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Perceived risk of COVID-19 diagnosis and stigma among Nigerians

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Abstract

The World Health Organization (WHO) classified Nigeria as one of the 13 African countries with a higher risk of spreading COVID-19. Although the Nigerian government and its health agencies set directives in place to help curb the spread of COVID-19, there are instances of unconcerned attitudes and adherence to false and superstitious beliefs surrounding COVID-19 among Nigerians. The current study examined the general perception of COVID-19 risk among Nigerians. Additionally, it examined the fear of possible stigmatization if an individual is diagnosed with COVID-19. A cross-section of 332 Nigerian men and women responded to measures on perceived vulnerability to diseases, perception of risk of being infected with COVID-19, COVID-19 stigma, and social and demographic characteristics. The findings show that respondents with a higher perception of vulnerability to diseases reported higher COVID-19 risk and perception of COVID-19-related stigma. Further, we found that gender, age, and education impacted COVID-19 risk and perception of COVID-19-related stigma. Our findings suggest that risk perceptions and attitudes towards COVID-19 can impact the level of preparedness against a pandemic. Also, the findings could inform strategies for the proper implementation of health protective measures at national, state, and local government levels during a viral outbreak.

Keywords: COVID-19, risk perception, stigmatization, coronavirus, diseases

Introduction

A newly identified virus, SARS-COV-2, has emerged and caused a worldwide pandemic. Called COVID-19, the virus belongs to the family of coronaviruses, known examples of which are the Severe Acute Respiratory Syndrome (SARS) and the Middle East respiratory syndrome (MERS) (Gorbalenya et al., 2020). The virus can be transmitted from person to person, primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. COVID-19 clinical symptoms include dry cough, fatigue, shortness of breath, sore throat, headache, nausea or vomiting, nasal congestion, and diarrhea (Peng and Zhou, 2020). In most cases, individuals infected with COVID-19 experience mild to moderate respiratory symptom (Rali and Sauer, 2020). In rarer cases, the virus can lead to severe respiratory disease, organ failure, or fatality (Du et al., 2020). World Health Organization has confirmed that no specific treatment or vaccine for this infection has been discovered at this time (WHO, 2020).

Since the outbreak of COVID-19 in December 2019, the world has recorded exponential growth in infection cases (Tang et al., 2020). As of September 21, 2020, the world reported 30,949,804 confirmed cases of COVID-19, with 959,116 deaths worldwide (WHO, 2020). The global pandemic has heavily impacted various communities and countries, including Nigeria. The World Health Organization enlisted Nigeria among the thirteen African countries identified as high-risk zones for the spread of COVID-19 due to the high population. The estimated number of Nigerians in 2019 was over 200 million (Varrella, 2020), with 40 percent of the total population (over 80 million people) living below the country's poverty line of 137,430 naira (\$381.75) per year (The World Bank, 2020).

The first confirmed case of coronavirus in Nigeria was reported on February 27, 2020, by the National Center for Disease Control (NCDC). As of September 20, 2020, there were 57,242 confirmed cases and 1,098 deaths in the country (NCDC, 2020). As COVID-19 spread rapidly across Nigeria, the Nigerian government implemented drastic measures to reduce the spread of the virus. Some of the

measures included closure of schools, markets and business places, the prohibition of religious and social gatherings, enforcement of practices such as quarantine, social-distancing, facemask wearing in public spaces, and total lockdown. Despite specific guidance issued by government officials in an effort to prevent the spread, there are daily accounts of Nigerians disregarding or refusing to adhere to government recommendations. Research that examined the practice of protective measures during the H1N1 outbreak found that public cooperation with respect to practicing of protective measures is dependent upon their risk perception of a pandemic (Van der Weerd et al., 2011).

Perception of risk and susceptibility to diseases

Risk perception is an individuals' perceived vulnerability to diseases/illnesses (Fischhoff, Bostrom & Quadrel, 1993). The process of forming risk perceptions is contextually based and can vary from individual to individual. For example, individuals whose family members have been diagnosed with a disease tend to have a more pessimistic risk perception for that specific disease (Chen & Kaphingst, 2011). How frequently or prevalently certain diseases are presented in the media, in general, can also alter individuals' risk perceptions (Choi et al., 2017). When health threats become more urgent and severe, risk perceptions also become higher (Shepperd et al., 2000). Logically, risk perception has a substantial impact on individuals' health behaviors and modification of risk perceptions can contribute to subsequent adjustments in health behaviors.

According to Rogers (1975), individuals' motivation to relinquish certain enjoyable activities that could contribute to diseases, such as overeating or smoking, stems from their personal beliefs of possible resulting health consequences. Taken together, perceived susceptibility to diseases is a crucial factor and determinant of health behavior. While fear which is driven by misinformation counters public health efforts in combating the virus (Ren et al., 2020), the fear offers an understanding of how people appreciate their health and the severity of the disease (Kobayashi et al., 2020). This fear brings to fore the

genuine concern about the virulence of SARS-CoV-2 which is exacerbated by the unavailability of a vaccine or globally accepted treatment (Khosravi, 2020; Lai et al., 2020).

Additionally, although Africa has garnered experience in combating epidemics such as Ebola and HIV (El-Sadr & Justman, 2020), stigma and discrimination are not alien to the continent. Stigma is a concept used to describe the perceived negative experience of persons or individuals with regard to some characteristics they have which are not universally accepted as the norm within their society (Goffman, 1963). This usually leads to a reduction in an individual's perceived status in society and perceived or real discrimination (Link & Phelan, 2001; Goffman, 1963). Perceptions of stigma are sometimes influenced by cultural beliefs about disease etiology (Mushi, et al. 2011). Within the Nigerian context, fear, anxiety, and stigma regarding epidemics have been recorded in the literature (Awofala & Ogundele, 2018).

To contextualize the issue of stigma regarding infectious or communicable diseases, one can draw on the HIV/AIDS epidemic in Nigeria. While HIV-related stigma is known to result in loss of jobs, exclusion from social networks, and physical violence (Earnshaw & Chaudoir, 2009), it also impacts on HIV testing, disclosure of seropositivity and treatment (Okareh et al., 2015; Okoronkwo et al., 2013; Yahaya et al., 2010). Additionally, certain factors have been reported to influence stigma in relation to infectious and communicable diseases in Nigeria. For example, people of lower socioeconomic status with lower educational levels were more likely to stigmatize people who are infected with infectious diseases (Dahlui et al., 2015). In contrast, people with higher levels of education and higher socioeconomic status were less likely to stigmatize people who were infected with infectious diseases (Dahlui et al., 2015).

Current study

Researchers argue that the practice of health-protective measures by individuals or the public is dependent on high levels of perceived risks associated with illnesses (Rogers, 1975). This decision is significantly premised on the individual's or public's assessment of the disease's severity or their

vulnerability to the disease (Rogers, 1975). Arguably, the absence of a vaccine for COVID-19 and the limited resources available in combating the virus could influence high perceived risk (El-Sadr & Justman, 2020) among individuals and communities. High levels of perceived risk could present some implications for public health interventions.

These issues are the justification for this study. As a result, the study, using a sample of Nigerians residing in Nigeria, explored the influence of perceived disease vulnerability, perceived threat of COVID-19, and sociodemographic factors on perceived COVID19-related stigma and risk of COVID-19 diagnosis.

Method

Participants and Procedure

This study included a sample of Nigerian men and women ($N=336$), aged 19 to 76 years. We collected the data using Qualtrics link that was published on: 1) group and personal pages on Facebook website, 2) various WhatsApp groups for Nigerians, 3) sent through text messaging, and 4) personal LinkedIn pages. The participants responded to measures assessing perceived vulnerability to disease, perceived stigma related to COVID-19 diagnosis, general risk perception, and additional demographic, social and ecological characteristics. The online survey was designed to last 20 minutes on average, and respondents received no monetary gift for study participation. This investigation was approved by the Institutional Review Board (IRB) of Union College, United States.

Measures

Primary outcomes

Perceived risks of COVID-19 Diagnosis. The perceived risk of Nigerians being diagnosed with COVID-19 and the perceived risk of being diagnosed with COVID were measured using single-item questions that examined the COVID risk perception among

Nigerians. The questions were: “How likely are Nigerians to be diagnosed with Corona virus?” and “How likely do you feel as a Nigerian that you will be diagnosed with Coronavirus?” Response choices to the questions were assessed using a 6-point Likert scale from 0 (not at all likely) to 5 (very likely). Additionally, respondents provided reasons for their responses by selecting from a list of 8 statements such as: “Nigerians don't easily get sick,” “Nigerians don't easily die of sicknesses,” and “Nigerians take care of their health.” The participants were given an opportunity to provide further reasons for their perceived beliefs regarding COVID-19 risk.

Perception of COVID-19-related stigma. The perceived stigma related to COVID-19 was assessed using 4-item statements that measured the degree to which participants agree with perceived COVID-19-related stigma. In this study, we did not directly assess individual tendencies to engage in the stigmatization of other people diagnosed with COVID-19. Rather, we assessed a more normative perception of COVID-19 related stigma given the novelty of the disease as at the time of data collection. Examples of items on the scale are: “a person diagnosed with Coronavirus will likely be stigmatized” and “if a person recovers from Coronavirus diagnosis, everyone in the community will likely abandon that person.” Respondents responded to the questions on a 6-point Likert scale from 0 (strongly disagree) to 5 (Strongly agree). The scores of the 4 items were made a composite score with Cronbach's $\alpha = 0.71$. Higher scores indicate a higher perception of COVID-19-related stigma.

Predictor variables

Perceived Vulnerability to Diseases. The Perceived Vulnerability to Diseases (PVD) scale (Duncan et al., 2009), a 15-item self-report questionnaire designed to assess individual differences in concerns about the transmission of diseases. For the purpose of this study, the questionnaire was modified into a 12-item scale to make it more applicable to the general viral

outbreaks. The participants rated their agreement with each of the items using a 6-point Likert scale of 0 (Strongly disagree) to 5 (Strongly agree). Ratings across 7 items were averaged to create a composite PVD score, with higher scores indicating greater PVD. The adapted scale had a Cronbach's Alpha of 0.72.

Perceived Threat of COVID-19 to Nigerians. The perceived threat of COVID-19 was measured using a statement that assessed the general perceived seriousness, impact, and overall threat of COVID-19 to Nigerians. The statement was: "the Nigerian government is exaggerating the health threat of COVID-19." Participants indicated the degree to which they agree with the statements using a 6-point Likert scale from 0 (strongly disagree) to 5 (strongly agree). Higher scores indicate a lower perceived threat of COVID-19 to Nigerians.

Demographic Characteristics. We included six demographic variables in the analyses: age, marital status, education, subjective social standing, presence of children, and the number of COVID-19 cases in town of residence. Although the study was designed to only include Nigerians and Nigerians who reside in Nigeria, we asked the participants to self-identify their nationality and country of residence. It is our assumption that the participants are from various Nigerian ethnic backgrounds such as Igbo, Hausa, Yoruba, Tiv, Urhobo, etc.

Data Analytic Strategy

We conducted descriptive analyses to provide measure performance and a profile of the sample's sociodemographic characteristics. We conducted two linear regressions to determine the associations between perceived risk of COVID-19, perceived COVID-19-related stigma, predictors of interest, and other covariates. All statistical analyses were conducted using SPSS version 23.0 (SPSS Inc., Chicago, IL) and R software, with a statistically significant p-value level set at 0.05.

RESULT

Sample characteristic. Participants were 336 self-identified Nigerian men and women resident in Nigeria, with a mean age of 33.35 ($SD = 7.10$) years. Over half of the sample (69.3%) reported having a college degree or more. The mean subjective social standing reported by the participants, to show how they perceive themselves to stand on a ten-rung ladder (from 1 = *worst off* to 10 = *best off*) that represented everyone in the society, was 5.34 ($SD = 1.71$). Approximately 46% reported being married. Other demographic, health, and social characteristics are provided in Table 1.

[TABLE 1 ABOUT HERE]

Perceived risk of contracting COVID-19

All reported results are of statistically significant relationships when other variables are controlled for in the regression model (see Table 2). The result shows that Nigerian women perceived the risk of Nigerians being diagnosed with COVID-19 more than men ($\beta = 0.3237$). Also, an increase in perceived vulnerability to diseases is associated with an increase in perceived risk of Nigerians being diagnosed with COVID-19 ($\beta = 0.1683$) and an increase in perceived personal risk of contracting the virus ($\beta = 0.503$). Additionally, increase in the perception that the Nigerian government is exaggerating the health threat of COVID-19 is associated with a decrease in perceived risk of Nigerians being diagnosed with COVID-19 ($\beta = -0.1245$). Further, an increase in subjective social standing is associated with a decrease in perceived risk of Nigerians being diagnosed with the virus and in the perceived personal risk of being diagnosed with COVID-19.

[TABLE 2 ABOUT HERE]

COVID-19-related stigma

The results are displayed on Table 3. Age was found to be associated with the perception of COVID-19-related stigma. An increase in age by a year is associated with a 0.023 unit

decrease in the perception of COVID-19-related stigma. Education was inversely associated with the perception of COVID-19-related stigma risk ($\beta = -0.104$). A year increase in education is associated with a 0.104 decrease in perception of COVID-19-related stigma. Also, compared to married Nigerians, those who are single have higher perception of COVID-19-related stigma ($\beta = 0.289$). There is a direct relationship between perceived vulnerability to disease and the perception of COVID-19-related stigma. A unit increase in perceived disease vulnerability increases the perception of COVID-19-related stigma by 0.116.

[TABLE 3 ABOUT HERE]

Discussion

The current study examined socio-demographic differences in the perceptions of stigma towards COVID-19, as well as risk and vulnerability towards the COVID-19 pandemic in Nigeria. The study is important given the immediacy of COVID-19 crisis and the need for effective public health interventions for infectious diseases.

We found that compared to men, women were more likely to think that Nigerians had an increased risk of contracting COVID-19. This result demonstrates women's proactive attitude towards news about pandemics or other health issues. The result may reflect findings from previous studies (Ek, 2015; Tong et al., 2014) which found that women were more likely to seek health information, adopt beneficial health behaviors and seek health care than men. Our findings highlight the unstated impact of gender roles which places most responsibility on women to maintain and improve the health status of members of their families.

Higher SES which is measured by subjective social standing was found to be inversely associated with perceived risk of contracting COVID-19. This directly supports the theory of fundamental causes of diseases which states that persons with higher socioeconomic status are more likely to have better access

to health information, health care services, and preventive services which serve to protect them from being vulnerable to diseases (Phelan et al., 2004). This finding has important implications for public health measures to be adopted, especially with regards to reducing exposure or vulnerability to infectious diseases. For instance, previous studies show that increased vulnerability directly informs preventive health behaviors adopted by people (Belcher et al, 2005; Goh, 2020; van der Pligt, 1998).

Additionally, the perception that the government is exaggerating the impact of COVID-19 is associated with decreased perception of risk of contracting the disease. This has several implications such as likelihood of complying with preventive public health measures. For instance, when citizens believe that their government has their best interests and is providing useful up-to-date information, the level of trust is likely to increase as will their compliance with governmental directives. This finding is supported by the previous research on assessing the role of institutional trust in determining citizens' adherence to governmental public health measures during public health crises, and the role that it plays in exacerbating or reducing the spread of diseases (Blair et al., 2016; Kutalek et al., 2015; O'Malley et al., 2004; van der Weerd, et al., 2011). Our findings add to the body of literature on the role that perceived vulnerability and risk to infectious diseases, such as COVID-19, would have on the preventive behaviors adopted by individuals especially if there is widespread distrust of governmental public health measures and directives.

Our study results also indicated that younger persons are more likely to perceive the likelihood of being stigmatized due to COVID-19 than their older counterparts. This finding is consonant with the findings of other studies where younger persons have a higher level of perceived stigma from a disease (Jenning et al., 2015; Thara and Srinivasan, 2000). However, our finding contrasts sharply with research showing that older adults with diseases are more likely to perceive and experience stigmatization (e.g., Emler, 2006; Harrison et al., 2019; Warner et al., 2009). Also, it our finding contrasts with that of Shibre and colleagues (2001) who found age as an insignificant predictor of high levels of perceived stigma. Perhaps this increased perception of stigma among younger persons is related to beliefs that younger

people should be hale and hearty, or that they would not be able to freely socialize or engage in social activities with their peers. This could be a hindrance to seeking health care and also increasing the risk of spread of disease. Equally important is the fact that prior research on attitudes and perceptions towards stigma focused on mental health/illness (Shibre et al, 2001; Jegede, 2002), tuberculosis (Cremers' et al 2015), epilepsy (Mushi, et al. 2011), malaria (Nuwaha, 2002). To the best of our knowledge, this is the first study looking at stigma due to viral respiratory infectious diseases in Nigeria.

In line with a common finding in health research (Donkor and Sandall, 2007; Griffiths et al., 2008; Zieger et al., 2016), we found that higher levels of educational attainment were predictive of reduced levels of perceived stigma. Individuals with higher levels of education may have more access to unbiased information about the risks and complications of COVID-19 as well as recovery options compared to persons with lower levels of education. Thus, they are more likely to seek healthcare and engage in preventive health behaviors. Additionally, single persons, compared to married persons were more likely to have higher perceptions of stigma related to COVID-19. Previous research found that single persons were less inclined to reveal their disease conditions due to the fear of not finding romantic partners (Cremers et al., 2015). It is also possible that those who are single are bothered about social restrictions such as not being able to hang out with friends that comes with being diagnosed with COVID-19. This finding will benefit from further exploration on the influence of marital status on stigma-associated perceptions of diseases. Interestingly, persons with higher perceived vulnerability to disease were more likely to perceive themselves as susceptible to stigma related to COVID-19. This may be due to the fact that COVID-19 is a highly fatal communicable disease that could manifest itself with obvious symptoms such as coughing and sneezing in public spaces, and subsequently result in other people actively avoiding the suspected infected person.

Limitation

The study is not without limitations. First, the sampling method and the size of the sample limits our ability to generalize our findings to every Nigerian. Second, we collected the data online and may

have unintentionally prevented Nigerians without access to the internet from participating in the survey. Lastly, due to the urgency to collect the data during the peak of COVID-19 outbreak and government lockdown, we collected the data over a week period. There remains the possibility that had the data been collected for a more extended period, we could have reached a wider range of Nigeria and recruited more participants for the study.

Conclusion

We examined COVID-19 risks perception among Nigerians and found that key demographic characteristics (age, gender) predict COVID-19 risk perceptions. Our data reiterates the importance of ensuring that individuals have an accurate perception of the threat posed by COVID-19 and viral infections and are well-informed about the impact of COVID-19 diagnoses on their social interactions. Recognizing the need for accurate perception of COVID-19 will help in the development and implementation of public health strategies for curbing viral infections and diseases. Equally important, it will ensure the success of public health strategies that will promote health prevention behaviors in individuals in times of a pandemic.

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Table 1. Demographic and social characteristics (N = 332)

	M(SD)/Percent
Age	33.35(7.10)
Gender (Men)	61.1
Education (\geq college degree)	69.3
Subjective social standing	5.45(1.71)
Marital Status (Married)	45.8
Sick in the last 6 months that required hospital visit (Yes)	18.2
Hospitalized in the last 12 months due to illness/injury (Yes)	10.7
Medical Insurance (No)	62.8

Table 2. Linear regression showing factors predicting COVID-19-related risks (N= 332)

	Perceived risk of Nigerians being diagnosed with COVID-19		Perceived risk of being diagnosed with COVID-19	
	Estimate	SE	Estimate	SE
Age	-0.0055	0.0108	-0.0047	0.0121
Gender (Ref = Male)				
Female	0.3237**	0.1537	-0.0489	0.1715
Subjective social standing	-0.0348	0.0445	-0.0844*	0.0497
Town (Ref = lower cases)				
Higher cases	0.0853	0.1545	-0.1423	0.1725
Perceive vulnerability to diseases	0.1683**	0.0841	0.503***	0.0939
Perceived threat of Covid-19 to Nigerians	-0.1245***	0.047	0.0297	0.0525

Notes: * = $p < .05$, ** = $p < .01$, *** = $p < .001$, SE = Standard Error

Table 3: Regression showing factors associated with perception of COVID-19-related stigma ($N = 332$)

	Estimate	SE	Pr(> t)
Age	-0.0229	0.0096	0.0181**
Gender (Ref = Male)			
Female	-0.1420	0.1179	0.2294
Education	-0.1040	0.0420	0.0140*
Subjective social standing	-0.0569	0.0330	0.0862*
Marital status (Ref = Married)			
Single	0.2885	0.1685	0.0879*
Town (Ref = lower cases)			
Higher cases	-0.1042	0.114	0.3611
Perceived vulnerability to diseases	0.1161	0.0618	0.0613*

Notes: * = $p < .05$, ** = $p < .01$, *** = $p < .001$, SE = Standard Error