Electronic Health Records Role in Predicting Outcomes to Work-Related Musculoskeletal Disorders: A Study Protocol

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Abstract. Work-related musculoskeletal disorders are increasing in cost and time lost from work. Electronic health records have the potential to provide rich data to help inform and predict outcomes to WMSDs. The objective is to compare an EHR dataset from an occupational health service to comparative data, to help determine if the EHR dataset can be used in future studies to predict outcomes to care.

Keywords. Electronic health records, occupational injuries

1. Introduction

Over the past 20 years, the cost of serious work-related musculoskeletal disorders (WMSDs) in Australia has increased by 58% [1]. Commonly, research into predicting return to work for WMSDs is conducted retrospectively through Worker's Compensation claims databases [2; 3]. They often lack data collection in many areas such as workplace cultural factors, psychosocial determinants [4], physical demands of a job, health factors and worker expectations [4; 5] that are involved in determining WMSD outcomes.

Electronic health records (EHRs) are increasingly being used for research, providing the opportunity to reuse real-world data, such as in predictive models as they collect many variables missing in claims databases and retrospective interviews.

An onsite health service that treats injured workers across Australia and employs chiropractors, physiotherapists and osteopaths has collected EHR data on WMSDs for 15 years. The EHR is specific for occupational use and collects job demands, obstacles to recovery and work modifications which have been shown to be factors involved in outcomes for WMSDs. The objective is to compare the EHR dataset from an onsite health service to Australian workforce and Workers Compensation claims data, to help determine if the EHR dataset can be used in future studies to predict outcomes to care.

2. Methods

The EHR dataset contains 57570 patient care plans data from 2014-21. The EHR dataset captures visits of workers to an onsite health service. Comparative data was obtained from the Australian Bureau of Statistics (ABS), which captures demographic data of the

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Australian workforce and Safe Work Australia (SWA), which records workers compensation claims data.

Ethical approval and consent were obtained for the study. Data was deidentified and extracted to a secure location.

Variables were selected if they were potentially predictive of outcomes to WMSDs and comparative data was available. The EHR dataset will be cleaned and coded to standardise for comparison.

Parameters from the Kahn's 2016 framework [6] data quality for secondary use of EHR will be the foundation of the study.

Missingness assessment will report on counts and percentage of missing records and implausible values will be determined.

External validity assessment will compare distributions within selected variables. Frequency, percentages of records and confidence intervals will be reported for age, duration of employment, region of birth and gender from the EHR and ABS datasets. It will also compare mechanism of injury, body region and diagnosis between the EHR dataset and SWA dataset.

3. Results

This is a protocol paper and thus no results are available.

4. Conclusions

Data will be presented to assist in determining if the dataset is useful in developing a predictive model determining the timely resolution of WMSDs. If a predictive model is possible, further studies can determine if integration of predictive modelling into the EHR can improve outcomes. If the data is relevant, the study will demonstrate internationally that chiropractors are collecting real-world data to create evidence in the management of injured workers.

Acknowledgements

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