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Predictors of health risk behaviors during COVID-19 outbreak among educated Nigerians: Public health implications for curbing viral outbreaks in Nigeria

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ABSTRACT

Education has been shown to promote engagement in preventive health behaviors, such as health-seeking and other protective behaviors against diseases. As an exploratory research, this study aimed to identify the key factors influencing health behaviors of educated Nigerians and illuminate how these behaviors manifested during the COVID-19 pandemic. Nigerian men and women (N = 369) aged 18 to 76 years (M = 34.02; SD = 7.59) responded to a survey administered using a Qualtrics link. Participants were assessed on social determinants of health, health risk behaviors during the coronavirus viral outbreak, confidence in government health policies, and demographic characteristics. Results revealed that despite education and individual actions, socioeconomic status, gender, and social determinants of health are key predictors of health behavior during the COVID-19 pandemic in Nigeria. This study adds to the body of knowledge on the wide-ranging negative association of gender, social determinants, and socioeconomic status with health-risk behaviors among Nigerians.

Introduction

In Nigeria, the first documented case of COVID-19 was reported on the 27th of February 2020 by the Nigeria Centre for Disease Control and Prevention (NCDC). As in other countries, once the first case of COVID-19 was recorded in Nigeria, the government, through the Federal Ministry of Health, implemented critical measures to limit the spread of the virus. Measures similar to those instituted globally include travel restrictions and curfews, social distancing measures, mask requirements, and weeks of lockdown (Ajide et al., 2020; Olapegba et al., 2020; Oyeniran & Chia, 2020). Given the novelty of COVID-19 during the early stage of the outbreak, there was a lack of clear and concise information from the government about the COVID-19 outbreak, its spread, and how to prevent it (Chukwuorji & Iorfa, 2020; Ohia et al., 2020). This led to confusion and misinformation, further fueling distrust of the government (Agusi et al., 2021; Nnama-Okechukwu et al., 2020).

There is also a general mistrust of the Nigerian government by its citizens due to a history of corruption and ineffective leadership — explains why many Nigerians were skeptical of COVID-related policies implemented by the government (Muhammed, 2020; Nwakasi et al., 2022). Despite the success of the measures instituted by the Nigerian government to fight COVID-19 spread, there were protests in various parts of the country against the government's lockdown measures (Esiaka et al., 2021; Omaka-Amari et al., 2020; Oyeniran & Chia, 2020). Some Nigerians refused to comply with the government's mandatory health policies, such as wearing masks and social distancing (Agusi et al., 2021; Esiaka et al., 2022; Nwakasi et al., 2022; Oyeniran & Chia, 2020). These issues highlight how trust in government can influence health behaviors relating to a specific public health measure.

Social determinants of health behaviors

Social determinants of health include economic and environmental conditions that affect individuals' overall psychological and physiological health (Braveman et al., 2011; Braveman & Gottlieb, 2014). There are five domains of the social determinants of health: access to quality healthcare, access to quality education, community engagement and interaction, socioeconomic status and stability, and environmental and neighborhood conditions (Marmot & Wilkinson, 2005). While intersections may occur between two or more domains, individuals can experience higher levels of one domain compared to another (World Health Organization, 2008). Exposure to the social determinants of health has been linked to health behaviors (Braveman et al., 2011; Braveman &

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Gottlieb, 2014; Short & Mollborn, 2015).

Education as a determinant of health behaviors

Research has shown that education is a protective factor against poor health outcomes (Fujiwara & Kawachi, 2009) and mortality (Lager & Torssander, 2012), and increases health policy compliance (Brunello et al., 2016; Silles, 2009). Education has been linked to increased healthy behaviors and improved health outcomes across the lifespan (Edelman & Kudzma, 2021). Education also promotes engagement in preventive health behaviors, such as health-seeking (Cheatham et al., 2008), protection of the self against diseases (Allengrante et al., 2019), and early disease detection behaviors (Atakere & Baker, 2019). The pathway through which education affects health behavior is linked to other social determinants of health. For example, individuals with higher educational attainment are likely to have significant economic resources to support healthy behaviors (Edelman & Kudzma, 2021; Lager & Torssander, 2012). In addition, individuals who have attended college report better access to healthcare than those without a college degree (Brunello et al., 2016; Fujiwara & Kawachi, 2009). As an exploratory research, the current study examines factors associated with the health behaviors of educated Nigerians during the COVID-19 outbreak.

Method

Participants and Procedure

We recruited a non-random sample of Nigerian men and women (N = 369) aged 18 to 76 years (M = 34.02; SD = 7.59) using convenience sampling. Participants responded to a survey administered using a Qualtrics link published on targeted social media platforms predominantly of Nigerians living in Nigeria: Facebook groups and pages, WhatsApp groups, text messaging, and personal LinkedIn pages. The survey assessed participants' tendencies to follow the COVID-19 public health directives, self-reported factors that serve as facilitators or barriers to engaging in healthy behaviors during the pandemic, and demographic characteristics. Data were collected over one week. The survey was designed to last an average of seven minutes. Participants included in the study were not offered monetary or other gifts for study participation. This study was approved by the Institutional Review Board of a university in the northeastern region of the United States.

Measures

Social determinants of health (SDoH): In the current study, we measured SDoH using a single question on the most compelling reasons for the likelihood of engaging in publicly mandated health behaviors during the COVID-19 pandemic. A priori response choices generated through synthetic thematic analysis of previous studies were crafted to reflect the following social determinants of health domains: economic reasons (e.g., money, work), social and community reasons (e.g., to hang out with friends and families), psychological reasons (e.g., boredom), and religious factors (e.g., to attend church or mosque service). The individual points were aggregated to obtain a score for SDoH, with higher scores indicating endorsement of a higher number of social determinants of health domains.

Health risk behaviors during coronavirus viral outbreak: We utilized a measure earlier reported by Nwakasi et al. (2021) to assess participants' likelihood of complying with public health directives. The measure reflected public health directives on health behaviors important for curtailing the spread of virus outbreaks. Participants were presented with the prompt: "The Federal Government, in an attempt to limit the spread of COVID-19, mandated Nigerians to adhere to certain health behaviors and enforced curfews and lockdowns. Thinking about the weeks ahead, please respond to each item using a scale from 0 (not at all) to 5 (very much) to indicate the likelihood that you would comply with the following public health directives." Examples of questions on the measure are "visit friends and family," "go to the market, attend a church/mosque service, use public transportation, go to a bar, etc. The scores from the questions were combined to create a composite score, Cronbach's α = .82. Higher scores indicate that participants are more likely to ignore public health directives and engage in risky health behaviors.

Demographic and social characteristics: The demographic and social variables included in the survey and used in data analyses are age, gender, marital status, employment status, years of education, and socio-economic status measured as subjective social standing in comparison to others in the participants' societies.

Data analytic strategy

First, we conducted descriptive analyses to provide a measure of performance and a profile of the participant's demographic characteristics. Second, we analyzed Pearson r to examine the relationship between study variables. Third, we conducted a hierarchical multiple regression analysis to test for likely predictors of health behaviors. All statistical analyses were conducted using SPSS version 23.0 (SPSS Inc., Chicago, IL) and R software, with a statistically significant p-value level of 0.05.

Results

Social demographics and social characteristics

Fifty-seven percent of the participants were men. All participants had more than 12 years of education, and 40.4% had post-graduate education. On average, the participants judged their socioeconomic standing to be 5.8 on a 10-rung socioeconomic ladder, with 10 being the highest socioeconomic status. More than half (55.6%) of the sample reported being married, whereas 70.7 reported being fully employed. See **Table 1** for more sociodemographic information. Furthermore, economic reasons (45%) were the most common reasons for

Table 1: Demographic characteristics (N = 369)

Variable	*M±SD/%*
Age	34.02±7.59
Gender (Men)	57.2%
Ethnicity (White)	73%
Education (≥ Post graduate)	40.4%
Marital Status (% Married)	55.6%
Socioeconomic status (level 3)[a]	23%
Employed	70.7%
Have kids	49.1%

Associations between study variables

Our results from the correlation analysis show a significant negative association between socioeconomic status and health risk behaviors (r = -.106, p = .042). Participants who judged themselves of higher socioeconomic status were less likely to engage in health risk behaviors during the outbreak. Gender had a positive association with health risk behaviors (r = .305, p < .001). Women were more likely to engage in health risk behaviors during the outbreak than men. Also, social determinants of health are positively associated with health risk behaviors (r = .344, p < .001). Other associations can be found in **Table 3**.

Table 2: Confidence in the levels of government and reasons for knowingly engaging in risky health behaviors during the pandemic

Variable	*% Strongly agree/reason*
Getting sick with Covid-19can be serious	51.4
Confidence in Federal government ability to curtail Covid-19	3.5
Confidence in State government ability to curtail Covid-19	5.7
Confidence in Local government ability to curtail Covid-19	2.7
Economic	45.3
Social	31.7
Psychology	31.2
Religious	12.5

Table 3: Correlation matrix of the study variables

Variable	Education	SES	Gender	Age	SDoH	Confidence	Health behavior
Education	-	.10†	.01	.15**	.02	-.03	.02
SES		-	.01	.15**	.04	.04	-.11
Gender (ref. women)			-	.09†	.22**	-.02	.31**
Age				-	-.00	.12*	-.05
SDoH					-	-.16**	.34**
Confidence						-	-.03
Health behavior							-

*p< 0.05; **p<.0.01; $^{\dagger}p$=0.06 – 0.07

engaging in risky health behaviors during the pandemic. Only 3.5% of the participants indicated that they had strong confidence in the federal government to curtail the Covid-19 pandemic.

Table 2 contains additional information on participants' confidence levels in the government to curtail COVID-19 outbreaks and their identified reasons for engaging in health risk behaviors.

Predictors of health behaviors during coronavirus outbreak

Table 4 shows the result of the Hierarchical multiple regression. In Model 1, with all of the demographic and social characteristics, only gender (B = .6.28, SE = 1.00, p < .001) and socioeconomic status (B = -.74, SE = .36, p = .042) variables were significant predictors of health risk behaviors (F (5,321) = 8.92, p < .001), accounting for 11% of the variation in health risk behaviors of educated Nigerians during the COVID-19

Table 4: Predictors of health behaviors among educated Nigerians

	Model 1	Model 2
Age	-.09	-.07
Gender	6.28**	4.92**
SES	-.74*	-.84*
Employment	.08	.30
Education	.79	.69
SDoH		2.99**
R^2	.11	.19
Adjusted R^2	.10	.18
R^2 change		.08
P value	<0.001	<0.001

*p< 0.05; **p<.0.01; †p=0.06 – 0.07

outbreak. In Model 2 with social determinants and confidence in the government added, gender (ref. women) (B = 4.92, SE = .07, p < .001), socioeconomic status (B = -.84, SE = .35, p = .015), and SDoH (B = 2.99, SE = .50, p < .001) were significant predictors of health risk behaviors (F (6,361) = 14.26, p <. 001) and explained 19% of the variation in health risk behaviors.

Discussion

The current study explored the health behaviors of educated Nigerians during the COVID-19 pandemic. This study aimed to identify the key factors influencing health behaviors and explore how these behaviors manifested during the COVID-19 pandemic. Education has been linked to increased healthy behaviors and improved health outcomes across the lifespan (Braveman & Gottlieb, 2014; Edelman & Kudzma, 2021; Hahn & Truman, 2015). This analysis, however, expands awareness on the wide-ranging negative association of gender, social determinants, and socioeconomic status with health-risk behaviors among educated Nigerians. In addition, the study revealed that despite education and individual actions, socioeconomic status, gender, and social determinants of health are key predictors of health behavior during the Covid-19 pandemic in Nigeria.

Gender was a significant predictor of health risk behaviors among educated Nigerians. Compared to men, women are more likely to ignore public health directives and engage in risky health behaviors. Our findings suggest that during the pandemic and in an attempt to become more supportive of the growth and maintenance of the family, more women ignored pandemic health directives and protocols. The current findings support previous studies that found that gender influences health risk behaviors (Hiller et al., 2017; Sánchez–López et al., 2012). The findings further illuminate the need for preventive interventions (e.g., health messaging and and outreach and support programs) that focus on gender-informed approaches when targeting multiple health risk behaviors.

Another significant predictor of health risk behaviors among educated Nigerians is socioeconomic status. Similar to previous studies (Gaalema et al., 2017; Schüz et al., 2020), we found that participants with lower socioeconomic status were more likely to engage in health-risk behaviors than those with higher socioeconomic status. Participants with lower socioeconomic status were more likely to engage in health-risk behaviors than those with higher socioeconomic status. Many Nigerians live below the poverty line, and the lockdown measures implemented by the government had a negative impact on their livelihoods. The inability to work and provide for their families may have led to frustration and anger toward the government's policies. Thus, Nigerians of higher socioeconomic status can deploy resources to avoid risks by providing the necessary protective materials and also adopting protective strategies, more than those of lower socioeconomic status. Our results highlight the importance of addressing socioeconomic health disparities in reducing health-risk behaviors.

Furthermore, the study found that social determinants of health, such as going to work and attending religious activities, were significant predictors of health risk behaviors among educated Nigerians. Similar to the findings of previous studies (Esiaka et al., 2022; Nwakasi et al., 2022; Ogba, 2021), we found that a greater presence of social determinants of health resulted in engagement with riskier health behaviors. Particularly illuminating is the impact of social/communal context in impacting health behaviors of educated Nigerians. Participants who feel that their social coexistence is threatened by health protocols are more likely to engage in health-risk behaviors than those who feel less threatened by health protocols.

This study emphasizes the need to address the social determinants of health as part of interventions to reduce health risk behaviors. Health behaviors are increasingly recognized as multidimensional and embedded in healthy lifestyles, varying over the life course and across places, and reflecting the dialectic between structure and agency that necessitates situating individuals in context (Short & Mollborn, 2015). It is therefore crucial to address these social determinants.

Limitations of the study and suggestions for further studies

The current study has certain limitations, which limit the generalizability of the findings to the Nigerian population. The data were collected via an online survey and exempted key members of the Nigerian population whose perspectives are critically important, given that a higher proportion of Nigerians live below the poverty lines and lack internet access. In addition, this study focuses on educated Nigerians. The impact of SDoH might have been better illuminated in our findings if we had surveyed uneducated Nigerians. Notwithstanding these limitations, the current study shows how individual-level factors, such as education and health literacy, can interact with SDoH to determine health behaviors.

Public health policy implication

On May 9, 2023, the World Health Organization declared an end to the COVID-19 emergency, signaling that one of the deadliest and most economically devastating pandemics in modern history is no longer a global threat. Despite the news, the current study shows that educated Nigerians are likely to engage in health-risky behaviors during viral outbreaks, which has several public health implications. This finding underscores the need for targeted messaging in different population groups. Tailoring communication to address each group's specific concerns and behaviors is crucial. There is a need to adjust considerations and actions within the scope of public health policies and to develop targeted interventions that will improve adherence to prevention measures and promote better health outcomes in Nigeria. There is also a need to revisit current public health strategies to ensure that they are effective in reaching all population groups regardless of their level of education or socioeconomic status.

Furthermore, there remains a need for behavioral change interventions focusing on individual factors such as knowledge, attitudes, and beliefs that influence risky behaviors. These interventions could help to promote healthy behaviors and reduce risky behaviors among educated individuals. Addressing these underlying factors through targeted interventions could help reduce health risk behaviors and promote healthier lifestyles.

Conclusion

Our current findings suggest educated Nigerians are likely to engage in health risk behaviors during viral outbreaks. Our findings highlight the need for targeted messaging, revisiting public health strategies, and addressing the root causes of risky behaviors. Through targeted efforts, the government and health practitioners can improve the effectiveness of their interventions and promote healthier behaviors among Nigerians.

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