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COMPARISONS OF REPORTING AND LEVEL OF AGREEMENT OF CO-MORBIDITIES ASCERTAINED FROM RHEUMATOLOGISTS, PATIENTS AND HEALTH ADMINISTRATIVE DATA: A DATA LINKAGE STUDY AMONG PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Comorbidity is an important prognosis and health outcome in rheumatic diseases and an important confounder or effect modifier in epidemiologic studies. Researchers face challenges regarding the optimal way to accurately measure comorbidity and there is a lack of information on the reporting and level of agreement of comorbidities obtained from different data sources.

Objectives: We investigated the prevalence of reporting and level of agreement of three specific comorbidities independently ascertained from rheumatologists, patients and health administrative data.

Methods: We studied patients enrolled in the Ontario Best Practices Research Initiative RA registry, which embeds clinical data collection into routine practice. Patients and rheumatologists independently report comorbidities using standardized questionnaires. To identify comorbidities ascertained from health administrative data, we performed deterministic linkage using coded health insurance numbers to link with the Ontario Cancer Registry, and the Ontario Diabetes Database and the Ontario Hypertension Database - the latter two of which are derived using validated administrative data case definitions. For these initial comorbidities of interest, we report the prevalence of each condition based on the method of ascertainment and the level agreement between data sources. Sensitivity, specificity and predictive values were calculated by alternating the reference standard (rheumatologist or patient) to assess the accuracy of the administrative data definitions.

Results: 1787 patients (97%) were successfully linked. The prevalence of cancer, diabetes and hypertension reported by rheumatologists were lower than those reported by both patients and administrative data (table). Patients reported more cancers than rheumatologists and administrative data, which is further illustrated in the lower sensitivity of administrative data in detecting cancers. There was substantial agreement between each of the three comorbidities ascertained from each data source (kappas ranging from 0.53-0.79). The accuracy of administrative data for comorbidity ascertainment was modest to excellent, regardless of the reference standard definition.

Image/graph:

Comorbidity	Prevalence (%)			Agreement (%)			Kappa[2]			Sensitivity[3] (%)		Specificity[3] (%)		PPV[3] (%)		NPV[3] (%)	
	A. Rheum	B. Patient	C. Admin	A vs B	A vs C	B vs C	A vs B	A vs C	B vs C	A vs C	B vs C	A vs C	B vs C	A vs C	B vs C	A vs C	B vs C
Cancer	6	9	7	94	96	95	0.5	0.6	0.6	70	58	97	98	57	75	98	96
Diabetes	8	10	13	97	94	95	0.8	0.7	0.8	93	90	94	96	57	69	99	99
Hypertension[1]	-	35	40	-	-	85	-	-	0.7	-	86	-	85	-	76	-	92

Abbreviations: (A) rheumatologist-reported comorbidity (B) Patient-reported comorbidity (C) Administrative data-reported comorbidity; PPV: Positive Predictive Value; NPV: Negative Predictive Value; [1]Hypertension was captured differently on rheumatologist questionnaire (under CVD); [2]Kappa values of 0.81–0.99 represent almost perfect agreement; 0.61–0.80 substantial, 0.41–0.60 moderate, 0.21–0.40 fair agreement, 0.0-0.20 as slight agreement and <0 as no agreement; [3]Alternated reference standard between rheumatologist-reported and patient-reported comorbidities to assess the accuracy of administrative data definitions.

Conclusions: For the initial comorbidities we studied, there was substantial correlation between rheumatologists, patients and health administrative data, but the prevalence varied by data source. Patients reported more previous cancers, which may reflect that basal and squamous cell carcinomas are not registered in the Cancer Registry or cancers pre-dating capture in the Registry. Thus, linkages between clinical registries (which capture patient- and physician-reported outcomes) and administrative data may overcome some of the limitations of imperfect ascertainment from using one data source alone.

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