



Mental Health Outreach via Supportive Text Messages during the COVID-19 Pandemic: One-week Prevalence and Correlates of Anxiety Symptoms

The Canadian Journal of Psychiatry /
La Revue Canadienne de Psychiatrie
2021, Vol. 66(1) 59-61
© The Author(s) 2020



Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0706743720969384
TheCJP.ca | LaRCP.ca



Marianne Hrabok, MSc, PhD^{1,2}, Izu Nwachukwu, MD²,
April Gusnowski, BA³, Reham Shalaby, MD¹, Wesley Vuong, MPH³ ,
Shireen Surood, PhD³, Daniel Li, MD¹, Andrew J. Greenshaw, PhD¹,
and Vincent Israel Opoku Agyapong, MD, PhD^{1,2} 

Keywords

COVID-19, pandemic, anxiety

Introduction

Coronavirus disease 2019 (COVID-19) was first reported in December 2019 in China and spread internationally, with significant, unprecedented impacts. In addition to impacts on physical health, threats to psychological health are evident, with around 30%¹ to 50%² of respondents reporting significant anxiety. Research suggests psychological effects of COVID-19 may be more pronounced in certain groups (e.g., female, socially stressed, frontline worker, preexisting psychological disorder).¹ In this study, we report an estimate of 1-week prevalence rates of anxiety symptoms and correlates in 6,041 individuals in Canada. These data were collected in the context of a baseline survey completed as part of a supportive texting program (Text4Hope),³ an intervention designed to offer mental health support at a general population level in an expedient, cost-effective, and evidence-based^{4,5} manner.

Method

Residents of Canada (primarily Alberta residents) were offered the ability to self-subscribe to supportive text messaging. Messages were aligned with a cognitive behavioral therapy framework, with content collaboratively developed by experts and those with lived experience. At first message, respondents were invited to complete an online survey to capture demographic information and baseline scores on the Generalized Anxiety Disorder 7-item (GAD-7) Scale.⁵ This project received ethics approval from the University of Alberta Human Ethics Review Board (Pro00086163). The Text4Hope program was launched in Alberta on March 23,

2020, and data were captured in the first week, ending March 30, 2020, with the data from 32,805 subscribers analyzed and presented in this study. Data were analyzed using the Statistical Package for Social Science Version 26, including descriptive statistics, χ^2 tests, and logistic regression.

Results

The response rate was 18.4% (6,041 of 32,805 individuals). Most respondents were Alberta residents (94%), over 40 years of age (52.0%), Caucasian (82.3%), completed postsecondary education (85.6%), were employed (72.2%), married (71.6%), and owned their home (66.6%). Nearly half (46.7%) reported moderate to severe anxiety.

Univariate analyses indicated that respondents who identified as gender diverse, were aged 25 years or less, Indigenous, had less than high school education, were unemployed, single, and those living with family had a higher likelihood of presenting with moderate to high anxiety compared to

¹ Department of Psychiatry, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Alberta, Canada

² Cumming School of Medicine, University of Calgary, Alberta, Canada

³ Addiction and Mental Health, Alberta Health Services, Edmonton, Alberta, Canada

Corresponding Author:

Vincent Israel Opoku Agyapong, MD, PhD, Department of Psychiatry, Faculty of Medicine and Dentistry, University of Alberta, IEL Walter Mackenzie Health Sciences Centre (WMC), 8440 112 St. NW., Edmonton, Alberta, Canada T6G 2B7.

Email: agyapong@ualberta.ca

Table 1. Logistic Regression Predicting Likelihood of Moderate to High Anxiety.

Predictor	B	SE	Wald	df	P Value	Odds Ratio	95% CI for Odds Ratio	
							Lower	Upper
Gender								
Male			5.27	2	0.07			
Female	0.22	0.10	4.93	1	0.03	1.24	1.03	1.51
Other gender	0.42	0.40	1.10	1	0.29	1.51	0.70	3.29
Age (years)								
≤25			159.9		<.001			
26 to 40	-0.34	0.15	5.41	3	.02	1.41	1.05	1.89
41 to 60	-1.18	0.15	58.26		<.001	3.23	2.38	4.35
>60	-1.61	0.22	54.34		<.001	5.00	3.23	7.69
Ethnicity								
Caucasian			19.52	3	<.001			
Indigenous (First Nations, Métis, and Inuit)	-0.21	0.18	1.45	1	.23	1.23	1.1	1.75
Asian	-0.62	0.17	13.78	1	<.001	1.85	1.33	2.56
Other	-0.31	0.12	6.33	1	.01	1.27	1.06	1.72
Education								
Less than high school diploma			13.43	3	<.001			
High school diploma	0.01	0.22	0.00	1	.96	1.10	0.65	1.56
Postsecondary education	-0.28	0.20	1.95	1	.16	0.76	0.51	1.12
Other education	0.88	0.51	2.97	1	.09	2.40	0.89	6.51
Employment status								
Employed			19.1	3	<.001			
Unemployed	0.32	0.10	9.73	1	<.001	1.37	1.13	1.67
Retired	-0.29	0.17	2.90	1	.09	0.75	0.53	1.05
Student	-0.26	0.16	2.54	1	.11	0.77	0.56	1.06
Relationship status								
Married/common law/partnered					.06			
Separated/divorced	0.06	0.13	8.95	4	.61	1.07	0.83	1.36
Widowed	-0.1	0.29	0.26	1	.73	0.91	0.92	1.59
Single	-0.03	0.09	0.12	1	.76	0.97	0.81	1.16
Other	-1.49	0.42	0.10	1	<.001	4.35	1.61	12.5
Housing status								
Own home			12.08	3	<.001			
Living with family	0.06	0.15	0.15	1	.70	1.06	0.79	1.43
Renting	0.21	0.09	6.13	1	.01	1.24	1.05	1.46
Other	0.04	0.41	6.53	1	.01	2.82	1.27	6.25
Constant	0.71	0.25	7.72	1	.01	2.02		

respondents with other characteristics within the same demographic group.

The full logistic regression model (see Table 1) containing all significant predictors was significant, $N = 6,041$, $\chi^2(21) = 380.60$, $P < 0.01$, and explained between 8.6% (Cox and Snell R^2) and 11.5% (Nagelkerke R^2) of the variance. This logistic model correctly classified 63.4% of all cases. Five of 7 independent variables (age category, ethnicity, education, employment, and housing status) made unique statistically significant contributions to the model. Age of the respondents made the biggest unique statistical contribution to the model, with a Wald score of 159.9.

Odds ratios suggested that those who were 26 to 40 years, 41 to 60 years, and those above 60 years of age were about 1.4, 3.2, and 5.0 times less likely to report significant anxiety symptoms compared to respondents who were 25 years or less, controlling for all other demographic factors. Odds ratios for other groups were as follows, in the direction of

greater levels of anxiety: female (1.24) compared to male, renting or undefined accommodation (2.8 and 1.24, respectively) compared to living in own home, or unemployed (1.37) compared to employed. Conversely, the following demographic characteristics were associated with less anxiety: Asian and “other” ethnicity (1.85 and 1.26, respectively) compared to Caucasian and “other” relationship status (4.3) compared to married.

Discussion

One-week prevalence rate estimates of anxiety symptoms during COVID-19 are high in subscribers of the Text4Hope program in Canada, with nearly half reporting moderate to severe anxiety, consistent with previous research.² This is especially striking, given that most respondents reported having the benefit of protective social factors including post-secondary education, employment, and home ownership,

indicating the widespread effect of the pandemic on the health of the general population despite protective social determinants of health. We also reported a number of socio-demographic correlates of anxiety symptoms, with these results indicating that there are higher risk groups within the general population that represent an important focus for interventions during times of crisis.

In terms of limitations to our study, we did not have prevalence data on anxiety symptoms in the period immediately prior to the COVID-19 crisis. Consequently, we are unable to determine specifically what proportion of anxiety in our study may be attributable to the COVID-19 pandemic. Second, we used a screening instrument, not a diagnostic interview, to estimate anxiety levels. Thus, it is unclear what proportion of the sample was experiencing anxiety symptoms reflective of a transient state related to the pandemic versus clinically significant anxiety disorders. Third, our anxiety estimates may overestimate the anxiety levels of the general population because we sampled those who self-subscribed to a texting intervention; thus, the respondents may have been experiencing higher levels of anxiety than a random sample of participants.

Authors' Note

Vincent Israel Opoku Agyapong conceived and designed the study, including the Text4Hope program, and performed data analysis. Marianne Hrabok analyzed the data, drafted the initial article with Vincent Israel Opoku Agyapong and Izu Nwachukwu, and participated in study design. April Gusnowski, Wesley Vuong, and Shireen Surood participated in study design and in data collection. Reham Shalaby, Daniel Li, and Andrew J. Greenshaw critically reviewed the article and contributed to the final draft of the article. All authors participated in study design and reviewed and approved the final draft of the article. The funder had no role in the design and conduct of the study; collection, management, analysis, and the interpretation of the data; preparation, review, or approval of the article; or the decision to submit the results for publication.

Acknowledgment

The authors acknowledge the support for the project received from Alberta Health Services and the University of Alberta.



Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was supported by grants from the Mental Health Foundation, the Calgary Health Trust, the University Hospital Foundation, the Alberta Children's Hospital Foundation, the Royal Alexandra Hospital Foundation, and the Alberta Cancer Foundation.

ORCID iD

Wesley Vuong, MPH  <https://orcid.org/0000-0001-8990-4804>
Vincent Israel Opoku Agyapong, MD, PhD  <https://orcid.org/0000-0002-2743-0372>

References

1. Wang C, Pan R, Wan X, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*. 2020;17(5):1729. doi:10.3390/ijerph17051729.
2. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020;3(3):e203976. doi:10.1001/jamanetworkopen.2020.3976.
3. Agyapong VIO. COVID-19 pandemic: health system and community response to a text message (Text4Hope) program supporting mental health in Alberta. *Disaster Med Public Health Prep*. 2020;1-5. doi:10.1017/dmp.2020.114.
4. Agyapong VIO, Juhás M, Mrklas K, et al. Randomized controlled pilot trial of supportive text messaging for alcohol use disorder patients. *J Subst Abuse Treat*. 2018;94:74-80. doi:10.1016/j.jsat.2018.08.014.
5. Agyapong VIO, Mrklas K, Juhás M, et al. Cross-sectional survey evaluating text4mood: mobile health program to reduce psychological treatment gap in mental healthcare in Alberta through daily supportive text messages. *BMC Psychiatry*. 2016;16(1). doi:10.1186/s12888-016-1104-2.