ISPOR 2024
EPH54

Enhancing BMI Data Accuracy: A Comparison of Claims and Electronic Health Record Databases

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Introduction

- Body mass index (BMI) scores are used to define obesity, an important indicator of health status and a risk factor for numerous chronic diseases
- This study evaluates the enhancement of obesity tracking by integrating electronic health record (EHR)-derived BMI data with existing claims data, addressing the limitations of relying solely on administrative codes for BMI information.

Objective

- This study aimed to assess the value of enhancing BMI information from a claims database, with clinical values recorded in structured fields of an EHR database.

Methods

Data Source

- Komodo Research Dataset (KRD) linked to Komodo Clinical Observations (KCO)

Komodo Research Dataset (KRD): *Composed of administrative data and claims, KRD captures routinely collected health services utilization records and expenditures for over 330 million de-identified unique individuals in the US. Native to HIPAA-compliant, privacy-preserving tokens, KRD offers extended patient-level observations of medical encounters and outpatient pharmacy dispensings via linkage across health and pharmacy insurance plans. Data availability is as early as 2016. Specialty datasets such as genomics, laboratory test results, and electronic medical records are readily accessible via additional linkage. KRD is the optimized schema of the underlying Healthcare Map™ from Komodo Health for RWE generation and HEOR.*

Komodo Clinical Observations (KCO): *Patient-derived, unit-standardized clinical observations summarized from over 154 million unique individuals across healthcare delivery systems in the US. Key variables include BMI, weight, height, smoking status, vital signs, Patient Health Questionnaire (PHQ-9), and General Anxiety Disorder (GAD-7) responses. Precertified linkage via privacy-preserving tokens is readily available.*

Study Design

- This retrospective cohort study used EHR-derived BMI data from KCO to enhance an existing claims-based identification for BMI records from KRD.

Inclusion/Exclusion Criteria

- Adult patients (i.e., aged ≥18 years) with:
  - at least 1 claim with International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) codes (Z68.1, Z68.2, Z68.3, Z68.4) from January 1, 2017, to September 30, 2023, from KRD, or
  - at least 1 BMI record obtained from KCO

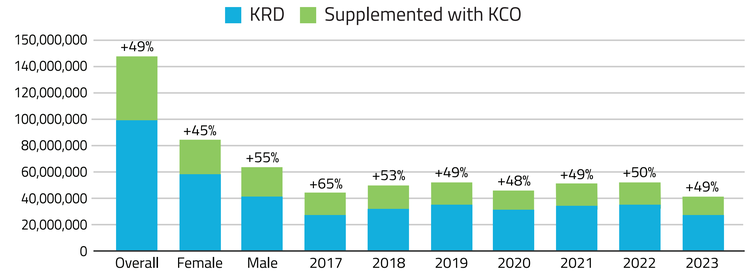
Key Study Variables

- Number of patients with BMI identified when using KRD only, and when using both KRD and KCO
- Frequency of BMI records using claims data only, and using both claims and EHR-based data
- Average BMI score from KCO compared with KRD (median of ICD-coded range) for patients present in both databases
- Findings were reported for the overall study period and stratified by year and gender

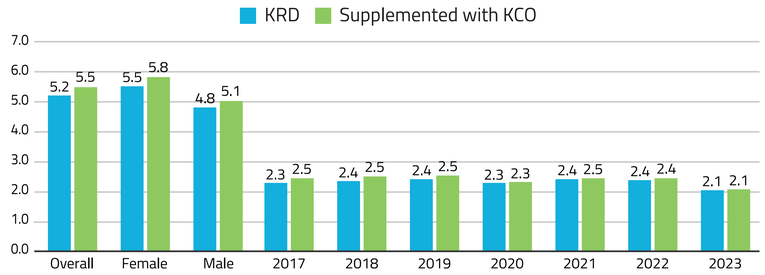
Results

- KRD and KCO together identified 49.1% more patients with at least one BMI record (N = 148,178,206) compared with KRD alone (N = 99,400,510).
- Frequency of BMI observations per person remained similar after supplementing with KCO (5.5 [standard deviation (SD) 8.8]) vs. KRD alone (5.2 [SD 8.8]).
- Among patients with both KRD and KCO records, their average BMI after supplementing KRD with KCO (31.5 [SD 7.0]) was similar to that from KRD alone (31.5 [SD 8.7]).
- Similar results were observed by year and gender.

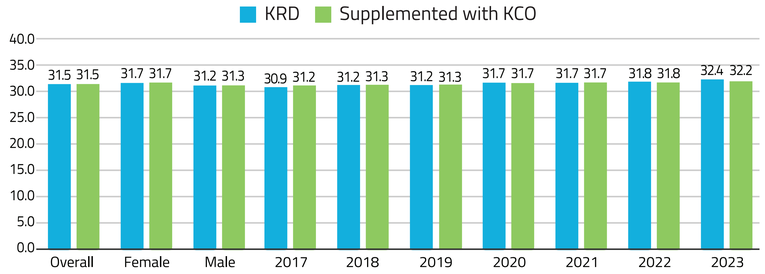
Number of patients with BMI records



Average frequency of BMI records



Average BMI score (among patients with BMI records in both KRD and KCO)



Conclusion

- Incorporating clinical observation values from EHR with claims-based diagnosis increases the identification of patients with BMI records and their frequency of BMI records without compromising the quality of BMI scores. Furthermore, supplementing BMI scores from EHR provides increased specificity compared to claims, which only offer a score range.

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