Socio-demographic correlates of depressive and anxiety symptoms among Jamaicans during the COVID-19 pandemic: A Rapid Online Survey

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ABSTRACT

Objectives

This study sought to investigate the prevalence and socio-demographic correlates of depressive and anxiety symptoms among Jamaicans during the ongoing COVID-19 pandemic.

Methods

This was a cross-sectional, population-based online survey. Persons 18 years and older, who reside in Jamaica were targeted via the Facebook social media platform. Those interested in participating were routed to a separate survey platform. The questionnaire captured data related to socio-demographics, knowledge of COVID-19, and beliefs and attitudes about COVID-19. Mental health issues including depressive and anxiety symptoms were assessed with questionnaire items from the Patient Health Questionnaire (PHQ-2) and the Generalized Anxiety Disorder (GAD-2).

Results

There were 485 participants in the study (90.8% female and 9.2% male). Almost all (97.7%) of participants felt that COVID-19 had greatly affected their lives. The prevalence of notable depressive symptoms and anxiety symptoms was 54.7% and 49.2% respectively. Binary logistic regression found significant associations between younger age, lower educational level, unemployment and significant depressive symptoms. While younger age and lower educational level were associated with significant anxiety symptoms.

Conclusion

The findings suggest the need for the government to develop targeted mental health initiatives for young adults, the under- or unemployed and those with lower levels of education.

INTRODUCTION

The Coronavirus disease (COVID-19), a novel, rapidly progressing and highly infectious respiratory disease, has caused a devastating pandemic which has impacted livelihoods worldwide and contributed to significant loss of life (World Health Organisation [WHO]).¹ The pace of this pandemic poses one of the most serious public health emergencies in the last century.²

Current studies suggest that the psychological stressors and reactions to COVID-19 are prevalent across the world. Therefore, addressing the effects of this disease on mental health is urgent.³⁻⁵ COVID-19 can lead to a generalised, heightened fear of the disease across a population.^{6,7} Furthermore, the psychological impact of quarantine is high with reported isolation stressors including quarantine duration, fear of infection, frustration, inadequate supplies and living situation, and inadequate information and financial loss.^{3,4,8}

Commonly reported psychological reactions to isolation measures include anxiety and depressive symptoms as well as self-reported stress.^{3,4} These psychological reactions have also been linked to sociodemographic factors as well as knowledge, attitudes and practices around the virus.⁵ Some studies indicate that level of knowledge, optimistic attitudes and employment of preventative measures are linked to lower levels of anxiety symptoms.⁵ Emerging evidence also suggests that some sociodemographic groups may be more susceptible to COVID-19 related anxiety and depressive symptoms, with gender and employment status frequently cited in the literature.^{4,8} Therefore, it is pertinent to assess the psychological reactions and impact of the general public who are currently experiencing COVID-19 mitigation strategies, which may represent a disruption of their daily lives and who may be unwittingly exhibiting stigmatising behaviours.⁹⁻¹¹

In Jamaica, various public health measures to combat the spread of COVID-19 were implemented. These measures included public health and psycho-education campaigns about COVID-19, in tandem with various mitigation strategies to reduce the spread. Measures taken to reduce the spread of COVID-19 involved partial restriction of movement, mask-wearing protocols, curfews, lock down, isolation and quarantine measures for suspected and confirmed COVID-19 cases. These measures have also been associated with stressors such as job loss, job

uncertainty, financial stress, family strain, loss of routine and reduced social contact, which could further snowball into mental health concerns such as anxiety and depression due to persistent feelings of fear and the rapid changes to daily life.^{9,11,12}

Currently, scientific study on the impact of COVID-19 in Jamaica is rapidly emerging, however, evidence on the relationship between COVID-19 and mental health in Jamaica, and more broadly, in the Caribbean region, is lacking. There is a need to better understand this relationship as it may contribute to guiding the country's public health response to the pandemic. Therefore, this study sought to provide insights into the association between COVID-19 and mental health among Jamaicans. Specifically, the objectives of the study were: (i) to investigate the prevalence of depressive and anxiety symptoms among the Jamaican population during the COVID-19 pandemic; (ii) to determine the socio-demographic factors associated with depressive and anxiety symptoms during the COVID-19 pandemic in the Jamaican population.

METHODS

Study Design

This was a descriptive, cross-sectional study, which utilised an online survey. Due to the pace, novelty and severity of this disease, methods of assessment of its impact need to be completed within shorter time frames, especially when considering the constantly evolving nature of research findings.¹³ However, given the longer timeframe (many months) that nationally representative household surveys take to complete, this was not a feasible option for this pandemic.¹⁴ Extant literature suggests that rapid online surveys provide a solution to the time-sensitive nature of pandemic research.^{14,15} Rapid online surveys have notable merits. These include their usage as social distance data collecting methods; they facilitate the speed at which planning the survey and publishing of the results can occur, while reaching a wider population and geographic range.¹⁶ Also, providing access to many different online and social media platforms (i.e., SurveyMonkey, WhatsApp, Facebook, Twitter etc.) to disseminate surveys.¹⁶ Cost, ease of implementation and increased anonymity are also valuable advantages in the use of this method of data collection.¹⁶ These are crucial elements especially when lockdown measures are in effect.

The target population consisted of persons 18 years and older who resided in Jamaica at the time of the study and who were active users of their Facebook accounts. The sample size was calculated using Raosoft online sample size calculator. Using a confidence interval of 95% and 5% margin of error and a response distribution of 50%, the minimum required sample size arrived at was 385 to be considered as representative. Non-probability sampling was employed; however, to increase the statistical power of the study, data collection was continued until a sample size of 485 participants was reached.

Facebook advertisements were used to recruit persons for the study by directing interested persons to click a link to study questionnaire. The data was collected between August and September 2020.

Ethical Approval for the study was granted through the Ministry of Health and Wellness Research Advisory Panel on Ethics and Medico-Legal Affairs Committee as well as from the University of the West Indies Faculty of Medical Sciences Ethical Research Committee. All participants provided online informed consent prior to participating in the study.

Data Collection Instrument and Procedures

A self-administered questionnaire on the Influence of COVID-19 on Coping and Well-being developed by the researchers was used for data collection. The research team included medical practitioners, public health specialists and psychologists. Research specialists conducted a review of the instrument to ascertain the appropriateness, accuracy and clarity of the instrument.

The instrument had two sections. Section A captured the sociodemographic characteristics of participants such as gender, age, marital status, area of residence, employment status and education level. Section B included questions with sub-sections assessing whether the participants had heard about COVID-19, beliefs about coercive control of COVID-19 (relating to stigma), personal protective attitudes towards COVID-19 and mental wellbeing during the pandemic. Depressive symptoms were measured using the Patient Health Questionnaire-2 (PHQ-2) which is a two-item Likert scale brief screening tool for depressive symptoms over the last two weeks associated with Major Depressive Disorder.¹⁷ Similarly, anxiety symptoms were measured using the Generalised Anxiety Disorder (GAD)-2 scale.¹⁸

The Patient Health Questionnaire- 2 (PHQ-2) is often used as a brief screening tool for symptoms of depression. PHQ-2 scores range between zero to six. In comparing this scale with the criterion standard, which is an interview carried out by a mental health professional, a score of three or greater had a sensitivity of 83% and specificity of 92% for major depression.¹⁷ This cut-off score would also signal the need for further assessment to determine if criteria are met for a depressive disorder.¹⁷

The Generalised Anxiety Disorder (GAD)-2 scale was used in the study as a brief screening tool for anxiety symptoms. The GAD-2 consists of a two-item Likert scale used to screen for anxiety symptoms over the last two weeks associated with GAD and other common anxiety disorders.¹⁸ A score of three or greater signals that further assessment is required to determine if criteria are met for an anxiety disorder. Previous studies have demonstrated that the GAD-2 questionnaire retains the outstanding psychometric properties of the longer GAD-7 and is an excellent first step screener.¹⁹ Also, authors have found that the GAD-2 had a sensitivity of 76% and a specificity of 81% in their studies.¹⁹ PHQ-2 and GAD-2 are validated scales with Cronbach's alpha (0.83 and 0.81) respectively.²⁰ In this study, for both PHQ-2 and GAD-2 tools, scores of 0-2 were categorised as 'insignificant depressive or anxiety symptoms' while scores between 3-6 were categorised as 'significant depressive or anxiety symptoms'. Both scales are available in the public domain.

Data Analysis

Data was analysed using both descriptive and inferential statistics and presented in tables and graphs using Statistical Package for the Social Sciences (SPSS) version 23 (IBM Corp, Armonk, New York, United States). Descriptive statistics were used to analyse the sociodemographic and other characteristics of the participants, tabulated, and reported in frequencies and percentages. Chi-square analyses were performed on categorical data. Binary logistic regression model was used to analyse sociodemographic predictors of depressive and anxiety symptoms which were represented as dichotomous variables reflecting those with 'significant depressive/insignificant depressive symptoms' or those with 'significant anxiety/insignificant anxiety symptoms'.

RESULTS

Demographics

There were 485 respondents; 432 (90.8%) female, 44 (9.2%) males. The age range of respondents spanned between 18 and 83 years with the most represented age

groups being 31-40 years (22.2%) and 41-50 years (21.9%). Most persons lived in urban parishes (59.9%), were affiliated with Christianity (85.4%), and were single (47.1%). Table 1 shows the socio-demographic characteristics of participants.

Table 1: Sociodemographic characteristics of participants

Variables	n (%)
<i>Gender</i>	
Male	44 (9.2%)
Female	432 (90.8%)
<i>Age</i>	
18-25 years	49 (10.5%)
26-30 years	72 (15.5%)
31-40 years	103 (22.2%)
41-50 years	102 (21.9%)
51-60 years	96 (20.6%)
60 years and over	43 (9.2%)
<i>Parish</i>	
Urban	287 (59.9%)
Rural	192 (40.1%)
<i>Religion</i>	
None	51 (10.7%)
Christianity	408 (85.4%)
Islam	2 (0.4%)
Rastafarianism	1 (0.2%)
Judaism	2 (0.4%)
Other	14 (2.9%)
<i>Marital Status</i>	
Married	133 (28.5%)
Unmarried	334 (71.5%)
<i>Employment Status</i>	
employed full-time	212 (44.3%)
employed part-time	40 (8.4%)
self-employed	47 (9.8%)
unemployed	153 (31.9%)
retired	27 (5.6%)
<i>Occupation Category</i>	
official/administrator	72 (15.7%)
professional	149 (32.5%)
technician	7 (1.5%)
protective service worker	10 (2.2%)
administrative support worker	106 (23.1%)
skilled artisan/craftsperson	20 (4.4%)
petty trader	13 (2.8%)
unskilled worker	29 (6.3%)
service/maintenance worker	11 (2.4%)
other	41 (9%)
<i>Education level</i>	
Secondary or lower	90 (19.1%)
Vocational	160 (34%)
Undergraduate	107 (22.7%)
Graduate	114 (24.2%)

Figure 1. Changes in employment status due to COVID-19 in percentage

Knowledge of COVID-19

Almost all respondents (99.4%) stated that they had heard of COVID-19. The majority (92.4%) reported knowing 'a great deal of information' about COVID-19, while others stated that they knew 'some information' (7.2%) and 'not much information' (0.4%). A large percentage of respondents reported that COVID-19 is a 'highly infectious disease' (95.5%), 'primarily passed through droplets from cough or sneeze of an infected person' (97%) and that 'touching your face increases the chance of COVID-19 virus getting into your body' (96%).

More than half of the survey respondents (57.2%) reported that their employment status had changed due to COVID-19. The most significant changes reported by respondents included 'loss of my job' (39.9%) followed by 'get fewer contracts' (29.1%).

Depressive and Anxiety Symptoms

More than half (n=255; 54.7%), of respondents reported significant depressive symptoms and almost half of respondents (n=223; 49.2%) reported significant anxiety symptoms.

Table 2 shows results of chi-square analysis, which revealed significant associations between age, marital

status, education level, employment, and changes in employment since COVID-19, types of changes in employment with significant depressive and anxiety symptoms.

The results of binary logistic regression analysis are presented in Table 3. Findings reveal that younger age groups especially those between the ages of 18-25 years were approximately 12 times more likely (odds ratio (OR) =11.997; 95% CI: 3.558-40.463) to have significant depressive symptoms and almost 5 times more likely (OR= 4.557; 95% CI: 01.622-12.803) to have significant anxiety symptoms than those 61 years or older. In addition, those with secondary or lower educational and vocational training were more likely to have significant depressive (OR=3.579; 95% CI: 1.752-7.311 & OR =1.970; 95% CI: 1.107-3.508 respectively) and anxiety symptoms (OR=2.173; 95% CI: 1.111-4.251 & OR=1.971; 95% CI: 1.116-3.484) than those who were educated at the postgraduate level.

Those who were employed were less likely to have significant depressive symptoms than those who were unemployed (OR=0.440; 95% CI: 0.269-0.7217). There were no statistically significant associations found for area of residence or marital status and depressive or anxiety symptoms.

Table 2. Chi Square analysis of sociodemographic characteristics and significant depressive/anxiety symptoms

Variables	Depressive Symptoms			Anxiety Symptoms		
	n	%	χ^2 (p value)	n	%	χ^2 (p value)
<i>Age Categories</i>			36.084 (<0.01)			28.432 (<0.01)
18-25 years	41	87.2%		36	78.3%	
26-30 years	46	64.8%		41	59.4%	
31-40 years	60	59.4%		48	49.5%	
41-50 years	47	47.5%		46	48.4%	
51-60 years	40	44.4%		33	36.3%	
61 years and over	14	35.0%		13	33.3%	
<i>Area of residence</i>			2.065 (>0.05)			3.054 (>0.05)
Urban	14	52.1%		12	45.8%	
Rural	10	58.9%		98	54.1%	
<i>Marital Status</i>			5.163 (<0.05)			11.068 (<0.01)
Married	19	58.3%		17	55.0%	
Unmarried	59	46.5%		48	37.5%	
<i>Education level</i>			43.231 (<0.01)			26.957 (<0.01)
Secondary or lower	66	77.6%		53	65.4%	
Vocational	97	62.6%		88	58.3%	
Undergraduate	48	45.7%		43	42.6%	
Postgraduate	39	34.8%		37	33.0%	
<i>Employment status</i>			28.954 (<0.01)			13.204 (<0.01)
Employed	13	45.0%		12	42.9%	
Unemployed	12	70.7%		10	60.6%	
<i>Employment status: changed</i>			34.834 (<0.01)			14.904 (<0.01)
Yes	17	66.3%		14	57.0%	
No	77	38.7%		75	38.7%	
<i>Type of change to employment</i>			14.150 (<0.01)			16.908 (<0.01)
Loss of job	84	79.2%		71	71.7%	
Placed in redundancy	19	63.3%		13	46.4%	
Salary cut	29	58.0%		26	51.0%	
Got fewer contracts	41	54.7%		32	42.7%	

Table 3. Socio-demographic correlates of depressive and anxiety symptoms

Variables	Depressive Symptoms			Anxiety Symptoms		
	Odds Ratio	95% C.I.for EXP(B) Lower	Upper	Odds Ratio	95% C.I.for EXP(B) Lower	Upper
<i>Age categories</i>						
18-25 years	11.997*	3.558	40.463	4.557**	1.622	12.803
26-30 years	3.773**	1.500	9.497	2.585*	1.058	6.322
31-40 years	4.143**	1.748	9.821	2.194	0.948	5.079
41-50 years	2.062	0.866	4.913	1.916	0.822	4.466
51-60 years	2.527*	1.051	6.080	1.456	0.617	3.438
Employed/unemployed	0.440**	0.269	0.721	0.649	0.407	1.035
<i>Education level</i>						
Secondary or lower	3.579**	1.752	7.311	2.173*	1.111	4.251
Vocational	1.970*	1.107	3.508	1.971*	1.116	3.484
Undergraduate	1.166	0.649	2.096	1.189	0.662	2.136
Urban/rural parishes	1.105	0.704	1.736	0.955	0.617	1.479
Married/unmarried	1.044	0.653	1.669	1.431	0.904	2.267

** Significant at the 0.01 level, *Significant at the 0.01 level

Table 4. Questionnaire Incorporating PHQ-2 and GAD-2 Screeners

Over the last 2 weeks, how often have you been bothered by the following problems?

Statements	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things				
Feeling down, depressed or hopeless				
Feeling nervous, anxious or on edge				
Not being able to stop or control worrying				

DISCUSSION

The study aimed to assess the effect of COVID-19 on the mental health of Jamaicans in addition to investigating the presence and extent of stigmatising attitudes and behaviours related to COVID-19. This paper speaks specifically to the effect on mental health. We examined the role of a group of select socio-demographic variables (education, age, marital and socio-economic status and

rural/ urban location) on depression and anxiety related to coping with COVID-19.

Study participants reported very high levels of knowledge of COVID-19 and its transmission. Previous research has suggested an association between knowledge of COVID 19 and concern about infection of family members and self and may contribute to depressive symptoms.^{21,22}

Other studies have shown correlations between knowledge and anxiety, fear and psychological distress.^{23,24} However, bivariate and multivariate analysis examining the link between knowledge of COVID-19 and depressive and anxiety symptoms could not be performed due to the high level of awareness of covid-19 (99.4% of participants). This finding suggests that in our sample, knowledge of COVID-19 was not a likely confounder of the association found between socio-demographic variables and anxiety and depressive symptoms.

The very high levels of knowledge of COVID-19 among study participants also indicates that mass media campaigns geared at educating the public about COVID-19 were effective among study participants. However, mass media public education approaches may be inadequate for addressing mental health needs. These approaches can however be adjusted to direct individuals and organizations to sources of help and educate the population on healthy ways to cope with stress related to the epidemic.²⁵ In Jamaica, there is a network of Community Mental health services in primary care health centres that can be accessed to provide care. However, mass media education strategies can be augmented with community-based approaches through local level stakeholders such as faith-based organizations and civil society groups including those that serve vulnerable groups like the elderly the physically and mentally challenged within communities. Training and other resources provided to these local agencies can strengthen their capacity to adequately address the needs of those affected by poor mental health

Pandemics are known to pose a threat to the mental health of those at varying levels of risk.²⁶⁻²⁸ Reviews of studies related to COVID-19 reported a negative impact of the pandemic on the mental health of populations. These studies reported between 16-18% prevalence of symptoms of anxiety and depression.^{3,25} One of the largest reported effects on mental health related to COVID-19 is from the United States where 45% of adults reported anxiety and stress.²⁹ Similar to findings of Choi et al which revealed that anxiety is frequently comorbid with depression, more than half of the respondents in our study reported depressive symptoms and almost a half also reported symptoms of anxiety.³⁰

The predictive factors for depressive symptoms also apply to symptoms of anxiety as reported by Ahmed et al in

their study in China.³¹ Our study established that younger age, lower educational status and unemployment were associated with both depressive and anxiety symptoms. Early evidence from other sources indicate that women, younger age and persons with poor sleep quality are at higher risk for poor mental health outcomes.³²⁻³⁴ Respondents in our study were predominantly female (90.8%), however, sleep quality before COVID-19 was not explored. In contrast to studies by Gao et al and Lei et al, this study showed that marital status was not associated with depressive and anxiety symptoms.^{35,36} The reason for our finding is unclear but might be related to the social organization of the domestic unit in the Jamaican society where the extended family system ostensibly cushions the effects of being single, divorced or widowed.³⁷ Another area of contrast with previously published studies was the association between urban living and anxiety and depression symptoms.^{31,33,34} There was no association between rural-urban dwelling and these specific mental health effects of COVID-19 in this study.

Adverse changes in employment status were singularly the most significant impact of the COVID-19 epidemic in the tourism-dependent region of the Caribbean, including Jamaica. The International Labour Organization reported a loss of over 34 million jobs in Latin America and the Caribbean at the end of the third quarter of 2020.³⁸ Loss of income, job and /or business was the most significant effect reported in our study as the majority of the sample had been affected in this way. This negative change in employment status was significantly associated with both depressive and anxiety symptoms. Unemployment is listed among significant risk factors for developing symptoms of mental disorders especially depressive symptoms.^{35,36,39,40}

There is an inherent responsibility of public health agencies to address the adverse mental health effects of national epidemics like COVID-19. Public health actions, such as social distancing, though necessary to reduce spread of the disease, can make people feel isolated and lonely and can increase stress and anxiety. Our study corroborates the literature from other parts of the world showing that anxiety and depression related to the novel nature of the COVID 19 pandemic and uncertainty about what could happen can be overwhelming and cause strong emotions. Public education must therefore at the minimum create an awareness of the possible mental

health effects of COVID-19 and the measures put in place to address transmission. The symptoms of anxiety, stress and depression are not always well recognised. Families including parents, care-givers and health-care providers should be able to recognise the symptoms and be guided to initiate suitable responses including seeking care and referral.

The findings of this study indicate that those who became unemployed or experienced significantly reduced income were more likely to experience depression and anxiety. In the initial four months of the epidemic in Jamaica the government offered tangible support through monetary grants, food and sanitization packages and enhanced access to medication to the most affected particularly in quarantined communities. These practical measures provide hope and a sense of support but may not be sustainable in a developing country such as Jamaica.

A coordinated approach that is evidence based should be implemented at the national level by the Ministry of Health and its stakeholders. Studies such as ours provide evidence for building an appropriate and adequate response.

Strengths and limitations

This study has some strengths. First, it used a pre-tested questionnaire (with components from well-known mental health screening tools) to carry out a nation-wide survey to meet the urgent need of assessing the perceptions of the general public on aspects of the novel coronavirus COVID-19. The use of a rapid online survey allowed for this research to be conducted in accordance to public health measures during the current pandemic. Second, a multivariate analysis was conducted using logistic regression to assess for independent factors associated with depressive and anxiety symptoms. Third, it is one of the first studies to systematically evaluate the influence of COVID-19 on mental health in Jamaica, and in the Caribbean region.

However, this study is not without limitations. A concern is the over-representation of females in the study as 90% of the participants were female. This study was conducted between August and September 2020. The rapidly changing context of the pandemic may also affect the generalizability of our findings.

There are also limitations associated with the use of online

survey, as with all methods. This study might not have captured certain populations that did not have Internet access to respond to the questionnaires. Similarly, the sample may disproportionately include individuals who, by reason of demographic or social and economic factors have and maintain social media accounts. This may lead to selection bias.¹⁶ Furthermore, the self-report aspect of the questionnaire without having a researcher on hand to answer any questions does pose its own challenges. This, however, was mitigated in this study through the prior testing of the questionnaire for ease of comprehension and completion, as has previously been practised by other researchers.¹⁶ Additionally, the use of brief screening tools to assess for depression and anxiety symptoms were limited to a two week recall history and not specific to the onset of the pandemic. Hence, other factors could contribute to these symptoms such as overall stressor of experiencing a pandemic, among others.⁴¹ This would require additional history beyond the scope of this study. Lastly, being a cross sectional study, it was not possible to establish causality between explanatory and outcome variables; nevertheless, our findings may contribute to the understanding of the mental health effects on the population during a COVID-19 outbreak.

CONCLUSION

COVID-19 pandemic has posed a multi-faceted challenge in the world, including the small island of Jamaica. Findings from this study highlight the need for government and non-governmental agencies to develop targeted mental health initiatives for those found to be most at risk of exhibiting depressive and anxiety-related symptoms. Those most at risk were found to be young adults, the under- or unemployed and those with lower levels of education.

RECOMMENDATIONS

COVID 19 and its effects seem to be associated to poor mental health in Jamaica. Addressing the mental health impact of COVID-19 in the country therefore needs to be prioritized. Programmes and services should be developed to address the effects of the pandemic on the mental health of the population. Both mental health and psychosocial support need to be integrated into the pandemic response. Coping strategies should be promoted through mass media and other communication strategies used by the health services. Given the diversity among those most-at-risk, interventions should be tailored to fit

the uniqueness of the situations surrounding those most vulnerable. Training of facility and community-based health workers needs to be coordinated, while guidelines for mental health support during outbreaks need to be made available and disseminated to all providing services.

Ethical Approval Statement: Ethical Approval for the study was granted through the Ministry of Health and Wellness Research Advisory Panel on Ethics and Medico-Legal Affairs Committee as well as from the University of the West Indies Faculty of Medical Sciences Ethical Research Committee.

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