Mapping Nursing Flowsheet Data to Common Data Models: A Pilot Study

SCHOOL OF NURSING
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Background

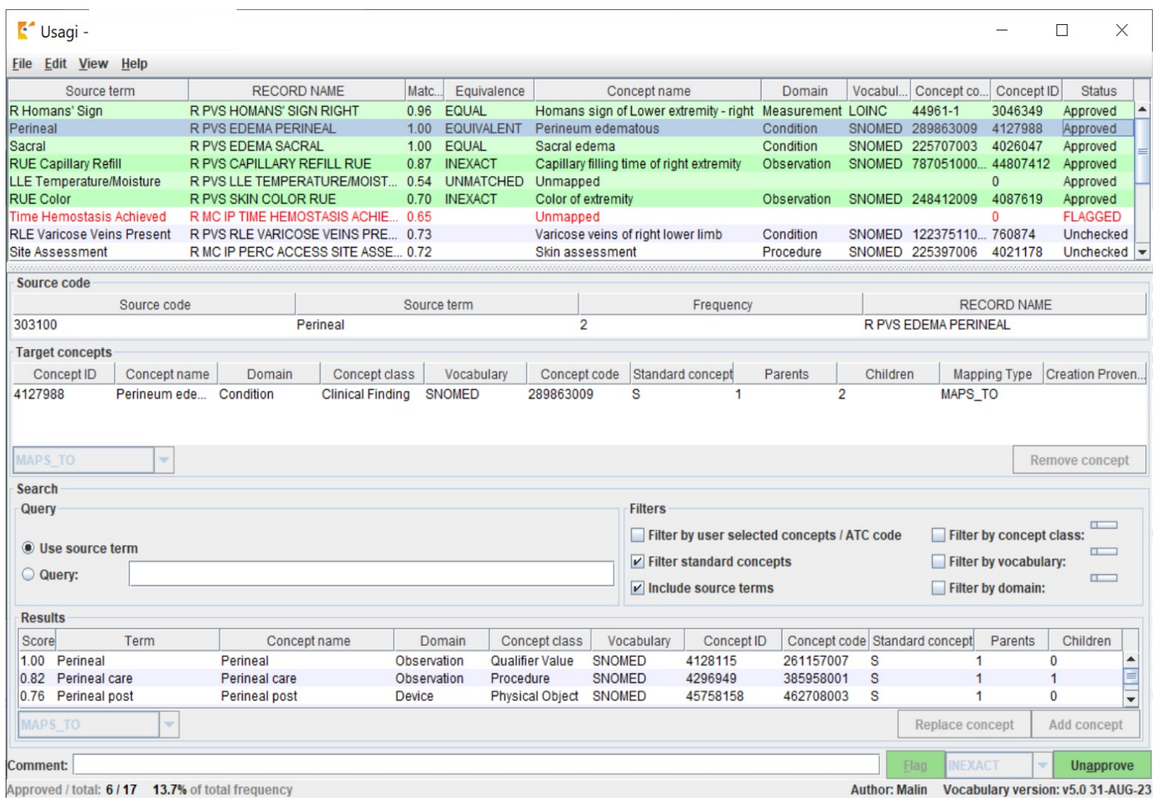
The national representation of nursing data is imperative for measuring patient outcomes, improving healthcare delivery, and contributing to large-scale translational research across different healthcare systems.

Inpatient nurses manually document 631-875 data points in flowsheets per 12-hour shift capturing observations, measurements, and interventions.[1]

Purpose

The purpose of this analysis was to evaluate the content coverage and representation of nursing data, as documented within flowsheets, in a publicly available common data model (CDM).

Figure 1. Usagi Software



Methods

Inpatient nursing flowsheets from a Midwestern academic medical center were retrieved by a nurse informaticist in November 2023.

Usagi (v1.4.3) software was used to map nursing flowsheet data to standardized Observational Medical Outcomes Partnership (OMOP) CDM vocabulary concepts:

- Logical Observation Identifiers Names and Codes (LOINC)
- Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT).

Two independent reviewers mapped flowsheet data. Discrepancies were resolved by deliberation.

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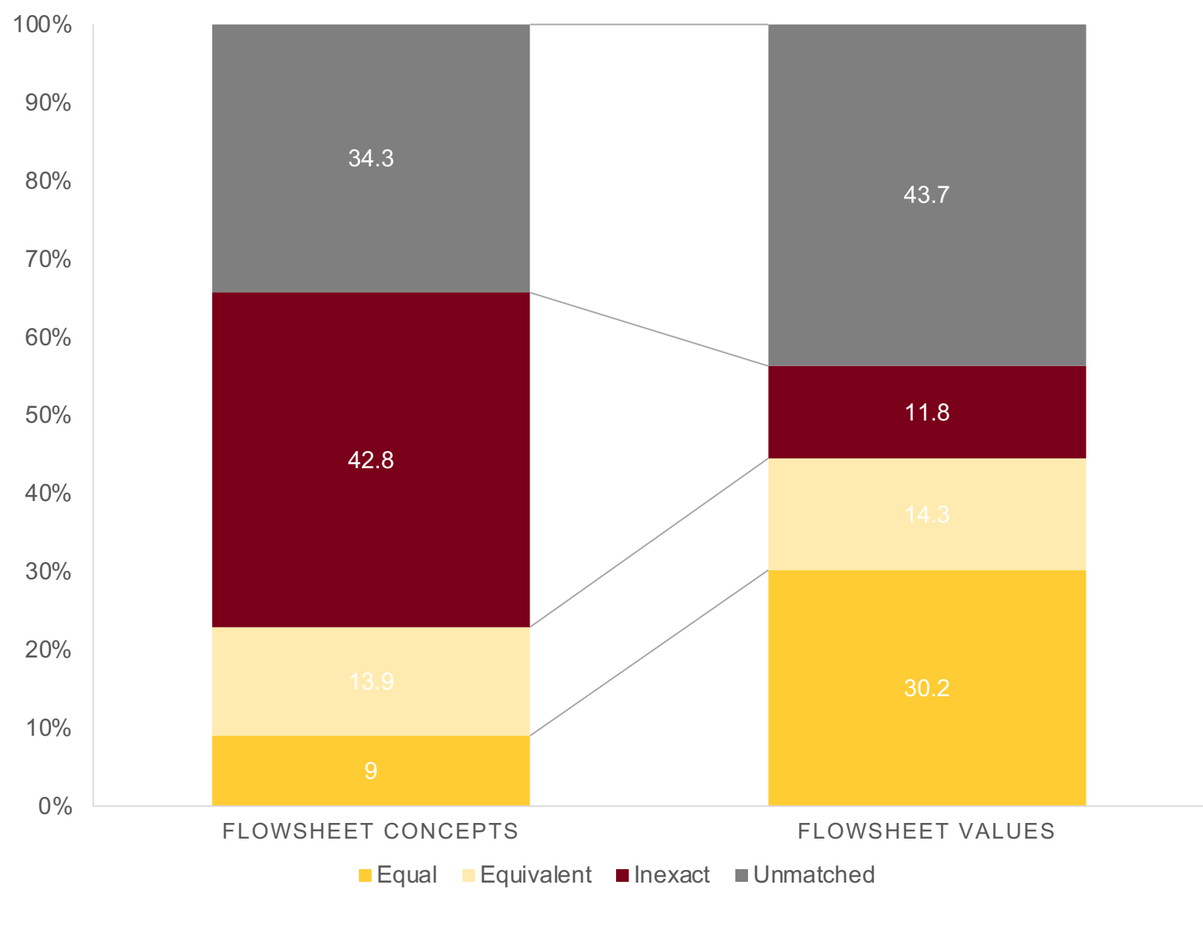
Results

Data from five flowsheets were mapped

- Vital Signs
- Head to Toe Assessment
- Intake and Output
- Lines, Drains, and Airways
- Daily Cares and Safety

1,170 flowsheet concepts (65.5% of assessment questions) and **1,831 values** (56.0% of assessment answers) were mapped to a standardized OMOP CDM vocabulary concept. Figure 2 shows semantic alignment.

Figure 2. Distribution of Semantic Alignment for Flowsheet Concepts and Flowsheet Values



Discussion

- 65.5% of flowsheet concepts and 56.0% of values were mapped to SNOMED CT and LOINC, confirming prior research revealing **a shortfall in representation of nursing data** in standardized terminologies.[2,3]
- Incomplete mappings and concept coverage gaps limit integration and analysis of nursing data at scale.[4]
- It is essential to identify which flowsheet concepts and corresponding values influence nursing outcomes to prioritize complete mapping.
- Minimum datasets from earlier research can guide the thorough mapping of critical nursing assessments.[5]

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