ORIGINAL ARTICLE

ALLERGIES DOCUMENTATION IN HMIS HISTORY OF PATIENTS ADMITTED IN GASTROENTEROLOGY AND PULMONOLOGY WARD AT LADY READING HOSPITAL, MEDICAL TEACHING INSTITUTE – PESHAWAR

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Background: This clinical audit aimed to assess the accuracy of allergy documentation within the Hospital Management Information System (HMIS) of the Gastroenterology and Pulmonology Wards at Lady Reading Hospital, MTI Peshawar. Proper documentation of allergies, including food, drugs, and other types, is crucial for patient safety to prevent adverse reactions. **Methods:** The clinical audit was conducted using the "HOPE" Hospital Management Information System (HMIS), donated by the Shaukat Khanum Memorial Trust. It involved a retrospective review of medical records for 20 patients from each ward across two audit cycles. In the first cycle, 10 patients were randomly selected from each ward, making a total of 20 patients. After identifying gaps in allergy documentation, interventions were implemented. A second cycle was then conducted to reassess documentation, selecting another set of 10 patients from each ward. Data collection involved checking if allergies were documented, and the results were recorded in an Excel sheet, marked as 'Yes' or 'No' for allergies. Data analysis was done using Microsoft Excel 2023 and the graphical representations were created in Microsoft Office Word 2023 and Microsoft Excel 2023 (Microsoft® Corp., Redmond, WA). The audit aimed for a 100% documentation standard as per the HMIS reading manual. **Results:** In the first cycle, 70% (n=7) of patients in the Gastroenterology Ward and 60% (n=6) in the Pulmonology Ward had no documented allergies. After implementing the recommended interventions, the second cycle showed a remarkable improvement, with a 100% documentation rate achieved in both wards. **Conclusion:** After implementing the recommendations, allergy documentation in the HMIS of Lady Reading Hospital MTI Peshawar significantly improved, which helped in preventing allergic reactions in patients admitted to the Gastroenterology and Pulmonology Wards.

Keywords: Allergy and immunology; Documentation; Medical Records; Hospital Information System; Electronic Health Record; Clinical Audit

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INTRODUCTION

Allergy is defined as an immune-mediated inflammatory response to common environmental allergens that are otherwise not harmful. Allergies included food, drug and unlisted allergies respectively.[1] Hypersensitivity is an exaggerated immune response to antigens, manifesting from minor (atopic dermatitis and rhinitis) to dangerous manifestations such as anaphylaxis which can be life-threatening.[2] The clinical audit aimed to confirm the proper documentation of allergies in the medical history section of the hospital management information system (HMIS) of patients admitted to the Gastroenterology and Pulmonology Ward of Lady Reading Hospital Medical Teaching Institute – Peshawar. Accurate documentation of allergies is important for patient safety and helps clinicians avoid potential allergic reactions during treatment.[3] A few years ago, Shaukat Khanum Memorial Trust called "HOPE" entered into a Support Services Agreement with four medical teaching institutes in Khyber Pakhtunkhwa, including Lady Reading Hospital in Peshawar, to introduce its advanced Hospital Management Information System (HMIS).[4] This software application is developed by Trust (HOPE) with ORACLE, a computer company in the United States of America and plays an important role in delivering quality patient care by providing an effective HMIS. This hospital management information system is made up of different components that cover everything from the clinical to administrative and financial needs of healthcare organizations. It provides fast and dependable access to patient diagnosis and treatment information, ensuring efficient healthcare services.[5]

This clinical audit aimed to assess the allergy documentation in the Hospital Management Information

System (HMIS) for patients in the Gastroenterology and Pulmonology Ward at Lady Reading Hospital and recommend improvements for proper documentation.

MATERIAL AND METHODS

This clinical audit was conducted at Lady Reading Hospital Medical Teaching Institute (MTI), Peshawar, with a focus on the Pulmonology and Gastroenterology wards. Data collection involved reviewing patient records within the hospital's management software to determine whether allergies were properly documented. Patients were identified using medical record numbers obtained from the admission register. In the first audit cycle, 10 patients were randomly selected from each ward, making a total of 20 patients. Following the initial review, a second cycle was conducted to reassess the documentation of allergies, again selecting 10 patients from each ward, totalling another 20 patients. The findings were recorded in an Excel spreadsheet, with allergy documentation marked as either "Yes" or "No." Data analysis was performed using Microsoft Excel 2023 (Microsoft® Corp., Redmond, WA), and the graphical representations were created in Microsoft Office Word 2023 and Microsoft Excel 2023 (Microsoft® Corp., Redmond, WA). Grammar and language checks were completed using the Grammarly software application.

The audit standard was based on the allergy documentation section within the Hospital Management Information System (HMIS) software, to achieve 100% compliance.

RESULTS

In the first cycle of the audit, the Gastroenterology Ward showed that out of 10 audited patients, 7 had no documented history of allergies, resulting in a 70% (n=7) rate of undocumented allergies and only 30% (n=3) documented allergies as shown in Figure A. Similarly, in the Pulmonology Ward, 10 patients were audited, and it was found that 6 had no documented history of allergies, leading to 60% (n=6) being undocumented and 40% (n=4) having their allergies properly documented.

In the second cycle of the audit, there was a remarkable improvement in allergy documentation within both wards. In the Gastroenterology Ward, all patients (100%) had their allergies (food and drug allergies) documented (Figures B and C), showing a complete adherence to the recommended documentation practices. Similarly, in the Pulmonology Ward, the audit revealed that all patients (100%) also had their allergies documented. (Figure D)

Recommendations

To achieve our target, several key recommendations were effectively implemented. First, we improved the documentation of allergies by providing healthcare professionals with clear guidance on accurately recording drug and food allergies in patient histories in HMIS (Figure E, F). New doctors and nursing staff received orientation from the HMIS/IT Department to ensure they understood this documentation process. This initiative was regularly reviewed and updated to maintain best practices. Second, we enhanced allergy prevention and management by educating healthcare professionals on the importance of verifying patient allergies before prescribing medications. Informative pamphlets were distributed in both wards to increase awareness (Figure G). Additionally, a system to flag potential drug-allergy interactions was implemented, providing alerts during the medication ordering process (Figure B, C). Collaboration with the dermatology department was also established to ensure comprehensive assessment, diagnosis, and treatment of allergic conditions. To further raise awareness, an Allergy Day was celebrated with the dermatology department, which included a hospital-wide walk to promote knowledge about allergies and their management.

Ward name	Total patients	Allergy documented	Allergy Not documented
Gastroenterology	10	n=3 (30%)	n=7 (70%)
Pulmonology	10	n=4 (40%)	n=6 (60%)

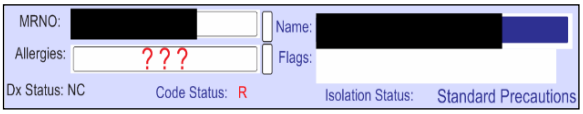

Figure-A: Undocumented Allergies in HMIS shown by Red Question marks

Ward name	Total patients	Allergy documented	Allergy Not documented
Gastroenterology	10	n=10(100%)	0(0%)
Pulmonology	10	n=10(100%)	0(0%)

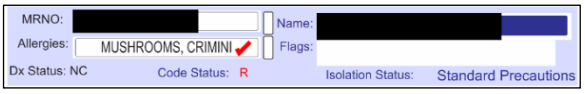

Figure-B: Documented Food Allergies in HMIS shown by Red Checkmark.

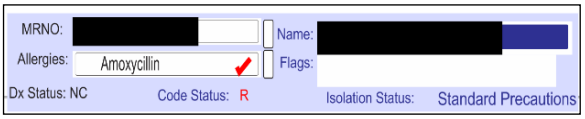

Figure-C: Documented Food Allergies in HMIS shown by Red Checkmark.

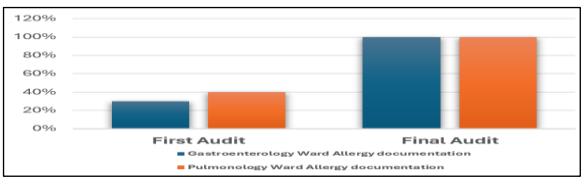

Figure-D: Allergy Documentation percentage of Gastroenterology and Pulmonology wards in both cycles

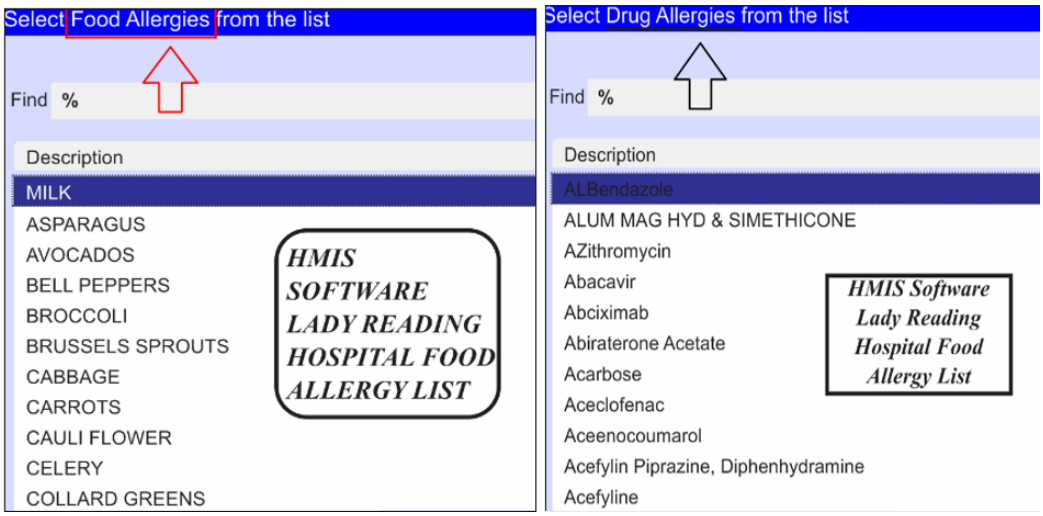

Figure (E, F): Food and Drug Allergy selection lists in HMIS

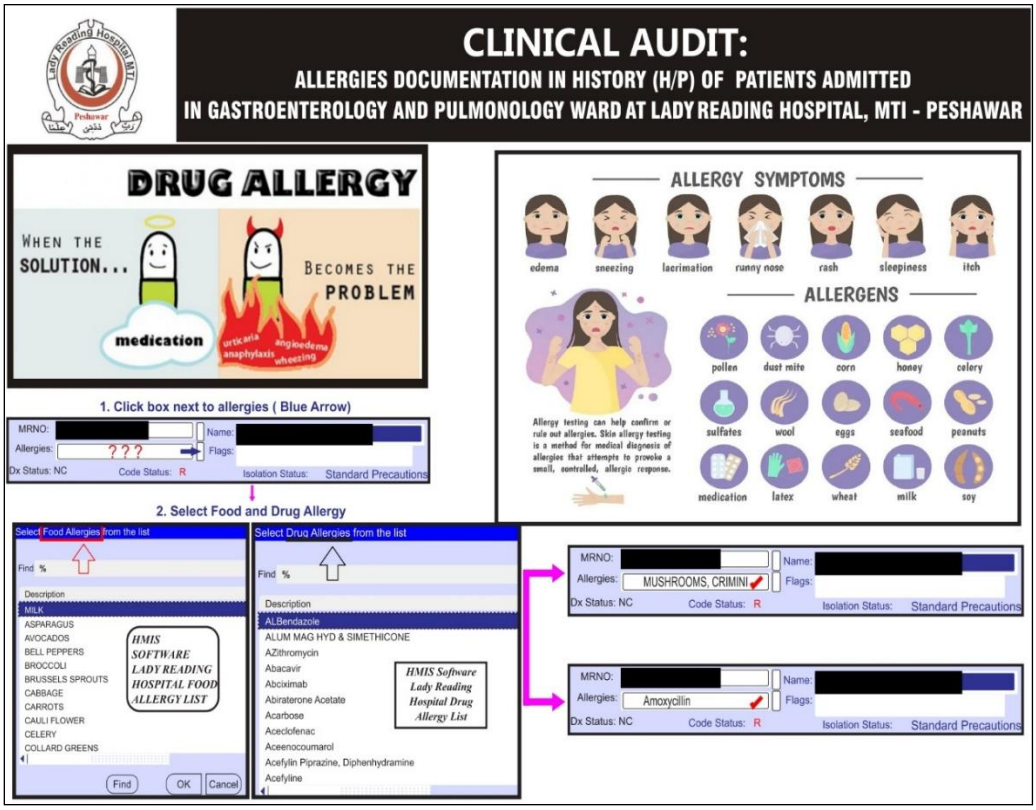

Figure G: Informative Pamphlets for Increasing Allergy Awareness in Wards

DISCUSSION

Drug hypersensitivity reactions, including allergic responses to medications, result from heightened immune or inflammatory responses. [6] These reactions are mediated by basophils and mast cells, leading to symptoms such as rash, hives, itching, swelling, wheezing, breathing difficulties, low blood pressure, and potentially life-threatening anaphylaxis.

In our initial audit, the documentation of allergies in the HMIS was recorded as 30% in the Gastroenterology ward and 40% in the Pulmonology ward. However, after implementing interventions, the second audit cycle demonstrated a significant improvement, with 100% compliance in documenting allergy status, as depicted in Figure D. Similar findings were reported by Graham-Clarke *et al.* (2010), where lower documentation rates were observed in the first cycle of their audit due to various

factors.[7] In their study, medications were the primary cause of allergies, with antibiotics such as penicillin being the most frequently reported (n=22), along with other medications like aspirin, cyclizine, metoclopramide, co-codamol, barium meal, and paracetamol.[7] Like Graham-Clarke *et al*., we utilized a computerized system—HMIS for our audit—while they used electronic patient records (EPR). Our first cycle findings also aligned with Khalil *et al*. (2011), who found that in a rural Australian hospital, 48% of patient records reported some form of allergy, but only 0.6% had accurately documented details.[8] Khalil *et al*. emphasized the need for healthcare professionals to actively identify and accurately record drug allergies to enhance patient safety[8]. Similarly, Farooq *et al*. (2008) found that 30% of preoperative drug charts in a surgical department lacked documented allergy information, and recommended strategies like computerized systems and staff education.[9] Rehman *et al*. (2022) also conducted a clinical audit on drug allergy documentation in a cardiology unit. Initially, 93% of clinical notes recorded allergies, which improved to 100% after interventions.[10] Our audit mirrored this process, as we conducted two cycles, achieving 100% documentation in the final cycle. The primary difference was that we used an HMIS, whereas Rehman *et al*. documented allergies in patient charts. One limitation of our study is the small sample size, as this was a clinical audit rather than a comprehensive research project. This restricted the focus to a specific patient subset within the Gastroenterology and Pulmonology wards. In future, we plan to conduct a broader study assessing allergy documentation across all wards at Lady Reading Hospital MTI Peshawar. Another limitation was the lack of distinction between different types of allergies, such as food versus drug allergies, an area we aim to explore in future research. Additionally, we plan to use a sample size calculator to ensure an appropriate sample size for our expanded study. Finally, our audit only covered two departments, so the findings may not be representative of the entire hospital. A more comprehensive study including all departments will provide a clearer understanding of the overall state of allergy documentation at the hospital.

CONCLUSION

Following the implementation of recommendations, the documentation of allergies in the HMIS at Lady Reading Hospital MTI Peshawar significantly improved, contributing to the prevention of allergic reactions in patients admitted to the Gastroenterology and Pulmonology wards

AUTHORS' CONTRIBUTION

MHK: Conceptualization. MHK, UFM, MKS: Supervision & Project Administration. AM, MND, MHK, BA, AMK: Manuscript Writing. JT, MKS, AMK, MHK, UFM, MND, AJ: Data Collection. MKS, UFM, AJ, MND, AM: Results Analysis & Interpretation. MHK, UFM, MKS, AJ, MND: Recommendations Development. AM: Manuscript Review & Editing. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work.

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