

Letter to the Editor

Selection Bias in Digital Conversations on Depression Before and During COVID-19

Edward Lee¹, BSc; Davin Agustines², DO; Benjamin K P Woo², MD

¹College of Osteopathic Medicine of the Pacific, Western University of Health Sciences, Montrose, CA, United States

²Olive View–University of California, Los Angeles Medical Center, Sylmar, CA, United States

Corresponding Author:

Edward Lee, BSc

College of Osteopathic Medicine of the Pacific

Western University of Health Sciences

4385 Ocean View Blvd

Montrose, CA, 91020

United States

Phone: 1 8189260488

Email: edward.lee@westernu.edu

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Comment on: <http://www.jmir.org/2022/6/e33637/>

(*JMIR Form Res* 2023;7:e42545) doi: [10.2196/42545](https://doi.org/10.2196/42545)

KEYWORDS

depression; COVID-19; treatment; race; ethnicity; digital conversations; health belief model; artificial intelligence; AI; natural language processing; NLP

Letter to the Editor

We read with great interest the article, “Applying the Health Belief Model to Characterize Racial/Ethnic Differences in Digital Conversations Related to Depression Pre- and Mid-COVID-19: Descriptive Analysis” by Castilla-Puentes et al [1]. The authors’ aim was to use digital conversations obtained by CulturIntel to describe the mentality, key drivers, and obstacles related to depression before and during the COVID-19 pandemic mapped to health belief model (HBM) concepts. The article concluded that there were substantial racial and ethnic differences that facilitated or hindered seeking help and treatment for depression before and during COVID-19. We applaud the monumental task of evaluating a large number of data points and categorizing them according to population. However, even though the authors acknowledge the limitation of having used only digital conversations, we wish to address two distinct issues related to demographics: (1) difficulties in addressing older populations’ needs and (2) identification of racial or cultural groups.

First, the sole use of digital conversations results in a selection bias against older adults. According to a Pew Research Center report from 2021, only 45% of those aged ≥65 years used social media sites compared to 84% of those aged 18 to 29 years and 81% of those aged 30 to 49 years [2]. Other methods should be implemented to capture older adults’ health beliefs and conversations about depression in order to obtain a more accurate representation of the population to create an HBM.

Furthermore, the 2019 US Census Bureau reported that there were 54.1 million residents aged ≥65 years in the United States [3]. These points highlight the need for diverse methods to numerically capture this important segment of society.

Second, despite categorizing data according to race and ethnicity, residency status was not identified. There is a difference between US-born, naturalized, and noncitizen immigrants. Asian immigrants who are in the process of applying for citizenship or are ineligible for citizenship are considerably more depressed than naturalized citizens due to the fear of possible deportation [4]. The rapid growth of various Asian subgroups, each with different cultural acclimatization needs, highlights the importance of cultural awareness in addressing mental health needs. Further categorization of Asian subgroups revealed that both noncitizens and naturalized citizens reported worse overall mental health, as well as health in general, compared to their US-born counterparts. The differences are attributable to multiple socioeconomic factors including education level, employment, insurance, and access to health care [5]. Unfortunately, the use of natural language processing to categorize racial/ethnic groups cannot discern differences across cultural generations. Methods that can capture specific Asian languages and ways to identify residency status should be developed and used to help identify generational and cultural differences. Implementing methods to cover the points mentioned can strengthen future applications of HBM studies.

In conclusion, we believe that addressing the above concerns will create an enhanced, culturally competent HBM that is

capable of identifying specific populations as well as needs for mental health support. We look forward to future advancements in this field.

Conflicts of Interest

None declared.

Editorial Notice

The corresponding author of "Applying the Health Belief Model to Characterize Racial/Ethnic Differences in Digital Conversations Related to Depression Pre- and Mid-COVID-19: Descriptive Analysis" declined to respond to this letter.

References

1. Castilla-Puentes R, Pesa J, Brethenoux C, Furey P, Gil Valletta L, Falcone T. Applying the health belief model to characterize racial/ethnic differences in digital conversations related to depression pre- and mid-COVID-19: descriptive analysis. *JMIR Form Res* 2022 Jun 20;6(6):e33637 [FREE Full text] [doi: [10.2196/33637](https://doi.org/10.2196/33637)] [Medline: [35275834](https://pubmed.ncbi.nlm.nih.gov/35275834/)]
2. Faverio M. Share of those 65 and older who are tech users has grown in the past decade. Pew Research Center. 2022 Jan 13. URL: <https://www.pewresearch.org/fact-tank/2022/01/13/share-of-those-65-and-older-who-are-tech-users-has-grown-in-the-past-decade/> [accessed 2022-09-04]
3. National Senior Citizens Day: August 21, 2022. US Census Bureau. 2022 Aug 21. URL: <https://www.census.gov/newsroom/stories/senior-citizens-day.html> [accessed 2022-09-04]
4. Yellow Horse AJ, Vargas ED. Legal status, worries about deportation, and depression among Asian immigrants. *J Immigr Minor Health* 2022 Aug 29;24(4):827-833 [doi: [10.1007/s10903-021-01252-1](https://doi.org/10.1007/s10903-021-01252-1)] [Medline: [34324125](https://pubmed.ncbi.nlm.nih.gov/34324125/)]
5. Bacong AM. Heterogeneity in the association of citizenship status on self-rated health among Asians in California. *J Immigr Minor Health* 2021 Feb 23;23(1):121-136 [doi: [10.1007/s10903-020-01039-w](https://doi.org/10.1007/s10903-020-01039-w)] [Medline: [32578010](https://pubmed.ncbi.nlm.nih.gov/32578010/)]

Abbreviations

HBM: health belief model

Edited by T Leung; this is a non-peer-reviewed article. Submitted 08.09.22; accepted 24.09.23; published 20.11.23.

Please cite as:

Lee E, Agustines D, Woo BKP

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JMIR Form Res 2023;7:e42545

URL: <https://formative.jmir.org/2023/1/e42545>

doi: [10.2196/42545](https://doi.org/10.2196/42545)

PMID:

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