

Using Social Network Analysis to Compare Hispanic and Black Dementia Caregiving Networks in Twitter

Yoon, S., PhD^{1,2}, Odlum, M., EdD,¹ Asim, H., BS,³ Deng, N., BA,³ Broadwell, P., PhD,⁴ Davis, N., PhD,⁵ Alcantara, C., PhD,⁶ Mittelman, M.S., DrPH⁷
¹Columbia University Irving Medical Center, New York, NY, ²Columbia University Data Science Institute, New York, NY, ³School of Professional Studies, Columbia University, New York, NY, ⁴Center for Interdisciplinary Digital Research, Stanford University, Stanford, CA, ⁵School of Nursing, Clemson University, Clemson, SC, ⁶School of Social Work, Columbia University, New York, NY
⁷Department of Psychiatry, Grossman School of Medicine, New York University, NY

Background and Aims

The prevalence of Alzheimer's disease is higher for Hispanics and Blacks than non-Hispanic Whites.¹ Experimental evidence and social exchange theory highlights the critical role of dyad or triad friendship relations in behavioral science.² Social network analysis of online communities, Twitter³ in particular may provide insights to design culturally sensitive and customized social support interventions for Hispanic and Black family caregivers for persons with dementia. The purpose of this study is to apply social network analysis on Tweets to compare Hispanic and Black dementia caregiving networks.

Methods

- We randomly extracted Tweets mentioning dementia caregiving and its related terms from corpora collected daily via API from Sep 1 to Dec 31, 2019 (n= 549,380 English Tweets, n= 185,684 Spanish Tweets).
- We applied a Twitter bot detection algorithm to remove bot-generated Tweets followed by applying a lexicon-based demographic inference algorithm to automatically identify Tweets likely authored by Black or Hispanic individuals (n= 114,511 English, n = 1,185 Spanish).
- Last, we applied the Louvain clustering algorithm³ to detect groups within each Hispanic and Black caregiving network using Python and ORA.

Analysis

- Fourteen distinct groups (11.0%, Louvain modularity value: 0.80) were detected in the Hispanic caregiving network whereas 123 groups (7.0%, Louvain modularity value: 0.89) were found in the Black dementia caregiving network (Figure 1).

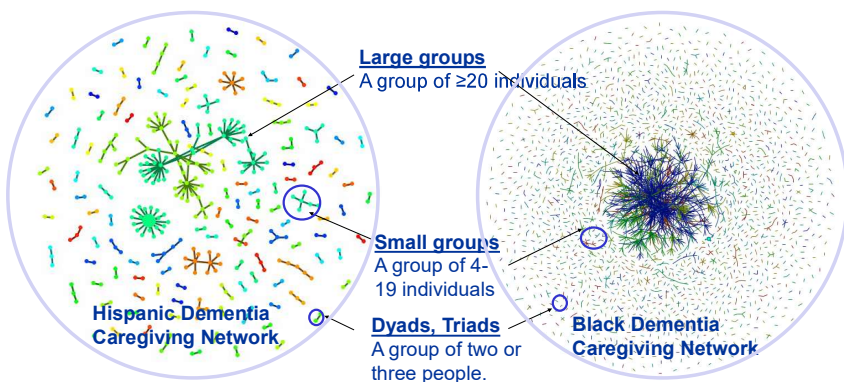


Figure 1. Social network structure of dyads, triads and communities of Hispanic and Black dementia caregiving networks

Results and Discussion

- Both networks contained a similar proportion of dyads or triads (Hispanics 88.2%, 88.9% Blacks) while the Black caregiving network included slightly larger proportion of isolates (Hispanics 0.8%, Blacks 4.0%) (figure 2).

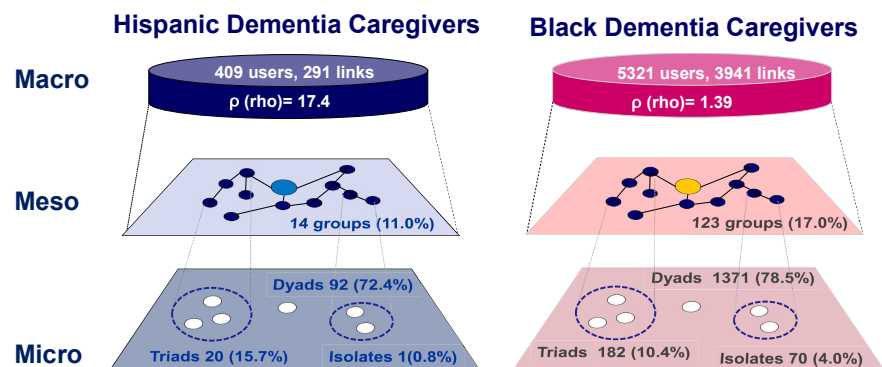


Figure 2. Characteristics of macro, meso and micro level Twitter networks between Hispanic and Black dementia caregivers

Conclusion

This study provides useful baseline information on composition of existing large groups, small groups and isolates for our future recruitment strategy and design of social support intervention for Hispanic and Black dementia caregivers.

Acknowledgments

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