Quantifying polypharmacy in elderly people: a comparison between source and mapped data in the UK Clinical Practice Research Datalink GOLD

Leena Elhussein, Ed Burn, Antonella Delmestri, Victoria Y Strauss, Daniel Prieto-Alhambra

Affiliation: Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, Windmill Road, University of Oxford, Oxford, UK

Background

- Polypharmacy is increasing in the developed world as the population ages.
- The use of mapped data in observational health studies has many advantages.
- OMOP-CDM is a common data model for the transformation of data to the same structure and vocabularies.
- Clinical Practice Research Datalink (CPRD) GOLD, a UK primary care database, has been mapped to OMOP-CDM.
- Identifying polypharmacy in CPRD GOLD has many challenges, such as, unavailability of data linkages (e.g., hospital data) in OMOP-CDM CPRD GOLD and identifying drugs on the product level vs. the ingredient level.

Objectives

1. Test the feasibility of identifying a polypharmacy cohort in elderly population using the OMOP-CDM mapped instance of CPRD GOLD data compared to the polypharmacy cohort identified using the source data.
2. Compare the cohort characterisation between the two cohorts.

Methods

	OMOP-CDM	Source
Population	Patients aged >65 on 01/01/2010, registered for >=1 year	
Inclusion criteria	Everyone	People with linkages to hospitalisation and mortality data
Cut-off (cohort definition)	Top quintile	Top quintile
Drug level	Ingredient	Substance
Doses	Different doses count the same	Different doses count the same
Example (paracetamol, aspirin, paracetamol + aspirin)	Two different ingredients	3 different substances

Descriptive analysis: Baseline characteristics and one-year point prevalence of oral bisphosphonates (BP)

Cohort validity evaluation metrics: Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV). *(Source data is the true classification)*

Results

OMOP-CDM

Total eligible = 1,009,042
Cohort eligible = 214,394
Cut-off = 15 ingredients
BP prevalence = 18.1% (95% CI 17.9% to 18.3%)

Source

Total eligible = 475,371
Cohort eligible = 116,076
Cut-off = 10 substances
BP prevalence = 17.6% (95% CI17.4% to 17.9%)

Source

OMOP-CDM		Cohort +	Cohort -	Total
	Cohort +	79040	14856	93896
	Cohort -	35462	340551	376013
	Total	114502	355407	469909

Total matched

Sensitivity=69.0% Specificity=95.8% PPV=84.2% NPV=90.6%

Conclusion

- Similar demographic and BP use in both instances
- Due to higher cut-off in mapped data → High validity but low sensitivity
- Due to difference in polypharmacy calculation → Difference in cut-off
- Need more research → To test generalisability of 15 ingredients cut-off

Contact: leena.elhussein@ndorms.ox.ac.uk