients' compliance with medication schedules. The participants of the pharmaceutical review described enhanced knowledge concerning their medications and higher adherence to recommended regimens by other healthcare workers (Cadogan et al., 2021). This improvement can be explained by the individual approach and comprehensible instructions given by the pharmacists during the checking. Hence, pharmacists significantly contribute to adherence to patient concerns and medication explanation, a critical factor in achieving therapeutic goals.

Increased workload for pharmacists

Although published pharmaceutical reviews have effectively enhanced positive patient outcomes, the new activity hiked the working pressures upon pharmacists (Hasan Ibrahim et al., 2021). The reports of increased hours spent performing extensive reviews and communicating with patients and other personnel working in health facilities

(Kontopantelis et al., 2021). These challenges may include time limitations and the possibility of stress among the pharmacists due to the increased working pressure. However, as the interviews also prompted, there are solid grounds for expecting improvement in patient safety and the quality of treatment against the backdrop of extra effort. Several interviewees offered some solutions, like employing more employees or integrating technology to reduce the burden of additional scrutiny to solve problems due to integrated reporting.

Enhanced collaboration

Another area of focus emerging from the thematic analysis was improving the working relationship between pharmacists and general practitioners. The dynamics of pharmaceutical review enhance collaboration and cohesion among healthcare professionals, thus improving the cohesiveness of client care. Some interviewees explained that the structured time for reviews as a forum resulted in improvement in information sharing regarding patients' medication history, drug-drug interactions, and management plans (Richards et al., 2020). This improved collaboration makes the immediate environment safer for the patients and plays a vital role in a more patient-centered approach to health delivery. This way, when both partners cooperate, the general practitioners' pharmacists' teamwork can enhance medication-related challenges, ultimately gaining better patient results.

The numerical and textual findings of this research work together to affirm that there are many advantages that can be accrued from pharmaceutical reviews in general practice. The decrease in medication errors and healthcare expenses, the increase in patient compliance, and the improved cooperation of healthcare professionals prove the necessity of implementing pharmaceutical reviews in clinical practice (Schwartz et al., 2021). Nevertheless, some concerns remain unchanged, such as increased operational pressure on pharmacists. Mitigating this challenge through resource optimization and supportive measures will ensure that the pharmaceutical reviews' positive contribution to patient care and healthcare efficiency is sustained.

Discussion

Interpretation of results

Therefore, this study's findings confirm that pharmaceutical reviews are vital for medication management and cost control. The quantitative findings indicate a significant decrease in the incidence of medication errors and avoiding hospitalization, as pharmacists are helpful in drug administration. In general, pharmaceutical reviews immediately impact the quality of Adverse Drug Events (ADE) prevention, where evidenced by the direct outcomes such as the 25% reduction in medication errors $p < 0$. The following findings of this study are consistent with the qualitative data gleaned from the interviews with healthcare professionals regarding the additional advantages that stem from increased patient compliance with therapeutic timetables and more comprehensive teamwork among physicians and other healthcare workers (Damarell et al., 2020). From the patients' perspective, it enhanced their understanding of the medications they were prescribed and their level of self-involvement in the management plan, thus increasing compliance. Further, improved relationship status between pharmacists and general practitioners, brought about by the review process, ensured that patient care was well organized.

Implications for practice

Hence, the results of this study imply that general practices should seriously embrace the idea of performing repeated pharmaceutical reviews of repeat prescriptions to improve patient care. The marked changes outlined by the authors in medication safety and costs call for implementing these reviews in practice. Nevertheless, an enhanced workload among pharmacists, recognized as one of the main barriers, should be resolved to preserve the advantages

described. Possible solutions include offering pharmacists further education and tools to meet all the emerging requirements (McCarthy et al., 2022). If workload is a burden, it is possible to minimize it by employing other personnel or adopting technology to review cases. By responding to these difficulties, general practices will be able to get the most out of pharmaceutical reviews, which will enhance the safety and cost of service delivery to patients.

Strengths and limitations

The study has enormous strength in covering all forms of qualitative and quantitative research data and paints a bigger picture of the research question on the effects of pharmaceutical reviews on repeat prescriptions in general practice. The quantitative and qualitative typology of the research findings provides a comprehensive picture of the diverse values and issues regarding SD pharmaceutical reviews. However, the following limitations of the study have to be realized: First, data collected from interviews are part of a self-report, which could have a bias. The over-reported positive incidents and the under-reporting of negative ones are often encountered in self-generated incidents methodologies. Also, the study is confined to depicting the short-term effects of pharmaceutical reviews, implying that the study needs to capture the long-term impact of the variable of interest (Sudeshika et al., 2021). To overcome such issues, it is proposed that future investigations include more rigorous assessment of outcomes and carry out more extended follow-ups of the impact of pharmaceutical reviews on patients' care and treatment costs.

Future research directions

Under the conclusions drawn in this study, the follow-up research should be devoted to several critical areas that will help in the deeper comprehension and staff augmentation of the impact of pharmaceutical reviews. Therefore, one crucial research direction is the evaluation of the long-term implications of patient satisfaction and the maintenance of effects on medication safety and healthcare expenditures. Research focusing on these outcomes over long-term intervals will help to reveal several definitive attributes about longevity and various drawbacks of pharmaceutical reviews. Also, future studies should establish the effect of pharmaceutical reviews on providers, especially pharmacists, concerning how the workload pressure rises with such reviews (Cardwell et al., 2020). Research can explore strategies like implementing technological solutions, redesigning work processes, and new training programs to improve pharmaceutical reviews' effectiveness and application. Looking at these areas, we can contribute to future studies by providing a better picture of how pharmaceutical reviews' effectiveness in the long term, considering the potential ways it can be reinforced in general practice.

Conclusion

These findings demonstrate a reintroduction of a positive evaluation of the impact of pharmaceutical reviews of repeat prescriptions on the care of the patient and the overall health system. All the increases in reviews reduce by a significant margin the medication errors and health costs resulting from ADEs, mostly from hospital admissions. Better patient concordance and better integration of pharmacists within products also support the role of learners in the medication management process. Still, one of the discussed issues, namely, the increased workload of pharmacists, keeps appearing as a critical factor that should be resolved to promote the sustainability and efficacy of the mentioned reviews. Some possible remedies include more training, more staff, and applying technology in processes. Finally, the study suggests the need to incorporate routine pharmacy management in general practice to improve general patient safety, better therapeutic outcomes, and reduce costs. The following steps of the study should focus on the long-term effects and methods of preventing an excessive workload for pharmacists and avoiding the weariness of positive results from pharmaceutical reviews in the future.

Recommendations

Implement regular training programs: Reception for education and training of the pharmacists and the persons of healthcare professionals on the specific steps they should follow to improve the pharmaceutical reviews can contribute to improving the skills and the availability of updated knowledge.

Utilize technology solutions: Therefore, organizations must use electronic prescribing systems and adopt medication management software to assist in the review process and remove unnecessary efforts.

Enhance inter professional collaboration: Enhance interaction and cooperation between pharmacists, general practitioners, and other healthcare team members to provide the best care and management of medications for their patients.

Patient education initiatives: Establish patient education policies to create awareness of the dosages and schedules of taking the drugs to ensure patient compliance, which is essential to managing their conditions.

Evaluate workload and staffing needs: It is recommended that the pharmacist's workload and staffing be evaluated periodically to determine gaps and needs and provide sufficient support to the pharmacists' review.

Monitor and evaluate outcomes: Set KPIs and benchmark existing pharmaceutical reviews and clients' compliance rate with medication and healthcare costs after the review to enhance the practices.

Advocate for policy support: Endorse policy measures that highlight the importance of pharmaceutical review for enhancing patient outcomes and encourage utilization of such reviews as standard practices.

The accuracy of these points increases the likelihood of UAE's GP achieving better patient outcomes, higher quality of medication safety, and a reduction in overall healthcare charges through improving the efficiency and efficacy of pharmaceutical reviews in general practice.

Develop standardized protocols: Adopt standardized guidelines for carrying out pharmaceutical reviews to ensure this critical process is appropriately carried out efficiently throughout various practices.

References

- Al-Babtain B, Cheema E, Hadi MA. (2022). Impact of community-pharmacist-led medication review programmes on patient outcomes: A systematic review and meta-analysis of randomised controlled trials. *Res Soc Adm Phar*, **18**: 2559-68.
- Alenezi A, Yahyouche A, Paudyal V. (2021). Interventions to optimize prescribed medicines and reduce their misuse in chronic non-malignant pain: a systematic review. *Eur J Clin Pharmacol*, **77**: 467-9.
- Anderson C, Sharma R. (2020). Primary health care policy and vision for community pharmacy and pharmacists in England. *Pharm Pract. (Granada)*, **18**.
- Avery AJ, Sheehan C, Bell B, Armstrong S, Ashcroft DM, Boyd MJ, Chuter A, Cooper A, Donnelly A, Edwards A, Evans HP. (2021). Incidence, nature and causes of avoidable significant harm in primary care in England: retrospective case note review. *BMJ Qual. Saf*, **30**: 961-76.
- Belachew SA, Hall L, Selvey LA. (2021). Non-prescription dispensing of antibiotic agents among community drug retail outlets in Sub-Saharan African countries: a systematic review and meta-analysis. *Antimicrob Resist Infect Control*, **10**: 1-5.
- Bloomfield HE, Greer N, Linsky AM, Bolduc J, Naidl T, Vardeny O, MacDonald R, McKenzie L, Wilt TJ. (2020). Deprescribing for community-dwelling older adults: a systematic review and meta-analysis. *J Gen Intern Med*, **35**: 3323-32.
- Cadogan CA, Murphy M, Boland M, Bennett K, McLean S, Hughes C. (2021). Prescribing practices, patterns, and potential harms in patients receiving palliative care: a systematic scoping review. *Explor res clin soc pharm*, **3**:100050
- Cardwell K, Smith SM, Clyne B, McCullagh L, Wallace E, Kirke C, Fahey T, Moriarty F. (2020). Evaluation of the General Practice Pharmacist (GPP) intervention to optimise prescribing in Irish primary care: a non-randomised pilot study. *BMJ Open*, **10**: e035087.
- Damarell RA, Morgan DD, Tieman JJ. (2020). General practitioner strategies for managing patients with multimorbidity: a systematic review and thematic synthesis of qualitative research. *BMC Fam Pract*, **21**: 1-23.
- Hasan Ibrahim AS, Barry HE, Hughes CM. (2021). A systematic review of general practice-based pharmacists' services to optimize medicines management in older people with multimorbidity and polypharmacy. *Fam Pract*, **38**: 509-23.

- Kontopantelis E, Panagioti M, Farragher T, Munford LA, Parisi R, Planner C, Spooner S, Tse A, Ashcroft DM, Esmail A. (2011).** Consultation patterns and frequent attenders in UK primary care from 2000 to 2019: a retrospective cohort analysis of consultation events across 845 general practices. *BMJ Open*, **11**: e054666.
- Li J, Zhou P, Wang J, Li H, Xu H, Meng Y, Ye F, Tan Y, Gong Y, Yin X. (2023).** Worldwide dispensing of non-prescription antibiotics in community pharmacies and associated factors: a mixed-methods systematic review. *Lancet Infect Dis*, **23**: e361-70.
- Luetsch K, Rowett D, Twigg MJ. (2021).** A realist synthesis of pharmacist-conducted medication reviews in primary care after leaving hospital: what works for whom and why?. *BMJ Qual. Saf*, **30**: 418-30.
- Mackie TI, Schaefer AJ, Karpman HE, Lee SM, Bellonci C, Larson J. (2021).** Systematic review: system-wide interventions to monitor pediatric antipsychotic prescribing and promote best practice. *J Am Acad Child Adolesc Psychiatry*, **60**:76-104.
- McCarthy C, Clyne B, Boland F, Moriarty F, Flood M, Wallace E, Smith SM, SPPIRE Study team. (2022).** GP-delivered medication review of polypharmacy, deprescribing, and patient priorities in older people with multimorbidity in Irish primary care (SPPIRE Study): A cluster randomised controlled trial. *PLoS Med*, **19**: e1003862.
- Mohsen S, Dickinson JA, Somayaji R. (2020).** Update on the adverse effects of antimicrobial therapies in community practice. *Canadian Family Physician*, **66**:651-9.
- Muheim L, Signorell A, Markun S, Chmiel C, Neuner-Jehle S, Blozik E, Ursprung P, Rosemann T, Senn O. (2021).** Potentially inappropriate proton-pump inhibitor prescription in the general population: a claims-based retrospective time trend analysis. *Ther Adv Gastroenterol*. **14**:1756284821998928.
- Nabhani-Gebara S, Fletcher S, Shamim A, May L, Butt N, Chagger S, Mason T, Patel K, Royle F, Reeves S. (2020).** General practice pharmacists in England: integration, mediation and professional dynamics. *Res Soc Adm Pharm*, **16**: 17-24.
- Naik-Panvelkar P, Norman S, Elgebaly Z, Elliott J, Pollack A, Thistlethwaite J, Weston C, Seibel MJ. (2020).** Osteoporosis management in Australian general practice: an analysis of current osteoporosis treatment patterns and gaps in practice. *BMC Fam. Pract*, **21**:32.
- Omuya H, Nickel C, Wilson P, Chewning B. (2023).** A systematic review of randomised-controlled trials on deprescribing outcomes in older adults with polypharmacy. *Int J Pharm Pract*. **31**: 349-68.
- Poots AJ, Jubraj B, Ward E, Wycoco A, Barnett N. (2020).** Education around medication review and deprescribing: A survey of medical and pharmacy students' perspectives. *Ther Adv Drug Saf*, **11**:2042098620909610.
- Richards GC, Mahtani KR, Muthie TB, DeVito NJ, Koshiaris C, Aronson JK, Goldacre B, Heneghan CJ. (2020).** Factors associated with the prescribing of high-dose opioids in primary care: a systematic review and meta-analysis. *BMC Med*, **18**:1-1.
- Rose O, Cheong VL, Dhaliwall S, Eislage K, Erzkamp S, Jorgenson D, Martínez F, Luetsch K. (2020).** Standards in medication review: an international perspective. *Can Pharm J./Rev. Pharm du Can*, **153**: 215-23.
- Roux B, Berthou-Contreras J, Beuscart JB, Charenton-Blavignac M, Doucet J, Fournier JP, de La Gastine B, Gautier S, Gonthier R, Gras V, Grau M. (2021).** REview of potentially inappropriate MEDication pr [e] scribing in Seniors (REMEDI [e] S): French implicit and explicit criteria. *Eur J Clin Pharmacol* **77**:1713-24.
- Schwartz KL, Ivers N, Langford BJ, Taljaard M, Neish D, Brown KA, Leung V, Daneman N, Alloo J, Silverman M, Shing E. (2021).** Effect of antibiotic-prescribing feedback to high-volume primary care physicians on number of antibiotic prescriptions: a randomized clinical trial. *JAMA Intern. Med*, **181**:1165-73.
- Sinnott C, Georgiadis A, Park J, Dixon-Woods M. (2020).** Impacts of operational failures on primary care physicians' work: a critical interpretive synthesis of the literature. *Ann Fam Med*, **18**:159-68.
- Sudeshika T, Naunton M, Deeks LS, Thomas J, Peterson GM, Kosari S. (2021).** General practice pharmacists in Australia: A systematic review. *PLoS One*, **16**:e0258674.
- Thapa P, Lee SW, Kc B, Dujaili JA, Mohamed Ibrahim MI, Gyawali S. (2021).** Pharmacist-led intervention on chronic pain management: a systematic review and meta-analysis. *Br J Clin Pharmacol*, **87**: 3028-42.