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The COVID-19 Pandemic: Stay Home Policy and exposure to risks of infection amongst Nigerians

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Abstract: The global threat that continues to accompany SARS-CoV-2 has led to a global response which adopts lockdown and stay home policy as means of curtailing its spread. This study investigates compliance with the Stay Home policy and exposure to COVID-19 in Nigeria. A cross-sectional mixed methods approach was adopted to elicit responses from 871 participants across six geopolitical zones of Nigeria. Descriptive, Chi-square and multiple regression tests were used to analyze survey data using SPSS while NVivo v12 was used for thematic analysis of qualitative data. States with complete lockdown had 72.4% of respondents complying fully with the policy compared with 44.2% of respondents in zones with partial lockdown. Market places, classified as high risks zones, were the most visited (n = 505; 71.0%). While compliance was influenced by the nature of lockdown enforced ($\chi^2 = 70.385$, $df=2$; $p<0.05$), being a female, a widow, and unemployed were associated with increased compliance. Exposure to COVID-19 was associated with being married, unemployed, and having no income. Fear, anxiety and misperception play major roles in compliance. The authors conclude that compliance is not uniform and a more nuanced and targeted approaches is required as government continue to respond to the COVID-19 global pandemic.

Keywords: COVID-19, Stay At Home, Nigeria

Introduction

The year 2020 began with a complex public health emergency, the outbreak and spread of a novel SARS-CoV-2, the COVID-19 pandemic. The pandemic created a global health crisis (Coronavirus disease (COVID-19) – World Health Organization n.d.), with no cure or potential remedies and therapies available at present (Rismanbaf 2020). Since its outbreak, COVID-19 has spread to over 200 countries (Coronavirus disease (COVID-19) – World Health Organization n.d.). In Africa, the first case of COVID-19 was confirmed on 14 February 2020 in Egypt (Shigemura et al. 2020). Two weeks after the case in Egypt, sub-Saharan Africa confirmed its first case in Nigeria on the 27th of February, 2020 (Adegboye, Adekunle, and Gayawan 2020; Adepoju 2020). Given its impact on the health and economies of developed countries, there was anxiety about the potential consequences the pandemic could have on Africa, given the level of poverty and poor health infrastructure in the continent (Nkengasong and Mankoula 2020). Nigeria, with a population of about 200 million people ranked 158 out of 189 in global development index (National Bureau of Statistics 2017; UNDP n.d.) The health system has been in a prolonged crisis resulting from a massive export of its health professionals to Europe, Canada and America, poor welfare, lack of appropriate infrastructure, inadequate doctor-patient ratio and a meagre budgetary allocation. (Adeloye et al. 2017; Imafidon 2018; Nigeria-Health-Budget-Analysis.pdf n.d.; Omoleke and Taleat 2017). As such, there was great concern regarding Nigeria's capacity to contain the epidemic owing to its weak health system (Adepoju 2020; Ebenso and Otu 2020).

On 30th March 2020, 4 weeks after the first case was confirmed in Nigerian, the government signed a nationwide COVID-19 Regulations which declared COVID-19 a dangerous infectious disease. Consequently, a two-week complete lockdown on Lagos and Ogun States as well as the Federal Capital Territory (FCT) was effected (Kalu n.d.). Following a risk assessment at the expiration of the two weeks, the lockdown was extended by another two weeks with Kano State added to the list of states for complete lockdown. The lockdown was implemented across multiple countries globally to curtail the spread of COVID-19, despite reservations of likely effectiveness in the context of low-income countries (Barnett-Howell and Mobarak 2020). Strict measures, which included the use of law enforcement agents, were introduced and enforced. Governments at state level also imposed partial lockdown in the form of a dusk to dawn curfew. Lockdown regulations included travel restrictions; either by air or road (including interstate border closure), closure of all schools as well as markets and recreational centres. However, businesses considered as essential services such as those providing health related and essential services, manufacturing and distribution companies, as well as commercial establishments involved in food processing, distribution, and retail companies, power generation, transmission and distribution companies. and private security companies were exempted from the lockdown (Adeloye et al. 2017). While the regulations affected consumption of nonessential commodities such as hospitality business, fabrics, sports, and electronics, it also negatively affected the income-generating capacity of individuals, families and groups (Lewnard and Lo 2020). While the 'Stay Home' policy sought to reduce human physical contact thereby decreasing and ending disease transmission, it created a financial challenge in a society where the majority of its citizens are entrepreneurs (Qiu et al. 2017).

At the commencement of the lockdown and Stay Home policy on the 30th of March, 2020, a cumulative total of 131 confirmed cases were initially reported in 2 states of Nigeria (Lagos, Ogun) and the Federal Capital Territory and on the 11th of April Kano States recorded its index case (Iboi et al. n.d.). However, 4 weeks into the lockdown, 33 states and the FCT had reported 1,532 confirmed cases. The infection had spread to nearly all states of the country. The demographics of patients with COVID-19 indicated that 14% of COVID-19 cases had travel history, 28% had contact with an infected person and 49% of patients had no epidemiological link. Also, more males (66%) tested positive for COVID-19 (Nigeria Centre for Disease Control n.d.). While many studies have been devoted to understanding the epidemiology of COVID-19 and the social response in terms of social and physical distancing, hand washing and the psychological impact of COVID-19 on people (Bedford et al. 2020; Desai and Aronoff 2020; Shigemura et al. 2020), no empirical evidence has been presented on compliance with the Stay Home policy and the risks of COVID-19 infection in Nigeria. This study addresses this gap in the evidence by providing evidence for understanding the patterns of compliance with the Stay Home policy and the likely ways in which people are exposed to the risk of contracting COVID-19.

Materials and methods

We conducted a cross-sectional online mixed methods study which combined a self-completed online survey using WhatsApp, Twitter, and Facebook with an in-depth interview of purposively selected participants, conducted by mobile phone, to investigate emergent issues around patterns of compliance and exposure to risk of contracting COVID-19. The survey was administered to respondents aged 18 and above across the six geopolitical zones of Nigeria using a link created on Google Forms. The survey instrument contained closed and open-ended questions on sociodemographic characteristics of respondents, compliance to government policy and movement around risk zones. Study instrument validation was conducted by a pre-test with purposively selected individuals based on sex (4 males, 2 females) who resided in the northern and southern parts of Nigeria.

Sampling and sample size

The survey was administered over a five-week period from 4th April to 8th May 2020. Six Research Assistants (RAs) were recruited to broadcast the survey link on social media across the 6 geopolitical zones. The survey link was also shared among authors (DA, SA, BE and AF) and RAs who thereafter shared on WhatsApp, Facebook and Twitter tagging colleagues and friends. To encourage wider public interest and participation in the research, colleagues and friends were instructed to share the link to the survey on social media. The qualitative data collection process involved the use of in-depth interviews (IDIs) to elicit information through in-depth engagement with respondents across 6 geopolitical zones. As the lockdown did not permit face-to-face interviews, the online survey and telephone interview strategies were adopted for the research. A sample size of 20 IDIs were considered to be sufficient for exploring perceptions and the Stay Home policy and respondents' experiences of lockdown measures. Using a quota sampling technique, 3 to 4 IDIs were conducted from each geopolitical zone. Interviews were discontinued after 22 IDIs were conducted as no new themes emerged from interviews.

Measurement

Compliance was measured by whether people stayed home fully, partially or did not stay home at all. It was also measured by whether they received guests or visited anyone during the lockdown. Our measurement of risk was informed by the guideline which restricted human interaction to between 10 and 20 people within a group (Gatherings Should Be Limited to 10 People, Trump Says - The New York Times n.d.; GloEpid n.d.). As such we categorised risk zones as places where more than 10 people are concentrated and interacted with each other. We classified places such as markets or shopping malls; churches or mosques; hospital or clinic; work/office, and parties as *high risks zones*. Low risk zone included visit to friends or family, and walking or exercise. Complete lockdown was defined as total restrictions of movements while partial lockdown was defined as either dusk to dawn curfew or a total restriction of movement to specific days of the week.

Data analysis

Quantitative data were exported from Google Forms and processed (DA) using the Statistical Package for Social Sciences (SPSS) version 22. Open-ended responses in the Google Forms were recoded into numeric data while some closed-ended responses, for example place where people visited during

lockdown, were recategorized into high or low risk zones. Descriptive analysis was conducted using simple frequency distribution tables and the Chi-Square and multiple regression test was used to understand socio-economic factors associated with compliance and exposure to risks of COVID-19 infections. Qualitative data were transcribed verbatim (AF) and nodes were mutually created inductively and deductively by two members (DA and SA) of the research team. Qualitative data were analysed (SA) adopting thematic analysis (Braun and Clarke 2006) and a computer assisted analysis procedure using NVivo version 12 to code and classify responses in line with relevant themes.

Consent and ethical approval

The survey exposed no participants to physical risks, although it was not known whether they themselves or family and friends had contracted COVID-19. No other ethical issues or harms were anticipated. An overview of the survey content was provided alongside details for individuals to consent to participation. Stored questionnaire responses were anonymised, and data were stored securely in Google Forms until the survey duration was completed. Ethical approval was granted from the University of Lagos Teaching Hospital ethical review board (UTHHREC/EREV/0420/08).

Results

Descriptive data

Eight hundred and eighty-three ($n = 883$) respondents participated in the survey. Of this, 4 respondents outside Nigeria (3 from the United Kingdom and 1 from the United States) participated in the survey. These were excluded from the analysis to give a total of 879 respondents. In terms of geographical spread, average participation was 12.8% across 5 geopolitical zones (Northeast: $n=106$, 12.1%), Northcentral: $n=122$, 13.9%), Northwest $n=117$, 13.3%), Southeast: $n=102$; 11.6%), Southsouth $n=114$, 13.0%) except in the Southwest zone where participation was higher ($n=318$, 36.2%). There were more male respondents (53.4%) than female. The mean age was 33.11 (SD = 8.3). Age range of respondents was 18 to 65 years, the majority were single ($n = 431$; 49.0%) or married ($n = 425$; 48.4%), and employed ($n = 578$; 65.8%). Most respondents had tertiary education ($n = 850$; and were living in urban areas ($n = 782$; 89.0%). About half ($n = 463$; 52.7%) of respondents earned regular monthly income.

Patterns of compliance with Stay Home policy

Results on Table 1 shows that more respondents ($n = 281$; 72.4%) within complete lockdown zones complied fully with the Stay Home policy relative to zones with partial lockdown ($n = 217$; 44.2%). Compliance in complete and partial lockdown zones was statistically significant ($\chi^2 = 70.385$, $df=2$; $p<0.05$), with most respondents ($n = 776$; 88.3%) agreeing it was an effective means to curtail the spread of COVID-19. Movement across the two zones was statistically significant ($\chi^2 = 52.254$; $df = 1$; $p<0.05$) and there were more movement in partial lockdown zones ($n = 272$; 70.1%) compared to the proportion who did so in complete lockdown zone ($n = 439$; 89.4%). Similarly, reception for guests was statistically significant ($\chi^2 = 4.612$; $df = 1$; $p<0.05$) and reception for guests was more common in partial lockdown zones ($n = 178$; 36.3%) compared to those in complete lockdown zones ($n = 114$; 29.4%). The itinerary of those who did not comply with the lockdown ($n = 711$; 80.9%) indicate that market places was the most visited ($n = 505$; 71.0%), with high

proportion of people in partial lockdown zones visiting markets (n = 320; 72.9%) and a little less proportion doing so in incomplete lockdown zones (n = 185; 68.0%). Places visited by respondents differed significantly by type of lockdown ($\chi^2=26.969$; df =6; $p<0.05$) as people in complete lockdown zones visited friends and families more (n = 44; 16.25%) compared to those who did so in partial lockdown zones (n = 37; 8.45%).

Table 1: A contingency table showing compliance with Stay Home Policy and exposure to risks by nature of lockdown

In terms of visitation to high and low risks zones by those who did not comply with lockdown measures, data suggests the majority (n = 613; 86.2%) visited high risks zones. When disaggregated by clusters, results show visitation to risk zones was statistically significant ($\chi^2=15.361$; df =1; $p<0.05$) by lockdown – more people in partial lockdown areas interacted within high risks zones (n = 396; 90.2%) compared to those who did so (n = 217; 79.8%) in complete lockdown zones.

Socioeconomic factors influencing compliance and movement around risk zone

Results on Table 2 show that being a female ($\beta = 0.210$; $t= 6.372$; $p<0.005$; $R^2=0.044$), a widow ($\beta = 0.080$; $t= 2.379$; $p<0.005$; $R^2=0.009$), unemployed ($\beta = 0.140$; $t= 4.108$; $p<0.005$; $R^2= 0.024$) or housewife ($\beta = 0.079$; $t=2.359$; $p<0.05$; $R^2=0.024$) and having random income ($\beta = 0.128$; $t= 3.649$; $p<0.005$; $R^2=0.018$), daily income ($\beta = 0.076$; $t= 2.199$; $p<0.005$; $R^2=0.018$), or no income ($\beta = 0.053$; $t= 1.539$; $p<0.005$; $R^2=0.018$), were statistically significant with compliance with Stay Home policy.

Table 2: A regression analysis of socioeconomic factors influencing compliance to Stay Home Policy and movement within risk zone

When exposure to risks was predicted, results from a logistic regression show that being married ($\beta = 0.92$; $t= 2.702$; $p<0.05$; $R^2=0.011$), having secondary education ($\beta = -0.081$; $t= -2.397$; $p<0.05$; $R^2=0.10$), being unemployed ($\beta = -0.185$; $t= -5.464$; $p<0.05$; $R^2=0.041$), and being a student ($\beta = -0.122$; $t= -3.602$; $p<0.05$; $R^2= 0.041$), having random income ($\beta = -0.086$; $t= -2.452$; $p<0.05$; $R^2=0.015$), or no income ($\beta = -0.143$; $t= -4.138$; $p<0.05$; $R^2= 0.015$) were statistically significant with movement around risks zones

Qualitative Findings

A total of 22 participants (male: n= 9; 40.9%, female: n= 13; 59.1%) across the 6 geopolitical zones shared their experience about the Stay Home Policy with an average of 3.7 participants per zone, a minimum of 3 and a maximum of 5 participants. The average age of participants was 39.7 with a Standard Deviation of 12.01. Majority of the participants (n= 13; 59.1%) had Diploma and graduate certificates while (n= 9; 40.9%) had secondary/primary education. A large proportion were married (n= 14; 63.6%) while about a third were single (n= 7; 31.8%).

Factors influencing compliance with Stay Home Policy

Compliance was mediated by anxiety and fear among some segments of the study participants. The fear of being infected with COVID-19 increased compliance among educated people who had steady and regular income. There were some categories of people who did not comply because of their engagement in small scale businesses which helps in meeting personal and family needs. Among this category, the Stay Home policy was compared to caging animals without feeding them. As one of the respondents puts it:

So you have people flouting the lockdown rule and there is the other aspect of “We can’t see COVID”, we can’t see it, some people can’t even feel it when they are sick, but they can clearly feel hunger. So if they comply for a week, after a few days they are going to go out and look for what to eat because that’s the clear danger they can see, every other thing we’re talking about is abstract. So the lockdown is not necessarily wrong but maybe the way we are applying it or all the other things we were supposed to put in place prior now have not been put in place
(IDI_Female_Married_Professional_34years_Northcentral)

Among those who did not comply with Stay Home Policy were people who doubted the reality of COVID-19 and those who believed it was a disease for only the rich. This was a prominent belief among those from lower socioeconomic groups.

Really there is many people didn’t believe with corona because this corona especially we here in the North it use to affect the big men. ... But just in the urban area maybe mostly corona is affecting them, this is why in the village they didn’t even believe with it up till tomorrow [There are many people in the north that do not believe there is corona virus since it is big men that are affected. It doesn’t affect the villagers and farmers because the virus is only in the urban areas]
(IDI_Male_Artisan_41years_Northwest)

Based on these factors and perception, compliance with Stay Home Policy was generally low among a segment of the population across the geopolitical zones of the country, in particular in states where there were partial lockdown or curfew. Policy guidelines also affected compliance in some ways. The rules guiding partial lockdown in some states allowed for people to move within specific days of the week which were opened for business or move between certain time of the day. These open days and time, although meant for engaging in essential services, were the loopholes exploited by people to defy the Stay Home Policy.

Exposure to Risk

Qualitative data from both northern and southern zones show that one main point of convergence was the market place. Household needs constitutes one of the most essential needs of man. For most people, the market place was the most important place to visit because of the need to replenish household stocks that have been exhausted. As revealed in the quote below, the market was usually congested:

Even on Tuesday wey state government declare make everybody enter market, even by myself I experience it. Because the congestion of the people even to breathe, you cannot fit breathe because too much people. If you ask some people they will say no it is a lie, nothing like COVID-19 [People sometimes are nonchalant, for instance, the state government said every Tuesday we can go to the market, the place is always too congested such that one is unable to breathe, because people believe there is nothing like COVID-19]
(IDI_Male_Married_Artisan_50years_Northwest)

A similar scenario played out in the southern part of the country where the need to trade compelled people to visit market places. Respondents reported that sustaining the family and was key since support was not coming from the government.

Some people no fit obey the order to stay at home because they need money. Like me now, I come sell my palm oil and garri that is why I came out, if government want make we dey house, make them give us money as Buhari dey give their people for North [I came out to sell my palm oil and garri, if the government wants us to stay at home they should give us money]
(IDI_Female_Widowed_Artisan_59years_Southeast)

Data revealed that the frequency of visit to the market, particularly for those in higher socioeconomic groups, was influenced by poor electricity supply. Power supply was generally poor. Buying and storing food items beyond one week was impossible. This would result to patronising the market places very frequently and regularly among people with regular income.

I cannot go to the market and say I'm shopping for two months because it will get spoilt. So I have to go to the market every week or every two weeks to buy the little quantity of food that I think will not get spoilt in the house due to lack of electricity. So with things like that, we can't apply the lockdown full scale the way civilised countries are applying the lockdown.
(IDI_Female_Married_Professional_34years_Northcentral)

Discussion

This study investigated the extent of compliance with the Stay Home Policy and exposure to risks of COVID-19 infection among Nigerians. Findings from the study demonstrates lockdown and Stay Home Policy as a potentially effective strategy to for curtailing the spread of COVID-19 pandemic. It highlights the importance of adapting global ideas to suit local realities (Block et al. 2020; Malouke et al. 2020). While compliance with Stay Home Policy was generally high across partial and complete lockdown areas, few recorded cases of non-compliance were significant enough to increase exposure to COVID-19 infection (Malouke et al. 2020). This suggests that compliance with the Stay Home Policy was not uniform. Market places were major points of interaction and economic exchange for purchasing to meet essential household or personal needs. While such action is deemed to be compliant with lockdown and Stay Home Policy – since some essential services, such as those involved in food farming and processing were not exempted from operating –

movement around market places impedes the practice of physical distancing and increases the risk of exposure to COVID-19 (GloEpid n.d.). Market stalls in many places are structurally compromised and usually overcrowded in addition to the fact that monetary exchange represents a viable means of transmitting COVID-19 into homes and subsequently the community (Angelakis et al. 2014; Kampf et al. 2020).

The implementation of the lockdown and Stay Home Policy occurred without efforts to accommodate likely social, economic, structural and cultural factors as compared to more nuanced lockdown approaches implemented in, for example, the Netherlands where remarkably high compliance was recorded (Malouke et al. 2020). This is thought to be linked to first determining social behavioural patterns that reinforce compliance in order to plan and implement effective physical distancing and Stay Home Policy (Malouke et al. 2020). In this study, visits to family members and friends during the lockdown underscores the social nature of man and the value attached to care and support from families and friends. The lockdown and Stay Home Policy were abrupt. It weakened existing social dynamics, cohesion and families ties which people were not prepared to compromise. An understanding of these realities may help to inform the design and implementation of more effective lockdown and physical distancing policies following identification of key behavioural patterns that reinforce compliance and limit interaction (Block et al. 2020; Malouke et al. 2020). This would have formed part of a local strategy that adopts the enforcement of guidelines around identified behavioural patterns and risks zones such as market places. Whilst previous research highlights the influence of conspiracy beliefs in shaping compliance with stay home policies (Allington and Dhavan n.d.), our study highlights these beliefs exist amidst other factors.

Limitations

Only people with mobile phones and other digital mobile technology participated in the survey. This may cause a bias in responses skewed towards the middle-and upper-class population, or those in urban centres who had access to the internet and social media applications. There were no measures in place to monitor the age of respondents. The study focuses mainly on people's compliance with the Stay Home policy and did not consider other regulations associated with physical distancing such as hand-washing and the use of sanitizers or nose masks.

Conclusions

Compliance with Stay Home Policy is not uniform across the geopolitical zones in Nigeria. A more nuanced and targeted approaches is required as government continue to respond to the COVID-19 global pandemic. Policy makers are yet to fully understand factors influencing compliance with full and partial lockdown policy and as such planning and design of policy frameworks that can effectively attract compliance is elusive.

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Ethics approval and consent to participate

The protocol was approved by the Ethics Committee of the University of Lagos Teaching Hospital ethical review board (UTHHREC/EREV/0420/08). Online and verbal consent was obtained from all participants through the use of an informed consent form.

Availability of data and materials

The data collected and analysed during the current study is available from the corresponding author, upon request.

Competing interests

Authors declare no conflict of interest

Authors' contributions

DAO conceptualized the study. DOA, SOA, AJF and TT designed the instruments used in the study. DOA, SOA, BE and BOO oversaw the implementation of the whole study. DA and SOA collected qualitative data. DA and MJA conducted quantitative data analysis, DOA, SOA and AJF conducted data analysis. DA wrote and the manuscript and all authors revised the manuscript.

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