

Perceived Risk and Knowledge of Coronavirus Transmission as Predictors of Social Distancing Compliance in South-West Nigeria

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ABSTRACT

The study examines perceived risk and knowledge of coronavirus transmission as predictors of social distancing compliance in south-west Nigeria. A snowball sampling techniques was used for the cross-sectional survey using an online questionnaire to collect data from respondents across the states in south-west Nigeria. The data collected was analyzed using Statistical Package for Social Sciences (SPSS). Results from the data analysis reveals that the majority 143(66.2%) had moderate compliance. It was also revealed that there was a significant positive direct relationship between perceived risk and knowledge of coronavirus transmission ($\beta = 0.19, p < 0.05$), [95% CI: = 0.12 (0.27)] and females exhibits social distancing compliance than male ($t = -3.459, df = 214, p < .05$). Based on the study, people were encouraged to fear less but comply with all the guidelines of prevention from hand washing to social distancing.

KEYWORD: Coronavirus, COVID-19, Perceived Risk, Social Distancing, South-west

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INTRODUCTION

Coronaviruses (CoV) which are a large family of viruses which causes illness ranging from the common cold to severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) was firstly discovered on December 2019 in Wuhan City, Hubei Province, China and it has since then according to World Health Organization (WHO, 2020) become a worldwide pandemic causing morbidity and mortality.

It is important to know that the world has faced many global health threats in recent years. Ebola for instance came in 2014 and claimed lives, Severe Acute Respiratory Syndrome (SARS) was also recognized in February 2003, infected fewer than 10,000 people, The H1N1 swine flu virus caused a pandemic in 2009, spreading to over 200 countries and killing more than 18,000 people. Other diseases, such as the Middle East Respiratory Syndrome (MERS) and at the moment Coronavirus have since emerged. At the onset of coronavirus outbreak in Nigeria, infected persons belonged to either the political class or high socioeconomic cadre (Chukwuorji & Iorfa, 2020), and this gave the virus the name 'a disease of the rich and mighty' (Nwaubani, 2020).

Coronavirus since its onset has unleashed an unprecedented global crisis, which has been causing large-scale loss of life, social anxiety and economic devastation around the world

and Nigeria is not excluded. The Africa Center for Disease Control (ACDC) reported of confirmed cases of COVID-19 as 1,203,769 with 28,289 deaths (ACDC, 2020). The concerns has mostly revolve around the health threats of contagion and the costs associated with reducing contagion, therefore there is need to reduce the spread by complying to social distancing behavior as recommended by World Health Organization.

Evidence revealed that human-to-human transmission could occur within a family and at the hospital, and SARS-CoV-2 has a stronger infectious capability than SARS-CoV, but a lower mortality than SARS-CoV, and as of August 26, 2020, Nigeria has recorded 53,021 of coronavirus cases with 1,010 deaths while 40,281 persons discharged. In Nigeria, male are the most infected persons, with the total number of 33,778 (64%), while the female comprises of 19,243 (36%) of the infected person, the totality of the affected persons are within the age range of 31-40 (25%).

In Nigeria, Covid-19 pandemic is part of the global pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The first confirmed case in Nigeria was announced on 27 February 2020, when an Italian citizen in Lagos tested positive for the virus and on 9th of March 2020, a second case

of the virus was reported in Ewekoro, Ogun State, a Nigerian citizen who had contact with the Italian citizen, and so there is need to check the social distancing compliance within the south-west states of Nigeria.

Out of the six states within the south-west of Nigeria, five has been recorded as part of the top 10 states in Nigeria who has high numbers of Coronavirus infected cases. Lagos has a total number of 18,035 confirmed cases and so recorded as the states with the highest number of recorded cases in Nigeria, Oyo is the third on the list, with 3,060 confirmed cases, Ogun is the tenth state with highest number of recorded cases, having 1,633 confirmed cases, Ondo has 1,524 confirmed cases, and Osun has 771 confirmed cases (Nigeria Center for Disease Control, Wednesday, 26th August 2020).

The governments of many countries hit by the COVID-19 pandemic have since introduced, or are considering enacting measures of “social distancing” in order to slow down the spread of the contagion, limit infections and casualties, and reduce the pressure on health service. Process put in place to curb the fast spread of the virus include canceling group events, mandating people to work from home, closing schools and commercial activities, and limit people’s freedom to leave their homes. The effectiveness of these measures relies crucially on compliance by the public and abiding by social isolation measures in response to the COVID-19 pandemic goes a long way in reducing the likelihood of both contracting the virus and infecting others, thus contributing to the public good by slowing down the otherwise rapid increase of the disease. During influenza pandemic, when a novel viral strain is encountered for which vaccines are not presently available, non-pharmaceutical interventions such as social distancing is encouraged while scientific community continues to research for possible vaccines or drugs for the viral infection.

According to Leppin & Aro, 2009, knowledge such as regular hand washing, using hand sanitizers, wearing face masks, respiratory etiquettes, social distancing and self isolation when sick are vital to reducing widespread infection. An examination of people’s perception of coronavirus risk is therefore important in understanding how people will relate to social distancing compliance in which will help reduce their risk of getting infected. In the same manner, having adequate knowledge of transmission can help them in their compliance to avoid getting infected.

This study therefore examines the perceived risk and knowledge of the coronavirus transmission on the social distancing compliance in South-West Nigeria. It tends to see how the perceived risk and the knowledge of the virus transmission predict the people’s social distancing behaviour while also looking into socio-demographic variables.

The Objective of the study

The main objectives of this study are to investigate perceived risk and knowledge of coronavirus transmission as predictors of social distancing compliance in south west Nigeria. The specific objective of this study includes:

1. To examine the level of Social distancing compliance during COVID-19 pandemic in South-west, Nigeria.

2. To examine the mediation relationship between Knowledge of Coronavirus transmission and Perceived risk on Social distancing compliance in South-west Nigeria.
3. To know if females will exhibits social distancing compliance than males
4. To examine if respondents who are 47 years and above will comply with social distancing than younger (15-22) respondents.

LITERATURE REVIEW

COVID-19 has deglobalizes the world in terms of human migration with airports shut, and social events (sports, festival,etc) which has been postponed definitely and so social distancing was encouraged by avoiding groups and keeping safe distance of 1-2m (Bruin et al 2020). The idea of social distancing negates regular social interaction, which is the bedrock of human society (Amzat & Razum, 2014), but it is an effective means of containing the spread of COVID-19. Understanding the transmission of the infection and evaluating the effectiveness of control measure is crucial for assessing outbreak in new areas and in future (Kucharski et al.2020).It was therefore observed that general public that is highly concerned about the danger posed by COVID-19 are usually highly willing to engage in social distancing.

SARs-COV-2 is deadly due to its high transmission and fatality rates (Carleton & Meng 2020) and the present average fatality rate from covid-19 are reported to be 3.4% (Rajgor et al 2020). In a review of 26 studies on preventive behaviours in pandemic (Bish & Michie, 2010), discovered that compliance rates varied greatly, for example, between 4% for wearing a mask, 41.3% for ‘one or more specific actions’ (Brug et al; 2004), and up to 95% for quarantine (Blendon et al; 2004). To contain infectious diseases like covid-19, experts and government officials alike recommend a series of preventive behaviours, such as social distancing or (voluntary) quarantine (Glass et al; 2006; Durham & Casman,2012; Ding, 2014; Karimi et al,2015; Weston et al; 2018; Lewnard & Lo, 2020).

It has been observed that when the danger posed to health by a virus and the pandemic knowledge is under estimated by the public, this could lead to decreasing implementation of social distancing, while the risk perception in the midst of a growing epidemic can be influenced by several factors, including knowledge of the disease, information sources and emotional aspects. Previous studies have found a positive relationship between disease related knowledge and perceived risk regarding the Middle East respiratory syndrome (MERS) (Kim & Choi, 2016; Kim and Kim, 2018) and Fierrer & Klein, 2015 suggested that people tend to overestimate the risk of negative outcomes due to excessive emotional stress. Either over estimation or under estimation of the perceived risk to health during a pandemic is good in achieving preventive measures. Dionne etal found that, risk perception associated with medical activities was a critical predictor of the epidemic prevention behaviors.

According to the theory of planned behaviour, only when people realize that they are in a health risk or even death risk will they have the situational awareness to take further healthcare protections. Bell (2020), risk perception during epidemics tends to track poorly with the actual risk. Sudden increases in infection risk make people initially overestimate

the actual risk. A new study by a team from the University of Sheffield and Ulster University in the United Kingdom suggests young men are handling the social distancing compliance by flouting the social distancing rules at twice the rate of young women. Liat Levita from the University of Sheffield, one of the lead authors, told the BBC that the results were not surprising: "We know that males in general take more risks and evolutionary psychologists have always explained that in terms of males trying to show off".

When people do not have all the information necessary to make a decision, the effort they put into making the leap to a decision depends on their perception of the gravity of the situation and expectations of the consequences of their actions. Several studies have identified perceived risk i.e. susceptibility, anticipated severity, and anticipatory worry and knowledge of adaptive behaviours as facilitators of compliance (C. Tang and Wong, 2003, 2005; Cheng & Ng, 2006; Leppin & Aro, 2009; Kwok et al; 2020). Kerfan xie, Benbu Liang et al, Nina B. Masters, et al (2020), found that in response to social distancing to the novel coronavirus, there was no statistically significant difference in social distancing behaviours by gender, urbanicity, race, monthly family income or political affiliation and Kristiana Murphy, et al when predicting compliance with social distancing restrictions, found that women were more likely than men to abide by the restrictions.

In the COVID-19 context, the practice of handwashing, hygiene, and use of face masks occur more frequently among females than males (Iorfa et al., 2020), and this could be due to their perceived susceptibility to illness among females as well as their health-conscious nature, therefore for social distancing behaviour, women has reported higher levels of social distancing than men (Mogens Pederson), this findings is in line with research suggesting that women are socialized toward a gender role that is more passive, rule abiding, and compassionate (Coffe and Bolzendahlo 2010; Granile 2007) and that women tend to exhibit higher level of organizational rule abidance than men (Portillo and Dettart-Davis 2009).

Furthermore, Kristiana Murphy, Harley Williamson, Elise Sargeant & Molly McCarth has found out that older Australians were not more likely to comply than younger Australians. They also found that a majority of the U.S adult population was practicing social distancing as of early March 2020, but by late March, the population may have been experiencing fatigue from extended time indoors and changes to their normal social behaviour. Fine et al, 2020 discovered that older respondents (age 45 & older) do indicate more social distancing compliance. Vanguard (Lagos) 4th May 2020, Mrs Roseline Adebayo, a 55 years old business woman, who lives in Agege, also regretted non-compliance with social distancing order in public places including bustops, but for people in its most populous metropolis and one of the most crowded cities in the world, social distancing has proved to be a challenging task-one that is only going to get more difficult as workers return to commuting on packed public transport or visiting cheek-by-jowl urban markets (Independent Premium) 8th May, 2020 by Timileyin Omilana.

Moreover, socioeconomic variables like gender and age (i.e. male, younger age) has consistently predicted non-compliance (Leung et al; 2003; Tang & Wong, 2003), this

might be connected to a generally lower risk perception, particularly a lower perceived susceptibility in younger males (De Zwart et al; 2009). Christina J. Atchison found that 70 years or older was positively associated with greater social distancing adoption compared to younger adults age 18-34 years.

Theoretical Framework

The Health Belief Model

The Health Belief Model (HBM) was selected as a theoretical framework to allow for the standardized investigation of individual beliefs and behaviors. The HBM is a conceptual model that attempts to understand and predict health related behaviors. Originally, the model was developed by the Public Health Service in the 1950's to understand what factors encouraged or prevented individuals from participating in government-sponsored screening campaigns (Rosenstock, 1966). The specific descriptors of the model are laid out below (Rosenstock, 1966; Becker & Maiman, 1975):

- 1. Perceived susceptibility-** The individual's feelings of how likely they are to contract a particular disease.
- 2. Perceived seriousness-** The level of impact an individual feels contracting a particular disease would have on his or her own life.
- 3. Perceived benefits of taking action-** This refers to how much a person feels that taking action will help in protecting them from contracting a specific disease or condition.
- 4. Perceived barriers to taking action-** This refers to reasons an individual may not take recommended preventive or protective action. These can include religious beliefs, personal opinions, and financial restraints.
- 5. Cues to action-** Cues to action are external forces that seek to promote a desired behavior.
- 6. Self-efficacy/likelihood of taking action-** Self-efficacy refers to the ability of individuals to take positive action to protect themselves. If an individual feels they are susceptible to the disease, that the disease is serious enough and that the benefits of taking action will outweigh the barriers to taking action, they will ultimately take the recommended actions to protect themselves.

Specifically, if individuals feel that they are susceptible to a disease and that the consequences are serious, and that any potential barriers of taking action are outweighed by the potential benefits of taking action, they will ultimately follow recommended suggestions to protect against disease (Rosenstock et al, 1994). However, this model is limited in its application in the sense that although it is conceptually predictive, predictors do not have standard mathematical quantifications, making it hard to quantify their inter-relations (Rosenstock, 1966). Similarly, the operational definitions applied to each of the variables are not constant from study to study (Rosenstock, 1966). Rosenstock (1966) also notes this model may be most applicable to middleclass populations that are more future oriented, as opposed to lower class populations.

However, the model is still useful in this study to understand personal protective behaviors to prevent the transmission of coronavirus and ultimately the increase in the frequency of

social distancing compliance. Empirical evidence from studies of anticipated responses to flu and actual responses to the severe acute respiratory syndrome epidemic suggests that perceived threat (including both anxiety about flu and perceived susceptibility to infection and perceived severity of consequences) may be an important predictor of adoption of preventive measures such as social distancing behaviour during pandemic (Lau, Kim, Tsui, & Griffiths, 2007; Lau, Yang, Tsui, & Kim, 2003; Leppin & Aro, 2009; Leung et al., 2005; Rubin, Amlot, Page, & Wessely, 2009). Conversely, there is also evidence that interventions that increase perceived threat in order to promote healthy behaviour can be ineffective or even counter-productive (Albaraccin et al., 2005; Witte, 1998).

METHODS

Participants

This cross-sectional survey made use of an anonymous online questionnaire to collect data from respondents. The link was purposively sent to various Whatsapp groups that consisted people within the south west zones of Nigeria (Redeemed Christian church, Agbowo, Oyo state women whatsapp group, Adekunle Ajasin University Alumni, Oyo State and Owo chapter whatsapp groups respectively, Muslim students whatsapp group, etc) , likewise individuals which are known to be located within the south-west region as at the time of this study. The link was also posted on various facebook groups and facebook posts and people within the south west Nigeria were asked to participate in the online survey. Snowball sampling technique was employed to recruit more Nigerians located within the country’s south west zones during the COVID-19 pandemic by encouraging those that were sent the link to also kindly share with their contacts. The research was conducted between July and August, 2020 and involved 216 respondents from the six states of the south west Nigeria.

RESULTS

In this chapter the data collected through questionnaires were analyzed and results were presented. 216 participants were sampled for the study from the six states in the South-west zone of Nigeria., 23(10.6%) of the respondents are 15-23 years, 44(20.4%) are 23-30 years, 103(47.7%) are 31-38, 35(16.2%) are 39-46 years while 11(5.1%) are 47 & above years of age. The data comprises of 120 (55.6%) males and 96(44.4%) females, which cut across different location in the south-western part of Nigeria. 85(39.4%) respondents are from Oyo state, 8(3.7%) from Osun, 55(25.5%) from Ondo,8(3.7%) from Ogun, 9(4.2%) from Ekiti, and 51(23.6%) from lagos state respectively. The mean of resepondents who have heard of coronavirus before is .93 while the SD is .26

Hypothesis 1: There will be higher level of social distancing compliance during COVID-19 pandemic in South west, Nigeria

Table 1: Summary of the Analysis of the level of Social Distancing Compliance during COVID-19 Pandemic in South-West Nigeria (N = 216)

Levels	Score-range	Frequency	percentage
Low	3-6	36	16.7
Moderate	7-10	143	66.2
High	11-1337	17.1	

Objective are sought to analyze the level of Social Distancing during COVI-19 Pandemic among Participants. The analysis was carried out with simple frequency counts. This was done by summing together items scores on all 7items of Social Distancing compliance Scale. The total score ranged from 3 to 13. The descriptive statistics indicated the mean for the distribution of scores 8.50 with a standard deviation of 1.948. One standard deviation above (X+SD or 8.50 + 1.948= 10.45.03) and below (X-SD or 8.50-1.948= 6.55) the mean were the used as cut off points. The results of this analysis are presented in Table 4.1. The results of data analysis showed majority 143(66.2%) had moderate compliance of social distancing during COVID-19 Pandemic, 37(17.1%) had high compliance of social distancing during COVI-19 pandemic while the remaining 36 (16.7%) had low compliance of social distancing during COVI-19 pandemic.

Procedure

Knowledge of coronavirus transmission and Social distancing compliance scale was developed by the researcher(s). Knowledge of coronavirus transmission has a reliability of 0.80 while social distancing compliance scale has a reliability of 0.44. A pretest of the questionnaire (knowledge of Coronavirus transmission and Social distancing compliance) was carried out with 40 respondents, which were given questionnaires to fill and accidental sampling were used to select them. Due to the Nigerian government social distancing rules, an online survey was later conducted in which the questionnaires were sent and filled by all the respondents via online. Study participants were encouraged to send the web link to potential respondents.

Instruments

The questionnaire consisted of four sections: the demographic variables, in which the respondents were asked of their age, highest educational attainment, present location, and most importantly if they have heard of coronavirus before and if they know anyone with coronavirus. The second section are items measuring the respondents perceived risk of the coronavirus, the section consisted of 5 items such as “how concerned are you about contracting coronavirus”. The third section consisted of items relating to knowledge of coronavirus transmission, the scale consisted of 5items such as “coronavirus can be contracted through contact with the saliva of an infected person”, while the last section consisted of scale measuring social distancing compliance, which includes 7 items such as “How often do you avoid handshaking and other physical greetings”.

Hypothesis 2: There will be positive mediation relationship between Knowledge of coronavirus transmission and Perceived risk on Social distancing compliance in South-west Nigeria.

Table 2: summary of mediation analysis of KCT, PCR on SDC (model 4 of PROCESS macro; N = 216)

Explained Variables						
Model	KCT			SDC		
	B	SE	95% CI	B	SE	95% CI
			LLCI (ULCI)			LLCI (ULCI)
Constant	15.93**	0.41	15.12(16.74)	7.60**	1.20	5.24 (9.95)
PCR	0.19**	0.04	0.12 (0.27)	0.04	0.04	-0.04 (0.12)
KCT				0.03	0.07	-.11 (0.17)
	R²	0.33		R²	0.09	
	F(df)	F(1, 214) = 25.91**		F(df)	F(2, 213) = 0.78	

Note: PCR = Perceive Risk, KCT= Knowledge of Coronavirus Transmission, SDC= Social Distancing Compliance **p> 0.05

Mediation analysis presented in Table 2 revealed significant positive direct relationship between PCR and KCT ($\beta = 0.19, p < 0.05$), [95% CI: = 0.12 (0.27)]. The overall model of the direct relationship accounted 33% of the total variance of KCT, $F(1, 214) = 25.91, p < 0.05$. The results showed no significant direct relationship between PCR and SDC ($\beta = 0.04, p > 0.05$), [95% CI: = -0.04 (0.12)] and further revealed non-direct relationship between PCR and SDC ($\beta = 0.03, p > 0.05$), [95% CI: = -0.11 (0.17)] via KCT . The overall model of the direct relationship accounted 08% of the total variance of mindfulness, $F(2, 213) = 0.78, p < 0.05$.

Hypothesis 3: Female respondents will significantly score higher on Social distancing Compliance than male respondents.

Table 4.3: A t-test Table Showing the Difference between Male and Female on Social Distancing Compliance

Variable	N	MEAN	SD	SE	DF	t	P
Male	120	8.10	1.96	.179	214	-3.459	<.04
Female	96	9.00	1.82	.186			

*p<.05

Table 4.3 showed that there was a significant difference between male and female students on Social distancing compliance ($t = -3.459, df = 214, p < .05$). The Hypothesis is therefore accepted.

Hypothesis 4: Respondents who are 47 years and older will significantly score higher on Social distancing Compliance than younger (15-22) respondents.

Table 4.4: A t-test Table Showing the Difference between older respondents and younger respondents on Social Distancing Compliance

Variable	N	MEAN	SD	SE	DF	t	P
47&above	11	8.64	2.02	.607	32	-.156	>.05
15-22	23	8.52	1.99	.416			

*p<.05

Table 4.4 showed that there was no significant difference between older respondent and younger respondents on Social distancing compliance ($t = -.156, df = 32, p > .05$). The Hypothesis is therefore rejected

DISCUSSION

The major objective of this study is to see how perceived risk and knowledge of coronavirus transmission will predict social distancing compliance in the south-western part of Nigeria.

Hypothesis one which states that “there will be higher level of social distancing compliance among respondents during COVID-19 Pandemic in South-West Nigeria. This hypothesis was rejected as revealed by table 4.1. The table shows that majority of the respondents 143(66.2%) had moderate compliance, 37(17.1%) had high compliance during the pandemic while 36(16.7%) had low compliance. This result is in line with the findings of Bish & Michie, 2010 in their review of 26 studies on preventive behaviours during pandemics, they found that compliance rates varied greatly between 4% for wearing a mask, 41.3% for “one or more specific actions”.

Hypothesis two which states that “There will be a mediation relationship between Knowledge of Coronavirus Transmission and Perceived Risk on Social distancing compliance in South-west Nigeria. The hypothesis is rejected. The result from table 4.2 reveals that there is positive direct relationship between Perceived risk and Knowledge of coronavirus transmission, the direct relationship which accounted for 33% of the total variance of knowledge of coronavirus transmission, while no significant direct relationship between Perceived Risk and Social distancing compliance and further revealed non-direct relationship between PCR and SDC via KCT see Figure 1. This result support the findings of Kim & Choi, 2016, Kim & kim, 2018 who finds positive relationship between knowledge of transmission and perceived risk during the outbreak of Middle East Respiratory Syndrome(MERS) but not in line with the findings of Dionnel et al, who found that perceived risk predict preventive behaviour.

Hypothesis three which states that 'female respondents will significantly score higher on social distancing compliance than male respondents' was confirmed by table 4.3. This implies that there was significant difference between males and females on social distancing compliance. This is in line with the work of Pederson who found that women report high levels of social distancing than male and also the findings of Kristiana Murphy, et al which predicted women to be more likely to comply with social distancing than males.

Hypothesis four which states that 'Respondents who are 47 years and older will significantly score higher on social distancing compliance than younger (15-22 years) respondents' was rejected by the table in 4.4. This result is not in line with the work of Christian J. Atchison found that 70 years or older was positively associated with greater social distancing than younger (15-22) years, even though the research of Nina B. Masters, et al (2020) found that majority of the adult population were practicing social distancing as of late march and became relax due to the extension of the lockdown.

Limitation of the Study

The present study has been restricted geographically to south-western part of Nigeria; therefore, care must be taken in applying the results to other geographical part of the country. Moreover, due to the online method of collecting the data for this study, majority of the targeted population did not respond to the study due to lack of adequate knowledge about this method of collecting data, as this method is not popular enough in Nigeria and so the sample population used for this study is small (216) and not adequate representative of the south-west Nigerian population.

CONCLUSION

This study investigated perceived risk and knowledge of coronavirus transmission as predictors of social distancing compliance in south west, Nigeria. The findings of the study showed that Nigerians located at the South-western region of the country is moderately complying with social distancing. The findings of the study also reveals that, there is a positive relationship between peoples' perception of risk and knowledge of coronavirus transmission and also discovered from the study that women in the south west Nigeria are complying more to social distancing as recommended by the government to reduce the fast spread of COVID-19 than their male counterpart.

It is therefore recommended that the general public should further be sensitized on the need to increase their level of social distancing compliance and efforts on increasing the awareness of the coronavirus transmission to be intensify to the extent that males will see the need to comply with social distancing while social distancing be enforced in small cities too.

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