### EVALUATION OF THE LEVEL OF COVID-19 SAFETY COMPLIANCE IN TERTIARY INSTITUTIONS

**TITLE PAGE**

Certification

Dedication

Acknowledgement

Table of Content

List of Tables

**ABSTRACT**

**CHAPTER ONE: INTRODUCTION**

1.1 Background of the study

1.2 Statement of the problem

1.3 Objective of the study

1.4 Research Question

1.5 Significance of the study

1.6 Definition of terms

**CHAPTER TWO: REVIEW OF LITERATURE**

2.1 Review of concepts

2.2 Theoretical Framework

2.3 Review of Empirical studies

2.5 Chapter Summary

**CHAPTER THREE: RESEARCH METHODOLOGY**

3.1 Research Design

3.2 Population of the study

3.3 Sample size determination

3.4 Sample size selection technique and procedure

3.5 Research Instrument and Administration

3.6 Method of data collection

3.7 Method of data analysis

3.8 Validity and Reliability of the study

**CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS**

4.1 Data Presentation

4.2 Answering Research Questions

**CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION**

5.1 Summary

5.2 Conclusion

5.3 Recommendation

**References**

**Appendix**

****ABSTRACT****

*The focus of this study is to evaluate the Level of Covid-19 Safety Compliance by Tertiary Institutions using university of Ilorin as a case study.Simple random sampling technique was used for the study. 340 respondents which includes staffs and students of University of Ilorin forms the population of the study. Data was presented and analyzed using frequency and tables.findings from the study showed that the extent of covid-19 safety compliance among tertiary institution is high although there is need to maintain this level of consistency.The study therefor recommends that the university society should be educated on the myth and the facts of COVID19. More so Task force teams should be set up to enforce adherence to the COVID-19 pandemic preventive measures in tertiary constitution.*

****CHAPTER ONE****

****INTRODUCTION****

 ****1.1 BACKGROUND OF STUDY****

Colleges and Universities environments are where students reside and concentrate in closeness to one another. They are additionally humming social center points where students are united from departments in the university. In recent times, the establishments of this special ecosystem have been affected essentially by the rapid spread of the Covid-19 flare-up, creating uncertainty in regards to the implication for advanced education.

According to the World Health Organization (WHO, 2020), Covid-19 is a family of viruses that cause illnesses ranging from the common cold to more severe diseases such as severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS).

In 1960 first case of coronavirus was notified and Canadian study in 2001 was identified approximately 500 patients as Flu-like system in which 17 to 18 cases were confirmed as infected with Coronavirus by polymerase chain reaction. These include livestock, birds, and mammals such as bats, camels, masked palm civets, dogs, mice, and cats. In 2003, various reports were published the spreading of Coronavirus in many countries such as Hong Kong, United States America, Singapore, Vietnam, Thailand, Taiwan and their several case of severe acute respiratory syndrome which caused by Coronavirus and their mortally was more than 1000 patient. Another study report in Hong Kong was confirmed 50 patients are suffering from severe acute respiratory syndrome while 30 of them were confirmed as Coronavirus infected. In Wuhan (China) late December 2019 a case unidentified pneumonia was reported by Hubei Province, People’s Republic of China (PRC) their clinical characteristics were very similar to those of viral pneumonia. After analysis on respiratory samples the Centre for Disease Control expert declared that the pneumonia, later known as novel virus and officially named the disease COVID-19 was declared by World Health Organization (WHO). The initial cases had a common exposure to the Huanan wholesale seafood market that also traded live animals. On December 31st 2019, China notified the outbreak to the WHO and on 1st January the Huanan sea food market was closed. For identification of this disease different sample from Huanan sea food market also tested, signifying that the virus originated from there. The number of cases started increasing exponentially, some of which did not have exposure to the live animal market, suggestive of the fact that human-to-human transmission was occurring.

The outbreak of pandemic Covid-19 all over the world has disturbed the educational, political, social, economic, religious, and financial structures of the whole world. The world’s topmost economies such as the US, China, UK, Germany, France, Italy, Japan, and many others are on the verge of collapse. Besides, Stock Markets around the world have been pounded and oil prices have fallen off a cliff. In just a week 3.3 million Americans applied for unemployment and a week later another 6.6 million people started searching for jobs. Also, many experts on economic and financial matters have warned about the worsening condition of global economic and financial structure.

In order to reduce and deal with the spread of the infection in Nigeria, the national Government commanded the utilization of face-mask; social distancing, utilization of sanitizers in washing hands and cleaning of surfaces regularly in contact with, these safety measures are all applicable to all individual and including university students. In any case, before the resumptions of tertiary institutions, the Nigeria Governments encouraged all tertiary institutions to guarantee that there is a sufficient consistence compliance to Covid-19 safety measures. hence, the extent to which tertiary institutions in Nigeria adhere to those compulsory safety measures have been uncertain likewise other parts of Nigeria. Thus, this study emerged as a result of this uncertainty.

****1.2 STATEMENT OF PROBLEM****

A pandemic is a disease outbreak that spreads across countries or continents. It affects more people and takes more lives than an epidemic which according to the World Health Organization (WHO), declared COVID-19 to be a pandemic when it became clear that the illness was severe and that it was spreading quickly over a wide area.

Coronavirus has been known to be a terrifying and destructive disease that can annihilate human lives across the world.

The Nigerian Government from the absolute first episode of this infection in Nigeria mandated the citizens to apply several measures to curb its widespread in the country. The closure of schools in the country from primary, secondary and tertiary level were among the measures the government took to reduce the rate of the spread of the pandemic. On the point of reopening schools in Nigeria, the government stated different measures school owners and tertiary institution management should but inn place in a quest to fighting the pandemic rand curb its widespread among students. Hence, most tertiary schools in Nigeria are over populated by thousands of students flowing in and out. However, the extent of law evasion and neglects among university students are overwhelming.

Johnson (2020) opined that; the adherence to the Covid-19 rules by tertiary students in Nigeria will be a challenge to the management because of the fact that many of the students are influenced by social groups as many belongs to notorious societies which encourages law evasion. Thus, this study is geared towards investigating the level at which tertiary institutions comply to Covid-19 safety prevention measures.

****1.3 PURPOSE OF THE STUDY****

The primary objective of this study is to evaluate the Level of Covid-19 Safety Compliance by Tertiary Institutions. Below are other specific objectives;

1. Investigate if students adequately make use of face mask, sanitizers and observe social distancing.
2. Examine the extent to which students observe those prevention measures.
3. Find out if school lecturers adhere to the execution and practice of these covid-19 safety prevention measures?
4. Investigate if school management and law enforcers ensure and contribute to the execution and application of the safety measures by students.

****1.4 RESEARCH QUESTION****

1. Does students make adequate use of face mask, sanitizers and observe social distancing?

2. At what extent do students observe those prevention measures?

3. Does the school lecturers adhere to the execution and practice of these covid-19 safety prevention measures?

4. Do the school management and law enforcers ensure and contribute to the execution and application of the safety measures by students?

****1.5 SIGNIFICANCE OF THE STUDY****

This study will be of unspeakable importance to the Federal and state Government as it will expose the situation of compliance by tertiary institutions, and the gaps the enforcement agencies creates which stipulate irregular adherence to covid 19 rules and restrictions. And the recommendations will make a great impact on how to tighten the restrictions. The study however will also help university management boards on what best way to ensure the safety of the students. This study will add to existing literature in this area of study and serve as an eye-opener for further research in this domain.

****1.6 SCOPE OF THE STUDY****

The study- Evaluation of the Level of Covid-19 Safety Compliance in Tertiary Institutions covers only University of Ilorin, Kwara State, Nigeria.

****1.7 DEFINITION OF TERMS****

****Compliance:**** the act of obeying and observing that which is lawful and legal.

Transportation Company: A transportation company is a business that transports freight from one location to another which is a key in the value chain in manufacturing.

****Covid 19:**** This is also known as coronavirus and it is a communicable respiratory disease caused by a new strain of coronavirus that causes illness in humans.

****Government:****The body of persons that constitutes the governing authority of a political unit or organization: such as. a : the officials comprising the governing body of a political unit and constituting the organization as an active agency.

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.0 INTRODUCTION**

Our focus in this chapter is to critically examine relevant literatures that would assist in explaining the research problem and furthermore recognize the efforts of scholars who had previously contributed immensely to similar research. The chapter intends to deepen the understanding of the study and close the perceived gaps.

**2.1 Corona Virus and Classification**

SARS-CoV-2 is a member of the family Coronaviridae and order Nidovirales. The family consists of two subfamilies, Coronavirinae and Torovirinae and members of the subfamily Coronavirinae are subdivided into four genera: (a) Alphacoronavirus contains the human coronavirus (HCoV)-229E and HCoV-NL63; (b) Betacoronavirus includes HCoV-OC43, Severe Acute Respiratory Syndrome human coronavirus (SARS-HCoV), HCoV-HKU1, and Middle Eastern respiratory syndrome coronavirus (MERS-CoV); (c) Gammacoronavirus includes viruses of whales and birds and; (d) Deltacoronavirus includes viruses isolated from pigs and birds [Burrell C, et al.2016]. SARS-CoV-2 belongs to Betacoronavirus together with two highly pathogenic viruses, SARS-CoV and MERS-CoV. SARS-CoV-2 is an enveloped and positive-sense single-stranded RNA (+ssRNA) virus [Kramer A, et al.2006].

SARS-CoV-2 is considered a novel human-infecting Betacoro- navirus [Lu R,et al.2020]. Phylogenetic analysis of the SARS-CoV-2 genome indicates that the virus is closely related (with 88% identity) to two bat-derived SARS-like coronaviruses collected in 2018 in east- ern China (bat-SL-CoVZC45 and bat-SL-CoVZXC21) and genetically distinct from SARS-CoV (with about 79% similarity) and MERS-CoV [Lu R,et al.2020]. Using the genome sequences of SARS-CoV-2, RaTG13, and SARS-CoV [Zhou P,et al.2020], a further study found that the virus is more related to BatCoV RaTG13, a bat coronavirus that was previously detected in Rhinolophus afﬁnis from Yunnan Province, with 96.2% overall genome sequence identity [Zhou P,et al.2020]. A study found that no evidence of recombination events detected in the genome of SARS-CoV-2 from other viruses originating from bats such as BatCoV RaTG13, SARS- CoV and SARSr-CoVs [Zhou P,et al.2020]. Altogether, these ﬁnding suggest that bats might be the original host of this virus.

However, a study is needed to elucidate whether any inter- mediate hosts have facilitated the transmission of the virus to humans. Bats are unlikely to be the animal that is directly responsi- ble for transmission of the virus to humans for several reasons [Lu R,et al.2020]:

1. there were various non-aquatic animals (including mammals) available for purchase in Huanan Seafood Wholesale Market but no bats were sold or found;
2. SARS-CoV-2 and its close relatives, bat- SL-CoVZC45 and bat-SL-CoVZXC21, have a relatively long branch (sequence identity of less than 90%), suggesting those viruses are not direct ancestors of SARS-CoV-2; and

(3) in other coronaviruses where bat is the natural reservoir such as SARS-CoV and MERS-CoV, other animals have acted as the intermediate host (civets and pos- sibly camels, respectively). Nevertheless, bats do not always need an intermediary host to transmit viruses to humans. For example, Nipah virus in Bangladesh is transmitted through bats shedding into raw date palm sap.

**2.1.1 Transmission**

The role of the Huanan Seafood Wholesale Market in propagating disease is unclear. Many initial COVID-19 cases were linked to this market suggesting that SARS-CoV-2 was transmitted from animals to humans. However, a genomic study has provided evidence that the virus was introduced from another, yet unknown location, into the market where it spread more rapidly, although human-to-human transmission may have occurred earlier [Yu W,et al.2020]. Clusters of infected family members and medical workers have conﬁrmed the presence of person-to-person transmission [Yu W,et al.2020]. After January 1, less than 10% of patients had market expo- sure and more than 70% patients had no exposure to the market [Yu W, et’al. 2020]. Person-to-person transmission is thought to occur among close contacts mainly via respiratory droplets produced when an infected person coughs or sneezes. Fomites may be a large source of transmission, as SARS-CoV has been found to persist on surfaces up to 96h [Kramer A, et al.2016] and other coronaviruses for up to 9 days.Whether or not there is asymptomatic transmission of disease is controversial. Findings about disease characteristics are rapidly changing and subject to selection bias. A study indicated the mean incubation period was 5.2 days (95% conﬁdence interval [95%CI]: 4.1–7.0). The incubation period has been found to be as long as 19 or 24 days , although case deﬁnitions typically rely on a 14 day window (G.S 2020).

The basic reproductive number (R0) has been estimated with varying results and interpretations. R0 measures the average num- ber of infections that could result from one infected individual in a fully susceptible population. Studies from previous outbreaks found R0 to be 2.7 for SARS and 2.4 for 2009 pandemic H1N1 inﬂuenza. One study estimated that that basic reproductive number (R0) was 2.2 (95% CI: 1.4–3.9). However, later in a fur- ther analysis of 12 available studies found that R0 was 3.28. Because R0 represents an average value it is also important to consider the role of super spreaders, who may be hugely responsible for outbreaks within large clusters but who would not largely inﬂuence the value of R0. During the acute phase of an outbreak or prepandemic, R0 may be unstable .

In pregnancy, a study of nine pregnancy women who developed COVID-19 in late pregnancy suggested COVID-19 did not lead to substantially worse symptoms than in nonpregnant persons and there is no evidence for intrauterine infection caused by vertical transmission [Chen HEA 2020].

In hospital setting, a study involving 138 COVID-19 suggested that hospital-associated transmission of SARS-CoV-2 occurred in 41% of patients [Wang. D 2020 ].

**2.1.2 Risk factors**

The incidence of SARS-CoV-2 infection is seen most often in adult male patients with the median age of the patients was between 34 and 59 years. SARS-CoV-2 is also more likely to infect people with chronic comorbidities such as cardio- vascular and cerebrovascular diseases and diabetes. The highest proportion of severe cases occurs in adults 60 years of age, and in those with certain underlying conditions, such as cardiovascular and cerebrovascular diseases and diabetes. Severe manifestations maybe also associated with co-infections of bacteria and fungi [Chen N. et’al 2020].

Fewer COVID-19 cases have been reported in children less than 15 years [20,30,7,32]. In a study of 425 COVID-19 patients in Wuhan, published on January 29, there were no cases in children under 15 years of age. Nevertheless, 28 pediatric patients have been reported by January 2020. The clinical features of infected pediatric patients vary, but most have had mild symptoms with no fever or pneumonia, and have a good prognosis. Another study found that although a child had radiological ground-glass lung opacities, the patient was asymptomatic. In summary, children might be less likely to be infected or, if infected, present milder manifestations than adults; therefore, it is possible that their parents will not seek out treatment leading to underestimates of COVID-19 incidence in this age group.

**2.1.3 Pathogenesis and immune response**

Like most other members of the coronavirus family, Beta- coronavirus exhibit high species speciﬁcity, but subtle genetic changes can signiﬁcantly alter their tissue tropism, host range, and pathogenicity. A striking example of the adaptability of these viruses is the emergence of deadly zoonotic diseases in human history caused by SARS-CoV and MERS-CoV. In both viruses, bats served as the natural reservoir and humans were the terminal host, with the palm civet and dromedary camel the intermediary host for SARS-CoV and MERS-CoV, respectively. Intermediate hosts clearly play a critical role in cross species transmission as they can facilitate increased contact between a virus and a new host and enable further adaptation necessary for an effective replication in the new host. Because of the pandemic potential of SARS- CoV-2, careful surveillance is immensely important to monitor its future host adaptation, viral evolution, infectivity, transmissibility, and pathogenicity.

The host range of a virus is governed by multiple molecular interactions, including receptor interaction. The envelope spike (S) protein receptor binding domain of SARS-CoV-2 was shown struc- turally similar to that of SARS-CoV, despite amino acid variation at some key residues . Further extensive structural analysis strongly suggests that SARS-CoV-2 may use host receptor angiotensin-converting enzyme 2 (ACE2) to enter the cells, the same receptor facilitating SARS-CoV to infect the airway epithelium and alveolar type 2 (AT2) pneumocytes, pulmonary cells that synthesize pulmonary surfactant. In general, the spike protein of coronavirus is divided into the S1 and S2 domain, in which S1 is responsible for receptor binding and S2 domain is responsible for cell membrane fusion. The S1 domain of SARS-CoV and SARS- CoV-2 share around 50 conserved amino acids, whereas most of the bat-derived viruses showed more variation. In addition, identiﬁcation of several key residues (Gln493 and Asn501) that govern the binding of SARS-CoV-2 receptor binding domain with ACE2 further support that SARS-CoV-2 has acquired capacity for person- to-person transmission. Although, the spike protein sequence of receptor binding SARS-CoV-2 is more similar to that of SARS- CoV, at the whole genome level SARS-CoV-2 is more closely related to bat-SL-CoVZC45 and bat-SL-CoVZXC21.

However, receptor recognition is not the only determinant of species speciﬁcity. Immediately after binding to their receptive receptor, SARS-CoV-2 enters host cells where they encounter the innate immune response. In order to productively infect the new host, SARS-CoV-2 must be able to inhibit or evade host innate immune signalling. However, it is largely unknown how SARS- CoV-2 manages to evade immune response and drive pathogenesis. Given that COVID-19 and SARS have similar clinical features, SARS-CoV-2 may have a similar pathogenesis mechanism as SARS- CoV. In response to SARS-CoV infections, the type I interferon (IFN) system induces the expression of IFN-stimulated genes (ISGs) to inhibit viral replication. To overcome this antiviral activity, SARS- CoV encodes at least 8 viral antagonists that modulate induction of IFN and cytokines and evade ISG effector function .

The host immune system response to viral infection by mediating inﬂammation and cellular antiviral activity is critical to inhibit viral replication and dissemination. However, excessive immune responses together with lytic effects of the virus on host cells will result in pathogenesis. Studies have shown patients suffering from severe pneumonia, with fever and dry cough as common symptoms at onset of illness . Some patients progressed rapidly with Acute Respiratory Stress Syndrome (ARDS) and septic shock, which was eventually followed by multiple organ failure and about 10% of patients have died. ARDS progression and extensive lung dam- age in COVID-19 are further indications that ACE2 might be a route of entry for the SARS-CoV-2 as ACE2 is known abundantly present on cilia ted cells of the airway epithelium and alveolar type II (cells (pulmonary cells that synthesize pulmonary surfactant) in humans.

Patients with SARS and COVID-19 have similar patterns of inﬂammatory damage. In serum from patients diagnosed with SARS, there is increased levels of pro-inﬂammatory cytokines (e.g. interleukin (IL)-1, IL6, IL12, interferon gamma (IFNγ), IFN- γ-induced protein 10 (IP10), macrophage inﬂamatory proteins 1A (MIP1A) and monocyte chemo-attractant protein-1 (MCP1)), which are associated with pulmonary inﬂamation and severe lung damage [45]. Likewise, patients infected with SARS-CoV-2 are reported to have higher plasma levels of pro-inﬂamatory cytokines including IL1β, IL-2, IL7, TNF-α, GSCF, MCP1 than healthy adults [Huang C, et al.2020]. Importantly, patients in the intensive care unit (ICU) have a signiﬁcantly higher level of GSCF, IP10, MCP1, and TNF- α than those non-ICU patients, suggesting that a cytokine storm might be an underlying cause of disease severity [Huang C, et al.2020]. Unexpectedly, anti-inﬂamatory cytokines such as IL10 and IL4 were also increased in those patients [Huang C, et al.2020], which was uncommon phenomenon for an acute phase viral infection. Another interesting ﬁnding, as explained before, was that SARS-CoV-2 has shown to preferentially infect older adult males with rare cases reported in children [Huang C, et al.2020]. The same trend was observed in primate models of SARS-CoV where the virus was found more likely to infect aged Cynomolgus macaque than young adults . Further studies are necessary to identify the virulence factors and the host genes of SARS-CoV-2 that allows the virus to cross the species speciﬁc barrier and cause lethal disease in humans.

**2.1.4 Clinical manifestations**

Clinical manifestations of 2019-nCoV infection have similarities with SARS-CoV where the most common symptoms include fever, dry cough, dyspnoea, chest pain, fatigue and myalgia [Huang C, et al.2020]. Less common symptoms include headache, dizziness, abdominal pain, diarrhoea, nausea, and vomiting [Huang C, et al.2020]. Based on the report of the ﬁrst 425 conﬁrmed cases in Wuhan, the common symptoms include fever, dry cough, myalgia and fatigue with less common are sputum production, headache, haemoptysis, abdominal pain, and diarrhoea. Approximately 75% patients had bilateral pneu- monia. Different from SARS-CoV and MERS-CoV infections, however, is that very few COVID-19 patients show prominent upper respiratory tract signs and symptoms such as rhinorrhoea, sneezing, or sore throat, suggesting that the virus might have greater preference for infecting the lower respiratory tract [Huang C, et al.2020]. Pregnant and non-pregnant women have similar characteristics. The common clinical presentation of 2019-nCoV infection are presented in Table 1.

Severe complications such as hypoxaemia, acute ARDS, arry- thmia, shock, acute cardiac injury, and acute kidney injury have been reported among COVID-19 patients [Huang C, et al.2020]. A study among 99 patients found that approximately 17% patients developed ARDS and, among them, 11% died of multiple organ failure. The median duration from ﬁrst symptoms to ARDS was 8 days .

2.1.5 Diagnosis

Efforts to control spread of COVID-19, institute quarantine and isolation measures, and appropriately clinically manage patients all require useful screening and diagnostic tools. While SARS-CoV- 2 is spreading, other respiratory infections may be more common in a local community. The WHO has released a guideline on case surveillance of COVID-19 on January 31, 2020. For a person who meets certain criteria, WHO recommends to ﬁrst screen for more common causes of respiratory illness given the season and location. If a negative result is found, the sample should be sent to referral laboratory for SARS-CoV-2 detection.

Case deﬁnitions can vary by country and will evolve over time as the epidemiological circumstances change in a given location. In China, a conﬁrmed case from January 15, 2020 required an epidemiological linkage to Wuhan within 2 weeks and clinical features such as fever, pneumonia, and low white blood cell count. On January 18, 2020 the epidemiological criterion was expanded to include con- tact with anyone who had been in Wuhan in the past 2 weeks [50]. Later, the case deﬁnitions removed the epidemiological linkage.

The WHO has put forward case deﬁnitions [23]. Suspected cases of COVID-19 are persons (a) with severe acute respiratory infections (history of fever and cough requiring admission to hospital) and with no other aetiology that fully explains the clinical presentation and a history of travel to or residence in China during the 14 days prior to symptom onset; or (b) a patient with any acute respiratory illness and at least one of the following during the 14 days prior to symptom onset: contact with a conﬁrmed or probable case of SARS-CoV-2 infection or worked in or attended a health care facility where patients with conﬁrmed or probable SARS-CoV-2 acute respiratory disease patients were being treated. Probable cases are those for whom testing for SARS-CoV-2 is inconclusive or who test positive using a pan-coronavirus assay and without laboratory evidence of other respiratory pathogens. A conﬁrmed case is one with a laboratory conﬁrmation of SARS-CoV-2 infection, irrespective of clinical signs and symptoms.

For patients who meet diagnostic criteria for SARS-CoV-2 testing, the CDC recommends collection of specimens from the upper respiratory tract (nasopharyngeal and oropharyngeal swab) and, if possible, the lower respiratory tract (sputum, tracheal aspirate, or bronchoalveolar lavage). In each country, the tests are per- formed by laboratories designated by the government.

**2.1.8 Treatments**

Similar to MERS-CoV and SARS-CoV, there is still no speciﬁc antiviral treatment for COVID-19. Isolation and supportive care including oxygen therapy, ﬂuid management, and antibiotics treatment for secondary bacterial infections is recommended. Some COVID-19 patients progressed rapidly to ARDS and septic shock, which was eventually followed by multiple organ failure [Huang C, et al.2020]. Therefore, the effort on initial management of COVID-19 must be addressed to the early recognition of the suspect and contain the disease spread by immediate isolation and infection control measures .

Currently, no vaccination is available, but even if one was avail- able, uptake might be suboptimal. A study of intention to vaccinate during the H1N1 pandemic in the United States was around 50% at the start of the pandemic in May 2009 but had decreased to 16% by January 2010.

Neither is a treatment available. Therefore, the management of the disease has been mostly supportive referring to the disease severity which has been introduced by WHO. If sepsis is identi- ﬁed, empiric antibiotic should be administered based on clinical diagnosis and local epidemiology and susceptibility information. Routine glucocorticoids administration are not recommended to use unless there are another indication. Clinical evidence also does not support corticosteroid treatment. Use of intravenous immunoglobulin might help for severely ill patients .

Drugs are being evaluated in line with past investigations into therapeutic treatments for SARS and MERS. Overall, there is not robust evidence that these antivirals can signiﬁcantly improve clinical outcomes A. Antiviral drugs such as oseltamivir combined with empirical antibiotic treatment have also been used to treat COVID- 19 patients [Huang C, et al.2020]. Remdesivir which was developed for Ebola virus, has been used to treat imported COVID-19 cases in US [Holshue ML, 2020]. A brief report of treatment combination of Lopinavir/Ritonavir, Arbidol, and Shufeng Jiedu Capsule (SFJDC), a traditional Chinese medicine, showed a clinical beneﬁt to three of four COVID-19 patients [Holshue ML, 2020]. There is an ongoing clinical trial evaluating the safety and efﬁcacy of lopinavir-ritonavir and interferon-α 2b in patients with COVID- 19 [Huang C, et al.2020]. Ramsedivir, a broad spectrum antivirus has demonstrated in vitro and in vivo efﬁcacy against SARS-CoV-2 and has also initiated its clinical trial. In addition, other potential drugs from existing antiviral agent have also been proposed.

**2.1.9 Control and prevention strategies**

COVID-19 is clearly a serious disease of international concern. By some estimates it has a higher reproductive number than SARS, and more people have been reported to have been infected or died from it than SARS. Similar to SARS-CoV and MERS-CoV, disrupting the chain of transmission is considered key to stopping the spread of disease. Different strategies should be implemented in health care settings and at the local and global levels.

To prevent further spread of the virus, civil societies, and government agencies-initiated awareness programs for promotions of several preventive measures. Body temperature screening was conducted at airports and those returning from countries with a high number of confirmed cases of COVID-19 were advised to self-isolate. The Nigeria Center for Disease Control in collaboration with State governments also initiated tracing and tracking of victims and their contacts. On 18th March 2020, the Nigerian government prohibited all gatherings of fifty people or above for four weeks and ordered a stay-at-home (Ewodage, 2020). Similarly, the Nigerian government, on 30th March 2020 introduced various containment plan such as the closing of the national borders and airspace, schools, worship centers, and other public places, canceling of public gathering events, the complete lockdown of the Federal Capital Territory, Lagos and Ogun states for fourteen days initially (Radio Nigeria, 2020).Body temperature screening was conducted at airports and those returning from countries with a high number of confirmed cases of COVID-19 were advised to self-isolate.

Some stipulated COVID 19 preventive measures are listed as follows:

1. Social distance
2. Self-isolation
3. Washing of hands with detergent or use of alcohol based sanitizers 4. Putting on a face mask in public places

**2.2 Covid-19 Safety Compliance in Tertiary Institutions**

Compliance with COVID-19 preventive measure is a double edge sword cutting through the fabric of the everyday life of the Nigerian citizen and the university environment to be precise. It has both negative and positive implications on the cumulative health of the university society. Ranging from mental health related issues, physiological effects to effects on our ecosystem.To prevent further spread of the virus, civil societies, and government agencies-initiated awareness programs for promotions of several preventive measures.Colleges an institution made ensured that they stick to the preventive measures at stipulated by NCDC which they have strategically ensure that student comply and strictly adhere to. These include the following:

Social distancing otherwise known as physical distancing works if the objective is to prevent the spread of the virus causing the coronavirus disease. Social distancing, also known as “physical distancing,” entails keeping space of at least 6 feet between yourself and other people outside of your home.

The principles of social distancing or physical distancing are;

1. Keep at least 6 feet (about 2 arms’ length) from other people.
2. stay away from crowded events or places and avoid mass gatherings.

Among all COVID-19 preventive measures, maintaining social distancing among ourselves is among the best tools we have to avoid being exposed to this virus and curbing the spread of the virus in our community. (CDC, 2020).These safety guidlines was complied to by universities by ensuring they reduce class size and adjusting to seating position during lectures.

**Washing of Hands with Detergents or Sanitizing Hands Using Alcohol-Based Hand Sanitizers:**

Another covid-19 safety guidelines that has been adhered to strictly by tertiary institutions after resumption was the hand washing culture. In university of ilorin, handwashing outlets was fixed at the entrance of the school gate and each lecture hall(Adeogun 2021) With many viruses, including corona virus, the virus is a self assembled nano-particle in which the most vulnerable structure is the outer lipid bilayer. Detergents dissolve the lipid membrane of microorganisms; virus inclusive. The virus's outer layer breaks apart thus inactivating it. Detergents are also alkaline substances that dissolve particles like dirt, bacteria, and viruses. These dissolved articles are washed off from the surface of the skin when the detergent is rinsed off while washing our hands., The alkalinity of the detergent (pH approximately 9-10), compared with the normal alkalinity of outer skin witha pH of 5.5 or lower, also can affect the skin barrier as well as the resident skin micro flora. In a study, it was found that an acid skin pH (4-4.5) keeps the resident bacterial flora attached to the skin, whereas an alkaline pH (8-9) promotes the dispersal from the skin in assessments of the volar forearm. (Lambers, Piessens, Bloem, Pronk, & Finkel, 2006). Considering the effectiveness of hand washing against the COVID-19 pandemic, the frequency of hand washing has been shown to have a limiting impact on influenza-like illness. A study of 2,082 observations, participants who spent only 5-10 seconds washing their hands with soap were more likely to contract influenza-like illness (odds ratio, 1.37; 95% confidence interval, 1.08-1.75), compared to participants who washed their hands for 15 seconds or more. Hand washing with detergents was found to be an independent protective factor against frequent influenza-like illnesses like coronavirus disease (Abdulrahman, et al., 2019). Alcohol throughout history has been used as a disinfectant, it is recommended for disinfecting the hands since the late 1800s. Some alcohol-based hand sanitizers contain isopropanol, ethanol, N-propanol, or a combination of both. The antimicrobial ability of alcohol can be attributed to its ability to breakdown and coagulate proteins, thus lysing microorganism’s cell membranes and terminating their cellular metabolism (Toney-Butler & Carver, 2020) (McDonnell & Russell, 1999). Alcohol solutions within the range of about 60% to 95% alcohol prove to be more effective against the viruses. Notably, alcohol with concentrations lower than 60 percent and higher than 90 percent appear to be less potent because of the presence of less water in the later, and proteins are not broken down easily in the absence of water (Wesley & Talakoub, 2020).

**Putting on Face Mask in Public Places and within the school environment:**

Putting on face mask is another safety guideline adhered to by Nigerai institution. This is practically prevalent seen when security personnels are mounted at the entrance of the school gate and lecture halls; ensuring that no student enters the school environment without putting on a face mask (Arit 2021). The report from a multidisciplinary group convened by the Royal Society called Delve (Data Evaluation and Learning for Viral Epidemics) has considered the evidence and concluded in favor of public use of face masks, including homemade cloth coverings to tackle Covid-19. Analysis suggests that this could reduce onward transmission by persons who have the disease but are not showing any symptoms or pre-symptomatic persons. if widely used in situations where physical distancing is not possible or predictable, it is worth noting that the use of face masks, including homemade cloth masks, can to a great extent contribute to reduction of the viral transmission (Davis, 2020).

**2.3 MODEL FRAMEWORK**

The model used for this study is the Health Belief Model.

The Health Belief Model (HBM) was developed to help understand why people did or did not use preventive services offered by public health departments in the 1950’s, and has evolved to address newer concerns in prevention and detection (e.g., mammography screening, influenza vaccines) as well as lifestyle behaviors such as sexual risk behaviors and injury prevention. The HBM theorizes that people’s beliefs about whether or not they are at risk for a disease or health problem, and their perceptions of the benefits of taking action to avoid it, influence their readiness to take action. Core constructs of the HBM: • Perceived susceptibility and perceived severity • Perceived benefits and perceived barriers • Cues to action • Self-efficacy (added more recently) The HBM has been most-often applied for health concerns that are prevention-related and asymptomatic, such as early cancer detection and hypertension screening – where beliefs are as important or more important than overt symptoms. The HBM is also clearly relevant to interventions to reduce risk factors for cardiovascular disease.



Source: Becker, M. H. & Maiman, L. A., (1975). Socio-behavioral determinants of compliance with health and medical care recommendations. Medical Care, 134(1), 10-24.

**2.4 Summary of Literature**

The novel Corona Virus has been described by WHO as an infectious disease. The above reviewed literature explained its classification origin, clinical manifestations,symptoms and preventive strategies.To prevent further spread of the virus, civil societies, and government agencies-initiated awareness programs for promotions of several preventive measures.However these guidelines is necessary to be practised across all sectors of Nigeria. Which one of it was Tertiary institutions. However the study revealed that universities have done their best to a large extent by both staffs and student in their compliance level to curb the spread of the the novel Corona-Virus.

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**3.1 AREA OF STUDY**

University of Ilorin, also known as Unilorin, is a federal government-owned university in Ilorin, Kwara State, Nigeria.University of Ilorin, is located in Ilorin, the capital city of Kwara State on latitude 8.4799° N and longitude 4.5418° E, covering an approximate land mass of 5,000 hectare. University of Ilorin is located at about 500km apart from Nigeria national capital (Abuja) and about 300km away from the Nation’s economic capital (Lagos). The University possess a staff strength of about 4,474, with over 48,000 undergraduate and over 5,000 postgraduate **students** in 90 academic programme.

**3.2 RESEARCH DESIGN**

Research designs are perceived to be an overall strategy adopted by the researcher whereby different components of the study are integrated in a logical manner to effectively address a research problem. In this study, the researcher employed the survey research design. This is due to the nature of the study whereby the opinion and views of people are sampled.

**3.3 POPULATION OF THE STUDY**

According to Udoyen (2019), a study population is a group of elements or individuals as the case may be, who share similar characteristics. These similar features can include location, gender, age, sex or specific interest. The emphasis on study population is that it constitute of individuals or elements that are homogeneous in description.

This study was carried out to evaluate the Level of Covid-19 Safety Compliance by Tertiary Institutions using University of Ilorin in Kwara State as a case study. The lecturers and student of the university form the population of the study. Four(4) selected department was used for the study. The selected departments are

* Faculty of Social Science
* Faculty of Education
* Faculty of Arts
* Faculty of Clinical Science

Statistics from the school the register showed that the total population is 52,474.

**3.4 SAMPLE SIZE DETERMINATION**

A study sample is simply a systematic selected part of a population that infers its result on the population. In essence, it is that part of a whole that represents the whole and its members share characteristics in like similitude (Udoyen, 2019). In this study, the researcher adopted the simple random sampling (srs.) method to determine the sample size.

**3.5 SAMPLE SIZE SELECTION TECHNIQUE AND PROCEDURE**

The Taro Yamane (1967:886) provides a simplified formula to calculate sample sizes.

**Assumption**

95% confidence level

 P = .5



n=52474/1+52474 (0.05)2

n= 52474/1+52474 (0.0025)

n= 52474/1+131.185

**n=396**

Therefore, for this study, the sample size is 396

**3.6 SOURCES OF DATA COLLECTION**

The research instrument used in this study is the questionnaire. A 10 minutes survey containing 5 questions were administered to the enrolled participants. The questionnaire was divided into two sections, the first section inquired about the responses demographic or personal data while the second sections were in line with the study objectives, aimed at providing answers to the research questions.

**3.7 METHOD OF DATA ANALYSIS**

The responses were analyzed using the frequency tables, which provided answers to the research questions.

**3.8 VALIDITY AND RELIABILITY OF THE STUDY**

The reliability and validity of the research instrument was determined. The Pearson Correlation Coefficient was used to determine the reliability of the instrument. A co-efficient value of 0.68 indicated that the research instrument was relatively reliable. According to (Taber, 2017) the range of a reasonable reliability is between 0.67 and 0.87.

3.9 **ETHICAL CONSIDERATION**

The study was approved by the Project Committee of the Department. Informed consent was obtained from all study participants before they were enrolled in the study. Permission was sought from the relevant authorities to carry out the study. Date to visit the place of study for questionnaire distribution was put in place in advance.

**CHAPTER FOUR**

**DATA PRESENTATION AND ANALYSIS**

**4.0 Introduction**

This chapter presents and analyze data collated from the field survey. 396 questionnaires was issued to the respondents in the four department of the University. However, the total of 340 questionnaires were retrieved, validated and analyzed for the study as some of the respondent did not return or completely answer the research questions.

**4.1 DATA PRESENTATION**

**Table 4.1: Demographic data of respondents**

|  |  |  |
| --- | --- | --- |
| **Demographic information** | **Frequency** | **percent** |
| GenderMale |  |  |
| 140 | 41% |
| Female | 200 | 59% |
| Religion |  |  |
| Christian | 120 | 35% |
| Muslim | 220 | 75% |
| Age |  |  |
| 16-26 | 200 | 58% |
| 27-37 | 80 | 24% |
| 38-48 | 40 | 12% |
| 49+ | 20 | 6% |

**Source: Field Survey, 2021**

From the above table, 41% of the respondent are male, 59% of the respondents are female. 35%of the respondent are Christian while 75% of the respondent are Muslim. 58% of the respondents are aged 16-26 years, 24% of the respondents are aged 27-37 years. 12% of the respondent are aged 38-48 years. 6% of the respondent are aged 49years and above.

**4.2 ANSWERING RESEARCH QUESTIONS**

QUESTION 1: Does students make adequate use of face mask, sanitizers and observe social distancing?

**Table 4.2:** Respondent on question 1

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| Yes  | 300 | 88 |
| No | 00 | 00 |
| undecided | 40 | 12 |
| **Total** | **340** | **100** |

**Field Survey, 2021**

From the response derived in the table above, 88% of the respondent make adequate use of face mask, sanitizers and observe social distancing. There were no record for no and undecided.

QUESTION 2. At what extent do students observe those prevention measures?

**Table 4.3:** Respondent on question 2

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| Very high extent | 300 | 88 |
| High extent | 18 | 5% |
| Low extent | 00 | 00 |
| uncertain | 22 | 7% |
| **Total** | **340** | **100** |

**Field Survey, 2021**

From the response derived in the table above, 88% of the respondent said to a very high extent. 5% of the respondent said high extent. 7% of the respondent were uncertain. There was no record for low extent.

QUESTION 3. Does the school lecturers adhere to the execution and practice of these covid-19 safety prevention measures?

**Table 4.4:** Respondent on question 3

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| Very high extent | 18 | 5% |
| High extent | 300 | 88% |
| Low extent | 00 | 00 |
| uncertain | 22 | 7% |
| **Total** | **340** | **100** |

**Field Survey, 2021**

From the response derived in the table above, 5% of the respondent said to a very high extent. 88% of the respondent said high extent. 7% of the respondent were uncertain. There was no record for low extent.

QUESTION 4. Do the school management and law enforcers ensure and contribute to the execution and application of the safety measures by students?

**Table 4.5:** Respondent on question 4

|  |  |  |
| --- | --- | --- |
| **Options** | **Frequency** | **Percentage** |
| Very high extent | 20 | 6% |
| High extent | 280 | 82% |
| Low extent | 18 | 5% |
| uncertain | 22 | 7% |
| **Total** | **340** | **100** |

**Field Survey, 2021**

From the response derived in the table above, 6% of the respondent said to a very high extent. 82% of the respondent said high extent. 5% of the respondent said low extent.7% of the respondent were uncertain.

**CHAPTER FIVE**

**CONCLUSION AND RECOMMENDATION**

5.0 **Introduction**

This chapter summarizes the findings in evaluation of the level of covid-19 safety compliance in tertiary institution using Unilorin Kwara State as a case study.

5.1 **Summary of the Study**

The focus of this study is to evaluate the Level of Covid-19 Safety Compliance by Tertiary Institutions.Other focus relates to an investigation about how students adequately make use of face mask, sanitizers and observe social distancing.it examined the extent to which students observe those prevention measures.it revealed if school lecturers adhere to the execution and practice of these covid-19 safety prevention measures.finally it investigated if school management and law enforcers ensure and contribute to the execution and application of the safety measures by students. Simple random sampling was used in the study as staffs and students of University of Ilorin form the population of the study as four selected department were the respondents to the issued questionnaire. Data was presented and analyzed using frequency and tables.

**5.2 Conclusion**

Nigeria's emergence of COVID-19 affected the university's environmental health and its society to a significant degree. Apart from the direct effects from the respiratory disease, our respective preventive measures have affected the environment and have forced society to change the way we work in public and private households. The problem of myths and untested information about the existence of the disease and different forms of prevention are also on the agenda. It should be noted that coronavirus is a disease that affects the elderly, the youth, the rich as well as people. It is not restricted to any ethnic group, race, or tribe. It’s a global pandemic and requires the collective effort of every citizen to fully combat the spread of the disease. While significant progress has been made by regulative bodies through enforcing the preventive measures, the recommended preventive measures also have their respective and a cumulative an effect on the university’s environmental health.

The use of physical barriers and social distance which proves to be the first line of defense against the coronavirus pandemic. Other guidelines include regular handwashing with water and use of alcohol based sanitizers though aides in the significantly curtailing the spread of the virus.However there is a crucial need to ensure high level of compliance of social distance and isolation on the students body and staff of the university of ilorin Kwara State.

1. **3 Recommendation**

The following recommendations are made from the findings of this study

* Provision should be made at the entrance of public buildings in the university environment for washing of hands using ordinary bar soap.
* Members of the university environment should be sensitized towards the use of face masks.
* Staff and students should be educated on the need to seek the services of an expert when they feel lonely or unfairly isolated.
* The members of the university environment should be educated on the effects of the abuse of the COVID-19 preventive measures
* Taskforce teams should be set up to enforce adherence to the COVID-19 pandemic preventive measures.
* The university society should be educated on the COVID19; the myth and the facts.
* Staffs and Student of University of Ilorin should ensure continuous compliance and strict adherence to Covid-19 safety measures.

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**QUESTIONNAIRE**

**PLEASE TICK [√] YOUR MOST PREFERRED CHOICE AND AVOID TICKING TWICE ON A QUESTION**

**SECTION A**

**PERSONAL INFORMATION**

**Gender**

Male [ ] Female [ ]

**Age**

16-26 [ ]

27-37[ ]

38-48 [ ]

49+[ ]

SECTION B

QUESTION 1: Does students make adequate use of face mask, sanitizers and observe social distancing?

**Table 4.2:** Respondent on question 1

|  |  |
| --- | --- |
| **Options** | **Please tick** |
| Yes  |  |
| No |  |
| undecided |  |

QUESTION 2. At what extent do students observe those prevention measures?

|  |  |
| --- | --- |
| **Options** | **Please tick** |
| Very high extent |  |
| High extent |  |
| Low extent |  |
| uncertain |  |

QUESTION 3. Does the school lecturers adhere to the execution and practice of these covid-19 safety prevention measures?

|  |  |
| --- | --- |
| **Options** | **Please tick** |
| Very high extent |  |
| High extent |  |
| Low extent |  |
| uncertain |  |

QUESTION 4. Do the school management and law enforcers ensure and contribute to the execution and application of the safety measures by students?

|  |  |
| --- | --- |
| **Options** | **Please tick** |
| Very high extent |  |
| High extent |  |
| Low extent |  |
| uncertain |  |