International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

Check for updates

Audit of anaesthetic chart documentation in private hospitals in Port Harcourt, Rivers State, Nigeria

Chigozie Benedeth Uwandu *, Fiekabo Hart and Christie Nwidum Mato

Department of Anaesthesia, University of Port Harcourt Teaching Hospital, Port Harcourt, P.M.B 500001, Port Harcourt, Rivers state Nigeria.

International Journal of Science and Research Archive, 2025, 15(01), 098-104

Publication history: Received on 21 February 2025; revised on 28 March 2025; accepted on 30 March 2025

Article DOI: https://doi.org/10.30574/ijsra.2025.15.1.0916

Abstract

Background: The Anaesthetic chart is a vital tool that depicts correct documentation of perioperative anaesthetic management of patients; it ensures standard of care, continuity of care and medico-legal protection when filled properly. The aim of this study was to evaluate the availability and quality of anaesthetic chart documentation and the factors that affect the routine use in private hospitals in Port Harcourt, Rivers State, Nigeria.

Methods: This was a one-year retrospective review of anaesthetic record-keeping in five high- volume private hospitals in Port Harcourt. Information on the use, appropriateness and legibility of the anaesthetic charts were obtained. Data analysis was done with SPSS version 20.0. Chi-square tests were used to determine the relationship between chart availability and documentation quality, with statistical significance defined as $P < 0.05$.

Results: All 5 hospitals had anaesthetic charts. Records of 442 surgeries were assessed, 300 (67.9%) surgeries had anaesthetic charts while 142 cases (32.1%) had no charts filled. Of the 300 charts, 105 (35.0%) were correctly filled, 118 (39.3%) were incompletely filled, and 77 (25.7%) were not legible. Chi-square analysis showed that there was no statistically significant association between availability of charts and documentation quality ($\chi^2 = 5.07$, $P = 0.167$).

Conclusion: Anaesthetic charts were filled in majority of surgeries carried out; however, the quality of documentation was unsatisfactory and needs to be improved upon

Keywords: Anaesthetic chart; Documentation; Private hospitals; Port Harcourt

1. Introduction

The Anaesthetic chart is a vital tool that depicts correct documentation of perioperative anaesthetic management of patients when properly filled. Anaesthesia complications contribute considerably to perioperative morbidity and mortality globally, with low- and middle-income countries (LMICs) experiencing rates 10–100 times more than high-income countries[1]. In LMICs, these risks could be worsened by substandard anaesthetic chart documentation often characterized by incomplete, inconsistent, or illegible documentation. Accurate anaesthetic chart documentation ensures standard of care, effective communication, adequate monitoring with prompt intervention, thereby playing a key role in reducing anaesthesia-related complications. Anaesthesia is an integral part of surgical safety, thus activities in the anaesthetic process must be carried out in such a way as to ensure maximum safety of the patient[2].

Anaesthesia practice in developing countries is fraught with challenges but safe anaesthesia is still achievable with sound clinical practice, effective communication and meticulous record keeping. The demand for surgical services seems to be on the increase in Port Harcourt, one of Nigeria's most vibrant metropolises in the Niger Delta[3] and the

* Corresponding author: Chigozie Benedeth Uwandu

capital of Rivers state. The private hospitals come to the rescue to serve the surgical population when the two government tertiary hospitals are full.

Record keeping in anaesthesia has been on as far back as 1895[4] and this is majorly in the anaesthetic chart. The details of patient's biodata, preoperative assessments, intraoperative management, and postoperative recovery are documented in the charts[5,6]. Meticulously documented anaesthesia charts are valuable for auditing the anaesthesia practice and offers medico-legal protection. Sometimes manually writing the anaesthetic charts consume time and this may negatively affect the documentation quality. Notwithstanding their importance, poorly written, incomplete and illegible anaesthetic charts may be seen in LMICs, but this varies across government-owned and private facilities. These suboptimal documentation practices were also noted in the audit of anaesthetic charts in a Nigerian teaching hospital[7]. Studies on anaesthetic chart usage and documentation have been carried out in public hospitals,[7,8] but there is a dearth of publications on the use of anaesthetic charts in private hospitals in Nigeria.

This retrospective study was therefore carried out to assess the anaesthetic chart usage and documentation in private hospitals in Port Harcourt and evaluate factors which affect or influence documentation quality.

2. Material and methods

2.1. Study Area

Port Harcourt, Rivers State, Nigeria.

2.2. Study Setting

The study took place in 5 private hospitals in Port Harcourt, Nigeria.

2.3. Research design

This was a retrospective review.

2.4. Study population

Hospital folders of patients who had surgery in the 5 private hospitals that consented to be part of the study.

2.5. Study duration

12 months from January 2023 to December 2023

2.6. Study instrument

Review of records of patients who underwent surgery requiring anaesthesia for surgery or diagnostic procedures.

2.7. Data obtained

- The availability of anaesthetic charts
- The availability of filled anaesthetic charts.
- The completeness of the chart (indicated as completely filled versus incompletely filled).
- The legibility of the entries (if one can read the drugs, dosages and etc.).

2.8. Data analysis

The data was analysed with SPSS version 20.0, Frequencies and percentages were calculated. The association between chart availability and documentation quality was computed by Chi-square tests. Statistical significance was set at $P < 0.05$.

3. Results

A total of 442 surgeries were performed between January 2023 and December 2023 in the five private hospitals. Anaesthetic charts were available in all 5 hospitals.

Table 1 shows a summary of the parameters reviewed in the patient's records. Out of the 442 surgeries, 300 (67.9%) had anaesthetic charts but there were no charts filled for 142(32.1%) patients (Fig 1). One hundred and five (35.0%) anaesthetic charts were completely and correctly filled, 118 (39.3%) cases were incompletely filled and 77 (25.7%) were not legible (Figure 2).

Table 1 Summary of the parameters reviewed

Parameter	**Number of cases**	**Percentage%**	**P-Value**
Total Surgery/Anaesthesia	442	100	
Chart availability			
Chart available	300	67.9	
Chart not available	142	32.1	0.167
Documentation quality			
Filled	105	35.0	
Incompletely filled	118	39.3	
Not legible	77	25.7	

The relationship between chart availability and documentation quality was analysed by Chi-square to produce a χ^2 value of 5.07 with a p-value of 0.167. There was no statistically significant relationship between the availability of anaesthetic charts and the documentation quality as $P > 0.05$.

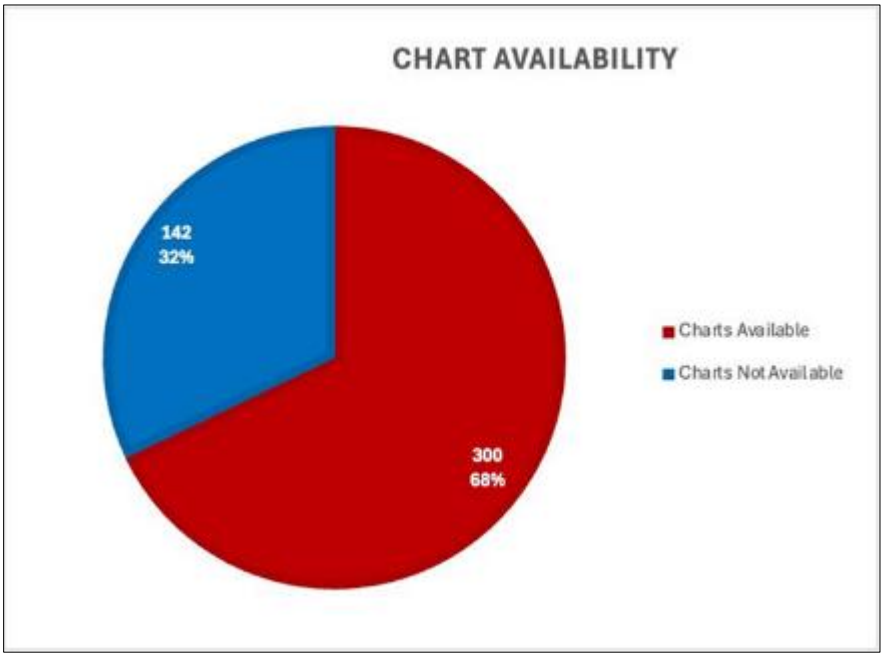

Figure 1 Percentage of surgeries with or without anaesthetic chart

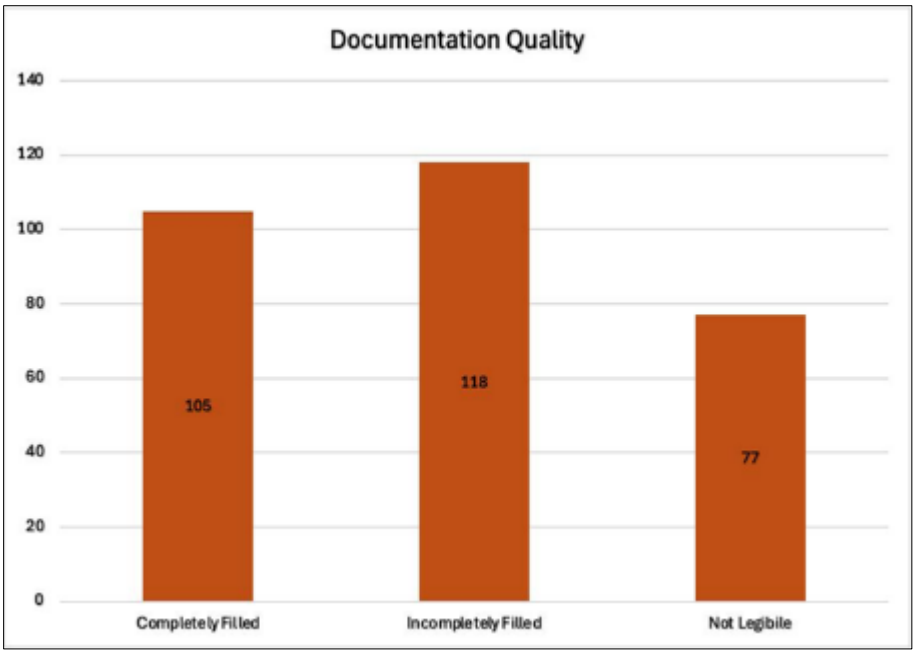

Figure 2 Documentation quality, comparing those completely filled, incompletely filled and those not legible

4. Discussion

Anaesthetists, like other medical professionals are expected to keep accurate documentation of all their professional interactions with the patients (consultations, ward rounds and procedures etc.). In Nigeria, the Anaesthetist usually reviews the patients in the ward a day prior to the surgery day except on those occasions when they are invited to review the patient earlier[6]. The pre-anaesthetic review is usually documented in the patient's folder and can be used as a reference in future. However, documentations during anaesthesia are usually done in the anaesthetic chart. The details of every anaesthetic given to any patient must be recorded in the anaesthetic chart. The anaesthetic chart is a vital tool for documenting accurate anaesthesia records essential for effective communication among colleagues, review by external organizations[8,9] including medico-legal reviews, audits and for research purposes. It usually contains the following[6] information:

- Patient's Details: Name, age, hospital number, medical history, allergies.
- Preoperative Assessment: ASA classification, diagnosis, planned procedure, consent.
- Anaesthetic Plan: Type of anaesthesia, drugs, dosages.
- Time stamps for induction, incision, end of surgery, emergence etc.
- Intraoperative Monitoring: Vital signs including oxygen saturation, drugs, fluids, key events, complications.
- Postoperative Care: Recovery details, pain management and postoperative complications if any.

Correct and comprehensive record keeping of anaesthetic care is necessary for safe perioperative care, continuity of care and medico-legal protection.[7] Although a significant number of surgeries in the private hospitals was observed to have an anaesthetic chart filled (67.9%), there was still a gap in the quality of documentation. Only 35.0% of the available charts were completely filled, while a substantial number were either incomplete (39.3%) or not legible (25.7%).

The finding of 142 surgeries (32.1%) in the surveyed private hospitals without anaesthetic charts is alarming. The importance of filling an anaesthetic chart during anaesthesia cannot be overemphasized because it ensures that the continuity of care for patients is maintained, as noted by Mathioudakis et al[6] who observed that medical professionals have access to the patient's previous anaesthetic exposures through the anaesthetic chart. This helps all the key players to be up to date with information and mitigates against critical incidents. For example, a patient who had a difficult intubation situation recorded in a previous anaesthetic chart, will guide future anaesthetists to prepare adequately to manage the patient's airway.

Medico-legal claims in Nigeria are gradually coming to life unlike in the past when such were hardly heard. Accurate anaesthetic chart records are protective to the medical practitioners should there be any litigation against the doctor. The non-availability of anaesthetic charts can be interpreted as evidence of negligence,[10] reflecting poorly on the standard of care given to the patients. This supports the maxim "if it is not documented, it didn't happen.[10]

Among the filled anaesthetic charts, the documentation quality was discovered to be poor. Only about 35.0% of the available charts were completely filled with the rest found to be incompletely filled and illegible. Other researchers[11,12] also reported similar completion rates ranging from 35% to 63.88%, and these situations are all less than ideal. Documentation protocols need standardization to ensure better compliance.

A significant proportion of the filled charts was found to be incomplete charts (39.3%) and this shows that there is likelihood of omission of some important information. Raymer[9] and Shinde et al[13] also reported similar findings and attributed it to insufficient time and substandard training as possible reasons.

Some of the available anaesthetic records were difficult to decipher because of poor handwriting and this hinders effective communication among the medical professionals. The usefulness of such charts is limited, and it may be caused by hurried writing or poorly designed anaesthetic charts. Handwritten records are known to be inadequate[11]. This has emphasized the need for transitioning to electronic systems which will ensure the standardization of entries and improve precision[8,14].

A Chi-square test was used to assess the association between chart availability and documentation quality. The analysis yielded a χ^2 value of 5.07 with a p-value of 0.167, indicating no statistically significant relationship between the two variables. This suggests that the deficiencies in documentation quality may be influenced by factors independent of whether the chart is available or not. Some of these factors include workload, staffing constraints, non-standardized chart formats, and inadequate training.

Workload and Staffing: In our experience, most often in private hospitals, the anaesthetists work alone with minimal support staff. One of the challenges of keeping an accurate, complete and legible anaesthetic chart is the high workload experienced by the lone anaesthetist with no support staff. This may lead to illegible records filled in a rush and incomplete too[15,16].

There is no standard anaesthetic chart format used in private hospitals; each hospital has their own style. This lack of standardized chart format produces inconsistent documentation practices .[9] During emergencies, there may be limited time to keep a good chart. The primary concern of the anaesthetists at such time is the care of the patients and this is usually prioritized over record keeping [5]. Lack of technological or electronic record systems also contribute to the problems of illegibility and incomplete anaesthetic charts.

Of significance is the fact that the anaesthetists who provide anaesthetic services in private hospitals also provide care in public hospitals; very few private hospitals have resident anaesthetists. This therefore shows that the standard of care reported in this study would be similar to what obtains in the public hospitals, reported in the study by Mato et al[7]

More recent studies[17,18,19] however indicate an improvement in record keeping by anaesthetists, but hospitals need to be encouraged to invest in computer-generated record keeping which have been shown to eliminate issues with illegible parameters.

Recommendations

To improve the standard of anaesthetic record keeping in the private health sectors, the following are recommended:

- The training and retraining of anaesthetists to emphasize the importance of accurate and complete documentation [8].
- Anaesthetic chart format should be standardized or electronic record systems adopted to improve accuracy, consistency and documentation quality in line with international best practices in anaesthesia.[17,20,21]
- The private facilities should create policies that insist that anaesthetic charts be completed before patients leave the operating theatre and these must also be monitored and audited regularly.[22]

Limitations and Future Directions

- One of the limitations of this work is the numbers of hospitals reviewed - 05. A future study involving more facilities should be carried out.
- This study does not demonstrate qualitative reasons responsible for the documentation deficiencies, though it provides valuable insights.
- Future research should incorporate interviews or focus group discussions with anaesthetic personnel to identify specific barriers to optimal documentation.
- In addition, further work to compare manual and electronic record systems could also highlight ways for improvement

5. Conclusion

This study revealed gaps in the anaesthetic record-keeping in 5 private hospitals in Port Harcourt, with a significant portion of charts either incompletely filled or not legible. However, Chi-square analysis indicated no statistically significant association between chart availability and documentation quality (χ^2 = 5.07, P = 0.167), suggesting that factors influencing documentation quality extend beyond mere availability. The observed gaps in documentation gaps can be bridged by regular training programs, standardization of chart format, and electronic record system adoption. All anaesthetists must strive to document accurately regardless of workload because it implies that the appropriate standard of care has been carried out and offers medico-legal protection.

Compliance with ethical standards

Disclosure of conflict of interest

There is no conflict of interest.

Statement of ethical approval

Approval was obtained from the Medical Directors of the private hospitals that consented to be part of the study.

Statement of informed consent

Secondary data was used, there was no direct contact with patients.

References

[1] Weiser TG, Haynes AB, Molina G, Lipsitz SR, Esquivel MM, Uribe-Leitz T, et al. Estimate of the global volume of surgery: a modelling strategy based on available data. Lancet. 2008;372(9633):139-144.

[2] Haynes AB, Weiser TG, Berry WR, Lipsitz SR, Breizat AH, Dellinger EP, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. N Engl J Med. 2009;360(5):491-499.

[3] Population of cities in Nigeria [Internet]. World Population Review. 2021 [cited 2021 Nov 19]. Available from: https://www.worldpopulationreview.com/

[4] Beecher HK. The first anaesthesia records. Surg Gynecol Obstet. 1940;71:689-693.

[5] Zemedkun A, Mulugeta H, Getachew H, Destaw B, Mola S, Milkias M. Assessment of manual intraoperative anaesthesia record-keeping practice at Dilla University Referral Hospital, Dilla, Ethiopia. Open Access Surg. 2021;14:1.

[6] Mathioudakis A, Rousalova I, Gagnat AA, Titus C. How to keep good clinical records. Breathe. 2016;12(4):371-375.

[7] Mato CN, Otokwala JO. An audit of anaesthetic record charts in the orthopaedic theatre of a Nigerian teaching hospital. Nig J Surg. 2007;13:12-15.

[8] Kadry B, Feaster WW, Macario A, Ehrenfeld JM. Anaesthesia information management systems: past, present, and future of anaesthesia records. Mt Sinai J Med. 2012;79:154-165.

[9] Raymer K. The anaesthetic record: how content and design influence function in anaesthetic practice and beyond. J Anaesth Clin Res. 2011;4(2):1-7.

[10] Modell JH, Layon J, Modell CS. Ethical and legal aspects. In: Miller RD, editor. Miller's Anesthesia. 5th ed. Philadelphia: Churchill Livingstone; 2000. p. 2721-41.

[11] Devitt JH, Rousalova I, Kurrek M, Cohen MM, Shaw M. The anaesthetic record: accuracy and completeness. Can J Anaesth. 1999;46:122-128.

[12] Ige FO, Adesina K, Fatoba M. Completeness of manual anaesthesia records in a tertiary facility in Nigeria. J Med Trop. 2017;19(2):86-89.

[13] Shinde SS, Parak S, Bhati S, Sahay N, Battu GS. Medico-legal and ethical issues in anaesthesiology profession. Indian J Anaesth. 2021;65(1):54.

[14] Feldman JM. Do anaesthesia information systems increase malpractice exposure? Results of a survey. Anaesth Analg. 2004;99(3):840-843.

[15] Momin SG. Survey of anaesthesiologists' reactions to implementation of laws related to anaesthesia practice. Indian J Anaesth. 2015;59(2):103.

[16] Metha R, Choksi T, Gupta P, Bhargava S, Bajwa SJS. Private practice in anaesthesia: A comprehensive analysis. Indian J Anaesth. 2021;65(1):68-72.

[17] Tse MK, Li SYW, Chiu TH, Lau CW, Lam KM, Cheng CPB. Comparison of the effects of automated and manual record keeping on anaesthetists' monitoring performance: randomized controlled simulation study. JMIR Hum Factors. 2020 Jun 16;7(2):e16036. doi:10.2196/16036.

[18] Merry AF, Webster CS, Hannam J, Mitchell SJ, Henderson R, Reid P, et al. Multimodal system designed to reduce errors in recording and administration of drugs in anaesthesia: prospective randomised clinical evaluation. BMJ. 2011 Sep 13;343:d5543. doi:10.1136/bmj.d5543.

[19] Currie G, Djebbari F, Quinn K, Lippke T, Page A, Salimi A, et al. Digitizing anesthesia paper health records using computer vision: Development and validation study. BMC Bioinformatics. 2024 Feb 22;25(1):59. doi:10.1186/s12859-024-05785-8.

[20] Clark C, Dickerson JE. Anaesthetic records. Anaesth Intensive Care Med. 2023;24(2):92-95. doi:10.1016/j.mpaic.2022.12.008.

[21] World Federation of Societies of Anaesthesiologists. International standards for a safe practice of anaesthesia. 2018 Edition. Available from: https://www.wfsahq.org/resources/safety-standards

[22] Popescu M, Yap J, Ng A, Nicholson K. Improving anaesthetic chart documentation. Clin Med. 2022;22(4 Suppl):66-67. doi:10.7861/clinmed.22-4-s66.