Asian Journal of Medicine and Health

Volume 22, Issue 9, Page 1-10, 2024; Article no.AJMAH.121332
ISSN: 2456-8414

Medication Reconciliation is Patient Safety and Quality: A Quality Improvement Initiative to Optimize Medication Therapy at Alwajba PHCC

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: https://doi.org/10.9734/ajmah/2024/v22i91084

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/121332

Original Research Article

Received: 10/06/2024
Accepted: 13/08/2024
Published: 17/08/2024

ABSTRACT

As per PHCC policy, medication reconciliation is mandatory to provide safe practice and comprehensive patient care. It is noted that the rate of medication reconciliation done in Alwajba HC is not meeting the target for the PHCC which may affect the patient safety. Based on the comprehensive assessment of medication reconciliation practices at Alwajba Health Center, a

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Cite as: *Soliman, Samar, Alia AlRuwaili, Mohanad Al-Khalaila, Duaa Haggeer, Mugtaba Salaheldin, Omar Hassan, Lini Thomas, and Litty Mathew. 2024. "Medication Reconciliation Is Patient Safety and Quality: A Quality Improvement Initiative to Optimize Medication Therapy at Alwajba PHCC". Asian Journal of Medicine and Health 22 (9):1-10. https://doi.org/10.9734/ajmah/2024/v22i91084.*

multi-faceted intervention strategy was devised. The interventions were meticulously designed to address the identified knowledge gaps and system-related challenges. The effective improvement of medication reconciliation procedures has a big impact on patient safety and overall healthcare quality. Improved patient outcomes result from lowering the likelihood of adverse drug events and guaranteeing correct treatment regimens.

Keywords: Chronic illnesses; healthcare quality; medication reconciliation; PHCC policy.

1. INTRODUCTION

Medication reconciliation is the process of systematic and comprehensive review of all the medications a patient is taking to ensure that any medications being added, changed, or discontinued are carefully evaluated [1].

Medication reconciliation (also known as "MedRec") [2] is a patient safety intervention that was introduced to improve communication about patients' medication information as they transition through the healthcare system. It is targeted at both the patient and the patient's healthcare providers and is designed to help prevent adverse drug events.

Medication reconciliation is an essential part of patient safety in all healthcare settings. It is the methodical process of comparing a patient's past medication history to their present prescriptions. Although it is frequently stressed in hospital and post-discharge care, its importance in primary care cannot be overstated [3,4,5].

Primary care is the cornerstone of healthcare delivery, offering families and individuals continuous, all-encompassing care. In this context, patients frequently manage several chronic illnesses that call for intricate drug schedules. The dynamic nature of health disorders and the regular release of new pharmaceuticals increases the likelihood of medication mistakes, duplications, omissions, or interactions [6,7].

In primary care, effective medication reconciliation is essential for several reasons. Firstly, it aids in the prevention of adverse drug events (ADEs), which have the potential to significantly raise morbidity, mortality, and healthcare expenses. Secondly, By making sure that patients comprehend their drugs and the rationale behind taking them, it also improves patient adherence [8,9,10]. Thirdly, by spotting chances to streamline regimens and reduce polypharmacy, it maximizes pharmaceutical therapy. Medication reconciliation [11] in primary care ultimately results in better patient outcomes, higher-quality care, and lower healthcare costs.

As per PHCC policy, medication reconciliation is mandatory to provide safe practice and comprehensive patient care.

Physicians may face some challenges to complete medication reconciliation including unawareness of the process, lack of time or forget to complete it. failures in communication about patient 's medications can result in harm to patient, can unnecessarily burden the healthcare system, and can affect society at large [12].

It is noted that the rate of medication reconciliation done in Alwajba HC is not meeting the target for the PHCC which may affect the patient safety.

2. METHODS

A completed medication reconciliation is a comprehensive process that ensures a patient's medication regimen is accurate and up to date while they move between care settings (for example, from the hospital to home or between various healthcare providers).

Important Elements of a Proper Drug Reconciliation: Medication Information Collection: This entails compiling an exhaustive inventory of all prescription and over-the-counter medications, vitamins, herbal supplements, and over-the-counter medications that the patient is currently using. Validation of Medication Details: This entails comparing the drug data that has been gathered with the patient's medical file and any information that may be accessible from prior doctors. Finding the Discrepancies: Finding any inconsistencies, omissions, or duplications by comparing the gathered pharmaceutical information with the current medication orders. Recording Modifications to Medication: Clearly recording any adjustments that are required.

Aim of the project: Improve the medication reconciliation done by the physicians in Alwajba Health Center from 68% to 87% by end of April 2024.

Outcome measures: Percentage of completed medication reconciliation by physicians in Al Wajba health center.

Process measures: Number of training sessions for Medication Reconciliations process and number of reminders.

Balance measures: Physician satisfaction surveys with the new medication reconciliation process.as we Administered a survey to physicians before and after implementation, assessing factors such as workload, efficiency, and satisfaction with the new system.

Intervention: We started our project by collecting data from HIM (Health Information Management) department regarding the percentage of medication reconciliation in Alwajba health center, then we started our project with a physician survey for assessment of the knowledge and challenges encountered by the physicians in doing the process of medication reconciliation for every patient every visit.

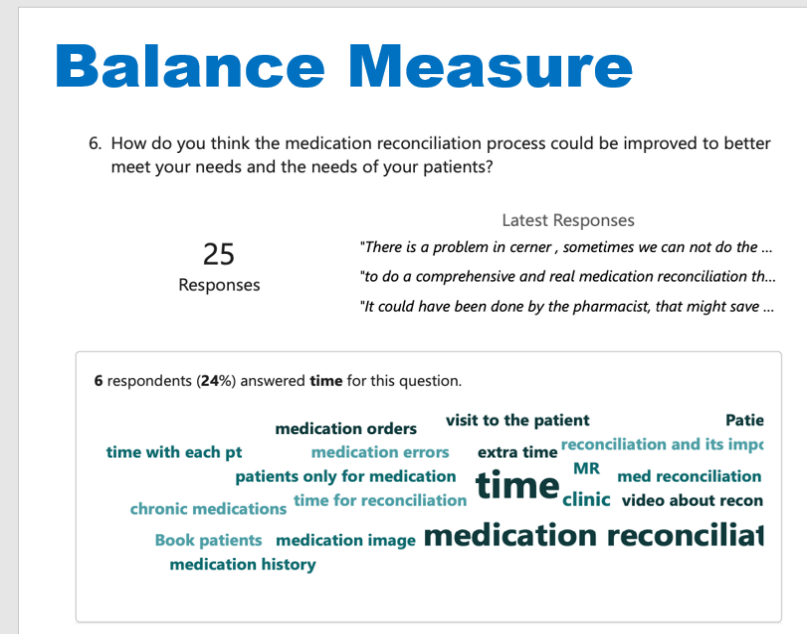

Fig. 1. Balance Measure

Then we stated our driver diagram as follow:

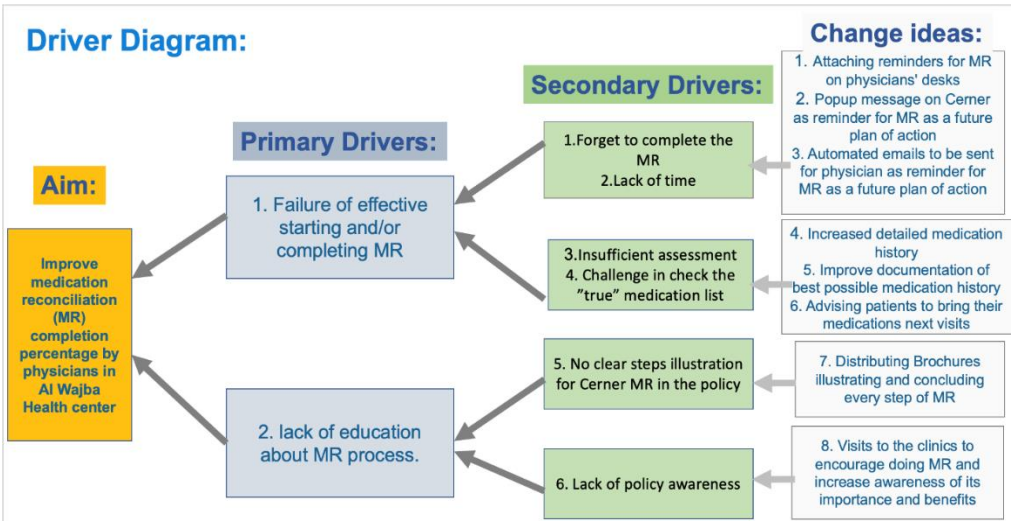

Fig. 2. Driver Diagram

Then we stated cause effect diagram as following:

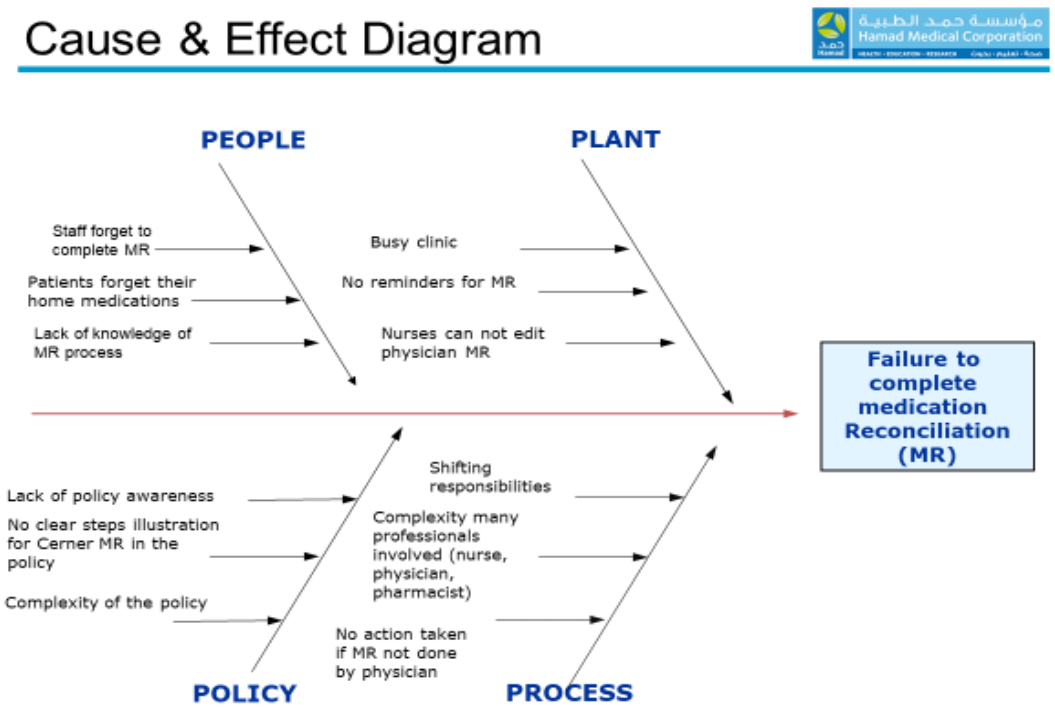

Fig. 3. Cause Effect diagram

Our pareto chart after the physician survey showed:

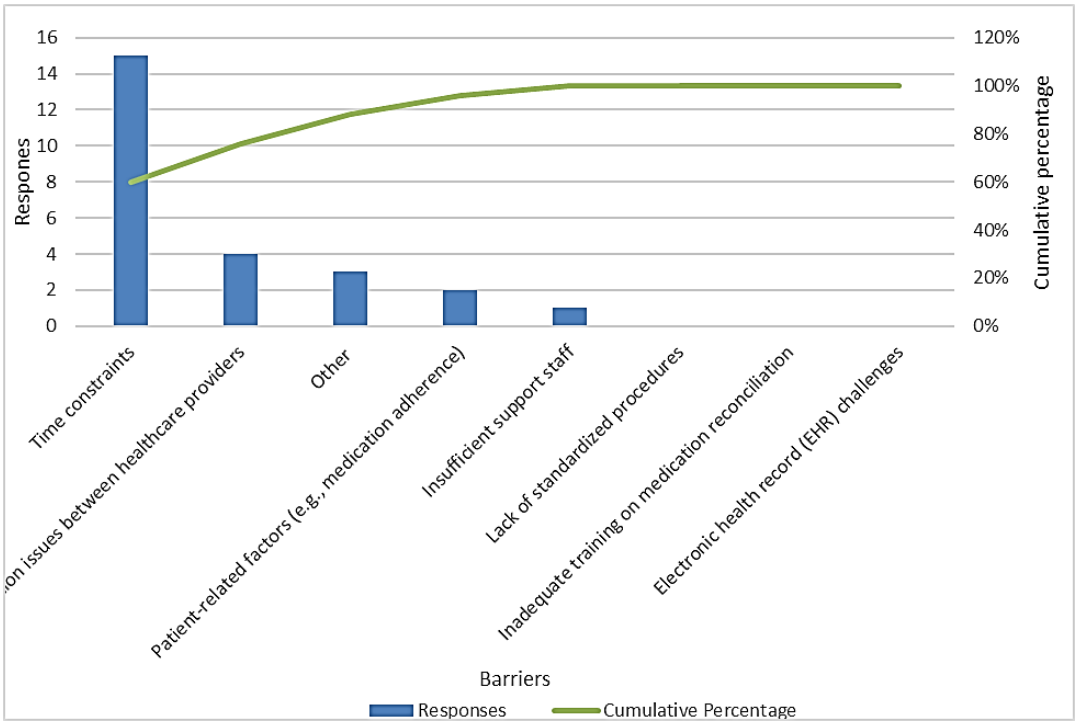

Fig. 4. Pareto chart - barriers in implementing medication reconciliation

Based on the comprehensive assessment of medication reconciliation practices at Alwajba Health Center, a multi-faceted intervention strategy was devised. The interventions were meticulously designed to address the identified knowledge gaps and system-related challenges.

- Educational Initiatives: To enhance physician knowledge and understanding of medication reconciliation, a series of face-to-face educational sessions were conducted. These sessions covered the importance of medication reconciliation, the step-by-step process, and potential consequences of errors. Additionally, informative brochures and policy guidelines were distributed to reinforce key concepts.
- Point-of-Care Reminders: To create consistent awareness among healthcare providers, prominent reminder cards were strategically placed in all clinics. These cards served as visual cues to prompt medication reconciliation for every patient visit.
- Digital Engagement: Leveraging technology, daily WhatsApp reminders were sent to physicians as a timely prompt to prioritize medication reconciliation. Furthermore, an instructional video demonstrating the medication reconciliation process within the Cerner electronic health record system was developed and disseminated.

By combining these diverse interventions, the project aimed to foster a culture of medication reconciliation, improve physician compliance, and ultimately enhance patient safety.

We initiated 5 PDSA cycles with our proposed interventions and started tracing the results of the medication reconciliation rate statistics extracted daily and weekly from the HIM and sharing the results with the physicians and discussing methods of improvement.

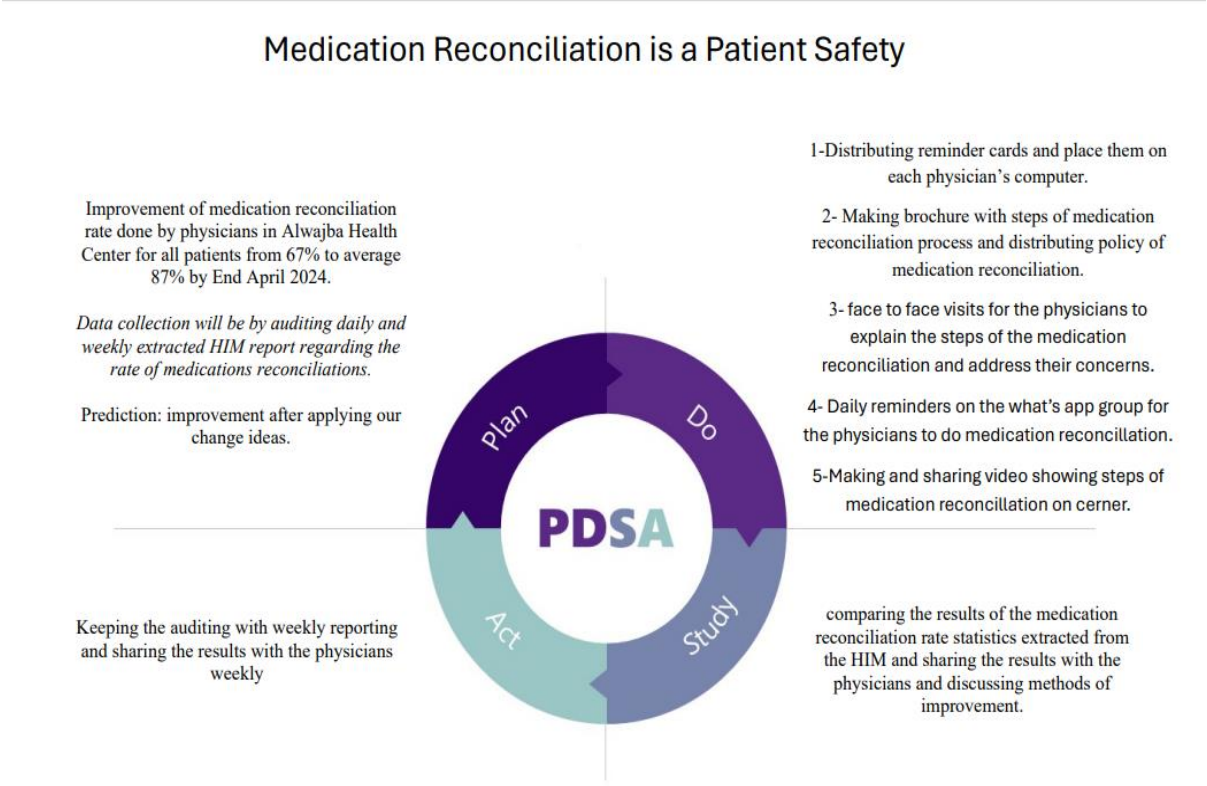

Fig. 5. Medication reconciliation

PDSA Cycle

1- Reminder Cards placed on each physician's desktop.

Plan:

Improvement of medication reconciliation rate done by physicians in Alwajba Health Center for all patients from 67% to average 87% by End April 2024

Data collection will be by auditing daily and weekly extracted HIM report regarding the rate of medications reconciliations.

Prediction: improvement after applying our change ideas.

Do:
Distributing reminder cards and place them on each physician's computer inside the office.

Study:

Comparing the results of the medication reconciliation rate statistics extracted from the HIM and sharing the results with the physicians and discussing methods of improvement.

Act:

Keeping the auditing with weekly reporting and sharing the results with the physicians weekly

PDSA Cycle

2- Distributing brochures with steps of medication reconciliation

Plan:

Improvement of medication reconciliation rate done by physicians in Alwajba Health Center for all patients from 67% to average 87% by End April 2024

Data collection will be by auditing daily and weekly extracted HIM report regarding the rate of medications reconciliations.

Prediction: improvement after applying our change ideas.

Do:
Making brochure that illustrate all the steps of medication reconciliation process with distributing PHCC policy of medication reconciliation to all physicians. It was done twice including both morning and evening shifts.

Study:

comparing the results of the medication reconciliation rate statistics extracted from the HIM and sharing the results with the physicians and discussing methods of improvement.

Act:

Keeping the auditing with weekly reporting and sharing the results with the physicians weekly.

PDSA Cycle

3- Face to face orientation for all physicians regarding importance and steps of medication reconciliation process.

Plan:

Improvement of medication reconciliation rate done by physicians in Alwajba Health Center for all patients from 67% to average 87% by End April 2024

Data collection will be by auditing daily and weekly extracted HIM report regarding the rate of medications reconciliations.

Prediction: improvement after applying our change ideas.

Do:

Doing face to face visits for the physicians in their clinics to explain for them the steps of the medication reconciliation on Cerner and address their concerns. It was done three times during both morning and evening shifts.

Study:

comparing the results of the medication reconciliation rate statistics extracted from the HIM and sharing the results with the physicians and discussing methods of improvement.

Act:

Keeping the auditing with weekly reporting and sharing the results with the physicians weekly

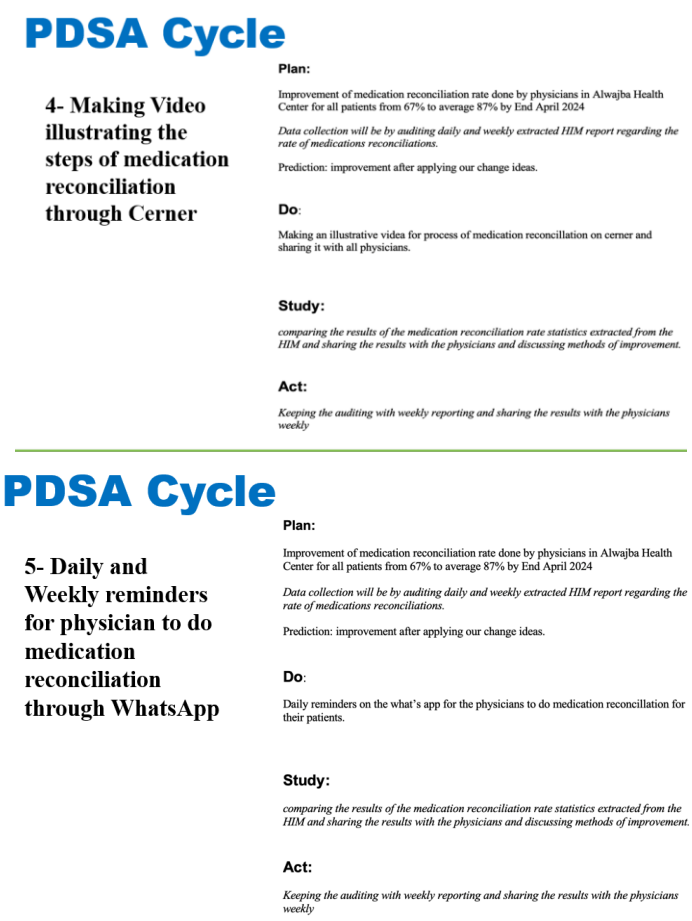

Fig. 6. Examples of PDSA

3. RESULTS

Improving medication reconciliation from 68% to 87.7% in Alwajba HC. Within time range from January 2024 till April 2024.

The WhatsApp feedback loops that run on a daily and weekly basis worked well for our PDSA cycle. We accelerated the pace of improvement by encouraging real-time communication and facilitating quick resolution of problems. But we also realized that, in order to stay focused and deal with possible information overload, a more organized approach was required. In general, this approach greatly improved the results of medication reconciliation and physician engagement."

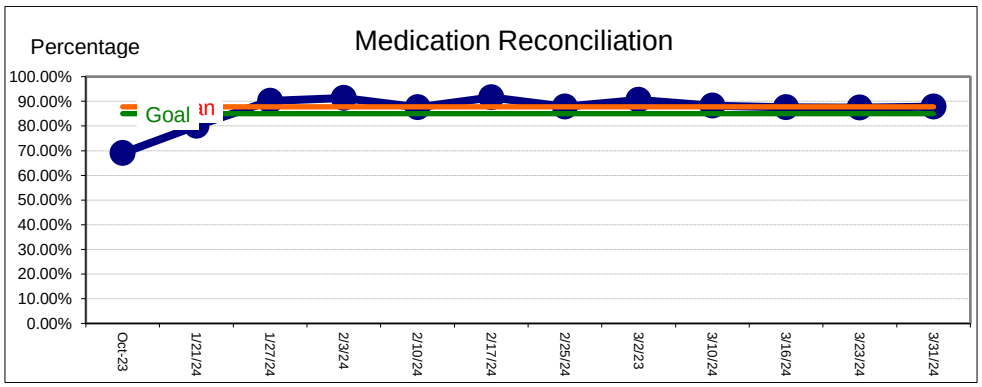

Fig. 7. Medication Reconcilation

Vertical Axis Label	Percentage
Graph Label	Medication Reconciliation

Date / Observation	Value	Median	Goal	End Median
Oct-23	69.00%	0.87773676	85%	
21/01/2024	79.99%	0.87773676	0.85	
27/01/2024	90.21%	0.87773676	0.85	
03/02/2024	91.30%	0.87773676	0.85	
10/02/2024	87.58%	0.87773676	0.85	
17/02/2024	91.58%	0.87773676	0.85	
25/02/2024	87.77%	0.87773676	0.85	
02/03/2023	90.52%	0.87773676	0.85	
10/03/2024	88.21%	0.87773676	0.85	
16/03/2024	87.52%	0.87773676	0.85	
23/03/2024	87.41%	0.87773676	0.85	
31/03/2024	87.78%	0.87773676	0.85	

Fig. 8. data staistics

4. DISCUSSION

Medication reconciliation procedures at Alwajba Health Center have significantly improved as a consequence of the deployment of comprehensive interventions, which also included digital engagement tactics, point-of-care reminders, and training programs. After the intervention period, the medication reconciliation rate rose from 68% to 87.7%. This significant improvement shows how well the combined strategy addressed the early knowledge gaps and system-related issues.

The training sessions were crucial in equipping doctors with the know-how and abilities needed to perform precise medication reconciliation. Their comprehension of the procedure was further cemented by the dissemination of important concepts via pamphlets and policy guidelines. Moreover, the incorporation of point-of-care reminders functioned as uniform cues, reducing the possibility of unintentional errors.

Digital platforms such as instructional videos and WhatsApp reminders were used to show how technology may be used to improve healthcare procedures. These platforms made resources easily available to doctors and promoted the timely sharing of knowledge.

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Digital platforms such as instructional videos and WhatsApp reminders were used to show how technology may be used to improve healthcare procedures. These platforms made resources easily available to doctors and promoted the timely sharing of knowledge.

The effective improvement of medication reconciliation procedures has a big impact on patient safety and overall healthcare quality. Improved patient outcomes result from lowering the likelihood of adverse drug events and guaranteeing correct treatment regimens.
The initiative also emphasizes the significance of a thorough strategy for medication reconciliation process optimization that takes into account system-related variables as well as physician knowledge.

Even if the treatments that were put into place had encouraging results, it is important to recognize the study's limitations. Like for sample, short duration of the project (less than 4 months) , or small scale of application on only one health center . Future studies could examine the long-term sustainability of the interventions, the cost-effectiveness of the strategies put in place, and the possibility of integrating electronic health records to automate the medication reconciliation

process in order to further strengthen the impact of medication reconciliation.

Several recommendations are made for additional measures to maintain the benefits made and improve drug reconciliation procedures even more. Weekly reminders to doctors will keep the momentum going and emphasize the significance of medication reconciliation. A timely reminder could be provided by working with the IT department to integrate pop-up messages into the Cerner system prior to the end of patient sessions. Automated emails can also be used to handle situations in which medication reconciliation is unintentionally overlooked.

In order to address the ongoing problem of doctors' time constraints, it is imperative that leadership at the PHCC be involved in discussions about expanding patient appointment times. Without sacrificing patient care, this modification can give doctors enough time to perform careful medication reconciliation.

Furthermore, it's critical to keep lines of communication open with doctors by implementing regular feedback mechanisms in order to spot new issues and adjust the drug reconciliation procedure appropriately.

By putting these tactics into practice and encouraging teamwork, Alwajba Health Center can maintain its standing as a pioneer in patient care and pharmaceutical safety.

5. CONCLUSION

The quality improvement project on Medication Reconciliation at Alwajba Health Center demonstrated success. Through strategic interventions including reminders, education sessions, surveys, and multimedia aids, reconciliation completion rates improved significantly. These efforts culminated in achieving the target goal of 87% reconciliation by April 2024, enhancing patient safety and quality of care.

The results of this study highlight how well a multifaceted strategy works to enhance drug reconciliation procedures in a medical context. The implementation of practical interventions and the resolution of physician knowledge gaps resulted in a notable rise in medication reconciliation compliance rates. The significance of medication reconciliation as a foundational element of patient safety is underscored by these findings.

To sustain and widen these gains, healthcare organizations must prioritize medication reconciliation as a critical component of patient care. Other facilities can profit from our strategies if they replicate and modify them. To guarantee continuous improvements in patient safety and medication management, monitoring, assessment, and innovation are crucial.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

I hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT AND ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/121332