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# Perceived Risk and Knowledge of COVID 19 Pandemic as Correlates of Compliance with Precautionary Behaviors Among Nigerian Secondary School Teachers.

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## Abstract

This is a correlation study designed to determine how perceived risk and knowledge of COVID 19 pandemic predict compliance with precautionary behaviors among secondary school teachers in Ondo-State. A descriptive cross sectional design, using survey method was used to carry out the study. The study population consisted of 200 participants selected through multistage sampling technique. The instrument used was validated by an infectious disease epidemiologist while reliability coefficient of 0.72 was obtained using test- retest method. Bivariate and multivariate analyses were done to determine the correlation. Findings indicated that knowledge of COVID 19 pandemic have strong positive relationship with compliance of precautionary behaviors among secondary school teachers. The computed r-value (0.738) was significant at $p<0.05$ level of significance. Findings also shows that there was significant relationship between risk perception and compliance with precautionary behaviors against COVID 19 among the secondary school teachers with the computed r-value (0.387) statistically significant at $p<0.05$ level of significance. However, findings indicated that there was no significant difference between gender and risk perception of COVID 19 among the participants. The computed t-value (0.253) with degree of freedom 198 was not significant at $p>0.05$ level of significance for the groups. Findings also implied that there was significant relationship between gender and compliance with COVID 19 precautionary. Recommendations were made that more sensitization and awareness strategies should be scaled up to increase knowledge and improve compliance with precautionary measures to put an end to the spread of the dreaded COVID 19 disease.

**Keywords:** Pandemic; Risk perception; Precautionary Behavior; COVID 19; Compliance

## 1.0 Introduction

The expansion of waste-intensive steel production processes has continued to be a source of global concern as a result of ever increasing deluge of toxic steel waste into the ecosystem with in recent times, the whole world has been battling with the outbreak of COVID 19, a virulent and highly contagious viral disease caused by corona virus

(2019-nCoV), a novel strain of Severe Acute Respiratory Syndrome (SARS- COV- 2). This pandemic was catastrophic and has devastated families, communities and countries globally with significant morbidity and mortality. According to the World Health Organization (WHO, 2020), this disease was first isolated in Wuhan City sea food market in China in December 2019. On January 30, 2020, The WHO declared this outbreak a Public Health Emergency of International Concern (WHO, 2020). Following the declaration, Governments around the world closed their borders, announced total or partial lockdowns, movement restrictions, social distancing, and wearing of facemasks (Biscayart *et al*., 2020; Zaka *et al.,* 2020; Zhao *et al*., 2020) as precautionary measures to curb the spread of the virus. The transmission of this virus remains mainly through human to human close contact with infected persons' secretions such as respiratory droplets (WHO, 2020). Mitigating the spread of this pandemic has become a major public health concern due to the rapidly increasing and contagious nature of the disease and its overwhelming influence on critical healthcare and frontline healthcare staff of many nations. Although, health is a fundamental human right, yet it remains a personal responsibility. In modern day emerging and re-emerging diseases such as COVID 19, human behavior is increasingly becoming a risk factor. This pandemic according to WHO (2020) has proven that joint efforts of the whole social fabric – the individual, the community and the state is required to protect the human race from being grossly depleted. However, knowledge gained from the control of previous disease outbreaks showed that the success of policies, programs or measures adopted by the government to control outbreak of diseases rely partly on the public having accurate knowledge and perceptions of their personal and societal risk factors (Olapegba *et al.,* 2000). With no proven and acceptable cure, not even the COVID 19 vaccination, the best way to curb the virus and prevent it from further spreading may therefore be the adoption of precautionary behaviours (Guner *et al.,* 2020). Findings from this study will serve as basis for health promotion and disease prevention during this pandemic or future outbreak of infectious diseases. The precautionary behaviors as prescribed by (WHO, 2020) include social distancing, regular hand wash with soap and water, use of alcohol based hand sanitizer, cough etiquettes and the use of face mask.

### 1.1 Risk Perceptions on COVID 19

Superstitious beliefs have largely shaped the perception of most Nigerians regarding the source and cause of COVID-19 (Chukwuorji and Iorfa, 2020). At the onset of the COVID-19 outbreak in Nigeria, infected persons belonged to either the political class or high socioeconomic cadre (Chukwuorji and Iorfa, 2020). The characteristic prevalence of COVID-19 infection among this group of persons accorded COVID-19 the name, 'a disease of the rich and mighty' (Nwaubani, 2020). Few months into the COVID-19 outbreak in Nigeria, perceptions revolved around "immunity" to COVID-19 among the religious folks with a disregard of bans on religious gatherings (Lichtenstein *et al,* 2020). Such perceptions could have been influenced by several factors. Social media platforms such as WhatsApp, Face book and Twitter have been used to spread false news on COVID-19, resulting to panic disorder and anxiety among some persons and shunning of safety measures among others (Aluh and Onu, 2020; Olapegba *et al*., 2020). Among many people, physical distancing, social isolations, restriction of religious and social gatherings etc. have been regarded as alien solutions in overcoming the COVID-19 pandemic in Nigeria and Africa at large (Olapegba *et al*., 2020)

### 1.2 Precautionary Measures

These are behavioral non-pharmaceutical interventions that are prescribed by World Health Organization (WHO, 2020). These include the followings**:**

### 1.2.1 Hand Washing

Washing hands with soap and water and an alcohol-based hand sanitizer for at least 20 seconds is a proven way to kill viruses and can curtail the spread of COVID-19. Hand washing should be done:

- Before entering a shared area, such as the schools and toilets.
- After coughing and sneezing.
- After using the restroom.
- At intervals throughout the work day.
- Before and after handling food.

### 1.2.2 Respiratory Hygiene

Maintaining proper respiratory hygiene helps prevent the spread of COVID-19 by keeping a distance, where possible, with people who have cold or flu-like symptoms. It is important to cover or sneeze into elbow, coughs and dispose of used tissues and clean your hands with safe water afterwards

### 1.2.3 Keeping the Environment Clean Always

Contamination on surfaces touched by staff and students is one of the major ways that COVID-19 spreads. Hence, it is important to clean and disinfect all surfaces in the schools. This should be done using a disinfectant and detergent. These surfaces include: floors, doors, desks, chairs and shelves.

### 1.2.4 Social Distancing

Social distancing and speaking to colleagues and students from a distance (six feet apart) is a safe practice to restrict contact with respiratory droplets.

### 1.2.5 Stay at Home When Sick

Encouraging sick members of staff to stay at home if one has symptoms or suspect a respiratory illness will minimize the spread of COVID 19

## 1.3 Statement of the Problem

The recent COVID 19 pandemic has caused a lot of morbidity and mortality across the globe as Nigeria continues to witness the surge in COVID 19 infections. As at 16th of March, 2022, the country's infection toll reached 255,092 cases confirmed, 249,457 discharged while 3,142 fatalities have been recorded (NCDC, 2022). This has caused overwhelming burden on health care services, economy, education, and social relationships. Despite unprecedented measures adopted by the Nigerian Centre for Disease Control (NCDC) in collaboration with World Health Organization (WHO) including lockdown and vaccination to control the spread of COVID 19 in Nigeria, the battle against the disease is still on though number of cases in Nigeria have continue to trickle down. Observations have shown that overcrowding and large gatherings in public places especially in the school environment have remained a public health concern and teachers' compliance with precautionary behaviors has been worrisome. However, the extent to which public health education can influence positive behavioral change among Nigerians remains vague (Amzat and Razum, 2018). Though, majority of people around the world are aware of (COVID 19) preventive and control measures, yet information about this virus and the effectiveness of vaccination is still evolving (WHO, 2020). However, inadequate knowledge and poor perception have largely been fingered as gaps in compliance against the disease. Thus insufficiency of fear as a propellant for adherence to recommended guidelines for COVID-19 has been reported to be an outplay of knowledge-attitude discrepancies (Chukwuorji *et al.,* 2020). The adoption of these precautionary behaviors in the present study is in tandem with the recommendations of the World Health Organization (WHO) on safety measures for COVID-19 (WHO, 2020)

## 1.4 Hypotheses

1. There is no significant relationship between level of knowledge and compliance with precautionary behaviors against COVID 19 among secondary school teachers in Ondo State, Nigeria.
2. There is no significant relationship between risk perception and compliance with precautionary behaviors against

COVID 19 among secondary school teachers in Ondo State, Nigeria

3. There is no significant relationship between gender and compliance with COVID 19 precautionary behaviors among secondary school teachers in Ondo State, Nigeria
4. There is no significant relationship between gender and risk perception of COVID 19 among secondary school teachers in Ondo State, Nigeria.

## 2.0 Methods and Procedures

### 2.1 Study Design

This study was carried out using a descriptive cross sectional research design

### 2.2 Study Population

The study populations for the study are all eligible members of staff of secondary schools in Owo Local Government Area, Ondo State. There are twelve (12) public secondary schools with staff strength of 390 teachers in Owo (Data from Owo Local Education authority, May 2022). All consenting members were included in the study. Security and Cleaners were excluded due to their low level of educational status which may affect their interpretation of the questionnaire. Verbal consent was obtained from participants.

### 2.3 Sample Size Determination and Sampling Technique

Taro Yamane's formula was used in selecting the sample size from the total population thus;

n= N/1+N (e^2)

Where n= Sample size

e= Level of significance
N= Total population (390)
Taking the level of significance as 0.05,
390/1+390 (0.05^2)
n= 390/1+390 (0.0025)
n= 390/1+1
n= 390/2
n=195
Sample size was approximated to20 0 participants to accommodate errors

### 2.4 Sampling Method

A multistage sampling technique was employed to carry out this study**.**

Stage One: Simple random sampling technique was used to select four public secondary schools.

Stage two: Simple random sampling technique was used to select 50 of participants from each selected schools. A total of 200 participants were selected

Stage three: A convenient sampling method was used to select participants included in the study until 50 participants were selected in each school.

### 2.5 Data Collection Tool and Procedure

A structured questionnaire was developed by the researcher from related studies. The questionnaire was adapted from a tool used for a similar perception study on Ebola Virus Disease in 2014 (Gidado *et al*., 2015). The tool was validated by an infectious disease epidemiologist. The questionnaire has five parts: socio-demographic characteristics, knowledge of COVID-19, preventive behaviors, risk perception and self-efficacy to practice COVID-19 prevention measures. The questionnaire was prepared in English language. The tool was pretested on 10% of the sample size in a school that was not selected for the actual study. The reliability (internal consistency) of the questionnaire was calculated based on data from the pre-test.

### 2.6 Data Collection Method

This study was conducted in selected Public Secondary Schools in Owo, Ondo State. The validated questionnaire was distributed by four trained research assistants who also collected them after the respondents finished filling the questionnaire. The data collectors used appropriate personal protective measures during data collection to prevent the transmission of COVID-19 virus to data collectors and respondents during administration of the questionnaire.

## 2.7 Ethical Consideration

Informed consent was obtained from the head of school's management and the respondents. The participants were informed of the purpose of the study and that participation is voluntary. Study respondents' confidentiality was maintained throughout data collection procedure

## 3.0 Results and Discussion

Table 1 presents the socio-demographic characteristics of study participants. The result shows there were more females (58%) than males (42%). What this implies is that there were many women that took an active part in the study. However, gender responses can be observed in terms of prevalence, diagnosis, severity, and outcomes. More than one-third (40%) of the entire sample constituting the majority of respondents were aged 45-54 years while those who were 55 years and above (12%) constituted the least. Majority (80%) of the respondents were married while divorces constituted the minority group (2%). Therefore, there were more married respondents in the study. More than three-quarter (78%) of the total sample were Christian while 22% were Islam. What this result implies is that there were many Christian in the study, and this can be attributed to the study area which is mainly dominated by the Christian. In addition, majority of the respondents (58%) were holders of HND/B.Sc. certificate, closely followed by Master's degree (18%), OND/NCE (16%), and Ph.D. holders (6%). The implication of this finding is that there were many respondents with HND/B.Sc. certificate in the study. Nevertheless, it implies that those that took part in the study were literates.

Table 2 shows that the computed r-value (0.738) is significant at $p<0.05$ level of significance. The null hypothesis is rejected. This implies that there is significant relationship between level of knowledge and compliance with precautionary behaviors of COVID 19 among secondary school teachers in Ondo State, Nigeria. The relationship between level of knowledge and compliance with precautionary behaviors of COVID 19 among secondary school teachers in Ondo State, Nigeria is high and statistically significant in a positive direction.

Table 3 shows that the computed r-value (0.387) is significant at $p<0.05$ level of significance. The null hypothesis is rejected. This implies that there is significant relationship between risk perception and compliance with precautionary behaviors against COVID 19 among secondary school teachers in Ondo State, Nigeria. The relationship between risk perception and compliance with precautionary behaviors against COVID 19 among secondary school teachers in Ondo State, Nigeria is low but statistically significant in a positive direction

Table 4 shows that the computed t-value (2.844) with degree of freedom 198 is significant at $p<0.05$ level of significance for the groups. The hypothesis is rejected. This implies that there is significant relationship between gender and compliance with COVID 19 precautionary behaviors among secondary school teachers in Ondo State, Nigeria.

Table 5 depicts that the computed t-value (0.253) with degree of freedom 198 is not significant at $p>0.05$ level of significance for the groups. The null hypothesis is therefore accepted. This implies that there is no significant difference between gender and risk perception of COVID 19 among secondary school teachers in Ondo State, Nigeria

Table 1: Socio-Demographic Characteristics of Study Participants

| **Socio-demographic characteristics** | **Frequency (n=200)** | **Total (%)** |
|---|---|---|
| **Gende**r | | |
| Male | 84 | 42.0 |
| Female | 116 | 58.0 |
| **Age in years** | | |
| 25-34 | 24 | 12.0 |
| 35-44 | 76 | 38.0 |
| 45-54 | 80 | 40.0 |
| 55 and above | 20 | 10.0 |
| **Marital status** | | |
| Single | 36 | 18.0 |
| Married | 160 | 80.0 |
| Divorced | 4 | 2.0 |
| **Religion** | | |
| Christianity | 156 | 78.0 |
| Islam | 44 | 22.0 |
| **Educational status** | | |
| OND/NCE | 32 | 16.0 |
| HND/B.Sc. | 116 | 58.0 |
| Masters | 36 | 18.0 |
| Ph.D. | 12 | 6.0 |
| Other | 4 | 2.0 |

Table 2: Pearson Correlation of level of knowledge and compliance with precautionary behaviors of COVID 19 among secondary school teachers

| **Variable** | **N** | **Mean** | **SD** | **R** | **P** |
|---|---|---|---|---|---|
| **Level of knowledge** | 200 | 46.88 | 11.19 | | |
| | | | | 0.738* | 0.000 |
| **Compliance with precautionary behavior of covid-19** | 200 | 23.32 | 3.84 | | |

*p<0.05

Table 3: Pearson Correlation of risk perception and compliance with precautionary behaviors against COVID 19 among secondary school teachers

| Variable | N | Mean | SD | R | P |
|---|---|---|---|---|---|
| **Risk perception** | 200 | 7.70 | 1.58 | 0.387* | 0.000 |
| **Compliance with precautionary behavior of covid-19** | 200 | 23.32 | 3.84 | | |

*p<0.05

Table 4: t-test of compliance with COVID 19 precautionary behaviors among secondary school teachers by gender

| Gender | N | Mean | SD | Std. Error | Df | T | P |
|---|---|---|---|---|---|---|---|
| **Male** | 84 | 22.43 | 3.31 | 0.36 | 198 | 2.844* | 0.005 |
| **Female** | 116 | 23.97 | 4.07 | 0.38 | | | |

*p<0.05

Table 5: t-test of risk perception of COVID 19 among secondary school teachers by gender

| Gender | N | Mean | SD | Std. Error | Df | T | P |
|---|---|---|---|---|---|---|---|
| **Male** | 84 | 7.67 | 1.40 | 0.15 | 198 | 0.253 | 0.801 |
| **Female** | 116 | 7.72 | 1.71 | 0.16 | | | |

p>0.05

### 3.2 Testing of Hypotheses

**Hypothesis 1:** There is no significant relationship between level of knowledge and compliance with precautionary behaviors of COVID 19 among secondary school teachers in Ondo State, Nigeria.
**Hypothesis 2:** There is no significant relationship between risk perception and compliance with precautionary behaviors against COVID 19 among secondary school teachers in Ondo State, Nigeria.
**Hypothesis 3:** There is no significant difference between gender and compliance with COVID 19 precautionary behaviors among secondary school teachers in Ondo State, Nigeria
**Hypothesis 4:** There is no significant difference between gender and risk perception of COVID 19 among secondary school teachers in Ondo State, Nigeria.

### 3.3 Discussion

Findings from the study present socio-demographic characteristics of respondents. The study revealed that there were many women (58%) in the study that took an active part in the study. Based on the view of Liu and Mager (2016), it is observed that in terms of prevalence, diagnosis, severity, and outcomes of diseases such as COVID-19 affect women more than men. Finding from the study also shows that those within the age bracket of 45-54 years were the majority (40%), and could be attributed to those who have more knowledge of health and illness behavior and the implication of diseases. Revealing from the study is that an overwhelming percentage of respondents (80%) were married people. The study revealed also the religious affiliation of respondents in which the Christians were the majority, and this was attributed to the study area which is mainly dominated by the Christian. The study further revealed that there were many respondents with HND/B.Sc. certificate in the study. Nevertheless, it implies that those that took part in the study were literates.

Findings indicated that knowledge of COVID-19 pandemic has a strong positive relationship with compliance with precautionary behaviours among secondary school teachers. The computed r-value (0.738) is significant at a $p<0.05$ level of significance. Therefore, greater COVID-19 knowledge predicted elevated levels of precautionary behaviours. This corroborates Chukwuwuorji and Iorfa (2020) finding that knowledge and superstitious beliefs have largely shaped the perception of most Nigerians regarding the source and cause of COVID-19.

Table 3 shows that the computed r-value (0.387) is significant at a $p<0.05$ level of significance. The null hypothesis is rejected. This implies that there is a significant relationship between risk perception and compliance with precautionary behaviors against COVID 19 among secondary school teachers in Ondo State, Nigeria. The relationship between risk perception and compliance with precautionary behaviors against COVID 19 among secondary school teachers in Ondo State, Nigeria is low but statistically significant in a positive direction. Higher levels of risk perception predicted higher levels of involvement in precautionary behaviors.

Findings from the study show that there is a significant relationship between gender and compliance with COVID-19 precautionary behavior among secondary school teachers in Ondo State, Nigeria. This result of the null hypothesis is being rejected. The result that gender differences existed in precautionary behavior is in line with past studies where females have consistently been found to engage in more precautionary behaviors than their male counterparts (Brug *et al.,* 2004; Bish and Michie, 2010). This implies that females have a greater tendency than males to engage in precautionary behaviors such as the washing of hands, use of hand sanitizers, wearing of face masks, cleaning of surfaces, and having plans to visit a hospital or call emergency numbers in case of suspected symptoms, etc. This may be related to the perceived global vulnerability of females to illness (Duncan *et al.,* 2009; Dellar *et al.,* 2015). This relationship between gender and precautionary behavior may probably indicate that females perceive themselves as more susceptible to adverse conditions than males.

The null hypothesis which stated that there is no significant difference between gender and risk perception of COVID 19 among secondary school teachers in Ondo State, Nigeria, was accepted.

Gender did not moderate the association of COVID-19 knowledge and risk perception, given that the interaction term was not significant. The study revealed that there was a moderated mediation effect significant indirect effect of COVID-19 knowledge on precautionary behavior through risk perception among females.

### 3.4 Limitation of the Study

This study relatively utilized a limited number of participants considering the population of the country; studies utilizing larger sample sizes are suggested. The non-use of online web survey data collection approach in our study may have resulted from poor access to internet facilities. Thus, our findings should be treated with caution

without considering these as representative of adequately sampled population with optimal distribution across commonly described socioeconomic strata

## 4.0 Conclusion

It is evident that perception shapes one's knowledge and the adoption of precautionary measures concerning the transmission of an infection. Data obtained from the perception of member of staff regarding COVID-19 could help target interventions needed to improve the knowledge of community members regarding Corona virus. In future, more comprehensive (e.g., qualitative) studies should be designed in a better inclusive sample from the different heterogeneous groups. Even with some limitations, our findings present valuable information about the knowledge and risk perception dynamics on compliance with COVID 19 precautionary measures in the Nigeria population.

### 4.1 Recommendations

1. Scaling up of sensitization of COVID 19 prevention strategies to include impute of teachers in the planning and implementation phases.
2. Setting up of hand washing and sanitizing stands outside the schools gates with a notification encouraging students and teachers to wash hands/sanitize before coming in.•
3. Provision of educational and promotional materials regarding updates with COVID-19 especially in schools
4. Use of alternative media such as radio, television and social media to educate the community on risk factors of infectious diseases.

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