Latent Class Analysis Illustrating Social Needs Potential Impact on Health Care Utilization

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Background:
Health care providers, researchers and payers have long used chronic conditions and other clinical diagnoses to adjust for expected patient outcomes and utilization of health care services, which typically serve as markers for costs and quality. Unfortunately, the associations between social needs, costs, and quality of care are still poorly understood.

Additionally, with a higher prevalence of social needs interventions, it is also worthwhile to understand how social needs travel together to explore more nuanced, targeted approaches to increase the efficacy and efficiency of social needs interventions.

Objective:
This study aims to describe how social needs cluster together into groups of similar high utilizing adults using screening data from a social needs intervention within Kaiser Permanente Southern California (KPSC).

Study Design:
Application of latent class analysis (LCA) using prospectively collected social needs screening data collected from a KPSC social needs intervention that launched November 2015 and concluded December 2016.

Outcomes:
The LCA social needs groupings/classes were the primary outcome of this study.

Analysis:
A latent class analysis (LCA) was used to identify the number of groups based on 14 social needs risk factors. Lowest Bayesian information criterion (BIC) was used to evaluate the best LCA model fit. After classes were created, patient data was supplemented to conduct additional descriptive analyses.

Results:
The study included 2,533 patients and the best-fitting LCA model categorized these individuals into 4 classes (BIC=28171.96).

- **Class 1** (most social needs): High prevalence of financial strain (97.6%). Charlson score average of 6.7 with an average of 5.5 encounters.
- **Class 2** (least social needs): Screened positive less than 5% for each social domain. Class 2 had an average of 4.3 encounters with a Charlson score of 7.1.
- **Class 3** (least social needs): Average of 3.8 encounters with a Charlson score of 7.1. Access to healthy food (80.6%) and financial strain (64.1%) were the highest needs.
- **Class 4** (least social needs): Average of 3.8 encounters with a Charlson score of 7.1. Financial strain (46%) and access to transportation (34.6%) were the most expressed needs.

Conclusions:
- LCA results demonstrate that patients with the most social needs (Class 1) were found with the highest health care utilization while not having the greatest medical complexity or the highest percentage of chronic diseases. Even further, class 1 ED utilization almost doubles that of the class with the lowest social needs.
- This latent class analysis may indicate that social needs may have a greater impact on utilization than clinical conditions or diagnostic codes.
- It is worthwhile exploring financial strain being considered as an essential domain for social needs screening.