

Analyzing Topics and Sentiments from Twitter to Gain Insights to Refine Interventions for Family Caregivers of Persons with Alzheimer's Disease and Related Dementias (ADRD) during COVID-19

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Background and Aims

Alzheimer's disease and related dementias (ADRD) is the sixth leading cause of death in the United States. More than 16 million family members or friends usually provide care for people with ADRD in their homes every year.¹ Sentiment analysis applying the Afinn algorithm helps to detect the affective state of users of social media as calculated via the Afinn lexicon, proposing a total emotional valence score.² The purpose of this study was to detect topics and sentiments to understand emotional distress as a foundation for developing Twitter-based interventions for Hispanic and African American dementia caregivers.

Methods

- We randomly extracted Tweets mentioning dementia/Alzheimer's caregiving related terms (n= 58,094) from Aug 23, 2019 to Sep, 14, 2020 via an API.
- We applied natural language processing to identify topics and sentiments from the Tweet corpus.
- We compared emotional valence scores of Tweets from prior to (through the end of 2019) and after the beginning of the COVID-19 pandemic (2020-).

Results

- Prevalence of topics related to caregiver emotional distress (e.g., depression, helpless, stigma, lonely, elder abuse), and caregiver coping (e.g, resilience, love, reading books) increased and late-stage of dementia caregiving (e.g., nursing home placement, hospice, palliative care) decreased during the pandemic (figure 1).

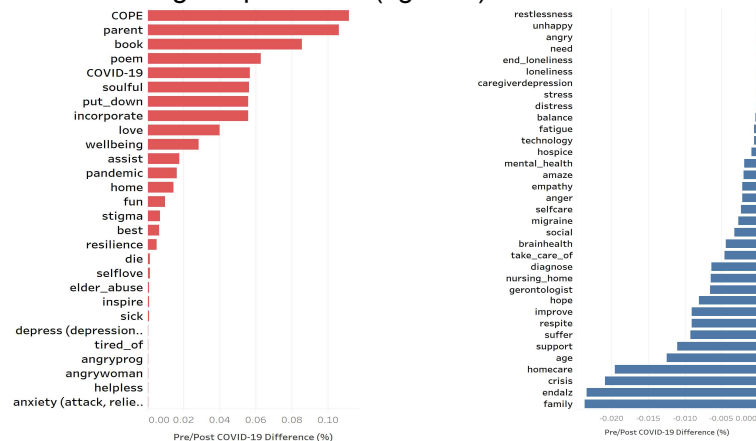


Figure 1. Changes in topic prevalence in Tweets mentioning dementia caregiving during COVID-19

Results and Discussion

- The mean emotional valence score significantly decreased from 1.18 (SD 1.57; range -7.1 to 7.9) to 0.86 (SD 1.57; range -5.5 to 6.85) after COVID-19 (difference -0.32 CI: -0.35, -0.29) (figure 2).

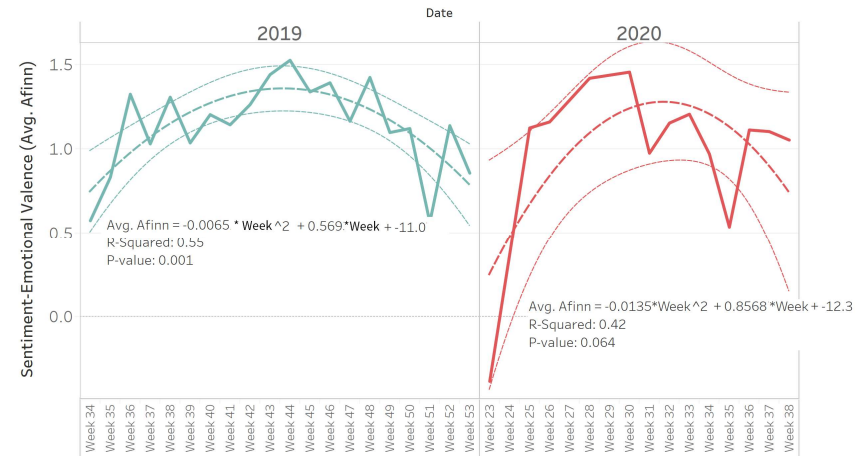


Figure 2. Emotional valence score of dementia caregiving Tweets before and after COVID-19

Conclusion

Application of topic modeling and sentiment analysis of streaming social media Twitter provides a foundation for research insights regarding Alzheimer's caregiving mental health needs for family caregivers of a person with ADRD.

Acknowledgments

Using Twitter to Enhance the Social Support of Hispanic and Black Dementia Caregivers (Tweet-S2) RO1AG060929

References

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