

SYNOPSIS

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TITLE

To develop a novel framework for detecting fraud in healthcare systems by leveraging historical medical data, focusing on the entities of patients, doctors, and services.

INTRODUCTION

Healthcare fraud and abuse pose significant challenges globally, disrupting the integrity of medical reimbursement processes and undermining the delivery of quality care. In India, where healthcare resources are already strained by the demands of a vast and diverse population, tackling these issues is crucial. Despite specialized investigation departments dedicated to mitigating healthcare fraud, existing approaches often fall short, relying on reactive measures that prove inadequate in the face of the complex and diverse practices within the sector. The distinction between patterns of service availing and service providing in healthcare fraud is essential for understanding the actors involved and the methods employed. Service availing patterns involve patients or beneficiaries manipulating claims or misrepresenting their healthcare needs, potentially resulting in financial losses for insurers and providers. Conversely, service-providing patterns entail healthcare professionals, pharmacies, or hospitals deliberately misrepresenting facts, from billing for unnecessary treatments to duplicating services. Given the far-reaching consequences of healthcare fraud, extending beyond financial burdens to impact societal well-being and erode trust in healthcare systems, innovative approaches are needed. Our research proposes a novel framework leveraging advanced analytics and machine learning techniques to detect and prevent healthcare fraud proactively. By analysing comprehensive datasets encompassing patient, doctor, and service-level information, our framework aims to uncover nuanced patterns of fraud, enabling interventions to safeguard resources and promote transparency and accountability in the sector.

RESEARCH QUESTION

“How can a comprehensive framework be developed to effectively detect fraudulent activities in healthcare insurance claims using transactional data from a local hospital?”

OBJECTIVES

The objective of this study is to develop a comprehensive framework for detecting fraudulent activities in healthcare insurance claims using transactional data from a local hospital. The specific objectives are:

1. To understand five years (2013-2019) of insurance claim transactional data from the chosen local hospital.
2. With a view to build a fraud detection system to address the problem of health care fraud insurance claims data set will be used.
3. With the objective of minimizing the prevalence of improper payments in the United States Health and Human Services (HHS) programs, particularly Medicaid and the Children's Health Insurance Program (CHIP), it is proposed to consider and analyze trends in the payment data and the data from the cases examined under the False Claims Act.

MATERIAL AND METHODS

STUDY DESIGN: Descriptive and thematic analysis methods

SETTING: The study will utilize secondary data sourced from healthcare databases and insurance records across various regions in India. These databases contain anonymized patient records, provider information, billing details, and claims data from multiple healthcare facilities.

STUDY POPULATION:

- **Inclusion Criteria:** Participants include individuals whose data are included in the secondary databases, such as patients who have utilized healthcare services, healthcare providers (doctors, nurses, pharmacists), insurance company representatives, and regulatory authorities.
- **Exclusion Criteria:** Data that does not pertain to the research objectives or does not contribute meaningfully to the study outcomes, ensuring the focus remains on relevant patterns related to healthcare fraud.
- **Study Tools:** Data analysis will involve descriptive and thematic analysis methods to identify patterns and trends related to healthcare fraud. Descriptive methods will be used to summarize the characteristics of fraudulent activities, while thematic analysis will involve identifying recurring themes or patterns in the data related to fraud detection and prevention.

DURATION OF STUDY: 18TH MARCH 2024 – 18TH JUNE 2024

SAMPLING TECHNIQUE: Convenience Sampling

DATA COLLECTION PROCEDURE:

Data will be collected from pre-existing healthcare databases maintained by hospitals, insurance companies, and regulatory bodies. These databases contain information on patient demographics, diagnoses, treatments, prescriptions, billing codes, and claims processing.

OPERATIONAL DEFINITION

- **Insurance:** A formal contract between an insurer and an insured individual or group, where the insurer agrees to cover part or all of the healthcare expenses incurred by the insured in exchange for a premium.

- **Fraudulent Activities in Healthcare Insurance Claims:** Any intentional act or omission designed to deceive others, resulting in a benefit to the perpetrator or another person/entity that causes a loss to another party, particularly the payer of healthcare services
- **Fraud Detection Framework:** A systematic approach comprising methodologies, algorithms, and processes designed to identify and prevent fraudulent insurance claims.

DATA ANALYSIS PLAN

Data analysis will involve descriptive and thematic analysis methods to identify patterns and trends related to healthcare fraud. Descriptive methods will be used to summarize the characteristics of fraudulent activities, while thematic analysis will involve identifying recurring themes or patterns in the data related to fraud detection and prevention.

ETHICAL CONSIDERATIONS

Since the study involves the use of secondary data, ethical approval, and informed consent are not applicable. However, measures will be taken to ensure data privacy and confidentiality by existing regulations and guidelines governing the use of healthcare data for research purposes.

IMPLICATION OF RESEARCH

The research primarily focuses on healthcare fraud detection methodologies using insurance claim transactional data from a local hospital over the period of 2013 to 2019.

REFERENCE LIST

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