Frontiers in Health Informatics
ISSN-Online: 2676-7104
www.healthinformaticsjournal.com
2024; Vol 13: Issue 3
Open Access

Effect Of An Educational Intervention On Completeness Of Medical Record Documentation In A Teaching Hospital: A Pre And Post Interventional Study

[1]Gouri N Malipatil, [2]Dr. Vijaykumar Kalyanappagol, [3]Dr. Chandrika. Doddihal

[1]*Ph.D. Scholar (Junior Research Fellow), Department of Hospital Administration, BLDE (Deemed to be University), Vijayapura, Karnataka, India – 586103
gouri.malipatil@gmail.com

[2]HOD, Department of Hospital Administration, BLDE (Deemed to be University), Vijayapura, Karnataka, India – 586103

[3]Associate Professor, Department of Community Medicine, BLDE (Deemed to be University), Vijayapura, Karnataka, India – 586103

Cite this paper as: Gouri N Malipatil, Vijaykumar Kalyanappagol,Chandrika. Doddihal (2024) Effect Of An Educational Intervention On Completeness Of Medical Record Documentation In A Teaching Hospital: A Pre And Post Interventional Study. *Frontiers in Health Informatics, 13* (3),4205-4213

ABSTRACT

Introduction: *Medical documentation is essential for patient care, ensuring clear communication among providers, facilitating quality assessment, and supporting research, all while adhering to standards of completeness, clarity, traceability, and truthfulness. Facilities implement various strategies to enhance medical record accuracy. Accurate and accessible medical records are crucial for effective healthcare. Inadequate documentation hampers clinical decisions, while training and best practices improve record quality and hospital administration efficiency.*

Methods: *In 2023, a pre-and post-interventional study was conducted at Shri B M Patil Medical College and Research Centre, Vijayapura, Karnataka. This analysis examined 500 inpatient medical records—250 before and 250 after a targeted intervention to enhance documentation accuracy and completeness. A systematic random sampling method was used to select records from surgical and allied departments. A four-day workshop trained healthcare staff on documentation principles in line with WHO and NABH guidelines. A validated deficiency checklist was utilized to assess records based on crucial patient assessment elements, ultimately evaluating the effectiveness of the educational initiative.*

Results: *The study demonstrated notable improvements in documentation completeness across various medical forms. For instance, OPD registration rose to 96.0%, while discharge summaries reached 100%. Other areas, including final diagnoses and consent forms, also significantly increased, enhancing overall efficiency and accuracy in patient record-keeping and care processes.*

Conclusion: *The inpatient discharge summary reached an impressive 100% completeness, starkly contrasting the 76% completion rate of investigation reports. This project illustrates those simple measures, like standardizing medical record formats and training healthcare providers, can greatly improve the thoroughness of medical records, ultimately enhancing healthcare quality.*

Keywords: *Medical Record Documentation, Completeness, Intervention*

Introduction

Medical documentation is comprehensive evidence for patients and is integral to their care through medical

reporting (1). It systematically records events and actions taken during patient treatment, authenticated by qualified professionals (2,3). This practice is crucial for data collection and facilitates communication among healthcare providers within hospitals. Furthermore, medical records are a key metric for evaluating the quality of healthcare services offered in these institutions (4).

Medical records serve multiple functions in patient care management, quality assessment, claims processing, education, research, and public health. They benefit patients through improved care, providers by minimizing caregiver challenges, and professionals by enhancing knowledge. Research outlines four essential standards for proper medical record compilation: Completeness (all sections must be filled), Clarity (handwriting and signatures must be legible), Traceability (activities and responsible personnel should be easily identifiable), and Truthfulness (events must be accurately and promptly documented). Despite these criteria, medical records are frequently not completed satisfactorily (5-11).

The World Health Organization (2003) defines quantitative analysis as a method for auditing medical records to ensure comprehensive healthcare documentation. This process involves verifying that all pertinent details, including accurate patient identification information, are thoroughly recorded in the medical record to maintain accuracy and completeness (12).

The principle “If it is not documented, it does not exist" emphasizes the critical role of documentation in healthcare (13). To improve the completeness of medical records, hospitals and health facilities have adopted numerous strategies and measures to ensure comprehensive and accurate documentation of patient information for effective healthcare delivery.

Maintaining comprehensive medical records enables physicians to monitor patients' medical histories and identify associated issues. Research indicates a strong correlation between quality documentation and continuity of care, patient engagement, and patient-centred services (14, 15-17). Proper record-keeping enhances patient well-being, care quality, and satisfaction, ultimately contributing to an improved quality of life within society (18, 19, 16, 20).

A significant portion of clinical documentation remains handwritten, making it prone to various errors in record-keeping. Common issues include illegible handwriting, incorrect patient identification, faulty timestamping, missing signatures, and lost records (21,22). Any of these factors, individually or together, can lead to medical mistakes and jeopardize patient safety (23). Electronic Health Records (EHRs) are suggested as a remedy to help healthcare professionals produce accurate clinical documentation.

Accurate, reliable, and accessible medical records are essential for advancing medical science and effective healthcare management (24). Inadequate information within these records may result in clinicians delaying their decisions or making erroneous choices, ultimately compromising patient care and the overall efficacy of the healthcare system (25).

A systematic review has revealed that numerous countries have expressed concerns regarding the incompleteness, inappropriateness, and illegibility of medical records (26, 27). Recently, various high-level health and safety planning strategies have sought to identify the factors that enhance the quality of medical care (28).

Instructive interventions have been demonstrated to significantly enhance the documentation quality in medical records (29-30). According to the American Health Information Management Association (AHIMA), training programs are highly effective in improving this process. Furthermore, best practices for enhancing documentation include implementing incentive programs, updating, and redesigning medical forms, routinely reviewing records, and ensuring that physicians have optimal opportunities to access and complete medical records (31). Proper documentation also contributes to the efficient operation of hospital administration.

Materials and Methods

This pre- and post-interventional study was undertaken in 2023 at Shri B M Patil Medical College Hospital and Research Centre in Vijayapura, Karnataka, a 1,200-bed teaching hospital serving over 50,000 patients annually and accredited by NABH. The analysis involved 500 inpatient medical records, comprising 250 case sheets from before the intervention and 250 from after, gathered from various departments, including Surgery, Obstetrics and Gynaecology, Orthopaedics, ENT, Neurosurgery, and Urology.

A systematic random sampling ref. A Study on the Completeness Level of Inpatient Medical Record Documentation (32) method was employed to select medical records before an intervention. Following a four-day workshop for nodal officers, junior residents, and nursing staff from surgical and allied departments, the quality of the records was assessed one month later. This study aimed to evaluate the effectiveness of educational training in enhancing the accuracy and completeness of medical records.

The workshop focused on documentation principles that are aligned with the latest guidelines from the World Health Organization (WHO) and the National Accreditation Board for Hospitals and Healthcare Providers (NABH). Led by the Resident Medical Officer (RMO), the course highlighted proper documentation techniques and essential components that must be recorded. Participants reviewed de-identified medical files to identify and discuss missing or incomplete information as a practical assessment.

The researcher used a deficiency checklist, validated by a professor, based on national and international accreditation standards. The checklist covered 13 key elements for a comprehensive patient assessment, categorized as complete or incomplete. These elements included forms like OPD registration form**,** Discharge/Death summary and date**,** Final diagnosis**,** Unit chief seal and signature**,** History sheet**,** Doctor's orders**,** Nurse's daily records**,** TPR (Temperature, Pulse, Respiration) records**,** Surgery consent**,** Anaesthesia consent**,** Anaesthesia records**,** Operation records**,** Investigation reports.

Statistical analysis

With the anticipated proportion of an enhancement of completeness and reporting of medical record completeness by physicians and nurses, 73% baseline and 84% after intervention ref. Improving Completeness of Inpatient Medical Records in Menelik II Referral Hospital, Addis Ababa, Ethiopia. (33) respectively. The study would require a minimum sample size of 250 (Total sample size, i.e. before and after the intervention is 500) to achieve a power of 95%detecting a difference in proportions between before and after the intervention at a two-sided p-value of 0.05. using statulator software.

Results

Table 1: Comparison of completeness of medical record documentation between pre and post-test

Comparison Between Pre & Post Test	Pre-Test		Post Test		Difference In Completeness N (%)	Mcnemar Chi-Square Test
	N	%	N	%		
OPD Registration Form						
Complete	228	91.2	240	96.0	12(5%)	P=0.024*
Incomplete	22	8.8	10	4.0		
Discharge/Death Summary						
Complete	243	97.2	250	100.0	7(2.8%)	NA
Incomplete	7	2.8	0	0		

Final Diagnosis						
Complete	174	69.6	201	80.4	27(13%)	P=0.004*
Incomplete	76	30.4	49	19.6		
Unit Chief Signature and Seal						
Complete	176	70.4	209	83.6	33(16%)	P=0.001*
Incomplete	74	29.6	41	16.4		
History Sheet						
Complete	193	77.2	228	91.2	35(15%)	P=0.001*
Incomplete	57	22.8	22	8.8		
Doctor's Order						
Complete	227	90.8	245	98.0	18(7%)	P=0.001*
Incomplete	23	9.2	5	2.0		
Nurse's Daily Records						
Complete	219	87.6	240	96.0	21(9%)	P=0.001*
Incomplete	31	12.4	10	4.0		
T.P.R Chart						
Complete	197	78.8	224	89.6	27(12%)	P=0.024*
Incomplete	53	21.2	26	10.4		
Surgery Consent						
Complete	181	72.4	202	80.8	21(10%)	P=0.044*
Incomplete	69	27.6	48	19.2		
Anaesthesia Consent						
Complete	189	75.6	223	89.2	34(15%)	P=0.001*
Incomplete	61	24.4	27	10.8		
Anaesthesia Records						
Complete	215	86.0	239	95.6	14(6%)	P=0.001*
Incomplete	35	14.0	11	4.4		
Operation Records						
Complete	196	78.4	228	91.2	32(14%)	P=0.001*
Incomplete	54	21.6	22	8.8		
Investigation Reports						
Complete	167	66.8	190	76.0	23(12%)	P=0.030*

Incomplete	83	33.2	60	24.0		
Total	250	100.0	250	100.0		
*: Statistically Significant						

Examining the completeness of various medical documentation forms pre- and post-intervention reveals significant improvements across multiple parameters. The data collected highlights the percentage of completeness and the statistical significance of the observed differences.

Outpatient Department (OPD) Registration Form: The completeness improved from 91.2% (N=228) in the pre-test to 96.0% (N=240) in the post-test, resulting in a significant difference of 5% (P=0.024).

Discharge/Death Summary: All summaries were complete in the post-test phase (100%, N=250), a notable improvement from 97.2% (N=243) in the pre-test, with a reduction in incomplete forms from 7 (2.8%) to 0 (0%).

Final Diagnosis: The percentage of complete diagnoses rose from 69.6% (N=174) to 80.4% (N=201), illustrating a substantial increase of 13% with statistical significance (P=0.004).

Unit Chief Signature and Seal: The completeness increased from 70.4% (N=176) before intervention to 83.6% (N=209) post-intervention, demonstrating a significant enhancement of 16% (P=0.001).

History Sheet: Completeness improved notably from 77.2% (N=193) to 91.2% (N=228), indicating a difference of 15% (P=0.001).

Doctor's Order: The proportion of complete orders escalated from 90.8% (N=227) to 98.0% (N=245), with a significant difference of 7% (P=0.001).

Nurse's Daily Records: Document completeness rose from 87.6% (N=219) to 96.0% (N=240), reflecting a 9% enhancement (P=0.001).

T.P.R Chart: Completeness increased from 78.8% (N=197) to 89.6% (N=224), marking a significant improvement of 12% (P=0.024).

Surgery Consent: The completeness of surgical consent forms rose from 72.4% (N=181) to 80.8% (N=202), demonstrating a significant difference of 10% (P=0.044).

Anaesthesia Consent: The data revealed an increase from 75.6% (N=189) to 89.2% (N=223), with a significant 15% improvement (P=0.001).

Anaesthesia Records: Completeness improved from 86.0% (N=215) to 95.6% (N=239), reflecting a 6% increase (P=0.001).

Operation Records: The percentage of complete operation records increased from 78.4% (N=196) to 91.2% (N=228), indicating a significant enhancement of 14% (P=0.001).

Investigation Reports: This category showed an improvement from 66.8% (N=167) to 76.0% (N=190), with a statistically significant increase of 12% (P=0.030).

Overall, the data indicates a marked improvement in the completeness of medical records across all examined categories, underscored by statistically significant results affirming the intervention's effectiveness.

Discussion

This study demonstrates a significant improvement in documentation quality following an educational workshop. Our findings indicate that education can enhance the documentation rates of various medical data

components. Initially, data handlers focused little on accurately documenting critical items such as final diagnoses and unit chief signatures, while lab tests and imaging reports were often insufficiently attached. Conversely, outpatient forms, discharge summaries, doctor's orders, nursing records, and anesthesia documentation were recorded accurately from the outset. Notably, one-month post-intervention, documentation of certain items showed a slight increase, highlighting the workshop's positive impact on documentation rates.

A study conducted in Addis Ababa, Ethiopia (33) supports our findings that implementing straightforward interventions can significantly enhance the thoroughness of inpatient medical records. Following these interventions, the completeness of medical records increased from a baseline of 73% to 84% during the post-intervention assessment. This suggests that adopting a series of targeted measures can effectively improve the completeness of medical documentation in healthcare settings.

A study conducted in Tehran, Iran (12) revealed that the absence of progress notes in medical records was the most significant issue, with 68.4% of inpatients lacking this documentation. Conversely, the recording time for the physician's initial visit was the least problematic, at 17.5%. Implementing a defective elimination form significantly improved the completion of medical records, highlighting the importance of systematic approaches in enhancing documentation practices within healthcare settings.

A study in Ethiopia (34) demonstrated a substantial enhancement in the completeness of medical records within the inpatient department, which rose from 53% to 82%. This improvement was achieved through a project in which a multidisciplinary team utilized a fishbone diagram to identify root causes and developed intervention strategies, followed by an action plan. A series of Plan-Do-Study-Act (PDSA) cycles were implemented, with feedback provided to unit heads and care providers after a thorough analysis of the results, leading to notable advancement in documentation quality.

In their 2015 study, Tavakoli et al. (35) identified inadequate education as a primary factor contributing to the poor quality of medical records. The authors asserted that targeted educational efforts could significantly enhance documentation practices, particularly when implemented through brief and repeated training sessions. Supporting research (36 – 38) further corroborates the notion that educational interventions effectively promote improved behaviours among healthcare providers concerning medical record documentation.

Medical records function as legal documents; thorough documentation is the most reliable defence in establishing whether a procedure was performed. Documentation is more objective and less prone to error than personal testimony. Guidelines exist regarding the content and enhancement of medical records. Research indicates that professional development workshops and personalized feedback can significantly elevate the quality of medical documentation, suggesting that healthcare institutions should consider implementing such initiatives to improve record-keeping practices.

Conclusion

The inpatient discharge summary achieved a remarkable 100% completeness rate, contrasting with investigation reports, which had a mere 76% completion. This project demonstrates that implementing straightforward interventions, such as standardizing inpatient medical record formats and providing training for healthcare providers, significantly enhances the completeness of medical records. The findings suggest that employing strategic problem-solving approaches can effectively bolster healthcare quality by improving the thoroughness of medical records.

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