Propensity Score Matching to Balance Comparison Groups to Examine the Impact of Co-Occurring Chronic Conditions in a US Medicare Population

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Background

- There is limited research examining the impact of overactive bladder (OAB) when it co-occurs with other chronic medical conditions.
- We sought to examine the impact of co-occurring OAB on healthcare resource utilization, clinical outcomes, and costs among US Medicare patients with osteoporosis (OP).

Methods

- **Study Design:** Retrospective cohort study
- **Data Source:** Humana administrative database, including enrollment data, medical, and pharmacy claims from 1/1/2009–12/31/2015
- **Inclusion Criteria:**
  - Diagnosis of OP (International Classification of Diseases, Ninth Revision [ICD-9] 730.0) identified from 1/1/2009 to 12/31/2014 in ≥1 outpatient or inpatient claim for bisphosphonates, calcitonin, teriparatide, denosumab or any OP code on a hospitalization claim.
  - ≥1 prescription for an OP medication (bisphosphonates, calcitonin, teriparatide, denosumab or any OP code on a hospitalization claim).
- **Exclusion Criteria:**
  - No claim with a related OAB diagnosis or medication at any time from 1/1/2009 to 9/30/2014 in ≥1 inpatient or outpatient (all payers).
- **Propensity Score Matching:**
  - The algorithms for OP and OAB identification may have introduced an estimate.
- **Outcome Measures:**
  - Resource utilization, clinical outcomes, and costs:
    - Acute inpatient lengths of stay, all-cause outpatient visits, all-cause emergency department (ED) visits, total number of unique medications, total costs, and total OP-reimbursed costs.
  - Propensity score model (PS) diagnostics
  - The PS distributions between cohorts were compared using the absolute standardized difference (SDiff). Variables with a SDiff less than 0.1 were considered balanced.
- **Limitations:**
  - Independent variables in the PS model specified a priori but included but were not limited to age, sex, plan type, chronic medical conditions, emergency department (ED), and hospitalization claims.

Results

- **Pre-match study sample**
  - All but one patient with OP and OAB was able to be matched, given the specified match PS was 0.058 (±0.035) for both groups. The distribution for the OP only match group is displayed in Figure 2a.

- **Post-match study sample**
  - All but one patient with OP and OAB was able to be matched, given the specified matching method and criteria, so an eligible patient with OP without OAB could not be matched.