

Leveraging Electronic Health Records and Administrative Datasets to Understand Social Determinants of Health: Opportunities and Challenges

Tan, J^{1*}, Wasey, J¹, Nelson, O¹, Tam, V¹, Simpao, A¹, and Galvez, J²¹The Children's Hospital of Philadelphia²The Children's Hospital of Philadelphia

Background

Electronic health records (EHRs) are ubiquitous in modern health care systems and contain granular detail about an individual's medical care. EHRs, however can be extremely limited in the amount of information about the patient's socioeconomic status and other non-clinical factors that relate to social determinants of health (SDOH). As increasing evidence supports the role of socioeconomic and environmental factors having a greater impact on overall health than health care services, it is important to create novel data analysis methods that can improve our understanding of SDOH factors for each patient and the greater population a health system cares for.

Main Aim

To demonstrate the feasibility and value of linking EHRs with administrative datasets to produce SDOH insights and better support research, quality improvement initiatives and operational decision making.

Methods/Approach

We linked EHR's at the Children's Hospital of Philadelphia, between 2015-2019, with administrative datasets including the US Census and the American Community Survey Datasets for over 40,000 pediatric patients. This required the validation of geocoding addresses and spatial join techniques to provide clinical insight into the individual patient along with SDOH insights into their neighborhood environment. We then conducted several studies that combined individual clinical factors and neighborhood socioeconomic risk factors to improve our understanding and care pathways for patients.

Results

Linking EHR data and administrative datasets required novel methods with unique challenges. Challenges included conducting such analysis with concern for the protection of patient

privacy, overcoming technical data linkage challenges, and understanding the limitations of administrative dataset granularity when compared to detailed granularity of individual medical records. Presentation of results to further ensure patient confidentiality and privacy was also critical to our analysis.

Conclusion

EHRs and administrative datasets can be successfully linked together to leverage the strength of both traditional clinical data and SDOH factors. While there can be technical and privacy related challenges, there are many benefits of using administrative datasets to provide unique multidimensional insights into socioeconomic and environmental impacts of health.

*Corresponding Author:

Email Address: tanj1@email.chop.edu (J Tan)