Evaluation of Proper Treatment Delivery and Time of Initiation of Treatment After Hospitalization by Nursing Staff in Kuwait Teaching Hospital Peshawar

Zia Ullah[1], Akhtar Zada[1], Muhammad Salman[1], Gulrukh Imtiaz[1], Mahnoor Khan[1], Mehreen Zaman[1], Saima Ali[2]

[1]House Officers, Kuwait Teaching Hospital, Peshawar (25000), Pakistan.

[2]Professor of Pediatrics, Kuwait Teaching Hospital, Peshawar (25000), Pakistan.

Corresponding Author*: Dr. Zia Ullah (zia962015@gmail.com)

ABSTRACT

Background: Medication errors are a pressing public health concern, leading to adverse outcomes and substantial healthcare costs. This study examines the incidence of drug administration errors, emphasizing the critical importance of timely treatment initiation. Delays in treatment pose significant risks to patient safety, highlighting the need for improved medication delivery protocols and enhanced patient care practices in hospitals.

Methods: A prospective cross-sectional study in a Kuwait teaching hospital's paediatrics unit, involving 120 participants, utilized non-probability convenient sampling. Data collection from patient files and attendants utilized a specially designed form. Data was collected by observing one patient for 24 hours. Participants were instructed to retain medication vials. Permission was obtained from the department head, and oral informed consent was secured. No personal identifiers were recorded. Interventions included workshops and performance evaluations, leading to observed improvement. Data analysis was conducted using SPSS version 22.

Results: Baseline data showed variations in dose administration across departments, with notable discrepancies in proper drug administration alignment with prescriptions. Treatment initiation delays were significant, and patient satisfaction was moderate. Post-intervention, improvements were observed in dose administration, although treatment initiation delays persisted. However, patient satisfaction notably increased following interventions.

Conclusion: Our study highlighted several critical issues in medication administration, such as delays in treatment initiation, improper dose administration, and missed doses. Implementing training sessions and workshops for nursing staff will ensure the best practices and they can manage their responsibilities more effectively.

Keywords: Drug delivery, Medication errors, Paediatrics, Study methodology, Nursing staff, Baseline and post-intervention results.

HOW TO CITE: Ullah Z, Zada A, Salman M, Imtiaz G, Khan M, Zaman M, Ali S. Evaluation of Proper Treatment Delivery and Time of Initiation of Treatment After Hospitalization by Nursing Staff in Kuwait Teaching Hospital Peshawar. National Journal of Life and Health Sciences. 2024 Sept; 3(2), 94-98.
DOI: https://doi.org/10.62746/njlhs.v3n2.42
Date of Submission: 28/02/2024 Date of Revision: 25/07/2024 Date of Acceptance: 25/08/2024

INTRODUCTION

Drug delivery refers to the process of administering pharmaceutical substances to produce a therapeutic effect. Medication errors can occur during any of the three key stages of the medication use process: prescribing, dispensing, and administration. Our study aimed to assess the frequency, types, and clinical significance of drug administration errors. Medication errors have emerged as a significant public health issue.[1,2] These errors are linked to a considerable rise in patient morbidity and mortality. The administration stage is particularly critical, as the opportunity to correct errors is limited, and mistakes at this point can directly impact patient safety. Addressing and preventing these errors can enhance patient outcomes in healthcare settings.[3,4] In the United States alone, medication errors result in 7,000 to 9,000 deaths annually. Furthermore, many patients experience, but do not always report, adverse reactions or complications related to medications. The annual cost of managing medication-related errors exceeds $40 billion, affecting over seven million patients. These errors not only decrease patient satisfaction but also contribute to growing mistrust in the healthcare system.[5,6]

Timely initiation of treatment is crucial. A treatment delay occurs when a patient does not receive prescribed medication, lab tests, physical therapy, or other treatments within the intended timeframe. This also encompasses delays in securing initial or follow-up appointments. Such delays can be considered a form of diagnostic error that may lead to patient harm or death. For healthcare organizations and providers, it represents a missed opportunity. Treatment delays are defined as instances where patients do not receive care within 30 minutes of admission to the hospital. A related diagnostic error is the delay in diagnosis, which refers to an extended period between the onset of symptoms, diagnosis, and the start of treatment.[7] In 2014, The Joint Commission's Office of Quality and Safety reviewed

Clinical Audit
ISSN: 3006-5852 & ISSN: 3006-5844

73 sentinel events caused by treatment delays, with 48 resulting in patient deaths. Between 2010 and 2014, 522 sentinel events were attributed to delays in treatment, including 415 deaths, 77 cases of permanent loss of function, and 24 instances requiring unexpected additional care or prolonged hospital stays. Furthermore, a study by the Agency for Healthcare Research and Quality (AHRQ) found that 28 percent of 583 diagnostic errors were life-threatening or led to death or permanent disability.[8]

The primary aim of this study was to assess the accurate timing of initiation of treatment and proper treatment delivery to the patient by nursing staff. The secondary aim is to propose suggestion for early initiation of treatment and proper treatment delivery to the patients to achieve therapeutic effects and prevent harm.

MATERIALS AND METHODS

It was primarily retrospective study which was conducted in pediatrics unit of Kuwait teaching hospital. Study was performed in Surgery ward Pediatrics ward Medicine ward Gynae ward and ER department of Kuwait teaching hospital Peshawar from 1st April to 30th September 2021. A total of 120 patients data were recruited. The sampling technique was non-probability convenient based sampling. Secondary data was collected from admitted patient files and the attendants of the patients through specially design Performa designed for this study. The study participants were educated and advised to keep the medicine that child receive. One patient was observed for first 24 hours of their hospital stay and data was collected. Permission of the head of department was sought before data collection. There was no personal identifier included in our data collection form. After collection of base line data interventions in the form of workshops, performance evaluation of nursing staff, awards for best performance were done. Then after one month reevaluation was done following improvement was observed. Data was analyzed on SPSS version 22.

RESULTS

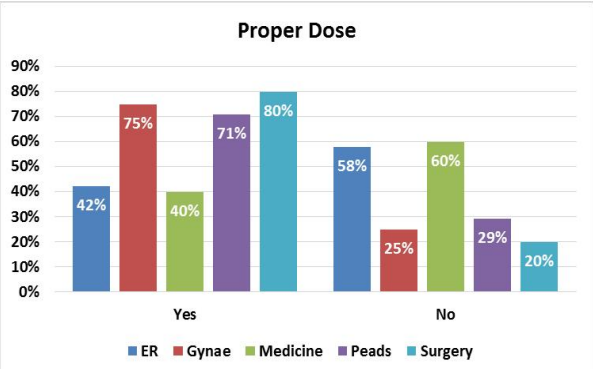


Figure 1: Overall proper dose administered in various faculties was as follow: Er (40%), Gynae (75%), Medicine (40%), Peads (71%), And Surgery (80%)

The Rationale Of Left Over Doses Was As Follow: Er (58%), Gynae (25%), Med (60%), Peads (29%), And Surgery (20%)

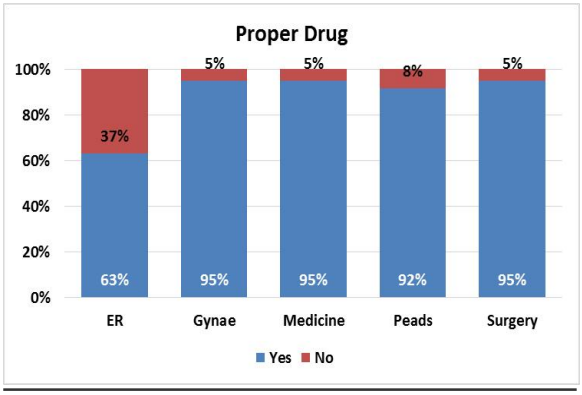


Figure 2: The ratio of proper drug administered was as follow: In ER, Gynae, Medicine, Pead's, Surgery 63%,95%, 95%, 92%, 95% of the time proper drug was administered according to the prescription of the doctor while 37%, 5%, 5%, 8%, 5% were not given the right drug.

The timely administration of drug by nursing staff was as follow

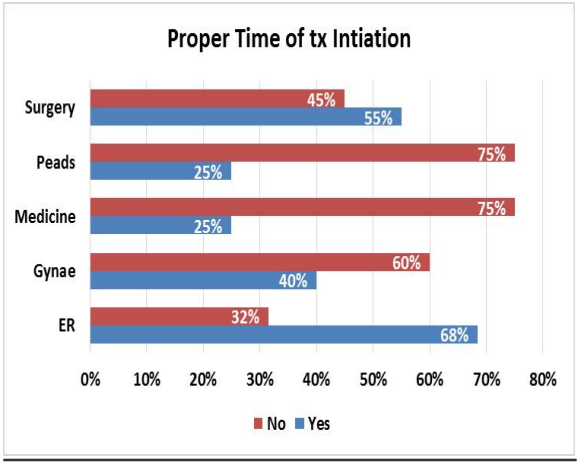


Figure 3: A significant delay of treatment initiation was noticed in each respective departments evaluated.

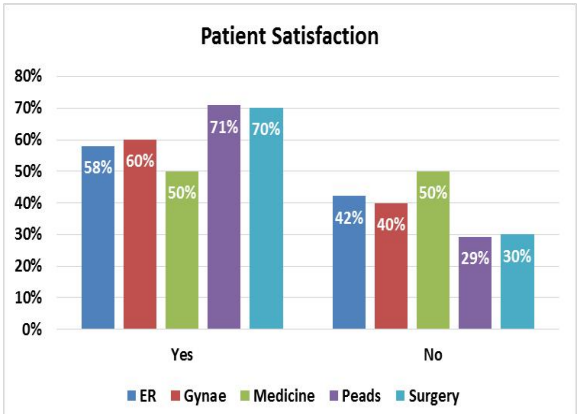


Figure 4: The perspective of patient satisfaction regarding the treatment they received was satisfactory but not very high yielding.

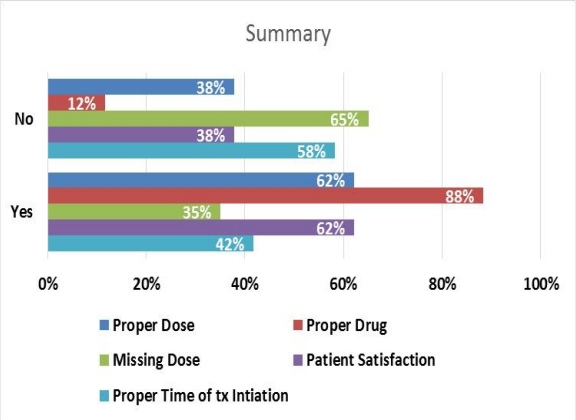


Figure 5: Results of post intervention data: A detailed data was collected two months after initial data was collected

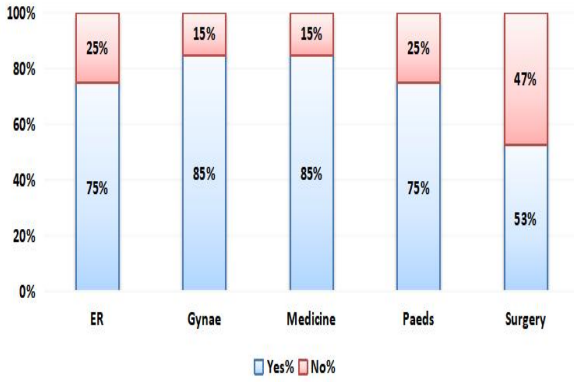


Figure 6: A significant improvement in dose administration was noted most notably in ER, Gynae and Medicine.

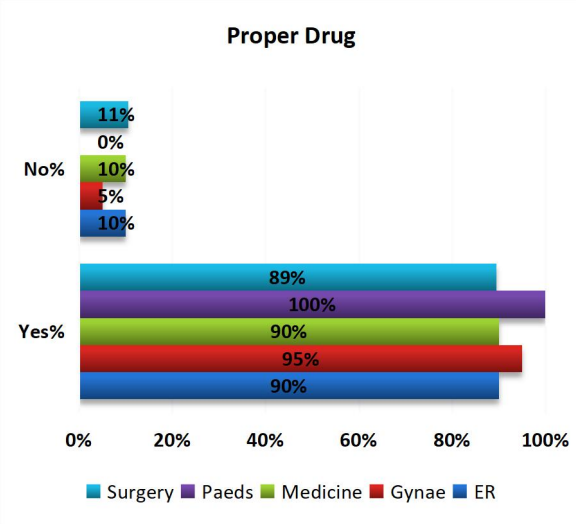


Figure 7: There was timely administration of proper drug to the patient according to the prescription of the doctor. Notable improvement was seen in the following departments i-e Surgery 89%, Peads 100%, Medicine 90 %, Gynae 95%, ER 90% respectively.

The timely administration of drug by nursing staff was as follow:

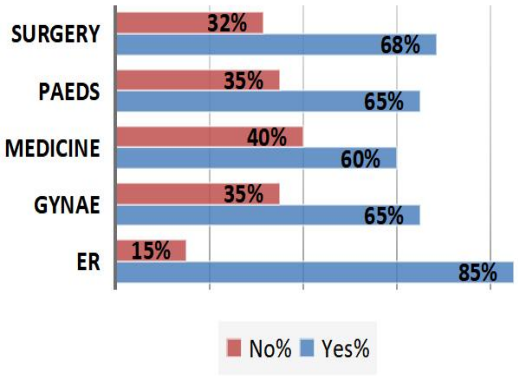


Figure 8: There was a significant delay in treatment initiation in each department.

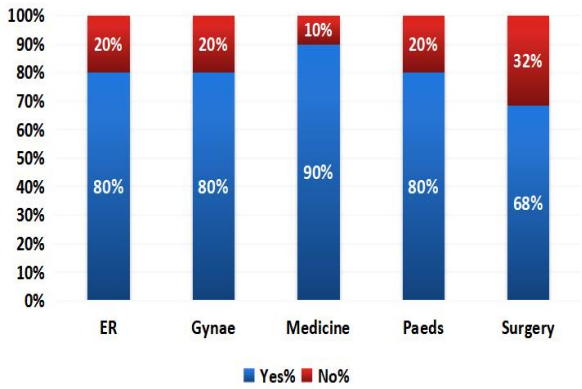
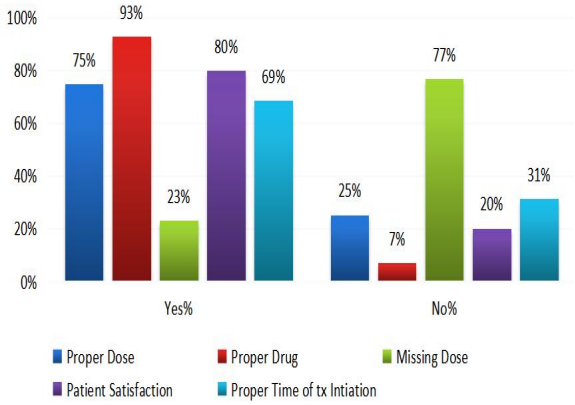


Figure 9: The perspective of patient on receiving care in hospital was very satisfying. And significant good response was observed.



DISCUSSION

This study evaluated the administration of medication across various departments and assessed the impact of an intervention designed to improve dose accuracy and timely treatment initiation. Initially, the proportion of correct doses administered varied significantly across departments, with Surgery showing the highest accuracy at 80% and ER the

lowest at 40%. The rationale for leftover doses was also department-specific, with the highest percentages in ER (58%) and Medicine (60%). The ratio of proper drug administration demonstrated considerable variability, with Gynaecology and Medicine both achieving 95% accuracy, while ER lagged behind at 63%.

Janique et al. reported a medication administration error rate of approximately 13.7% and Gillian et al. reported that 41% of medication errors were related to administration. In contrast, our study initially observed a higher error rate of 25.4%, which improved significantly to 7.2% following the intervention.[9,10] The NHS survey reported that 60% of patients were satisfied with the nursing care they received. In comparison, our study found an average patient satisfaction rate of 61.8% at the initial data collection, which improved to 79.6% following the intervention.[11]

Our study revealed that initial treatment initiation was significantly delayed, with a delay rate of 75%. Timely drug administration by nursing staff revealed significant delays across all departments, underscoring a widespread issue in treatment initiation. Despite these delays, patient satisfaction with the care received was generally positive, though not exceptionally high. Although the administration of the correct drug was generally satisfactory at 91.67%, there remains room for improvement. Specifically, proper doses were not administered to 29.17% of patients, and doses were missed in 25% of cases, indicating areas needing enhancement.

Following the intervention, substantial improvements were observed. Delays in treatment initiation decreased to 69%, and the correct drug was administered with a consistent satisfaction rate of 91.67%. Importantly, the accuracy of dose administration saw a marked improvement, rising to 75%, while the occurrence of missed doses was reduced to 23%. The follow-up data revealed significant progress in dose administration across departments, particularly in the ER, Gynaecology, and Medicine. By the study's conclusion, drug administration accuracy had increased across all departments, with Surgery reaching 89% and Pediatrics achieving 100%. These findings indicate that the interventions were effective in improving both the accuracy and timeliness of medication administration. Although delays in treatment initiation persisted at 69% post-intervention, there was an overall positive trend in drug administration practices. The administration of the correct drug remained at a satisfactory level of 91.67%, and the accuracy of dose administration significantly improved to 75%, with missed doses reduced to 23%. Patient feedback regarding the care received was notably more positive after the intervention, reflecting an improved perception of care quality.

The study successfully identified and addressed critical issues in medication administration, particularly concerning dose and timely treatment. However, further efforts are needed to fully resolve delays in treatment initiation. Future research should consider multi-center settings and focus on optimizing strategies to minimize these delays and further enhance patient satisfaction.

CONCLUSION

Our study highlighted several critical issues in medication administration, such as delays in treatment initiation, improper dose administration, and missed doses. Implementing training sessions and workshops for nursing staff will ensure the best practices and they can manage their responsibilities more effectively. Reducing duty hours and increasing the number of nursing staff will help alleviate workload pressures, potentially reducing delays in treatment initiation. Additionally, by increasing compensation for existing staff will improve job satisfaction and retention, contributing to better overall performance. By addressing these issues with targeted interventions, healthcare facilities can improve medication administration, reduce treatment delays, and enhance patient care outcomes. Establishing a system of checks and balances will ensure that medications are administered on time and in the correct doses. Arranging hands-on retraining workshops on IV cannulations (particularly in pediatrics, where IV-line placement is a common cause of delay) will address specific challenges identified in our study.

REFERENCES

1. Kohn LT, Corrigan JM, Donaldson MS, Institute of Medicine (US). Committee on quality of health care in America. In To Err Is Human: Building a Safer Health System Washington, DC: National Academy Press, 2000–287.
2. Schmitt É.Le Risque Médicamenteux Nosocomial: Circuit Hospitalier Du Médicament et Qualit Des Soins Paris: Masson,1999
3. Alagha H. Z, Badary O. A, Ibrahim H. M, Sabri N. A. Reducing prescribing errors in the pediatrics intensive care unit:An experience from Egypt. Acts paediatr. 2011;100(10):e169–e174. [PubMed] [Google Scholar]
4. Barach P, Small S. D. Reporting and preventing medical mishaps:Lessons from non-medical near miss reporting systems. British Medical Journal. 2000;320(7237):759763. http://dx.doi.org/10.1136/bmj.320.7237 759 . [PMC free article] [PubMed] [Google Scholar]
5. Wittich CM, Burkle CM, Lanier WL. Medication errors: an overview for clinicians. Mayo Clin Proc. 2014 Aug;89(8):1116-25. [PubMed]
6. Whittaker CF, Miklich MA, Patel RS, Fink JC. Medication Safety Principles and Practice in CKD. Clin J Am Soc Nephrol. 2018 Nov

07;13(11):1738-1746. [PMC free article] [PubMed]
7. Reference.MD: Definition of delayed diagnosis (accessed January 20, 2015)
8. Schiff GD, et al.: Diagnostic Error in Medicine: Analysis of 583 Physician-Reported Errors. Archives of Internal Medicine. 2009;169(20):1881-1887 (accessed January 20, 2015)
9. Jessurun, J. G., Hunfeld, N. G. M., de Roo, F. M., van Onzenoort, H. A. W., van Rosmalen, J., van Dijk, M., & van den Bemt, P. M. L. A. (2023). Prevalence and determinants of medication administration errors in clinical wards: A two-centre prospective observational study. Journal of Clinical Nursing, 32, 208–220. https://doi.org/10.1111/ jocn.16215
10. Cavell GF, Mandaliya D. Magnitude of error: a review of wrong dose medication incidents reported to a UK hospital voluntary incident reporting system. Eur J Hosp Pharm 2021; 28:260–265. doi:10.1136/ejhpharm-2019-001987
11. Aiken LH, Sloane DM, Ball J, et al. Patient satisfaction with hospital care and nurses in England: an observational study. BMJ Open 2018;8: e019189. doi:10.1136/bmjopen-2017-019189