Ethiopian Journal of Environmental Studies & Management 14(2): 254 – 265, 2021.
ISSN:1998-0507 doi: https://ejesm.org/doi/v14i2.10
Submitted: March 30, 2021 Accepted: April 26, 2021

HOUSING CONDITIONS AND PREVALENCE OF RESPIRATORY DISEASES IN LOW SOCIOECONOMIC DISTRICTS IN PHASE TWO OF FEDERAL CAPITAL CITY, ABUJA

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Abstract

This paper examined housing conditions and the prevalence of respiratory diseases in three low socioeconomic districts in Abuja. Primary data were acquired through the Multi-Stage sampling technique from three districts namely Mabushi, Utako and Gudu in the Federal Capital Territory, Abuja. The first stage involved the selection of 270 housing units. The second stage involved the random selection of the housing units and the third was the administration of questionnaires to the household heads. The data was analyzed and presented in tables. The secondary data were sourced from textbooks, journals and internet facilities. Over 70% of the houses are poorly ventilated. The conditions of internal walls of the sampled houses in three districts are poor. These houses have cracked walls and the presence of algal growth on walls. Over 80% of the sampled houses do not meet the United Nation's Habitat minimum occupancy ratio standard of 3 persons per room. Common cold accounts for the majority (49%) of the respiratory disease reported in the three districts followed by cough, which is about 40%. About 27% of respondents attributed the cause of respiratory disease in their districts to overcrowding, 28% attributed it to poor ventilation, while 23% attributed it to bad sanitation and hygiene. There is a significant difference in the prevalence of respiratory diseases between and within the three districts. The study recommended that targeted housing policies to support individuals living in squatter settlements should be considered to mitigate adverse outcomes associated with respiratory disease.

Key Words: *Healthy housing, Urban poor, Respiratory diseases, Slums*

Introduction

Housing is one of the basic needs of life, it provides shelter, safety, warmth as well as a place to rest. Housing is described by Melinikas (1998) " as a specific and relatively limited, physically, biologically and socially close place where people and groups of people can live their biosocial life by receiving services, performing house chores and other biosocial activity". The World Health Organization (1990) stated that housing should provide protection against communicable diseases, protection against injury, poisoning and chronic diseases and reduce psychological and social stresses to a minimum. Housing conditions play a major role in the health status of the individual. A variety of housing features have been reported to

influence the physical, social, economic and mental well-being of occupants (Turunen *et al*., 2010). Housing contributes to the burden of diseases by exposing people to dangerous substances or hazards or infectious diseases. In New Zealand, 10 percent of hospital admission per year are attributed to household crowding. In Kyrgyzstan, household crowding causes 18.13 deaths per 100,000 from tuberculosis (TB) per year (WHO, 2018).

In Nigeria, housing quality is deficient both in urban and rural areas, however, this problem is most severe in urban centres. Rapid urbanization has exacerbated housing challenges among low-income earners by promoting the proliferation of urban slums (Aduwo *et al*., 2016). The UN-Habitat (2006) noted that Nigeria has one of the worst urban housing situations in the world. Houses in the urban core areas in Nigerian cities are characterized by inadequate infrastructural facilities, poor ventilation, non-availability of in-built toilets and kitchens, as well as poor refuse disposal system. Other problems that are associated with urban housing are lack of effective planning, development of shantytowns, and availability of dilapidated houses (Ibimilua and Ibitoye, 2015).

Respiratory disease is a disease that affects the lungs and other parts of the respiratory systems, it could be chronic or acute. Chronic include asthma, lung cancer, allergies, pulmonary hypertension, etc. while acute include flu, pneumonia, common cold bronchitis, whooping cough, coronavirus, etc. (Davis, 2021). Coronavirus disease-2019 (Covid-19) is a pandemic impacting countries all over the world. It is a severe acute respiratory illness caused by a novel coronavirus (SARS COV-2). Presently the disease has infected 126 million people globally and claimed 2.7 million lives. To minimize human transmission of the virus and decrease the rate of spread, several measures such as wearing of face mask staying at home, washing hands often with soap and water, practicing physical distancing, etc. have been recommended (Centre for Diseases Control, 2019). However, some of these measures such as physical distancing and hygiene measures can be compromised if housing conditions are poor. Ahmad *et al.* (2020) noted that people with poor housing conditions have a limited ability to practice effective physical distancing and good personal hygiene; hence, potentially at higher risk of worse outcomes related to a respiratory infectious illness such as Covid-19.

This paper aims to examine the housing conditions and prevalence of respiratory diseases in the low socioeconomic districts of the federal capital city, Abuja. This is to raise awareness that healthy housing promotes good physical and mental health and can mitigate the transmission of respiratory infection.

Conceptual Framework

Healthy Housing Concept

The World Health Organization (2018) defines healthy housing as a shelter that supports a state of complete physical mental and social well-being. Healthy housing provides a feeling of home, including a sense of belonging, security and privacy. It also refers to the dwelling being structurally sound, providing shelter from excessive moisture, facilitating comfortable temperature, adequate sanitation and illumination, sufficient space, safe fuel or connection to electricity and protection from pollutants, injury, hazards, mould and pests. Healthy

housing also relies on the immediate housing environment and the extent to which this provides access to services, green spaces and active and public transport options, as well as protection from waste pollution and the effects of disaster, whether natural or man-made.

According to the National Centre for Healthy Housing (2018), a healthy home is housing that is designed, constructed, maintained and rehabilitated in a manner that is conducive to good occupant health. (Michigan Department of Community Health, Healthy Homes Section 2018). The seven principles of a healthy home are:

1) Keep it dry
2) Keep it clean
3) Keep it pest-free
4) Keep it safe
5) Keep it contaminant-free
6) Keep it ventilated
7) Keep it maintained

Four Pathways Connecting Housing to Health

According to Taylor (2018) there are four pathways connecting housing to health. First, there are research works describing the health impacts of not having a stable home (the stability pathway). Second, there are papers describing the health impacts of conditions inside the home (the safety and quality pathway). A third, smaller set of research papers describes the health impacts of the financial burdens resulting from high-cost housing (the affordability pathway). Lastly, there is rapidly growing literature that describes the health impacts of neighbourhoods, including both the environmental and social characteristics of where people live (the neighbourhood pathway).

The Stability Pathway

Studies have shown that being without a stable home is detrimental to one's health. People who are chronically homeless face substantially higher morbidity in terms of both physical and mental health and of increased mortality. People who face housing instability i.e. in the form of moving frequently, are also more likely to experience poor health. Multiple moves have been associated with adverse mental health, educational, and behavioural outcomes in children, and diminished physical and mental health in adulthood (Bures, 2003; Sandel *et al*., 2018).

The Quality and Safety Pathway

Substandard housing conditions such as water leaks, poor ventilation, dirty carpets, and pest infestation have been associated with poor health outcomes, most notably those related to asthma. Residential crowding has also been linked to both physical illness (such as infectious disease) and psychological distress (Taylor, 2018; WHO, 2019). Acute respiratory infection has been associated with the increased number of persons per room and with the high level of indoor air pollution (Getahun *et al*., 2010). Inadequate water supply and sanitation affect food safety and personal hygiene (WHO, 2019).

The Affordability Pathway

Affordable housing alleviates residential crowding. High-quality housing limits exposure to environmental toxins that impact health. Families paying excessive amounts of their income for housing often have insufficient resources remaining for other essential needs including food, medical insurance and health care. Affordable housing can therefore improve health outcomes by freeing up family resources for nutritious

food and health care expenditures (Maqbool *et al*., 2015).

The Neigbourhood Pathway

Studies have found that the availability of resources such as public transportation to one's job, grocery stores with nutritious foods, and safe spaces to exercise are all correlated with improved health outcomes. Living close to high-volume roads, in contrast, is a danger to health and can result in increased rates of respiratory diseases such as asthma and bronchitis and increased use of health care. In a blight remediated, neighbourhood even walking past a vacant lot that had been "greened" decreased heart rate significantly, in comparison to walking past a non-greened vacant lot (Taylor, 2018).

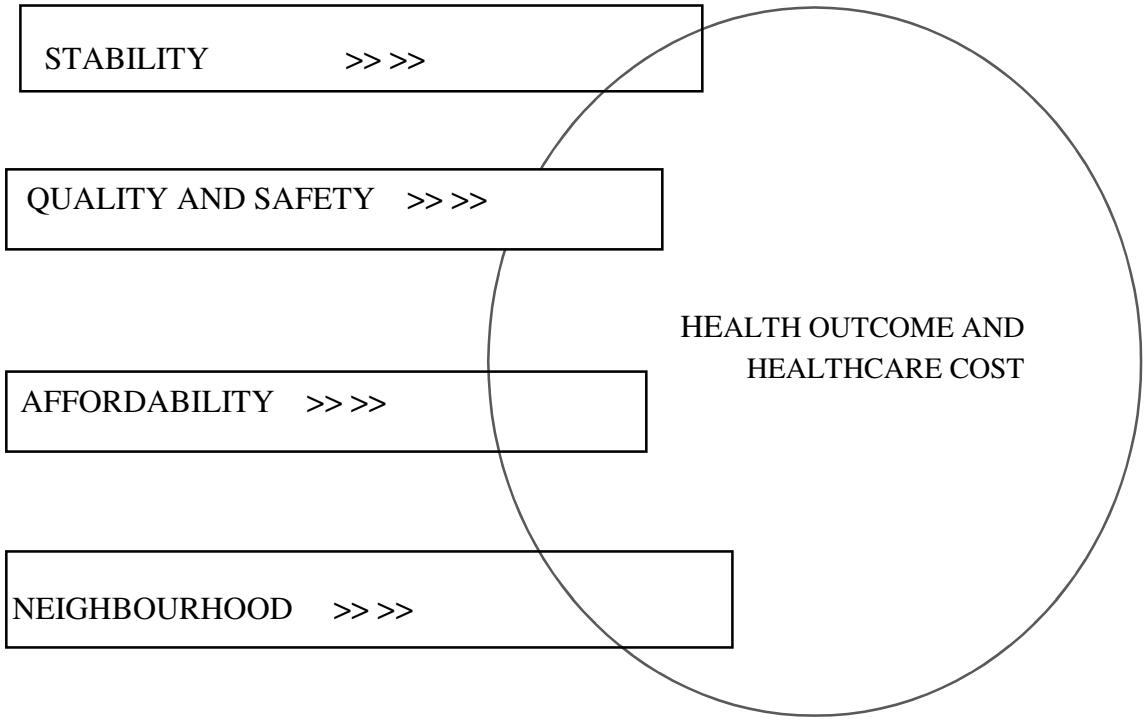

Fig. 1: Four pathways connecting housing to health
Source: Taylor 2018

Study Area

The Federal Capital Territory (FCT) was created in 1976, it is 1,100 km away from Lagos. It is located in the heartland of the country, it lies between latitude 8° 25″ and 9° 21″ north of the equator and longitude 6° 45″ and 7° 39″ east of the Greenwich meridian. Its area of land coverage is 8,000 km^2 .The Federal Capital Territory is divided into six area councils namely: Abaji, Kwali, Kuje, Bwari, Gwagwalada and Abuja Municipal Area Council (AMAC). The Federal Capital City (FCC) is located within the Abuja Municipal Area Council. The FCC development programme was divided into five Phases namely: Phase I, II, III, IV and V. The city consists of about 93 districts in the 5 phases, 22 sector centres, 3 Industrial areas, an Institution Research District as well as two Central area districts and a National park at Kukwaba.

The population of the FCC is estimated to 3.2 million (World Bank, 2017). The study area is Phase 11, it has 20 districts and covers about 97 km^2 (FCDA, 2015). It is physically separated from Phase I by Ring Road I – a major ten-lane dual carriageway and from Phase III by another dual carriageway – Ring Road 2.

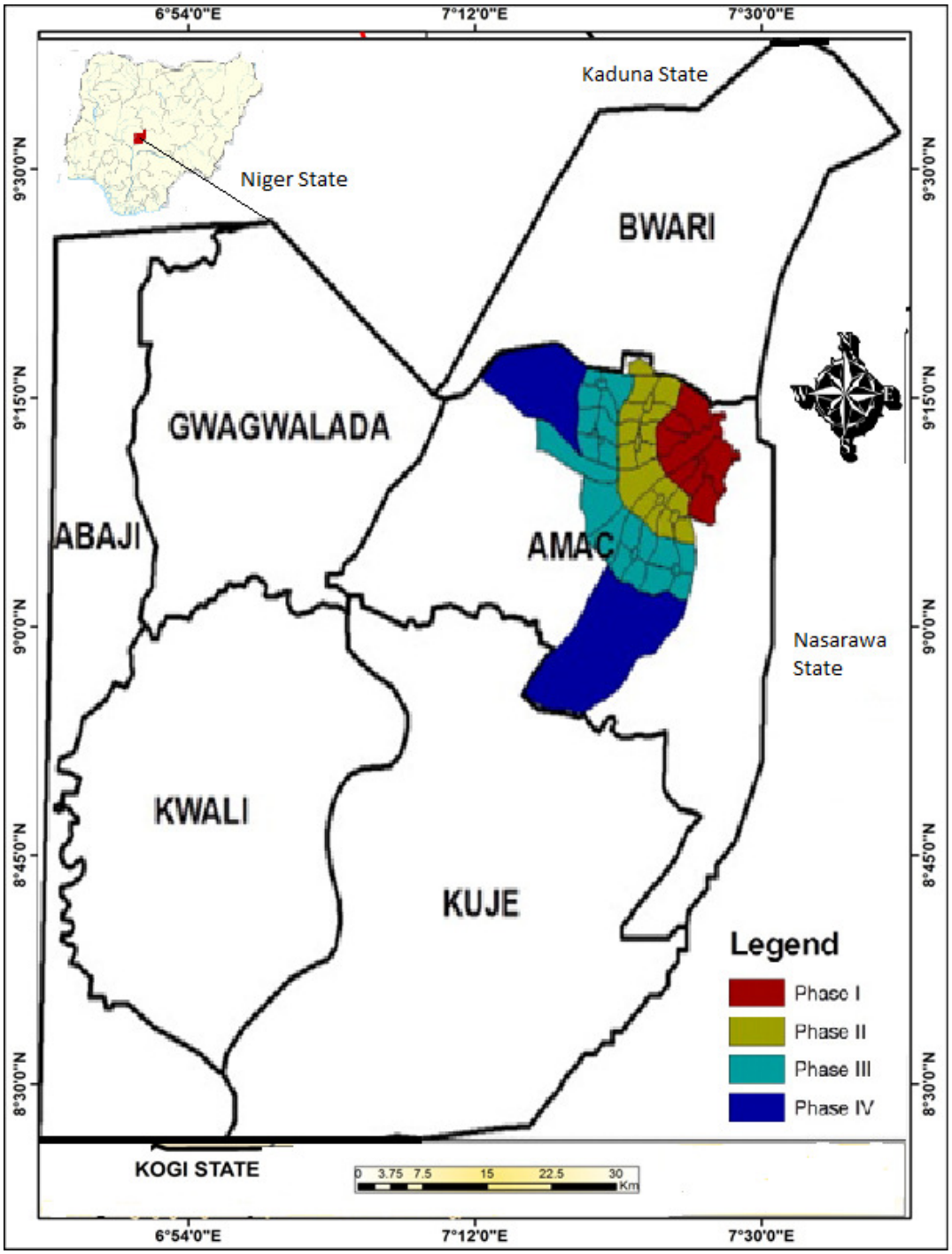

Fig. 2: FCT showing Six Area Councils and FCC

Methodology

The research utilized both primary and secondary data. The primary data were acquired through the Multi-Stage sampling technique. Three low socioeconomic districts namely Mabushi, Utako and Gudu were used for this study. The number of residential buildings in each district is Mabushi (266), Utako (313) and Gudu (248) (Adji, 2019). The first stage involved the selection of sample size from the three districts. The Sample Size was determined by adopting Singh and Masuku (2015) formula as follows:

n = N / 1 + N (e) 2 where:
n = Sample Size
N = Study Population
1 = Constant
e = Error Margin of 5%

With this formula, 270 housing units were selected for this study. The second stage involved the random selection of the housing units to be sampled. The third and final stage was the administration of questionnaires to the household heads. Data collection lasted for a period of three months (November 2020 to January 2021). The data were analyzed using a statistical package for social sciences (SPSS) and the results were presented in tables. The chi-square statistics were used to test the hypothesis that there is no significant difference in the prevalence of respiratory disease in the three low socioeconomic districts. The secondary data were sourced from government publications, textbooks, journals, newspapers and internet facilities.

Result

Table 1 shows the socioeconomics characteristics of respondents in the three districts. It was observed that the majority (80%) of the respondents were male and about 55% of them are self-employed. In table 2, the majority of the houses in the three districts are below 10 years old. More than 65% of the sampled houses in the three districts are constructed with cement. Over 70% of the houses are poorly ventilated, majority of these houses (72%) have only one functioning window. The conditions of internal walls in of the sampled houses in three districts are poor, the data revealed that about 46% in district 1, 56.8% in district 11 and 42.6% in district 111. These houses have cracked walls and the presence of algal growth on walls. As shown in Table 3, water supply to residential buildings in the three districts is mainly by water vendor, 61.6 %, (district 1) 50 % (district 11) and 47.5% (district 111). Over 80% of the sampled houses do not meet the United Nation's Habitat minimum occupancy ratio standard of 3 persons per room. This is an indication of overcrowding (see table 4). Common cold accounts for the majority (49%) of the respiratory disease reported in the three districts (table 5), followed by cough, which is about 40%. In table 6, about 27% of respondents attributed the cause of respiratory disease in their districts to overcrowding, 28% attributed it to poor ventilation, while 23% attributed it to bad sanitation and hygiene and all these are traceable to poor housing conditions. Table 7 revealed that all respondents are aware of the presence of COVID-19 diseases in Nigeria. However, in Table 8, only about 2% of respondents have gone for COVI-19 testing, the majority (85%) of respondents have not done the test. Therefore, the presence of COVID-19 could not be affirmed. The testing for COVID-19 cost N39, 000 which is more than the minimum wage of N30, 000. In table 9, the calculated X^2 valve is 31.45 and the table valve is 13.36, this shows that the calculated value is

greater than the table valve. This implies that the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, it is concluded that there is a significant difference in the prevalence of respiratory diseases between and within the three districts. The reason for the differences could be as a result of types of building materials used, the age of buildings, number of persons per room among others.

Table 1: Socioeconomics characteristics of respondents

		District 1 Mabushi		District 11 Utako		District 111 Gudu	
		n =86	%	n = 102	%	n =82	%
Sex	Male	75	87.20	92	90.1	69	80.4
	Female	11	12.7	10	9.8	13	15.8
Age	≤ 29years	15	17.4	12	11.7	20	24.3
	30-39years	19	22	21	20.5	38	46.3
	40-49 years	32	37.2	40	39.2	13	15.8
	≥50 years	20	23.2	29	28.4	11	13.4
Occupation	Civil servant	30	34.8	34	33.3	37	45.1
	Self Employed	56	65.1	68	66.6	45	54.8

Table 2: Physical conditions of buildings

		District 1 Mabushi		District 11 Utako		District 111 Gudu	
Variables		n =86	%	n = 102	%	n =82	%
Age of Building	≤ 5 years	19	2.2	40	39.2	23	28
	6-10years	43	50	27	26.4	30	36.5
	11-15years	16	18.6	19	18.6	24	29.2
	≥16 years	8	9.3	16	15.6	5	6.1
Wall Material	Mud	27	41.3	34	33.3	30	36.5
	Cement	59	68.6	66	64.7	52	63.4
Roofing Material	Corrugated iron sheet	71	82.5	74	72.5	63	76.8
	Aluminum	15	17.4	28	27.4	19	23.1
Flooring Material	Cemented	65	75.5	84	82.3	60	73.1
	Not cemented	21	24.4	18	17.6	22	26.8
Ceiling Type	Asbestos	46	53.4	53	51.9	39	47.5
	Sack	10	11.6	15	14.7	16	19.5
	Wood/Plank	30	34.8	34	33.3	27	32.9
Ventilation	Poor	62	72	83	81.3	63	76.8
	Cross	24	27.9	17	16.6	19	23.1

Number of window per room	1	66	76.7	77	75.4	59	71.9
	2	20	23.2	25	24.5	23	28
Condition of internal walls	Poor	40	46.5	58	56.8	35	42.6
	Fair	27	31.3	23	22.5	21	25.6
	Good	19	22	21	20.5	26	31.7

Table 3: Sources of water supply to residential buildings

		District 1 Mabushi		District 11 Utako		District 111 Gudu	
Variables		n =86	%	n = 102	%	n =82	%
Sources of Water Supply	Tap	10	11.6	18	17.6	15	18.2
	Well	15	17.4	23	22.5	11	13.4
	Borehole	8	9.3	10	9.8	17	20.7
	Water vendor	53	61.6	51	50	39	47.5

Table 4: Population densities

		District 1 Mabushi		District 11 Utako		District 111 Gudu	
		n =86	%	n = 102	%	n =82	%
Number of person per room	1-3	13	15.1	19	18.6	10	12.1
	4-6	45	52.3	51	50	48	58.5
	≥ 6	28	32.5	32	31.5	24	28.2

Table 5: Prevalent respiratory diseases

		District 1 Mabushi		District11 Utako		District 111 Gudu	
		n =86	%	n = 102	%	n =82	%
Respiratory diseases	Cough	25	29	30	29.4	33	40.2
	Common cold	42	48.8	52	50.9	47	57.3
	Tuberculosis	2	2.3	-		-	
	Pneumonia	8	9.3	7	6.8	-	
	Asthma	9	10.4	13	12.7	2	2.4

Table 6: Causes of respiratory diseases

		District 1 Mabushi		District 11 Utako		District 111 Gudu	
		n =86	%	n = 102	%	n =82	%
Causes	Crowding	28	32.5	34	33.3	22	26.8
	Poor ventilation	25	29	29	28.4	23	28
	Bad sanitation and hygiene	19	22	23	22.5	17	20.7
	Change of season	14	16.2	16	15.6	20	24.3

Table 7: Knowledge of covid-19 disease

		District 1 Mabushi		District 11 Utako		District 111 Gudu	
Knowledge of COVID		n =86	%	n = 102	%	n =82	%
	Yes	86	100	102	100	82	100
	No	-	-	-	-	-	-

Table 8: Respondent's covid-19 testing

		District 1 Mabushi		District 11 Utako		District 111 Gudu	
		n =86	%	n = 102	%	n =82	%
COVID testing	Yes	2	2.3	1	0.9	-	-
	No	73	84.8	87	85.2	73	89
	No answer	11	12.7	14	13.7	9	10.9

Table 9: Chi-square testing prevalence of Respiratory disease in the three low socioeconomic district

Variable	X^2 computed	Df	Critical valve of X^2 @ 0.01	Remarks
Prevalence of Respiratory diseases in the 3 districts	31.45	8	13.36	Rejected

Discussion

The findings of this study concur with many studies that have shown that housing contributes to the burden of disease through exposing people to dangerous substances or hazards, or infectious diseases (Getahun *et al*., 2010; Ogundahunsi and Adejuwon, 2014; WHO, 2018; Taylor, 2018; WHO, 2019). Worldwide, crowding is often a marker of poverty and social deprivation (Krieger and Higgins, 2002). A high risk of acute

lower respiratory infection was associated with the increasing number of persons per room and high level of indoor air pollution in a study made among children under five years in Addis Ababa (Getahun *et al*., 2010). Overcrowding has been associated with the spread of respiratory illnesses like tuberculosis and influenza which have aerosol and droplet transmissions, both of which are potential modes of transmission for COVID-19 (Shereen *et al*., 2020; Ahmad *et al*. 2020). In Hua Qian *et al*. (2020) study investigating the initial COVID-19 outbreaks in China, the study showed that 79.9% of outbreaks occurred indoors.

Nicol (2006) in his work on eight European cities identified a definite relationship between damp/mouldy homes with migraine/frequent headaches, cold/throat illnesses, asthma and wheezing. Airborne fungi are harmful to human health and can also destroy residential buildings in particularly wooden parts, such as roofs and walls. Inadequate ventilation is one of the multiple factors that contribute to the development of mould in a home (WHO, 2009). The growth of mould on the wall of a house has been implicated in increased susceptibility to respiratory infection, asthma and allergies among children (Dales *et al*., 1991).

Another aspect of poor housing conditions in the three districts is the lack of water supply to residential buildings. Lack of appropriate facilities interferes with the ability to practice good hygiene. People with poor housing conditions have a limited ability to practice effective physical distancing and good personal hygiene; hence, potentially at higher risk of worse outcomes related to a respiratory infectious illness (Ahmad *et al*., 2020).

Conclusion

The study revealed that housing conditions in the three low socioeconomic districts are generally poor. It is characterized by overcrowding, poor ventilation, poor physical conditions of buildings and little access to the public water supply. This study revealed that poor housing conditions contribute to poor health. The respiratory diseases prevalent in the three low socioeconomic districts are cough, common cold, tuberculosis, pneumonia and asthma. The presence of COVID-19 could not be affirmed in the three districts because of little or absence COVID-19 testing by the inhabitants. The study also revealed that some non-pharmaceutical measures such as physical distancing and personal hygiene in combatting the spread of COVID-19 and other respiratory diseases can be compromised because housing conditions are poor.

The study recommended that targeted housing policies to support individuals living in squatter settlements should be considered to mitigate adverse outcomes associated with respiratory disease. There should be a continuous awareness program on the existence of COVID-19 in Nigeria by government and non-governmental organizations especially among the urban poor. Also COVID-19 testing should be made available and affordable to all citizens to curb the spread of the diseases.

The National and local government should take immediate measures to secure the right to housing for all within the Federal capital territory. This can be done through deferrals of mortgage payments; imposition or extension of moratoriums on forced evictions of informal settlements and slums; introduction of rental stabilization or reduction measures;

suspension of utility costs and surcharges for the duration of the pandemic; and creation of emergency funds to reduce exposure for categories at risk. (UN-Habitat, 2021)

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