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Psychological Responses to the COVID-19 Outbreak are Related to Trust in Public Institutions: Implications for Management of Emerging Infectious Dis-eases

Respuestas Psicológicas a COVID-19 se Relacionan a la Confianza en Instituci-ones Públicas: Implicaciones para el Manejo de Enfermedades Emergentes

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ABSTRACT

Emerging pathogens, especially those related to infectious diseases require behav-ior change as well as engaging the population in participating in preventive behav-iors. Psychological responses are thus of vital importance to disease prevention. While the stress of a pandemic has been associated to many psychological symp-toms, these symptoms have not been systematically explored in a broader sociopolit-ical context. Psychological responses may be linked to the perceptions of health professionals and may also relate to trust in public institutions. As such, psycho-pathology is not only a consequence of stress associated with pandemics but rather, the result of an interplay of personal and sociopolitical factors. This study showed that members of the general population are experiencing significant symptoms of psychological distress. Regression analyses showed that psychological distress was associated with negative attitudes towards healthcare professionals as well as distrust in public health authorities. This study is relevant because a lack of trust in health officials may impact the degree to which the population adheres to public health guidelines to prevent and manage COVID-19.

Keywords: COVID-19, Coronavirus, anxiety, mental health, gender

RESUMEN

Los patógenos emergentes, especialmente aquellos relacionados a enfermedades infectocontagiosas requieren cambios de comportamiento y participación de comu-nidades en conductas saludables. En este sentido, las respuestas psicológicas son vitales para los esfuerzos de prevención. Si bien el estrés generado por las pande-mias se relaciona a síntomas psicológicos, los mismos no se han estudiado siste-máticamente en contextos sociopolíticos más amplios. Las reacciones psicológicas pueden estar vinculadas a cómo se perciben los profesionales de la salud y la con-fianza en instituciones públicas. En este sentido, la psicopatología no es solo con-secuencia del estrés, sino además de procesos sociales como la confianza en insti-tuciones públicas. Este estudio mostró que la población general experimenta sínto-mas significativos de malestar psicológico. Análisis de regresión a la vez mostraron que los síntomas psicológicos se relacionan a la percepción negativa del personal de salud y a la falta de confianza en las autoridades sanitarias. Este estudio es re-levante dado que la falta de confianza en las autoridades sanitarias puede impactar la adherencia de la población a las directrices que permiten mitigar y prevenir mas infecciones de COVID-19.

Palabras clave: COVID-19, Coronavirus, ansiedad, salud mental, género

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The Dominican Republic has implemented prevention and manage-ment programs for vector-borne infectious diseases like Dengue, Zika, and Chikungunya for many years [1, 2]. This experience notwithstanding, the most re-cent Global Health Security Index (GHS) report [3] ranked the Dominican Republic in its lowest tier due to its poor capability to prevent and mitigate emerging patho-gens. Therefore, a newly introduced pathogen such as SARS-CoV-2, which causes the recently named Coronavirus Disease (COVID-19), represents a significant chal-lenge for the country's healthcare system. These challenges are compounded be-cause emerging pathogens cause fear and anxiety in the population thus complicat-ing efforts to change people's behaviors in order to mitigate the impact of emerging infectious diseases [4]. If mental health services and more broadly behavioral health measures are not included in the strategies to handle the pandemic, negative men-tal health outcomes may significantly impact prevention strategies and may lead to a subsequent mental health crisis that may further overwhelm the already strained public healthcare services that have worked overtime to manage the pandemic.

In the Dominican Republic, the COVID-19 pandemic coincided with an im-portant period of political unrest and change [5]. In early 2020, municipal elections were canceled due to irregularities in the electronic voting system. The temporary cancellation of the elections led to several weeks of mass demonstrations, which added to an already known historical problem of low confidence in government in-stitutions [5, 6]. While the elections were eventually held (by then there were report-ed cases of COVID-19 in the country), the repercussions of this crisis are still felt in the general population. The length of the declaration of the state of emergency and subsequent measures that include a nightly curfew, reduced economic and social activities, and mandatory mask wearing also led to the postponement of presidential campaigns, leading to a highly politicized environment that was further fueled by the postponement of the presidential elections from May to July of 2020. As such, unrest and low confidence in public institutions represent an additional challenge to health authorities during this pandemic. Individuals may choose to disregard official messaging and health guidances of institutions they do not trust, thus severely un-dermining health authorities' capability to prevent and effectively manage the crisis by effectively engaging the community [5, 7]. Engaging historically marginalized communities might be even more difficult as trust in public

institutions may be even lower in these groups. This lower level of trust may be the result of a history of nega-tive interactions with public institutions such as when women report cases of gen-der-based violence (GBV) or members of the transgender community experience discrimination in healthcare settings and there is little in terms of a government re-sponse to ameliorate systemic inequality.

Adding to this challenge is the fact that emerging pathogens and peri-ods of social distancing bring about anxiety and other psychological symptoms [8]. We hypothesize therefore, that mental health symptoms may be further aggravated when individuals do not trust health authorities, and that this response may be more severe for women because they are overrepresented in the healthcare labor force [8, 9] and women face a lack of protection in the country from several forms of GBV. Recent data from China supports these assertions with a study showing women are more likely to experience trauma symptoms [10]. As a result of the aforementioned examples, the current sociopolitical context in the Dominican Republic provides a unique opportunity for behavioral scientists to understand psychological responses to pandemics in a political and gendered context that is all too common across de-veloping countries.

Previous studies on mental health during viral outbreaks have shown that healthcare workers and members of the general population experience nega-tive emotions and cognitions such as affective symptoms, anxiety, and increases in suicidal ideation [11]. Some studies have also found that the COVID-19 pandemic is associated with increased symptoms of post traumatic stress disorder (PTSD) in the general population [4, 8]. In some ethnic minority populations in Britain, psychotic symptoms also occur in the context of pandemics and isolation [12]. Other studies also indicate increases in sleep disturbances, as well as problematic drug and alco-hol use [8, 13]. Individuals diagnosed with COVID-19, their caretakers, and members of the general public who did not become sick face the uncertainty and fear of pre-venting illness from a disease for which there is no vaccination nor a proven treat-ment [14]. Also, individuals already diagnosed with anxiety and affective disorders may experience worsening symptoms [11]. Healthcare professionals have reported these various psychological symptoms as well as burnout [15]. The combination of these social and cultural factors create the perfect storm for the development of mental health symptoms under the stress of a new infectious disease.

In the Latin American region, there is widespread stigmatization towards those diagnosed with mental illnesses [16]. This pervasive stigmatization is experi-enced by members of the general public and even family members of those diag-nosed with mental illnesses [16]. These traditional attitudes may pose an additional challenge to the management of the COVID-19 pandemic in that it may hinder those experiencing distress from seeking help. This may particularly impact women who already require mental health services disproportionately due to domestic abuse and other forms of violence [8].

In the context of an emerging infectious disease, cultural stigma towards mental illness also raises important questions about broader psychological re-sponses: Are psychological symptoms circumscribed to negative mental health out-comes like anxiety and depression or are there wider symptoms and cognitions that interact with the sociopolitical context? While some individuals may experience af-fective and anxiety symptoms, another potential psychological response could be attaching negative feelings and cognitions to individuals perceived to be at risk for contracting the virus. Historically this has been demonstrated, especially in the 1980s during the HIV epidemic. As such, the current pandemic may lead to an in-crease in negative attitudes towards healthcare workers [13]. These psychological responses may have far reaching consequences that impact behavior beyond men-tal health. These broader responses may have long-term effects on interpersonal interactions with healthcare professionals and overall healthcare utilization if indi-viduals are afraid to seek health services for due to fear of contracting COVID-19.

Distrust in public officials especially health authorities may have particularly devastating consequences to mitigating the impacts of COVID-19 both in terms of preventing transmission and preventing serious complications that are associated to behavior management such as adherence to isolation protocols [5]. Data from sev-eral developed countries suggest that during major national crises, communities come together to combat the crises [8]. However, data from developed countries in which there are higher levels of transparency and trust in public institutions, should not guide scientists nor policy makers in developing countries where the sociopoliti-cal contexts vary substantially. There is some data showing that while in some con-texts prosocial community behaviors are evident, panic also leads to impulsive be-haviors such as hoarding medication, which has serious

consequences for the most vulnerable communities [5].

The purpose of this study was to understand the psychological re-sponse of Dominicans to COVID-19 as measured by two brief psychopathology in-struments and explore the relationship of mental health symptoms with trust in pub-lic institutions and negative perception of healthcare professionals. Specifically, we wanted to see if trust and negative perception of healthcare professionals could predict mental health symptoms for members of the general population. Because of a predominantly female healthcare work force, and issues that women regularly face in Dominican society related to violence and inequality, results will also explore any sex differences that may be present [9]. This is to our knowledge, the first study of this kind in the Dominican Republic and may provide useful guidance on how to manage mental health in the context of public health crises in development contexts when there is low public trust in institutions as well as limited resources that assist in coping with the stress imposed by emerging infectious diseases.

METHODS

Participants

The study was made available to all members of the public who were over the age of 18. Our sample had a mean age of 33.25 years (SD = 12.38). In our sample, 79.93% of participants were women (n = 458). Most participants (98.26%) were residents of the Dominican Republic at the time of survey completion. Most participants did not belong to any of the COVID-19 high risk groups (76.79%) (i.e. having a diagnosis of obesity, diabetes, hypertension, etc.), had not travelled in the last 30 days (91.62%) and had not come in contact with anyone with a confirmed diagnosis of COVID-19 (94.42%). Lastly, our sample consisted mostly college edu-cated participants with more than 70% of participants self-reporting having complet-ed a bachelor's, master's or doctoral level educational program.

Materials

Sociodemographic instrument. We created a sociodemographic questionnaire for this study. It asked general education questions as well as other demographic variables of interest. Variables included age, sex, level of education, profession, social media use, and other general demographic characteristics.

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Patient Health Questionnaire 4 (PHQ-4). This instrument was devel-oped to provide a brief assessment of anxiety and depression [17]. Answers are pro-vided on a 1 to 4 Likert type scale in which 1 means the symptom is not experienced, while a score of 4 indicates the symptom is experienced every day. Scores are add-ed to provide a risk indication from none to severe and higher scores indicate great-er severity of symptoms. The PHQ has anxiety and depression subscales.

Impact of Event Scale-Revised (IES-R). The scale is a 22-item ques-tionnaire that aims to evaluate an individual's response to a traumatic event, in this case the experience of the COVID-19 pandemic. The scale uses the symptoms that are characteristic of Post Traumatic Stress Disorder (PTSD), but it is not used as a diagnostic tool [18]. The scale provides scores for 3 subscales: intrusive thoughts, avoidance, and physiological arousal.

Perceptions of Healthcare Professionals. With this instrument, we wanted to see if psychological responses extended to how healthcare professionals were perceived. The instrument was developed for this study using literature in the area of stigma as the theoretical framework for question development. Higher scores in this measure indicate a higher negative perception of healthcare workers. Be-cause we developed the questions for the perception of health care professionals for this study, we conducted an exploratory factor analysis (EFA). We ran an orthog-onal rotation and considered Eigen values above 1 for factors. EFA yielded a 1 fac-tor solution that can be seen on table 1.

Table 1. Factor Loadings for Exploratory Factor Analysis for Perceptions of Healthcare

Item	Factor 1	Uniqueness
Cuando veo a un médico o personal de salud, guardo distancia porque me puede contagiar	0.75	0.45
No estoy dispuesto a estar en el mismo lugar que un médico o personal de salud	0.84	0.30
Los médicos y el personal de salud deben mantenerse fuera de sus trabajos	-	0.89
He sentido deseos de agredir un médico o personal de salud	-	0.96
Me he burlado de los médicos o personal de salud (chistes, memes, etc.) durante el brote de COVID-19	-	0.97
Tengo miedo a estar cerca de un médico o personal de salud	0.70	0.51

Trust in the Ministry of Health. Lastly, we translated and adapted the Scale for Citizen Trust in Government Organizations [19] to measure perceptions about health authorities, in this case, the Ministry of Health (MoH) of the Dominican Republic, which is the government agency in charge of managing the pandemic. The scale yields 3 subscale scores (benevolence, competence, and integrity) and an overall score. Table 2 contains the results of the reliability analyzes conducted for each scale and subscale (McDonald's ω and Cronbach's α).

Table 2. Reliability Analyses for Instruments

Instrument	McDonald's ω	Cronbach's α
PHQ	0.81	0.80
[1]Anxiety	0.78	0.78
Depression	0.73	0.73
Impact of Events Scale	0.93	0.93
Intrusion	0.88	0.88
Avoidance	0.83	0.82
Hyperarousal	0.82	0.81
Trust in MoH	0.95	0.95
Competence	0.92	0.92
Benevolence	0.88	0.88
Integrity	0.91	0.90
Perception of Healthcare Professionals	0.70	0.70

[1]Indented lines indicate ubscales

Procedure. The research team began data collection after obtaining approval of the ethics committee. All instruments used were available for academic purposes or required the author's authorization for use. In the case of the latter, permission was obtained. The survey included an informed consent form and was conducted online. The survey was anonymous; however, participants who were interested in participating in a follow-up study were allowed to provide an email address for future contact. The study was posted on the university's COVID-19 website, and a link was also provided via the university's social media accounts. Researchers also made the survey available to their professional networks. This study was a low-risk protocol that did not involve contact with participants and did not obtain sensitive infor-mation. Data were collected from March 20th to April 20th of 2020. In order to mini-mize missing data that would lead to exclusion of participants, most of the question-naire was programmed so that subsequent questions only became available after current questions were answered using only the options provided.

Our data analytic plan included exploratory data procedures to describe the sample properly, comparisons of mental health scores by gender, and linear regres-sion analyses to see if trust in health authorities and negative perceptions of healthcare workers were predictors of psychological symptoms. Lastly, reliability measures were obtained for the instruments used for data collection. All analyses were conducted with GPower 3.1 [20] and JASP 0.10.2.

RESULTS

A statistical power analysis was performed for sample size estimation. The effect size (ES) in this study was conservatively selected at the $f2 = .02$, which is considered small according to Cohen's criteria [21]. With an alpha = .05 and pow-er = 0.80, the projected sample size needed with this effect size using GPower 3.1 [20] is approximately N = 550 for a linear regression analysis with two predictors. Thus, our sample size of 573 was more than adequate for the central questions of this study and should also allow for expected attrition.

We conducted two sets of regression analyses in order to test the two brief psychopathology instruments previously mentioned. In the first model, trust in the Ministry of Health (MoH) and perceptions of healthcare workers were covariates while the PHQ was the dependent measure. Results showed a statistically signifi-cant model ($F(2,568) = 17.96$, $p < .001$) in which trust in MoH ($t = -3.714$, $p < .001$) and perceptions of healthcare workers were significant ($t = 4.537$, $p < .001$). Overall, the model predicted 6% of the variance ($R^2 = .06$, $RMSE = 2.73$).

For the second model, we used the same covariates and scores in the longer measures of psychological symptoms, the IES, as the dependent variable. This model was also significant ($F(2,568) = 16.84$, $p < .001$). Like the previous model, both trust in MoH ($t = -2.69$, p = .007) and perceptions of healthcare workers ($t = 5.02$, p < .001) were significant. The model predicted 6% of the variance ($R^2 = .06$, $RMSE = 14.12$).

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Lastly, we tested for sex differences in mental health symptoms. It is well known in psychological literature that women tend to experience higher levels of anxiety and depression and we expected that this pattern would continue during the pandemic, especially due to role demands of women at this time. Overall, wom-en scored higher than men in the PHQ and the IES. For both measures differences in the PHQ ($t(571) = -2.97$, $p = .001$, Cohen's $d = .31$) and in the IES ($t(571) = -3.11$, $p = .002$, Cohen's $d = -.33$) were statistically significant. This indicates small to medi-um effect sizes for sex differences in both measures that include depression, anxie-ty, and trauma. There were also sex differences in the perception of healthcare workers, with women perceiving healthcare workers as a threat to their health more so than their male counterparts ($t(571) = -2.48$, $p = .04$, Cohen's $d = -.26$). Lastly, there were sex differences in trust in MoH, but in this case, men had higher scores, that is, they were more likely to trust public health officials than women ($t(567) = 2.09$, $p = .04$, Cohen's $d = .22$). Table 3 contains a comparison of women and men's scores.

Table 3. Sex Differences in all Measures

Instrument	Mean	SD	SE
PHQ			
Men	2.86	2.74	0.26
Women	3.72	2.81	0.13
Impact of Events Scale			
Men	15.73	13.10	1.22
Women	20.42	14.74	0.69
Trust in MoH			
Men	3.03	0.84	0.08
Women	2.85	0.79	0.04
Perception of Healthcare Professionals			
Men	1.61	0.58	0.05
Women	1.75	0.56	0.03

DISCUSSION

Our results show that social factors, like perceiving healthcare workers as a health risk and trusting public institutions play an important role in the devel-opment of psychological symptoms during a public health crisis. While these factors only explain some of the variance, they are statistically significant contributors and as such, public health efforts need to include them when planning the response to a pandemic or future emerging pathogen. Future studies should look into the de-gree to which trust in public officials impacts engagement in preventive behaviors like wearing masks in public and social distancing guidelines. Studies do suggest that harnessing community support and behavior change require effective commu-nication in order to generate credibility [7]. Furthermore, Kaslow and colleagues [22] emphatically state that principles of behavioral sciences should be included in communication strategies. Effectiveness and evidence base, in this case, may be more crucial than quantity in terms of bombarding the population with directives and mass media campaigns [5]. In addition, studies should see if negative attitudes to-wards healthcare professionals change over time or if the perception that healthcare workers are a possible source of contagion remains. Studies should explore if these perceptions impact healthcare utilization (i.e. whether individuals experiencing psy-chological distress use healthcare services or stay away out of fear) and stigmatiza-tion towards healthcare workers.

The findings of this study show that there are statistically significant differences in the way men and women are responding to the pandemic. This is im-portant because psychological literature for a long time has found sex differences in the frequency of anxiety and depression between men and women. However, the pandemic may make women even more vulnerable. Women who are in abusive re-lationships may find themselves in isolation or quarantine in unsafe settings. Wom-en who have children may also feel overburdened by the simultaneous demands of remote work, homeschooling, and behavior change to manage the pandemic and households with diminishing income and other resources restrictions. Similarly, studies have shown that efforts to improve physical health are dependent on mental health [13]. As such, women who experience more psychological symptoms, may be less likely to engage in the necessary behaviors to manage their physical health during the pandemic. Follow up studies should further explore issues related to role demands, cultural context, and mental health.

While there are several strengths to this study's methods and design, there are also limitations. All measures included were self-report measures which in addition to requiring savvy and awareness of psychological constructs, may also be susceptible to social desirability. In addition, an online survey requires that those who access it have internet service and computer equipment. As a result, individu-als in resource restricted settings without computers and internet access were not able to participate in the study. This limitation may be overcome in future studies looking at long term psychological consequences on COVID-19 as at that time, it may be safe for researchers to interact with hard to reach communities without in-ternet in order to gather data from a more representative sample.

Notwithstanding these limitations, this is to our knowledge the first study that looks at COVID-19 and psychological responses in the Dominican Re-public that takes into account social and political issues. Mental health is important for everyone, however, it may be of particular importance in low income countries because many of the buffers that developed countries can provide in order to help their citizens cope, are not available to everyone in low income countries (i.e. strong healthcare systems, financial resources for workers, accessibility and availability of masks) [23–26]. This study is important because it provides guidance on potential long-term mental health service needs that extend beyond the emergency period and explores the interplay of psychopathology and social issues in a political con-text common across the developing world.

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