ASSESSING THE FEASIBILITY OF USING HOSPITAL DATA FOR ACCIDENT ANALYSES

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ABSTRACT-Road accidents are a significant public health concern in Sri Lanka. Accident data are usually collected from police inventories. However, hospital data can provide detailed information on the severity of injuries, the circumstances of accidents, and the demographic characteristics of the victims compared to police reports. This helps us understand accident patterns better and how they affect public health. With this comprehensive view, we can find under-reported accidents, accident hotspots, and specific risk factors. This helps policymakers to create targeted strategies to prevent accidents. Healthcare professionals can also use this data to improve medical care for accident victims, which may reduce the number of deaths and injuries. Overall, using hospital data helps us make better decisions, leading to safer roads and healthier communities. The objective of this research is to determine whether hospital data can be a valuable source for accident analysis and identify necessary steps for its effective use. Both police and hospital accident records are collected during the data collection including accident severity, socio-demographic information of the victims, and other important factors for accident analyses. The study evaluates the quality and reliability of hospital data and asses its potential for improving the scope of the accident analysis incorporating more factors such as injury types, deaths before and after a certain age, length of hospital stay, long-term disabilities, etc. The methodology includes a review of the relevant literature and an analysis of accidents from a sufficient sample of police and hospital data. The findings of this study provide important insights into the potential use of hospital data for accident studies, as well as improve the accuracy and efficiency of accident investigations.

Keywords: Road accidents; Hospital data; Police data; Accident analyses

1. INTRODUCTION

Road accidents have become a major public health problem worldwide [1]. There were about 1.35 million road accidents in 2016, and more than 90% of those accidents occurred in low-and middle - income countries [2]. Road accidents are primarily caused by human mistake; hence it is crucial to maintain a trustworthy and secure transportation infrastructure [1]. In order to prevent fatal accidents and reduce serious injuries, it is essential to build safe roads and sidewalks, enforce safe speed limits and traffic laws, and drive safely [1]. Road traffic accidents are increasingly a serious problem all over the world, as they have a direct impact on the economic growth and development. The economic cost of road accidents is significant, and estimates indicate that the cost of road accidents is roughly 3% of the Global Domestic Production (GDP) [1].

Road accidents are also a significant public health problem in Sri Lanka with significantly high rates of morbidity and mortality [3]. Data from the Sri Lanka Police show that number of fatalities due to road accidents in Sri Lanka are very high with more than 2,000 of deaths and 20,000 of injuries annually [3]. Also, an average of six people die in traffic accidents every day, and thousands of road accidents occur every week. According to the statistics, one in every 45 deaths is caused by a car accident, and the past pattern of automobile crashes demonstrates that the risk for the next generation will be turned the double [4]. During 1990-2010 period, the number of motor cars in Sri Lanka

climbed from 0.8 to 3.9 million [5]. From the perspective of the transportation industry, road accidents in Sri Lanka have grown into a major issue, threatening the country's long-term economic growth by causing huge economic losses [6]. The annual economic cost of road accidents is estimated to be over Rs 10,000 million, or nearly 1% of Sri Lanka's GDP [7]. The Sri Lankan government has a target to reduce the number of deaths due to road accidents by 50% by 2023 [7]. To achieve this goal, it is important to understand the underlying factors and develop effective prevention strategies.

The majority of prior research in this field has concentrated only on analyzing accident patterns using police data, while hospital data has been largely ignored. This is significant because hospital data has the ability to provide useful information about the nature and degree of injuries sustained in accidents, as well as the circumstances surrounding the event. This project intends to fill this gap by rigorously examining the possibility of using hospital data for accident analysis. It also provides insights into how hospital data may be used to improve existing accident investigations and preventive efforts.

2. MATERIALS AND METHODS

Firstly, Panadura urban area is selected for the study which is located in the Kalutara district of Sri Lanka. Panadura is a bustling town with an estimated population of approximately 100,000 residents. The area is known for its high traffic density due to its strategic location along major transportation routes and commercial centers. Panadura's road network includes several main roads, intersections, and roundabouts, which makes it a critical location for analyzing traffic accidents and implementing preventive measures. The relevant hospital and police data on traffic accidents are gathered from three Hospitals and the three police stations. Here, the data available in the inventories of the respective authorities are used and nearly two years of data are collected. After the data collection, police and hospital data are cross checked and compared to identify the differences of factors recorded for a more comprehensive analysis. The goal is to identify important factors in hospital data that are not available in police data and use them to expand the scope of current accident analyses. This involves weighing of the advantages and disadvantages of each dataset. Finally, the feasibility of integrating these two datasets into a single database is investigated. This entails recognizing potential obstacles and constraints, such as discrepancies in data-gathering methods and variable definitions. The goal is to give recommendations for integrating both datasets in order to improve accident investigations and preventive efforts.

3. RESULTS AND DISCUSSION

The expected outcome of this research is to encounter hospital data as a reliable source in accident analyses. Hospital data consist of information of traffic accidents including nature and degree of injuries arising from accidents, as well as the circumstances surrounding the event while police data may have limitations and biases, such as under-reporting, lack of clarity, etc. Also, police data do not provide a full picture of injury patterns and severity of accidents compared to hospital data. Furthermore, hospital data can provide immediate information on accidents, which can aid in the identification of trends and accident hotspots. Challenges are encountered when using hospital data for accident analyses. The data's quality, accessibility, and consistency across different hospitals are issues that are being addressed. Close collaboration with hospitals is being undertaken to collect data in a consistent way. The data is being carefully checked for accuracy and compared with police data to ensure reliability. Patient privacy is being protected, and the data is being made anonymous. By performing these checks, we aim to ensure that our findings are trustworthy and can be used to improve road safety. In contrast, police statistics may be inconsistent due to variances in reporting standards or individuals' reluctance to report accidents. The findings of this study will able to be used by policymakers and healthcare professionals to achieve objectives related to public health as well. This study is an ongoing research and results will be available soon.

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4. CONCLUSION

In conclusion, this study assesses the feasibility of using hospital data for accident analyses through a mixed-method approach. Panadura urban area is considered for collecting data. The study attempts to ensure that hospital data can provide valuable information on the nature and severity of injuries resulting from traffic accidents, as well as the circumstances surrounding the event, which is not available with police data. Even though hospital data may have some limitations, it provides a complete and more accurate picture of injury patterns and severity than police data. The integration of both datasets can enhance accident investigations and prevention efforts and policymakers and healthcare professionals can use them for public health purposes as well.

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