American Academic Scientific Research Journal for Engineering, Technology, and Sciences
ISSN (Print) 2313-4410, ISSN (Online) 2313-4402
http://asrjetsjournal.org/

Assessment of the Relationship between Design and Performance in Infectious Diseases Isolation Facility of Nigerian Hospitals

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Abstract

The high and continuous spread of infectious disease such as Corona virus (COVID-19) has affected public health globally. The preparedness of hospitals in the face of this situation is a problem in the Nigerian context, hospitals were faced with the problems of lack of viral containment spaces to isolate suspected cases and treat the infected patients. This research aims at assessing the relationship between design and performance in infectious disease isolation facility of Nigerian hospitals with a view to a framework for setting-up of infectious disease isolation facility in Nigerian hospitals. The research objectives are as follows: (1) To determine the relationship between design and performance of infectious diseases isolation centres in Nigerian hospitals, (2) To determine the perception of medical practitioners in the performance of infectious diseases isolation centre of Nigerian hospitals and (3) To develop a framework or a model for the setting-up of IDIC in Nigerian hospitals. The above objectives were achieved through the employment of quantitative research design approach. This method uses survey questionnaires, about 35 were distributed for the whole sample population, reliability test was conducted, the hypothesis was tested and found significant at $P < 0.05$ confidence interval. A correlation analysis was conducted. Simple statistical analysis was conducted to determine the mean and frequencies of the analysed data The result of quantitative analysis were presented in frequency tables and pie charts from SPSS v21 analysis output. The result shows that there is a positive relationship between design and performance i.e. the more accurate and satisfying the design is, the higher the result or outcome and performance from the end-users.

Keywords: Assessment; Relationship; Design; Performance; Infectious Diseases; Isolation; Facility; Nigerian; Hospitals

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1. Introduction

1.1 Background

The high and continuous spread of infectious diseases such as coronavirus disease has affected public health globally, the entire world came to a standstill with the outbreak of this unprecedented pandemic tagged COVID-19 [1]. This pandemic affected not only human health but also the operational health of businesses and organisations [1]. It is being addressed temporarily at various local and global scales through construction and erection of temporary structures and tents; conversion of public spaces such as hotels, stadia and Office blocks into temporary isolation camps; social distancing measures; as well as compliance to WHO guidelines [2]. SARS-COV-2, The virus that causes COVID-19, is primarily transmitted through droplets and contact routes [1]. However, certain procedures performed in health care settings produce aerosols that may render the virus airborne and capable of spreading over much longer distances. These include nebulizer treatments, suctioning of respiratory secretions, and endotracheal intubation [2].

The world today is witnessing an alarming spread of infectious diseases and this has sparked an extensive research in the field of infectious disease control techniques [3]. This led to the development in the field of infection suppression in order to reduce the spread of diseases. A logical solution to the problem was isolation of patients. Most recent global outbreaks like COVID-19, Ebola, Lassa and Yellow fever have shown that, even though we have advanced technologically, a lot need to be done in the field of containment suppression [4].

This is exemplified by the current COVID-19 pandemic where the appearance of a seemingly limited cluster of cases of pneumonia linked to a sea food market in Wuhan, China Commission (2019) has become one of the worst pandemics in human history with a staggering number of more than 1.4 million infections in 177 countries and more than 85 000 deaths globally as of 9 April 2020 [5]. It is worth noting that only a few of the current 177 countries affected seem to have passed the peak of the epidemic while the majority of these countries are just beginning to see a surge in cases.

As at July 30, 2021, the number of confirmed COVID-19 cases in Bauchi state is 1,551 with 17 deaths, and in Nigeria, there are 172,821 confirmed cases with about 2,167 deaths [6]. Total confirmed cases globally, amounted to 199,466,211 and about 4,244,541 deaths [1]. As the COVID-19 pandemic continues to move at record speed, the speed and volume of the scientific knowledge on SARS-CoV-2 and COVID-19 are correspondingly fast and unprecedented. As of 9th April, 2020, the WHO regularly updated bibliographic database of publications on COVID-19 astoundingly including more than 5300 publications Steffens (2020) of which about 1800 articles appeared in PubMed indexed journals [7].

1.2Statement of the Problem

The rapid spread of COVID-19 disease has generated a global public health problem and preparedness of hospitals in the face of this situation is a problem in Nigerian context. Currently in Nigeria, public and private hospitals were faced with the problems of lack of viral containment spaces to isolate suspected cases and treat the infected patients as well.

1.3 AIM AND OBJECTIVES

This research aims at assessing the relationship between design and performance in infectious disease isolation facility of Nigerian hospitals with a view to a framework for setting-up of infectious disease isolation facility in Nigerian hospitals. The research objectives are as follows: (1) To determine the relationship between design and performance of infectious diseases isolation centres in Nigerian hospitals, (2) To determine the perception of medical practitioners in the performance of infectious diseases isolation centre of Nigerian hospitals and (3) To develop a framework or a model for the setting-up of IDIC in Nigerian hospitals.

2. Literature Review

2.1 Introduction

Infection control is emerging as a biggest challenge to health services around the world. All hospitals knowingly or unknowingly admit patients with communicable diseases [2]. In recent years, emerging infectious diseases represent an ongoing threat to the health and livelihoods of people everywhere. Over the last few decades, there have been several emerging infectious diseases (EIDs) that have taken the global community by surprise and drawn new attention to EIDs, including HIV, SARS, H1N1, and Ebola.

2.2 Isolation Room

A High-level Isolation Room (HIR) has been defined as a hospital room provided with negative pressure, with at least six air changes per hour, and an anteroom. We adopted this definition because it accords with international guidelines, and we believed that these features are crucial for effective patient isolation and may represent the minimum requirements for such facilities [8]. Negative pressure is essential for the isolation of patients affected by confirmed or suspected diseases with obligate, preferential or opportunistic airborne transmission (XDR-TB, SARS, human-adapted highly pathogenic strains of influenza virus, smallpox). The presence of an anteroom increases the efficiency of the system, providing an obstacle against pressure loss and reducing the risk of movement of contaminated air into common areas; moreover, the anteroom provides a controlled environment in which donning and removal of personal protective equipment and other infection control procedures can be done safely [8].

2.3 Functions of isolation room

i. To separate patients who are likely to be infectious to other persons.
ii. To provide an environment that will allow reduction of the concentration of airborne particles through various engineering methods.
iii. To prevent escape of airborne particles from such rooms into the corridor and other areas of the facility using directional airflow.
iv. To protect patients who are immune-compromised from potential harmful pathogens

2.4 Types of Isolation Rooms

There are two types of isolation rooms: (1) Airborne infection isolation (AII) rooms and (2) Protective environment (PE) rooms. The airborne infection isolation (AII)/Negative pressure isolation refers to the isolation of patients infected with organisms spread via airborne droplet nuclei <5 μm in diameter. These include patients suffering from measles, chickenpox and tuberculosis [9]. Protective environment (PE)/Positive pressure isolation is a specialized area for patients who have under-gone allogeneic hematopoietic stem cell transplant (HSCT) [10].

3. Methodology

3.1 Research Design and the Study Area

This refers to the way a researcher applies a logical structure to his research project. The function of this step in the research process is to make sure that the data gathered are sufficient and appropriate for answering the research questions completely and unambiguously [11]. For the purpose of this study, quantitative design approach shall be employed. The study was conducted at the Infectious Diseases Isolation Facility (IDIF) in Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH), Bauchi, Bauchi state.

3.2 Descriptive Survey Research Approach

A cross-sectional descriptive survey design was employed. A stratified probability sampling method was applied to the population of the isolation facility in order to select the sample among Doctors, Nurses, Pharmacist and laboratory scientist. This selection exclude the admin, records and finance staff of the department, only those staff that serve the patients were involved in the study.

3.3 Hypothesis

The hypothesis was formulated after a careful review of the current state of the art in relevant field.

H1 There **IS** a relationship between design and performance in infectious diseases isolation centres of Nigerian hospitals.

H2 There is **NO** relationship between design and performance in infectious diseases isolation centres of Nigerian hospitals.

In testing hypothesis for this study, the P-value was assumed at $P< 0.05$ confidence interval.

3.4 Population of the Study Area

Due to the limited number of personnel that works in the isolation centres, to reduce the risk of infection, the total population of the study area would be used as the sample of the study i.e. 100% of the Doctors, Nurses, Laboratory scientist and Pharmacist. This is to ensure credibility and reliability of the data set. There are fifty

(50) staff in the isolation camp, but the population was sampled. This would be discussed under sample size.

3.5 Sample Size and Sample Frame

The sample size was determined using the Krejcie and Morgan table. This table was used to determine the sample size of the population of this study, according to Krejcie and Morgan in [12], for a population of fifty (50), the sample size shall be forty four (44). Therefore since population (*N*) is 50 then sample (*S*) would be 44, i.e. *N* (50) ~*S* (44).

The sample frame further determines those that are not relevant to the study but exist in the sample size. In this case, there are two (2) admin staff, two (2) community health workers, and two (2) ward attendants that were screened, bringing down the number to thirty eight (38). Therefore the sample frame would be: 44-6=38. the final number of sample that would participate is thirty eight (38).

3.6 Data Collection Instrument and Reliability

A survey questionnaire was used with closed ended question; a likert scale rating system was adopted to collect the responses of the sample elements. There are three sections in the questionnaire, A, B and C. Section A contains the student's information, section B was intended to determine the respondents demographic data and section C constitute the questions, which were further divided into two. Part A was intended to collect the responses of the participants to achieve research objective number one (1). Part B was intended to collect the responses of the participants to achieve research objective number two (2). There are twenty five items on the scale. Pallant in [12] recommends that the number of items on a scale should not be less than ten, this is to increase the reliability of the scale and to obtain cronbach's alpha coefficient of not less than 0.5. A cronbach alpha coefficient of 0.7 would be an excellent one

Table 1: Distribution of questionnaires.

Questionnaires distributed	**Questionnaires returned**	**% of Questionnaires returned**	**% of Questionnaires not returned**
38	35	92	8

Source: field survey, 2021.

3.7 Checking the reliability of the scale

The analysis table below shows that the scale is reliable, and there are twenty five items on the scale (25). The cronbach alpha co-efficient was determined at 0.653 approximately equal to 0.7 as recommended by [13]. This shows that the scale is excellently reliable.

Table 2: Reliability Statistics.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.653	0.587	25

Source: Result of SPSS analysis

4. Data Analysis and Result

4.1 Result of Analysis from Correlation

For both Pearson and Spearman results, SPSS provides you with a table giving the correlation coefficients between each pair of variables listed, the significance level and the number of cases. The results for Pearson correlation are shown in the section headed **Correlation**. If you requested Spearman rho, these results are shown in the section labeled **Nonparametric Correlations**. The way in which you interpret the output from the parametric and non-parametric approaches is the same.

4.2 Interpretation of Result from Correlation

4.2.1 Checking the Number of Cases

The first thing to look at in the table labelled Correlations is the N (number of cases). There are no missing values. In this study there are 15 cases that had scores on both of the scales used in this analysis. The case processing summary table below shows the number of items is correct. There are fifteen (15) cases to be tested this research.

Table 1: Case Processing Summary.

	N	%
VALID CASES	15	100
EXCLUDED	0	0
TOTAL	15	100

A list wise deletion based on all variables in the procedure, Spss result output, 2021

4.2.2 Determining the Direction of the Relationship between Variables

The second thing to consider is the direction of the relationship between the variables. Is there a negative sign in front of the correlation coefficient value? If there is, this means there is a negative correlation between the two variables (i.e. high output on one side are associated with low output on the other). The interpretation of this

depends on the way the variables are rated. Always check with the questionnaire, and remember to take into account that for many scales some items are negatively worded. What do high values really mean? This is one of the major areas of confusion for researchers, so make sure you get this clear in your mind before you interpret the correlation output.

In this study, the Pearson correlation coefficient (–.587) and Spearman rho value (–.602) are negative, indicating a negative correlation between design and performance. The *more* constraints the design has, the *less* performance you get from staff and low recovery process from the patients.

4.2.3 Determining the Strength of the Relationship between Variables

The third thing to consider in the output is the size of the value of the correlation coefficient. This can range from –1.00 to 1.00. This value will indicate the strength of the relationship between your two variables. A correlation of 0 indicates no relationship at all, a correlation of 1.0 indicates a perfect positive correlation, and a value of –1.0 indicates a perfect negative correlation. How do you interpret values between 0 and 1? however, Cohen (1988, pp. 79–81) suggests the following guidelines:

Small r=.10 to .29, Medium r=.30 to .49, Large r=.50 to 1.0

These guidelines apply whether or not there is a negative sign out the front of your r value. Remember, the negative sign refers only to the direction of the relationship, not the strength. The *strength* of correlation of r=.5 and r=–.5 is the same. It is only in a different *direction*. In this study, there is a large correlation between the two variables, suggesting quite a strong relationship between design and performance (–.587 and –.602).

4.2.4 Assessing the significant level

The next thing to consider is the significance level (listed as **Sig. 2 tailed**). The level of statistical significance does not indicate how strongly the two variables are associated (this is given by r or rho), but instead it indicates how much confidence we should have in the results obtained. The significance of r or rho is strongly influenced by the size of the sample. In a small sample (e.g. n=15), you may have moderate correlations that do not reach statistical significance at the traditional p<.05 level. In large samples (N=100+), however, very small correlations (e.g. r=.2) may reach statistical significance. While there is need to report statistical significance, the strength of the relationship and the amount of shared variance

4.2.5 Summary of Result from Correlation

The results of the correlation, using Pearson correlation shall be presented in this research study as follows. The relationship between design (as measured by the RD) and performance (as measured by the P) was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a strong, negative correlation between the two variables, $r = –.587$, $n = 15$, $p < .0005$, with low levels of Design and with lower levels of performance. In this study, the Pearson correlation coefficient (–.587) and Spearman rho value (–.602)

are negative, indicating a negative correlation between design and performance. The *more* constraints the design has, the *less* performance you get from staff and low recovery process from the patients.

4.2.6 Result of Analysis from Central Tendency

Table 2: respondents' sex.

	Frequency	Percent	Valid Percent	Cumulative Percent
MALE	12	80.0	80.0	80.0
FEMALE	3	20.0	20.0	100.0
Total	15	100.0	100.0	

Source: SPSS v21 analysis output

Above show the gender of the participants. Men account for about 80% of the participants. Only 20% of Women participated.

Table 3: respondents' age.

Age	Frequency	Percent	Valid Percent	Cumulative Percent
20-25	1	6.7	6.7	6.7
30-35	6	40.0	40.0	46.7
40-45	6	40.0	40.0	86.7
50-55	2	13.3	13.3	100.0
Total	15	100.0	100.0	

Source: SPSS v21 analysis output

40% of the participants are between the age of 30-35 years, and that another 40% are between the age of 40-45years. This shows that most of the active and front line managers are of the age of 30-45 years. 13.3% are between the age of 50-55years, this group are considered to be at the age of elderly people and therefore they are offer full and effective information to the researcher.

Table 4: respondents' profession.

profession	Frequency	Percent	Valid Percent	Cumulative Percent
DOCTOR	8	53.3	53.3	53.3
NURSE	6	40.0	40.0	93.3
LABSCIENTIST	1	6.7	6.7	100.0
Total	15	100.0	100.0	

Source: SPSS v21 analysis output

One can see that doctors are about 53.3%, nurses' form almost 40% and lab scientist about 6.7%. These data shows that doctors are many among other staff in the isolation centre. Therefore the researcher can acquire adequate data during field study.

Table 5: respondents' years of experience.

	Frequency	Percent	Valid Percent	Cumulative Percent
0-5	2	13.3	13.3	13.3
5-10	3	20.0	20.0	33.3
10=15	5	33.3	33.3	66.7
15-20	2	13.3	13.3	80.0
ABOVE20YRS	3	20.0	20.0	100.0
Total	15	100.0	100.0	

Source: SPSS v21 analysis output

About 20% of the participants have more than 20 years of experience which is going to be an added advantage to the researcher and most at times adequate and proper data or information about a situation would be obtained from them. 13.3% have experience of up to 15-20 years and the majority of the participants (33.3%) have from 10-15 years of experience. These demographic data would be very use full to the researcher. Years of experience are one of key characteristics of a qualitative study.

Table 6: Summary of mean for likert scale of the entire construct of the study.

Item on scale	Mean	Std. Deviation	N	Approximate Mean	Remark (LIKERT SCALE)
PMP1	3.80	.941	15	4	SATISFIED
PMP2	3.60	.910	15	4	HIGH QUALITY
PMP3	3.53	.640	15	4	VERY WELL
PMP4	3.87	.516	15	4	HIGH STANDARD
PMP5	3.80	.561	15	4	VERY RESPONSIVE
PMP6	4.27	.458	15	4	VERY LIKELY
PMP7	1.80	.414	15	2	NO
PMP8	1.13	.352	15	1	YES
PMP9	1.20	.414	15	1	STRONGLY DISAGREE
PMP10	4.07	.961	15	4	STRONGLY AGREE
PMP11	1.60	.507	15	2	DISAGREE

PMP12	4.47	.516	15	5	STRONGLY AGREE
PMP13	4.67	.488	15	5	STRONGLY AGREE
PMP14	4.73	.458	15	5	STRONGLY AGREE
PMP15	4.40	.507	15	4	AGREE
PMP16	2.33	1.952	15	2	STRONGLY AGREE
RDP1	4.27	1.033	15	4	AGREE
RDP2	4.27	.884	15	4	AGREE
RDP3	4.27	.594	15	4	IMPORTANT
RDP4	4.53	.516	15	5	STRONGLY AGREE
RDP5	4.40	.632	15	4	AGREE
RDP6	4.20	.561	15	4	GOOD
RDP7	4.33	.617	15	4	AGREE
RDP8	1.13	.352	15	1	YES
RDP9	4.67	.488	15	5	STRONGLY AGREE

Source: SPSS v21 analysis output

4.3 Discussion of Results

Table 6 above, under presentation of result shows the result of analysis from central tendency, basically mean, variance and standard deviation. The mean and approximate mean of all construct is displayed in the remark column with a likert scale rating. Item one, construct PMP1 seeks to know whether the participants are satisfied with the design requirements and configurations of the isolation facility of ATBU Teaching hospital. The mean of their response (4) shows they are **SATISFIED** with the status core, even though they pointed out that the centre was specifically design for viral hemorrhagic fever diseases. PMP2 construct seeks the respondents to describe the quality of services rendered in the centre. Their response (4) indicates **HIGH QUALITY** services are acquired in the facility, which is premised on the design and configuration of spaces in the facility.

PMP3 construct seeks to know how well does the design and performance meet the intended need? Their responses confirm that the design had meet the intended need **VERY WELL.** PMP4 ask the respondents to rate the standard of architectural design and construction of the facility. Their response (4) rates the design and construction as **HIGH STANDARD.** PMP 5 seeks to know how responsive the participants are in terms of performance or output. The result (4) indicates that the output is **VERY RESPONSIVE.** PMP6 seeks to know how likely would the participants recommend the facility to someone. The respondents (4) would **VERY LIKELY** recommend the centre to others to come for treatment. The PMP7 ask weather high efficiency particulate air conditioners (HEPA) are installed In the facility? Their response (2) indicates that there are **NO** HEPA filter in the facility, which means patient with respiratory diseases cannot be isolated in the facility. PMP

8 seeks to know if patients are separated based on the mode of their diseases? The respondents reported that patients **WERE** isolated according to type of their ailment. PMP9 seeks to know whether the facility can cater for all form of infectious diseases. The respondents **DISAGREE**, and state that only viral hemorrhagic fevers can be treated in the facility. PMP10 shows the respondents **AGREE** that an isolation facility should be zoned into four (4) namely: (i) Triage (ii) Green zone (iii) Yellow zone and (iv) Red zone. PMP11the respondents **DISAGREE** that a negative pressure is not available in the isolation facility. PMP12 the respondents **STRONGLY AGREE** that addition of functions in form of design requirements and functional configurations can upgrade the facility to cater for other form of infectious diseases such as airborne diseases.

PMP13 seeks the opinion of the respondents on whether stakeholders from various relevant discipline be involved in the planning and design of isolation facility, the participants **STRONGLY AGREE** that stakeholders should form part of the planning process. PMP14 seeks the perception of the respondents on whether an open space be provided for cohort treatment of large number of patients with watery or water borne diseases. The participants **STRONGLY AGREE** that large open space is essential for the management of water borne diseases especially in the event of any pandemic or epidermic. PMP15 Seeks the opinion of the participants on whether a molecular genetics and infectious diseases laboratory be incorporated during the planning and design of isolation facility? The respondents **AGREE** and stress the need for the provision of a molecular laboratory within the facility; this is to ensure that the level of spread of diseases is brought to a minimum. PMP16 seeks to know whether suspected patients be isolated individually before the outcome of result from the lab. The respondents **STRONGLY AGREE** that patients be isolated individually pending the outcome of the laboratory investigations.

SECTION TWO of the construct seeks the opinion and perception of the participants on whether there is a relationship between design and performance. The first construct RDP1 seeks to know whether the respondents **AGREE** that there is a relationship between design and performance or outcome in an isolation facility. Do the spacial arrangements, configurations and space analysis affect the end users and patients? The respondents **AGREE** that a relationship exist, and it is what actually determines the performance, improve staff capacity, comfort and convenience. RDP2 seeks to know whether separation of patients, ante-room for each room, and one patient in each single room, self-closing door for each room, and type of floor, wall & ceiling finishes will enhance performance in an isolation facility. The respondents **AGREE** that there is a relationship between design and performance. RDP3 seeks whether mechanical ventilators such as high efficiency particulate air conditioner (HEPA) are important factors that enhance performance in an isolation facility. The participants show that these devices are **IMPORTANT** factors that enhance performance in an isolation facility. RDP4 seeks to know whether separation of air supply and air exhaust and decontamination before discharge, enhance safety, infection prevention and control measures and quality of containment and suppression. The participants **STRONGLY AGREE** that this separation would enhance safety, infection prevention, and disease containment and suppression. RDP5 seeks to know whether separation of patients into classes of rooms according to mode of transmission such as Negative pressure room (class N), Positive pressure room (class P), Alternating pressure room (class A) and Standard pressure room (class S) may enhances performance and outcome. The participants **AGREE** that this separation would enhance performance. RDP6 request the respondents to rate the relationship between design and performance in infectious disease isolation centre of ATBUTH, Bauchi. The participants

rate relationship between design and performance in the facility as "**GOOD**". RD7 the respondents **AGREE** that improper spacial arrangement and relationship of functional spaces may hinder containment suppression and increase the rate of transmission. In RDP8 the participants **AGREE** that provision of services like dialysis, theatre, critical care and laboratory services in the centre, would enhance performance. In RDP9, the participants **AGREE** that phasing of isolation centre according to the classes of diseases would enhance performance, outcome and infection prevention & control.

All the above responses indicate that there is a strong relationship between design and performance in an isolation facility, and that the more effective the design, the higher the output and performance.

5. Summary, Conclusion and Recommendation

5.1 Conclusion

The relationship between architectural design and performance of any building can never be over-emphasized. The efficiency of any design determines the outcome of the end users or occupants. The more effective the design, the higher the output. This study was aimed at assessing the relationship between design and performance of isolation facility in Nigerian hospitals. A survey research approach was used in the conduct of the study, close-ended questionnaire were used as the main research tool. Results were analysed using SPSS v21, result from correlation and central tendency were interpreted. The result from correlation reveals that with high efficiency in design, there will be high performance or output from end-users and patients in terms of fast recovery and workout of staffs. The mean of the twenty five constructs were interpreted and reported accordingly. In conclusion, a study of an assessment of relationship between design and performance in isolation facility of Nigerian hospital was conducted and findings were reported and recommendations were drawn accordingly.

5.2 Recommendation

The following findings from this research were recommended to stakeholders the assessment of the relationship between design and performance in an isolation facility of Nigerian hospitals:

1. Provision of a triage at the point of entry in any hospital. Accident & Emergency, Casualty Unit or Trauma Centre.
2. Separate area for suspected cases, with each patient in one single room until after diagnosis from a laboratory report.
3. Confirmed cases area to be divided into 3, premise on the mode of the disease i.e. waterborne, airborne and contact disease. Each of these areas should have all the necessary functional spaces that the staff and patients may require.
4. There should be provision for infectious disease and molecular genetics laboratory specifically for the isolation facility.
5. There should be provision for critical care unit, dialysis unit and operation theatre with all the necessary diagnosis tools and examination equipment such as ultra sound machine, X-ray machine and

a pharmacy.

6. Areas for patients with respiratory diseases shall be equipped with negative pressure and High Efficiency Particulate Air Conditions (HEPA).
7. Doors and water taps shall be sensored or automatic to avoid cross contamination.
8. All rooms in respiratory disease area shall have anteroom and door to open in-ward.
9. Wall and floor finishes shall be washable and ceiling shall be tightly closed e.g. POP ceiling and lamina floor.
10. There shall be provision for visitors' area, this area shall be sealed with views through glass and verbal communication should be through intercom.
11. All patients' areas shall be under CCTV control.
12. The whole complex shall be divided into four (4): (i) Triage, (ii) Green (Safe) area, (iii) Yellow (semi-safe) zone and (iv) Red (danger) zone and both suspect and confirmed patient areas shall fall under a particular zone listed above

Acknowledgement

I sincerely acknowledge the effort of my Supervisors, Prof. I.U. Hussaini and Dr. B.U. Wakawa for their tireless supervision and guidance; I appreciate them and pray that Allah SWT will bless them abundantly. I sincerely thank the Coordinator and Manager of Infectious Disease Isolation Facility in ATBU Teaching Hospital, Bauchi, for taking their precious time to participate in the study despite their busy schedule, may Allah bless you all.

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