Integrating Welfare and Healthcare Data to Enhance Detection of Child Maltreatment: Development of a Clinical Decision Support System

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Introduction

Child maltreatment (CM) is a critical global public health issue with devastating consequences and significant financial costs. Up to 50% of children who die from physical abuse have prior healthcare encounters, highlighting missed opportunities for early intervention. Despite this, under-identification and reporting of CM in healthcare systems persist. This project aims to enhance healthcare professionals' ability to identify and manage suspected physical abuse cases by integrating welfare and healthcare data into a clinical decision support (CDS) system.

Methods

A digital infrastructure was created to link welfare data from the Jerusalem municipality with healthcare data from Terem urgent care centers, Shaare Zedek Medical Center (SZMC), and Hadassah Medical Center. A case definition for child abuse was established in collaboration with municipal social workers and applied to the dataset. Univariate and bivariate analyses were performed to identify key risk factors for child abuse.

Results

The dataset included 1,055,013 encounters by 471,525 patients, with a median age of 6.07 (IQR 2.41 to 12). Of these, 13,907 (2.94%) patients had records with welfare services, and 6,523 (1.38%) met the case definition for child abuse. Among positive cases, 4,808 (73.7%) had prior medical encounters before their welfare diagnosis. Leading clinical factors associated with child abuse included gender, with a slightly higher proportion of males among the positive cases compared to the controls (OR 1.11), and visits per patient - positive cases had significantly more visits per patient

compared to controls, with a mean of 6.28 visits among positive cases and 4.54 among controls ($p < 0.001$).

Discussion

We established a unique dataset that integrates welfare and medical data, identifying a substantial number of child abuse cases (n=6,523) within clinical records. This dataset enabled the identification of key risk factors and will inform the development of a prediction model. The next steps involve building a multivariate predictive tool to identify child abuse cases from clinical data and prospectively deploying this model across participating healthcare sites.