

أثر جودة البيانات السريرية على عملية الترميز الطبي في القصيم

The Impact of Clinical Data Quality on the Clinical Coding Process in

Qassim

مشروع تخرج

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Introduction

Clinical coding is a process of rewriting the medical intervention and diagnostic condition data in the patient file from the full descriptive term to numeric and alphanumeric codes.¹

For diagnoses, the codes are typically three to five alphanumeric digits, such as I10 and G40.40.

For interventions, the codes consist of seven numeric codes, such as 92515-99.²

Accurate and reliable clinical coding is essential for effective healthcare management, reimbursement, and research. Clinical coding involves the transformation of clinical data into standardized codes and the interpretation of patient information.²

These codes play a vital role in various healthcare activities, including billing, statistical analysis, quality improvement, and decision-making processes.²

The International Classification of Diseases (ICD-10-AM) is a well-known classification system and coding standard that is frequently used in the coding process.³

This system enables the consistent representation of healthcare diagnoses and interventions.

However, the quality of the clinical data used in the coding process can significantly impact its outcomes and downstream applications.³

The official coding of diseases began around the 17th century in England. Known as the London Bills of Mortality, certain data of diseases and ailments were collected and arranged into numerical codes. The numeric codes were then used to measure the most frequent causes of death.

On the other hand, clinical coding in Saudi Arabian MOH¹⁶ hospital start officially in 2019 after the program held by SCFHS¹⁷ which presented to around 600 coders divided to 3 batches.

Speaking on data, it is play a big role in how to code and has a huge impact on the result of coded files.⁷

Thus, to have a correct outcome from the coded files, you must have a correct data to reach out a fine product.¹⁰

Components of medical file data could be (Demographical and Medical), these data may found in two ways even a Paper-based or Electronic-based.⁸

HIM and other health practitioner are responsible of the data entry process.⁹

Research Problem

The research aims to address the following problems related to clinical coding and data quality:

- A) Identification of data quality issues in clinical coding.
- B) Understanding the consequences of data quality issues on coding accuracy and productivity.¹¹
- C) Need for strategies to improve data quality in the coding process.¹²

The Importance and Objectives of the Research

The primary objective of this research project is to investigate the impact of clinical data quality on the clinical coding process.⁴

By exploring this relationship, we aim to identify how data quality issues affect coding accuracy, productivity, and overall healthcare outcomes. Furthermore, this research seeks to provide insights into strategies for improving data quality in clinical coding practices, ultimately leading to enhanced patient care and data integrity.⁵

Importance of Addressing Data Quality in Clinical Coding¹⁴

The accurate and reliable coding of clinical data is crucial for several reasons. It ensures appropriate reimbursement for healthcare services provided, supports accurate statistical analysis for research and public health monitoring, facilitates effective healthcare management, and enables informed decision-making for patient care.⁶

Research Hypothesis

To address the research objective, this study will focus on the following key research questions:

- a) How does clinical data quality influence the accuracy of the clinical coding process?
- b) What impact does data quality have on the productivity of clinical coders?¹³
- c) How does compromised data integrity affect the clinical coding process?¹⁵
- d) What are the challenges and limitations associated with maintaining data quality in clinical coding?

Methodology

To answer the research questions and achieve the research objectives, a quantitative approach will be employed in this study.

The study design will be a cross-sectional study, and the sample will be selected based on the availability of Qassim Health Cluster Health information system that utilize clinical coding processes. Quantitative data will be collected through coding accuracy assessments, productivity measurements, and analysis of data quality indicators. Descriptive statistics will be used to analyze the quantitative data collected.

1. Study Design: A cross-sectional study design will be used to collect data from healthcare organizations and coding professionals.

2. **Sample Selection:** The sample will be selected based on the availability of Qassim Health Cluster that utilize clinical coding processes. A purposive sampling technique will be employed to ensure the inclusion of the organization with varying sizes and characteristics.
3. **Data Collection:** Quantitative data will be collected through the following methods:
 - a) **Coding Accuracy Assessments:** A sample of coded medical records will be randomly selected for assessment. Trained coders will review the records and compare the assigned codes to the standard. Coding accuracy will be measured by calculating the percentage of correctly assigned codes.
 - b) **Productivity Measurements:** The coding productivity of clinical coders will be measured by recording the number of codes assigned per working day. This data will be collected through electronic coding systems.
 - c) **Data Quality Indicators:** Data quality indicators, such as completeness, accuracy, consistency, and timeliness, will be analyzed using predefined metrics and checklists. These indicators will provide quantitative measures of data quality in the coding process.
4. **Data Analysis:** Descriptive statistics will be used to analyze the quantitative data collected. The coding accuracy rate will be calculated as a percentage, indicating the level of agreement between assigned codes and the standard. Productivity measurements will be analyzed to determine the average number of codes assigned per working day. Data quality indicators will be assessed and reported quantitatively, providing insights into the overall quality of clinical data used in the coding process.
5. **Ethical Considerations:** Ethical guidelines regarding data privacy and confidentiality will be strictly followed throughout the research process. No personally identifiable information will be disclosed or reported.

Conclusion

By investigating the impact of clinical data quality on the clinical coding process, this research aims to contribute to the existing body of knowledge on healthcare management, data quality, and coding practices. The findings of this study will have implications for healthcare organizations, policymakers, and researchers seeking to optimize clinical coding processes and improve overall patient care.

References

1. de Lusignan, S., Minmagh, C., Kennedy, J., Zeimet, M., Bommeziijn, H., & Bryant, J. (2001). A survey to identify the clinical coding and classification systems currently in use across Europe. In *MEDINFO 2001* (pp. 86-89). IOS Press.
2. Roberts, R., Hirsch, N., Innes, K., & Truran, D. L. (1999). Casemix classification issues and change from ICD-9-CM to ICD-10-AM coding. *Casemix Quarterly*, 1(2).
3. Rae, K., Britt, H., Orchard, J., & Finch, C. (2005). Classifying sports medicine diagnoses: a comparison of the International classification of diseases 10-Australian modification (ICD-10-AM) and the Orchard sports injury classification system (OSICS-8). *British Journal of Sports Medicine*, 39(12), 907-911.
4. Juniati, V., Athwal, S., & Khandwala, M. (2019). Clinical coding and data quality in oculoplastic procedures. *Eye*, 33(11), 1733-1740.

5. Horsky, J., Drucker, E. A., & Ramelson, H. Z. (2017). Accuracy and completeness of clinical coding using ICD-10 for ambulatory visits. In *AMIA annual symposium proceedings* (Vol. 2017, p. 912). American Medical Informatics Association.
6. Nouraei, S. A. R., O'hanlon, S., Butler, C. R., Hadovsky, A., Donald, E., Benjamin, E., & Sandhu, G. S. (2009). A multidisciplinary audit of clinical coding accuracy in otolaryngology: financial, managerial and clinical governance considerations under payment-by-results. *Clinical Otolaryngology*, 34(1), 43-51.
7. Quan, H., Li, B., Duncan Saunders, L., Parsons, G. A., Nilsson, C. I., Alibhai, A., ... & IMECCHI investigators. (2008). Assessing validity of ICD-9-CM and ICD-10 administrative data in recording clinical conditions in a unique dually coded database. *Health services research*, 43(4), 1424-1441.
8. Tran, T., Luo, W., Phung, D., Gupta, S., Rana, S., Kennedy, R. L., ... & Venkatesh, S. (2014). A framework for feature extraction from hospital medical data with applications in risk prediction. *BMC bioinformatics*, 15(1), 1-9.
9. Salahuddin, L., Ismail, Z., Hashim, U. R., Ismail, N. H., Raja Ikram, R. R., Abdul Rahim, F., & Hassan, N. H. (2020). Healthcare practitioner behaviours that influence unsafe use of hospital information systems. *Health informatics journal*, 26(1), 420-434.
10. Davenport, R. J., Dennis, M. S., & Warlow, C. P. (1996). Effect of correcting outcome data for case mix: an example from stroke medicine. *Bmj*, 312(7045), 1503-1505.
11. Lucyk, K., Tang, K., & Quan, H. (2017). Barriers to data quality resulting from the process of coding health information to administrative data: a qualitative study. *BMC health services research*, 17, 1-10.

12. Hosseini, N., Kimiafar, K., Mostafavi, S. M., Kiani, B., Zendehtdel, K., Zareiyan, A., & Eslami, S. (2021). Factors affecting the quality of diagnosis coding data with a triangulation view: A qualitative study. *The International Journal of Health Planning and Management*, 36(5), 1666-1684.
13. Alonso, V., Santos, J. V., Pinto, M., Ferreira, J., Lema, I., Lopes, F., & Freitas, A. (2020). Problems and barriers during the process of clinical coding: a focus group study of coders' perceptions. *Journal of medical systems*, 44, 1-8.
14. Santos, S., Murphy, G., Baxter, K., & Robinson, K. M. (2008). Organisational factors affecting the quality of hospital clinical coding. *Health Information Management Journal*, 37(1), 25-37.
15. Shephard, J. (2020). Clinical coding and the quality and integrity of health data. *Health Information Management Journal*, 49(1), 3-4.
16. Ministry of Health.
17. Saudi Commission for Health Specialties.