**UNIVERSITY OF CALGARY**
CUMMING SCHOOL OF MEDICINE
Department of Family Medicine

# Validating Primary Care EMR Data for Osteoarthritis
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## BACKGROUND

**Context:** Osteoarthritis (OA) is a chronic musculoskeletal condition common among older adults. It is typically diagnosed and managed within community-based settings. Digital record-keeping such as EMRs within primary care practices provides a valuable source of information for chronic disease research and surveillance.

Because EMR data are recorded for patient care and administrative tasks, the quality and suitability of the data should be assessed before being used for secondary purposes.

**Objective:** To determine the quality of pan-Canadian primary care EMR data for osteoarthritis surveillance and research.

## METHODS

**Design:** Secondary analysis of de-identified, pan-Canadian primary care EMR data extracted from participating primary care providers by the Canadian Primary Care Sentinel Surveillance Network (CPCSSN).

**Participants:**
- Active within the practice
- 45 years or older
- Diagnosed with OA

**Outcome Measures:** Completeness and plausibility for patient-level demographics, clinical observations, OA medications, total knee replacements (TKR) and chronic co-morbidities. External validity compared to other published population-level sources.
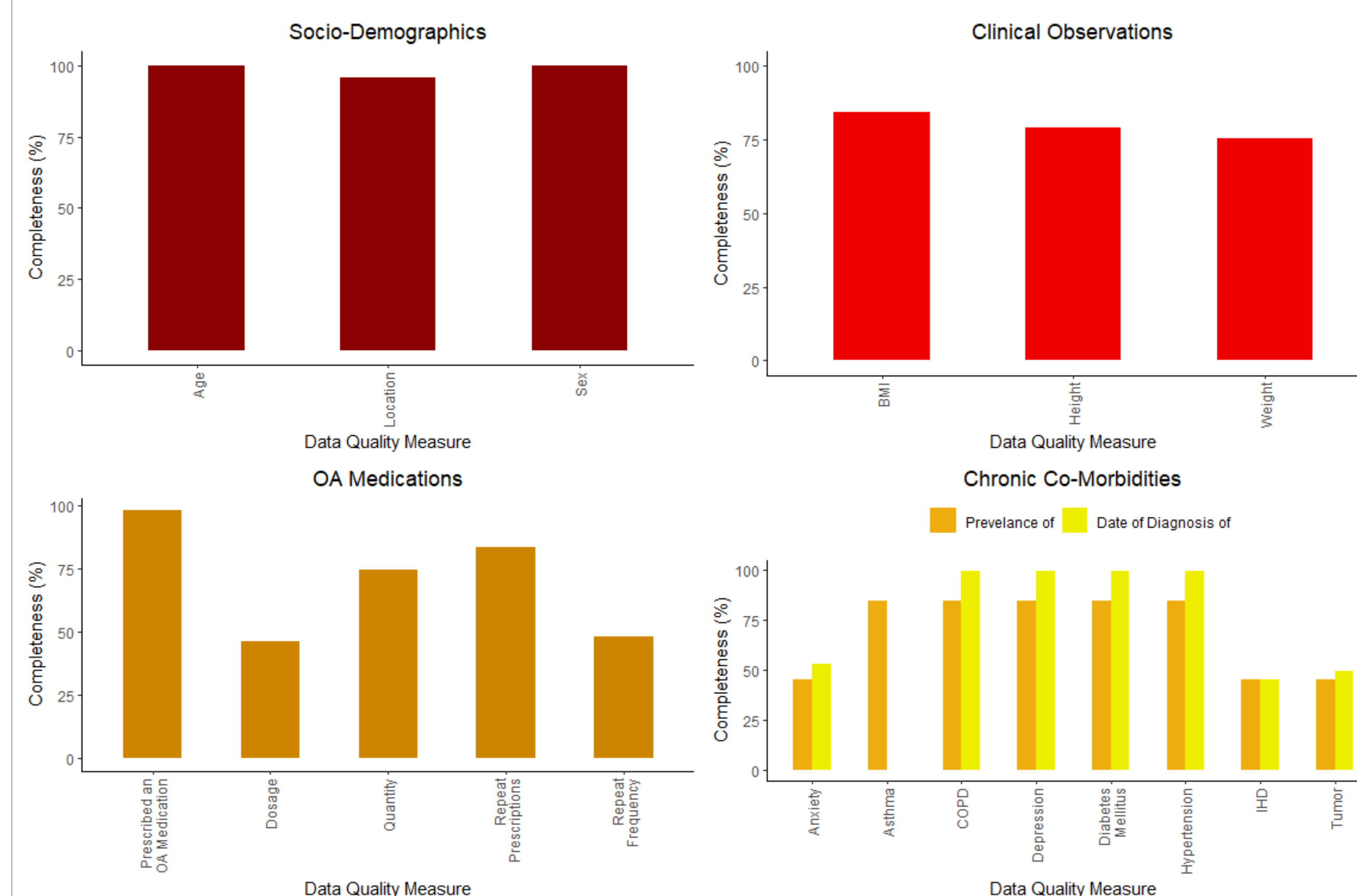
## RESULTS

Overall completeness of CPCSSN data was **good** for:

- demographics (age, sex, urban/rural) (98.6%)
- BMI (84.4%%), height (79.2%), weight (75.6%)
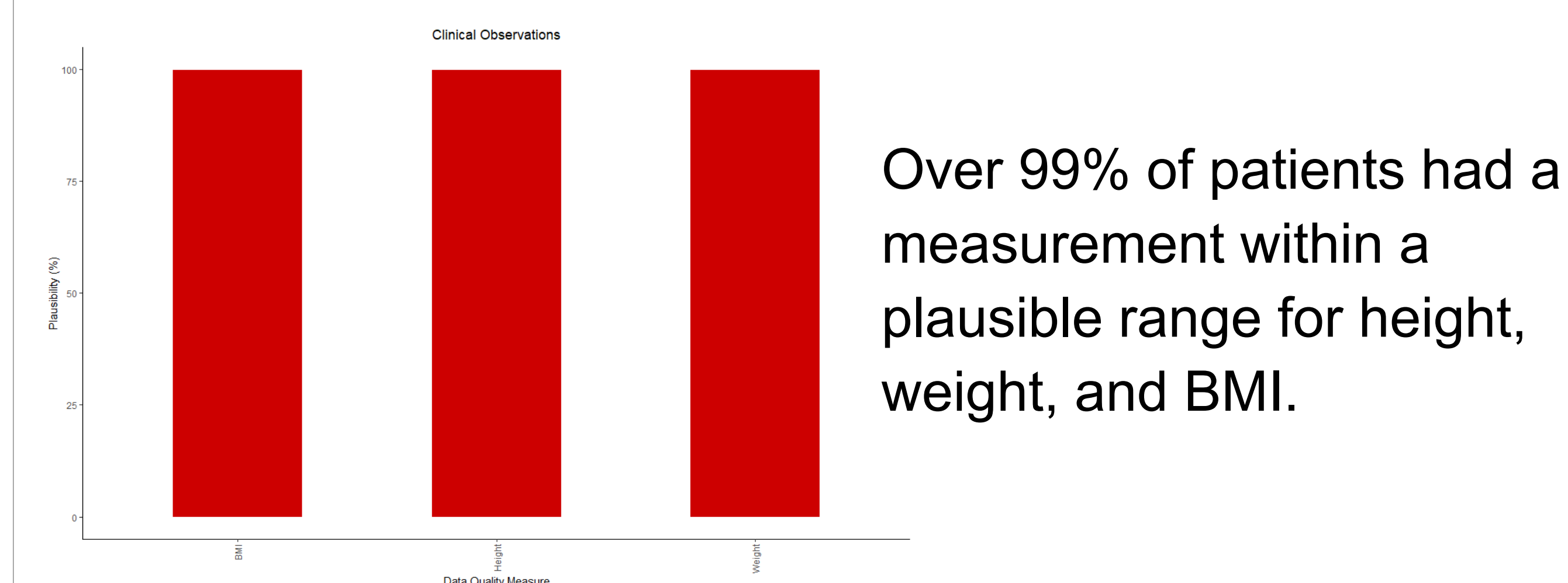- CPCSSN defined chronic co-morbidities (84.9%)

## RESULTS

Completeness was **lower** for:

- other chronic co-morbidities (45.7%)
- dose & frequency information for OA-related medications (47.1% of prescription records)



**Figure 1:** Completeness (%) of CPCSSN data in four categories of data quality measures.



Over 99% of patients had a measurement within a plausible range for height, weight, and BMI.

**Figure 2:** Plausibility (%) of values for height, weight & BMI.

## RESULTS

| Table 1: Prevalence of OA based on different data sources; N(%) | | | |
|---|---|---|---|
| **Data Source** | **Male** | **Female** | **Overall** |
| CPCSSN*(1) | 87,072 (12.4) | 120,538 (15.6) | 207,610 (14.2) |
| PHAC**(2) | 1.6 M (11.13) | 2.4 M (16.05) | 4.0 M (13.63) |
| SLCDC***(3) | -- | -- | 1,755 (37.1) |

*Age-sex standardized 2012 CPCSSN-EMR data based on the national age-sex distribution from the 2011 Canadian census data

**Based on the results from the Canadian Chronic Disease Surveillance System for the 2016 - 2017 fiscal year

***Based on the results from the 2009 Survey on Living with Chronic Diseases in Canada - Arthritis

## CONCLUSION

The completeness and plausibility for most outcome measures were high. Low percentages for dosage and frequency of OA prescription records could be due to the use of over-the-counter medications. Prevalence of OA in the CPCSSN population was slightly higher compared to the Canadian population when compared to administrative data but lower when compared to survey data.

**Limitations:** Currently, the national CPCSSN database has no processed information on medical procedures, thus the quality of TKR data can not be reported. Future CPCSSN work could focus on developing methods to process & code medical procedures.

## REFERENCES

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3) MacDonald, K. V., Sanmartin, C., Langlois, K., & Marshall, D. A. (2014). *Symptom onset, diagnosis and management of osteoarthritis*. Statistics Canada.

4) Courtesy of Multimedia, Instructional Resources, Cumming School of Medicine

**Alberta Health Services**
Family Medicine
Calgary Zone

SAPCReN

CPCSSN RCSSSP
Canadian Primary Care Sentinel Surveillance Network
Réseau canadien de surveillance sentinelle en soins primaires

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