ASSESSMENT OF HEALTH WORKERS' AWARENESS AND UNDERSTANDING OF THE NIGERIA NATIONAL CLIMATE CHANGE POLICY IN KADUNA METROPOLIS

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Abstract

Climate change poses a significant threat to human health and well-being, and in recognition of this, the Nigerian government developed the National Climate Change Policy (NCCP) to address its impacts. It is essential that health workers are well-informed about the NCCP to encourage active contributions in educating and protecting the public against the adverse effects of climate change on their health. This study therefore assessed health workers' awareness and understanding of the NCCP in secondary public hospitals in Kaduna metropolis. Two research questions were formulated to guide this study. Using the Leslie Kish formula, a sample size of 160 was calculated, which was then increased to 179 to increase the precision of the study. A standard questionnaire was used as the major instrument for data collection from 185 health workers working in government-owned secondary care facilities in Kaduna metropolis. A sample size of 179 respondents were selected using multistage sampling. The data collected from the respondents was summarized descriptively and inferentially for the various categories included in this study. The majority of health workers were found to have good understanding of the basic concepts of the NCCP in Nigeria. A statistically significant relationship ($p = 0.009$) was found between awareness of NCCP and age of respondents. The study concluded stressing the need to develop an action guide for health workers to provide a clear description of their roles as it relates to the practice of the NCCP in Nigeria.

Keywords: Climate Change, National Climate Change Policy, Health Workers, Healthcare

Introduction

Climate Change is the biggest threat and challenge facing mankind (WHO, 2021). United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as "a change of climate that is attributed directly or indirectly to human activities, that alters the composition of global atmosphere, and that is in addition to natural climate variability over comparable periods" (UNDP, 2016). Intergovernmental Panel on Climate Change (IPCC) also defines climate change generally as "any change in climate overtime whether due to natural variability or as a result of human activity" (Pielke, 2004).

Natural processes as well as human engagements and activities contribute to the increase of greenhouse gases in the atmosphere (Klingelhofer *et al*., 2020). This leads to the warming of the earth, a phenomenon termed global warming. The adverse effects of climate change can result in increased morbidity and higher health services utilization, among other things (Dupraz & Burnand, 2021). Agricultural yields are also decreasing, which contributes to reduced production, availability, and access to food, especially in areas that are already deprived (Dupraz & Burnand, 2021).

Climate change poses a significant threat to human health and well-being, and in recognition of this, the Nigerian government developed the National Climate Change Policy (NCCP) in 2013, which was later revised in 2021, to address its impacts and promote mitigation and adaptation measures (Federal Ministry of Environment, 2021)..

In Nigeria, climate change is expected to exacerbate existing health problems such as malnutrition, malaria, and heat stress, as well as increase the risk of new health threats such as flooding and infectious diseases (Oyekale, 2018). Numerous reports further show that climate change has adverse effects on human health, such as increased rates of respiratory and heat-related illnesses, vector-borne and waterborne diseases, food and water insecurity, and malnutrition (Ryan, 2016).

There have been numerous efforts to mitigate the harmful effects of climate change on health, with health workers and public health professionals as key targets of various initiatives (Dupraz & Burnand, 2021). The NCCP is an essential policy to guide Nigeria's efforts to mitigate and adapt to the impacts of climate change, but its success depends on the knowledge, attitudes,

and practices of key stakeholders, including health workers who play a critical role in the delivery of health services and the promotion of healthy behaviors in the community (WHO, 2008).

The health sector, including health workers, has a crucial role to play in responding to the expected impacts of climate change on human health, as they are often the first point of contact for individuals seeking health care (Bates *et al*., 2015). It also has critical role to play in responding to this challenge by preparing health systems and communities for the expected impacts of climate change, and advocating for policy changes that promote health and sustainability (Watts *et al*., 2018). Research has shown that health workers are closer to the public and more trusted, especially on health issues (Robert, John, & Joachim, 2014). Thus, it is essential that health workers are well-informed about the national climate change policy in Nigeria to encourage active contributions in educating and protecting the public against the adverse effects of climate change on their health.

There is limited research and literature on the awareness and understanding of health workers regarding the NCCP, which is essential for the development of effective interventions to promote the policy's implementation in the health sector. Existing studies have focused on the general public, secondary school students and university students, but not specifically on health workers (Ogbonna, Otuu & Madueke, 2020).

The knowledge gap and dearth of information on this topic poses a significant challenge to the development of effective interventions to promote the implementation of the NCCP in the health sector. Therefore, there is a need for research that examines the awareness and understanding of health workers regarding the NCCP to identify gaps and develop interventions to promote its effective implementation. This can help to identify areas where training and capacity-building interventions are needed to enhance the knowledge and skills of health workers regarding the policy.

To address this gap, this study aims to assess health workers' awareness and understanding of the Nigeria NCCP in Kaduna Metropolis. By doing so, the study seeks to contribute to the designing and development of appropriate and effective interventions to promote and improve the understanding and implementation of the NCCP in the health sector, ultimately contributing to efforts to mitigate the impacts of climate change on human health in Nigeria, and improving public health outcomes in the face of climate change.

It will also provide an understanding of the awareness of the national climate change policy among healthcare professionals, determine the extent to which they understand the link between climate change and health and their role in promoting the implementation of the policy, assess their level of preparedness to accurately inform the public about the relationship between climate change and their health, and encourage and motivate individuals and communities to adopt activities and lifestyles that contribute to reducing the adverse impact of human activities on the climate. To assess awareness of national climate change policy among health workers in public hospitals in Kaduna metropolis and to assess understanding of health workers in public hospitals in Kaduna metropolis towards the national climate change policy.

Research Questions

    i.   What is the level of awareness of health workers in public hospitals in Kaduna metropolis regarding the national climate change policy in Nigeria?

    ii.   What is the level of understanding of health workers in public hospitals in Kaduna metropolis regarding the national climate change policy in Nigeria?

Method and Materials

Kaduna State occupies an area of approximately 48,473.2 square kilometers and has a population of more than 6 million (Folashade & Ismail, 2013). The State is divided into 23 local government areas. The metropolitan area consist of 4 local government areas, which include, Kaduna North, Kaduna South, Igabi and part of Chikun. There is one tertiary and five secondary public hospitals in Kaduna Metropolis. All of the five secondary hospitals were included in this study. The secondary healthcare facilities are Yusuf Dantsoho Memorial Hospital, Tudun Wada, Gwamna Awan General Hospital, Kakuri, General Hospital, Kawo, General Hospital, Rigasa, General Hospital, Sabon Tasha. This is a descriptive cross-sectional study of health workers working in government-owned secondary care facilities in Kaduna metropolis, Kaduna State, Nigeria.

The study instrument for this research was adapted from similar studies (UNDP, 2016), and pre-tested on nurses/midwives of the Adewole Primary Healthcare Center, Ilorin, Kwara State. The questionnaire was divided into two sections: section A

covered socio-demographic information, and section B covered awareness and understanding, and designed to assess the awareness and understanding of health workers regarding the national climate change policy in Nigeria.

The awareness and understanding section had five items. One question had options 'Yes' [1 point], 'No' [0 point] or 'I don't know' [0 point]. The other four questions had mixtures of right and wrong answers. Right answers were scored [1] and wrong answer [0].

The total awareness and understanding score ranged from zero to five; awareness score of 0–2.99 was considered inadequate awareness and a score of 3–5 was considered adequate awareness of the National Climate Change Policy in Nigeria.

A sample size of 160 was determined using the Leslie Kish formula for estimating single proportions. This was however, increased to 179 respondents to increase the precision of the study.

Multistage sampling technique was used, and all the five secondary healthcare facilities with 1,273 health workers of different cadres were included in this study. Health workers across all categories were interviewed using the questionnaires, until a sample size of 179 was achieved.

Table 1: Categories, Departments and Number of Health Workers in each of the Sampled Secondary Public Hospitals in Kaduna Metropolis
Yusuf Dantsoho Memorial Hospital, Tudun Wada (YDMH), Dr. Gwamna Awan General Hospital, Kakuri (GAGH), General Hospital, Kawo (GHK), General Hospital, Rigasa (GHR), General Hospital, Sabon Tasha (GHS)

S/N	Category	YDMH	GAGH	GHK	GHR	GHS	Total
1	Medical Doctors	15	16	8	7	10	**56**
2	Laboratory Scientist	16	14	13	17	10	**70**
3	Radiographers	0	0	0	0	1	**1**
4	X-Ray Technicians	4	4	3	3	2	**16**
5	Pharmacists	8	7	5	5	6	**31**
6	Pharmacy Technicians	13	13	10	11	10	**57**
7	Nursing Staff	152	127	68	67	70	**484**
8	Health Management Information System Officers	24	21	13	13	12	**83**
9	Health Attendants	97	84	69	58	70	**378**
10	Community Health Officers	1	0	3	0	2	**6**
11	Environmental Health Officers	8	9	6	7	9	**39**
12	Nutritionists	6	2	4	6	0	**18**
13	Dental Therapists	9	8	5	3	4	**29**
14	Physiotherapists	1	1	1	1	1	**5**
	Total	**354**	**306**	**208**	**198**	**207**	**=1273**

Respondents were proportionately allocated to each of the hospitals from the total sample size of 179, using the formulas:

Population percentage = Study population for each hospital/Total study population x 100

Respondents = Proportion of the population percentage of each hospital from the sample size

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Table 2: Shows the Study Population and Respondents in each of the Secondary Public Hospital in Kaduna Metropolis

Hospital	Study Population	Respondents
Yusuf Dantsoho Memorial Hospital (YDMH)	354	50
Dr. Gwamna Awan General Hospital (GAGH)	306	43
General Hospital, Kawo (GHK)	208	29
General Hospital, Rigasa (GHR)	198	28
General Hospital, Sabon Tasha (GHS)	207	29
Total	**1273**	**179**

Using controlled quota sampling, respondents were allocated to the different cadre of health workers in each of the five secondary public hospitals in Kaduna Metropolis.

Table 3: Shows the Respondents Allocated to each Category/Cadre of Health Workers in each Secondary Public Hospital in Kaduna Metropolis

S/N	Category	YDMH	GAGH	GHK	GHR	GHS	Total
1	Medical Doctors	2	2	2	1	1	**8**
2	Laboratory Technicians	2	2	2	2	2	**10**
3	Radiographers	0	0	0	0	1	**1**
4	X-Ray Technicians	1	1	0	0	0	**2**
5	Pharmacists	1	1	1	1	0	**4**
6	Pharmacy Technicians	2	2	2	1	1	**8**
7	Nursing Staff	20	16	10	11	11	**68**
8	Health Management Information System Officers	3	3	2	2	2	**12**
9	Health Attendants	14	13	6	9	9	**51**
10	Community Health Officers	1	0	1	0	0	**2**
11	Environmental Health Officers	1	1	1	1	1	**5**
12	Nutritionists	1	1	1	0	0	**3**
13	Dental Therapists	1	1	1	0	1	**4**
14	Physiotherapists	1	0	0	0	0	**1**
	Total	**50**	**43**	**29**	**28**	**29**	**=179**

Random sampling was used to select respondents from each of the category of health workers in each hospital, who were then administered questionnaires.

The data were summarized descriptively for the various categories of healthcare personnel included in this study. Data obtained was also analyzed inferentially using Statistical Package for Social Sciences (SPSS) version 20.

Results and Discussion

A total of 200 potential respondents were approached, of whom 185 individuals completed the paper questionnaire (response rate of 92.5%). Of these, 6 responses did not include adequate socio-demographic details of the participants, and were excluded. In total, 179 responses were considered for data analysis.

Medical Doctors formed 4.4% of the respondents, Nurses/Midwives 38%, Pharmacists 2.4%, Health Attendants 29.7%, Health Management Information System Officers 6.5%, Community Health Officers 0.5%, Environmental Health Officers

3.1%, Nutritionists 1.4%, Dental Therapists 2.3%, Pharmacy Technicians 4.5%, and X-Ray Technicians 1.2%. All sampled healthcare workers were from secondary public hospitals.

The average age of the participants was 39.8 years. 84.4% were female and 15.6% were male. Educational status and years of experience also varied widely between the subgroups. Socio-demographic characteristics of the participants are summarized in Table 4.

Table 4: Socio-Demographic Characteristics of the Study Participants (n=179)

Variables	Frequency	%
Age in years		
20-29	62	34.6
30-39	87	48.6
40-49	21	11.7
50-59	9	5.1
Sex		
Male	28	15.6
Female	151	84.4
Education Level		
Informal	5	2.8
Primary	21	11.7
Secondary	15	8.4
Tertiary	134	74.9
Postgraduate	4	2.2
Religion		
Islam	115	64.2
Christianity	64	35.8
Cadre		
Medical doctors	7	4
Nurses	62	34.6
Pharmacists	8	4.5
Lab. Technicians	9	5
Health Attendants	49	27.4
Community Health Officers	3	1.7
Environmental Health Officers	5	2.8
Health Information Management Officers	10	5.6
X-Ray Technicians	4	2.2
Nutritionists	4	2.2
Dental Therapists	5	2.8
Radiologists	4	2.2
Physiotherapists	5	2.8
Pharmacy Technicians	4	2.2
Work experience		
10 years and less	136	76
More than 10 years	43	24
Total	179	100

Table 5: Awareness Grade

Variable	Frequency	%
Awareness		
Adequate awareness	175	97.8
Inadequate awareness	4	2.2
Total	179	100

4.1. Awareness and Understanding of the National Climate Change Policy (NCCP) in Nigeria

Relatively lower proportion of nurses/midwives (41.9%) acknowledged to have heard of the NCCP in Nigeria before. A higher proportion of doctors (100%) and Environmental Health Officers (80%) identified health as main focus area of the Nigeria NCCP mitigation and adaptation plans (Table 6). Most respondents also recognized the promotion of a low-carbon, climate-resilient and gender-responsive sustainable socio-economic development (67.6%) as the goal of the NCCP in Nigeria.

Table 6: Awareness and Understanding of National Climate Change Policy (NCCP) in Nigeria among the Respondents (n=179)

Variables	Awareness Adequate Frequency (%)	Inadequate Frequency (%)
Age in years		
20-29	60(96.8)	2(3.2)
30-39	86(98.9)	1(1.1)
40-49	21(100)	0
50-59	8(88.9)	1(11.1)
Sex		
Male	27(96.4)	1(3.6)
Female	148(98)	3(2)
Education level		
Informal	4(80)	1(20)
Primary	20(95.2)	1(4.8)
Secondary	15(100)	0
Tertiary	132(98.5)	2(1.5)
Postgraduate	4(100)	0
Religion		
Islam	112(97.4)	3(2.6)
Christianity	63(98.4)	1(1.6)
Cadre		
Medical doctors	7(100)	0
Nurses	60(96.8)	2(4.2)
Pharmacists	8(100)	0
Lab. Technicians	9(100)	0
Health Attendants	47(95.9)	2(4.1)
Community Health Officers	3(100)	0
Environmental Health Officers	5(100)	0
Health Information Management Officers	10(100)	0
X-Ray Technicians	4(100)	0
Nutritionists	4(100)	0
Dental Therapists	5(100)	0
Radiologists	4(100)	0
Physiotherapists	5(100)	0
Pharmacy Technicians	4(100)	0
Work experience		
10 years and less	133(97.8)	3(2.2)
More than 10 years	42(97.7)	1(2.3)

Variable	Frequency	%
Heard of the NCCP in Nigeria before now?		
Yes	92	51.4
No	81	45.3
Don't Know	6	3.3
What NCCP in Nigeria entails		
Comprehensive and crucial framework that aims to address the challenges posed by climate change.	128	71.5
Aims to promote sustainable development in Nigeria.	11	6.1
Gives guidelines on how to reduce weight.	1	0.6
Focuses on different aspects of climate change mitigation and adaptation.	53	29.6
Aims to educate the public on space travels.	1	0.6
Goal of the National Climate Change Policy in Nigeria		
To ensure space travels are safe and affordable.	38	21.2
To change the position of the Moon and Stars.	2	1.1
To promote a low-carbon, climate-resilient and gender-responsive sustainable socio-economic development.	121	67.6
To reduce crude oil theft in the Niger Delta.	1	0.6
Objectives of the National Climate Change Policy in Nigeria.		
To implement adaptation and mitigation measures that promote low-carbon development.	97	54.2
To develop and implement appropriate strategies and actions to reduce the vulnerability of Nigerians to the impacts of climate change.	82	45.8
To promote gender equality and ensure women rights are respected.		
To develop strategies to ensure the Moon does not fall on the Earth.		
Main focus areas of the Nigeria NCCP mitigation and adaptation plans.		
Health	134	74.9
Ethnicity	2	1.1
Energy	11	6.1
Gender		
Oil and Gas	10	5.6
Emotion		
Waste	16	8.9
Football		
Don't Know/Not Sure	10	5.6

Table 7: Awareness Grade

Variable	Frequency	%
Awareness		
Adequate awareness	175	97.8
Inadequate awareness	4	2.2

Majority (97.8%) of the respondents had adequate awareness and understanding of the Nigeria National Climate Change Policy, while only 2.2% had inadequate awareness.

4.2 Factors Associated with Awareness and Understanding of the National Climate Change Policy

Table 12: Relationship Between Awareness of National Climate Change Policy (NCCP) and Age of the Respondents among Health Workers in Kaduna Metropolis (n=179)

Variable	Awareness			
	Adequate Frequency (%)	Inadequate Frequency (%)	Test Statistic	*P*-Value
Age in years			Fisher's Exact Test = 57.563	*P* = 0.009
20-29	60(96.8)	2(3.2)		
30-39	86(98.9)	1(1.1)		
40-49	21(100)	0		
50-59	8(88.9)	1(11.1)		

Majority of the respondents had adequate awareness and understanding of the National Climate Change Policy, with health workers aged 40 - 49 years having the highest proportion of people (100%) with adequate understanding. The relationship was statistically significant.

Table 13: Relationship Between Awareness of National Climate Change Policy (NCCP) and Sex of the Respondents among Health Workers in Kaduna Metropolis (n=179)

Variable	Awareness			
	Adequate Frequency (%)	Inadequate Frequency (%)	Test Statistic	*P*-Value
Sex			Chi-Square = 0.271[a] df = 1	*P* = 0.602
Male	27(96.4)	1(3.6)		
Female	148(98)	3(2)		

Majority of the male and female respondents had adequate awareness and understanding of the National Climate Change Policy, with female health workers having the highest proportion of people (98%) with adequate understanding. The relationship was however not statistically significant.

Table 14: Relationship Between Awareness of National Climate Change Policy (NCCP) and Education Level of the Respondents among Health Workers in Kaduna Metropolis (n=179)

Variable	Awareness			
	Adequate Frequency (%)	Inadequate Frequency (%)	Test Statistic	*P*-Value
Education level			Fisher's Exact Test = 7.062	*P* = 0.072
Informal	4(80)	1(20)		
Primary	20(95.2)	1(4.8)		
Secondary	15(100)	0		
Tertiary	132(98.5)	2(1.5)		
Postgraduate	4(100)	0		

Majority of the respondents across all educational level had adequate awareness and understanding of the National Climate Change Policy, with health workers at secondary and postgraduate levels having the highest proportion of people (100%) with adequate understanding. The relationship was however not statistically significant.

Table 15: Relationship Between Awareness of National Climate Change Policy (NCCP) and Religion of the Respondents among Health Workers in Kaduna Metropolis (n=179)

Variable	Awareness			
	Adequate Frequency (%)	Inadequate Frequency (%)	Test Statistic	*P*-Value
Religion			Chi-Square = 0.206[a] df = 1	*P* = 0.650
Islam	112(97.4)	3(2.6)		
Christianity	63(98.4)	1(1.6)		

Majority of the respondents across all religion had adequate awareness and understanding of the National Climate Change Policy, with Christian health workers having the lowest proportion of people (1.6%) with inadequate understanding. The relationship was however not statistically significant.

Table 16: Relationship Between Awareness of National Climate Change Policy (NCCP) and Cadre of the Respondents among Health Workers in Kaduna Metropolis (n=179)

Variable	Awareness			
	Adequate Frequency (%)	Inadequate Frequency (%)	Test Statistic	*P*-Value
Cadre			Fisher's Exact Test = 8.833	*P* = 0.999
Medical doctors	7(100)	0		
Nurses	60(96.8)	2(3.2)		
Pharmacists	8(100)	0		
Lab. Technicians	9(100)	0		
Health Attendants	47(95.9)	2(4.1)		
Community Health Officers	3(100)	0		
Environmental Health Officers	5(100)	0		
Health Information Management Officers	10(100)	0		
X-Ray Technicians	4(100)	0		
Nutritionists	4(100)	0		
Dental Therapists	5(100)	0		
Radiologists	4(100)	0		
Physiotherapists	5(100)	0		
Pharmacy Technicians	4(100)	0		

Majority of the respondents across all cadres had adequate awareness and understanding of the National Climate Change Policy, with health attendants having the lowest proportion of people (95.9%) with adequate understanding. The relationship was however not statistically significant.

Table 17: Relationship Between Awareness of National Climate Change Policy (NCCP) and Work Experience of the Respondents among Health Workers in Kaduna Metropolis (n=179)

Variable	Awareness		Test Statistic	P-Value
	Adequate Frequency (%)	Inadequate Frequency (%)		
Work experience			Chi-Square = 0.002[a] df = 1	P = 0.963
10 years and less	133(97.8)	3(2.2)		
More than 10 years	42(97.7)	1(2.3)		

Majority of the respondents regardless of years of work experience, had adequate awareness and understanding of the National Climate Change Policy. The relationship was however not statistically significant.

Discussion

The NCCP is an essential policy to guide Nigeria's efforts to mitigate and adapt to the impacts of climate change, but its success depends on the awareness and understanding of key stakeholders, including health workers who play a critical role in the delivery of health services and the promotion of healthy behaviors in the community (WHO, 2008).

With limited literature available on awareness and understanding of health workers regarding the national climate change policy in Nigeria, this study is the first of its kind. The majority of health workers had good understanding of the basic concepts of the national climate change policy in Nigeria. However, there were some gaps in awareness and understanding, particularly in the specific goal of the national climate change policy in Nigeria.

The findings of this study suggest that health workers in Kaduna Metropolis, Kaduna State, Nigeria, have a good understanding of the basic concepts of the national climate change policy. However, there is a need to improve their awareness and understanding of the goals and objectives of the policy. Additionally, there is a need to develop and implement programs to help health workers integrate the national climate change policy into their work.

The findings of this study are consistent with another study conducted among health workers in relation to climate change. For example, a study conducted among public health nurses found that although most of the respondents had good knowledge of the basic concepts of climate change, and about 50% of them agreed that it is the duty of their healthcare division to address the health impacts of climate change, less than 40% believed that their actions could lead to an actual decrease in the adverse effects of climate change (Polivka, Chaudry, & Mac, 2012). In the study, majority of the respondents suggested that their division did not have the capacity or were not prepared to address the health-related impacts of climate change (Polivka, Chaudry, & Mac, 2012).

The study revealed that 48.6% of the health workers have never heard of the National Climate Change Policy in Nigeria. This is in line with a study that found that small proportion (13.8%) of health workers were aware of guidelines to protect against heat wave (in the context of climate change) and its health implications (Adah, Olusonde & Nashon, 2019). Similarly, according to a study assessing the preparedness and perception of local public health department directors in the United States regarding climate change, more than 40% of the respondents believe that community stakeholders, including workers in their health departments, lack the necessary climate change knowledge and required expertise to plan and execute effective mitigation or adaptation strategies (Maibach *et al.*, 2008).

However, the study established that Medical doctors have strong awareness and understanding about the National Climate Change Policy in Nigeria (100%). Following a similar pattern, majority of the health workers showed good awareness and understanding of the National Climate Change Policy in Nigeria. Nurses/Midwives (22.6%), Health Attendants (28.6%), Dental Therapists (80%), Health Management Information System Officer (33.3%) and X-Ray Technicians (50%) however show poor understanding, where they claimed that "to ensure space travels are safe and affordable" was the goal of the National Climate Change Policy in Nigeria.

Previous studies show that most public health officers feel ill-equipped and unprepared in terms of information, training, and resources to mitigate the threat (Bedsworth, 2009). They also feel the need for additional funding, staffing and training to aid proper and effective response to climate change problems (Maibach *et al*., 2008).

According to a survey conducted by the Minnesota Department of Health (MDH) among a convenience sample of Board-certified nurses and physicians in Minnesota, only 21% of the participants felt adequately prepared to engage in discussions about climate change, and merely 4% reported discussing the topic with all or the majority of their patients (Kircher *et al*., 2022).

The findings of this study have several implications for policy and practice. First, there is a need to develop and implement programs to improve the understanding of health workers on the specific goals of the national climate change policy in Nigeria. This could be done through training programs, workshops, and seminars.

Second, there is a need to develop and implement programs to help health workers integrate the national climate change policy into their work. There is also a need to advocate for policies and sensitize health workers on climate change adaptation and mitigation practices in the health sector. This could be done by developing guidelines and protocols for climate change-sensitive healthcare practices, and by providing health workers with access to resources and support.

Conclusion

Climate change is a significant and escalating cause of health issues among patients, and will as well be for future generations Healthcare professionals are widely recognized as reliable sources of health information, and being a major stakeholder, are also responsible for raising awareness about climate change and its health effects among the general public and policymakers

The findings of this study suggest that most health workers have good awareness and understanding of what the national climate change policy in Nigeria entails.

There is therefore need to develop an action guide or action plan for health workers to guide them on their duty towards positive climate change mitigation and adaptation practices.

According to a recommendation by the American College of Physicians (ACP), it is important that physicians and the broader health care community around the world educate the general public, colleagues, community, and law/policy makers on issues of climate change and the risks it poses to human health.

Recommendations

1. There is need to develop an action guide for health workers to provide a clear description of their duty and roles as it relates to the practice of the National Climate Change Policy (NCCP) in Nigeria.
2. Future research should investigate the awareness and understanding of health workers regarding the national climate change policy in other parts of Nigeria and in other developing countries.
3. Future research should use quantitative and qualitative methods to assess the health workers' awareness and understanding in more detail.

References

Adah R., Olusonde O., Nashon B. (2019). Heat Wave in the Context of Climate Change: A Cross Sectional Study on Awareness and Practices among Health Workers in North East Nigeria. International Journal of Research and Scientific Innovation (IJRSI) | Volume VI, Issue X, October 2019 | ISSN 2321–2705

Adedeji, Olufemi & Okocha, Reuben & Olatoye, Olufemi. (2014). Global Climate Change. Journal of Geoscience and Environment Protection. 02. 114-122. 10.4236/gep.2014.22016.

Ademola A. Q., & Adeyinka A. A. (2018). Perception of climate change and awareness of mitigation strategies among university students in Southwestern Nigeria. Journal of Environmental and Public Health, 2018, 1 – 12. Doi: 10.1155/2018/1039764

Al-Hanawi M. K., Angawi K., Alshareef N., Qattan A. M., Helmy H. Z., Abudawood Y., Alsharqi O. (2020). Knowledge, attitude and practice toward climate change among the health professionals in Saudi Arabia. Journal of Public Health Research, 9(4), 1817. https://doi.org/10.4081/jphr.2020.1817

Bates M., Hunt A., Haynes R., & Ores T. (2015). Climate change and health: a systematic review of the evidence. Health & Place, 32, 156-167. Doi: 10.1016/j.healthplace.2014.11/002

Bedsworth L. (2009). Preparing for climate change: a perspective from local public health officers in California. *Environmental health perspectives*, *117*(4), 617–623. https://doi.org/10.1289/ehp.0800114

Byron, L., & Akerlof, K. L. (2021). Climate and health concerns of Montana's public and environmental health professionals: a cross-sectional study. *BMC public health*, *21*(1), 1778. https://doi.org/10.1186/s12889-021-11737-1

Department of Climate Change, Federal Ministry of Environment, Nigeria (2021). 2050 Long Term Vision for Nigeria (LTV-2050). Accessed on: 28th June, 2023. Available on: https://unfccc.int/sites/default/files/resource/Nigeria_LTS1.pdf

Dupraz, J., & Burnand, B. (2021). Role of Health Professionals Regarding the Impact of Climate Change on Health-An Exploratory Review. *International journal of environmental research and public health*, *18*(6), 3222. https://doi.org/10.3390/ijerph18063222

Federal Ministry of Environment. (2021). National climate change policy (revised). Abuja: Department of Climate Change, Federal Ministry of Environment. Retrieved from https://climatechange.gov.ng/wp-content/uploads/2020/09/national-climate-change-policy-1-1.pdf

Federal Ministry of Environment. (2013). National policy on climate change. Abuja: Department of Climate Change, Federal Ministry of Environment. Retrieved from https://climatechange.gov.ng/wp-content/uploads/2020/09/national-climate-change-policy-1-1.pdf

Folashade B. O., Ismail T. S. (2013). Determinants of Home Delivery among Hausa in Kaduna South Local Government Area of Kaduna State, Nigeria. *American International Journal of Contemporary Research*. Vol. 3 No. 5; May 2013

Francis E. E., Adamu S. S., Samuel O., Nanven A. M., Solomon J., Laura M., Kenneth O. O. (2020). Knowledge, attitude, and practice among healthcare workers towards COVID-19 outbreak in Nigeria. Heliyon, Volume 6, Issue 11, e05557. ISSN 2405-8440. https://doi.org/10.1016/j.heliyon.2020.e05557.

Hafiz L., Okafor J. C., Augustine C. O., Esther C. A., Ammielshaddai C. A., Chiemelie O., Chike C. U., Animashaun B. O. (2022). The impact of talent management on the performance of employees at BarauDikko Teaching Hospital (BDTH), Kaduna. South Asian Journal of Social Studies and Economics. 27-44. 10.9734/sajsse/2022/v15i330408

Kircher M, Doheny B M, Raab K, Onello E, Gingerich S, Potter T. (2022) Understanding the Knowledge, Attitudes, and Practices of Healthcare Professionals toward Climate Change and Health in Minnesota. *Challenges*. 13(2):57. https://doi.org/10.3390/challe13020057

Klingelhöfer, D., Müller, R., Braun, M. et al. (2020). Climate change: Does international research fulfill global demands and necessities? Environ SciEur 32, 137. https://doi.org/10.1186/s12302-020-00419-1

Maibach, E. W., Chadwick, A., McBride, D., Chuk, M., Ebi, K. L., &Balbus, J. (2008). Climate change and local public health in the United States: preparedness, programs and perceptions of local public health department directors. *PloS one*, *3*(7), e2838. https://doi.org/10.1371/journal.pone.0002838

Mehrotra S., Hiatt R. A. & Fink A. (2019). Health professionals for a healthy climate: Linking knowledge, policy and actions. PloS one, 14(8), e0217702

Ogbonna B. O., Otuu F. C. & Madueke L. (2020). Assessment of the awareness and perception of climate change among secondary school students in Port-Harcourt, Nigeria. Journal of Environmental and Public Health, 2020, 1 – 10. Doi: 10.1155/2020/6854832

Oyekale A. S. (2018). Climate change and health challenges in Nigeria: A systematic review and policy implication. Current Environmental Health Reports, 5, 115-124. Doi: 10.1007/s40572-018-0181-3

Pielke, R. A. (2004). What is Climate Change? Energy & Environment, 15(3), 515–520. https://doi.org/10.1260/0958305041494576

Polivka, B. J., Chaudry, R. V., & Mac Crawford, J. (2012). Public health nurses' knowledge and attitudes regarding climate change. *Environmental health perspectives*, *120*(3), 321–325. https://doi.org/10.1289/ehp.1104025

Robert J., John M., & Joachim O. (2014). Public Trust in Physicians — U.S. Medicine in International Perspective. DOI: 10.1056/NEJMp1406707

Ryan A. Crowley (2016). Climate Change and Health: A Position Paper of the American College of Physicians. https://doi.org/10.7326/M15-2766

Saqlain, M., Munir, M. M., Rehman, S. U., Gulzar, A., Naz, S., Ahmed, Z., Tahir, A. H., &Mashhood, M. (2020). Knowledge, attitude, practice and perceived barriers among healthcare workers regarding COVID-19: a cross-sectional survey from Pakistan. *The Journal of hospital infection*, *105*(3), 419–423. https://doi.org/10.1016/j.jhin.2020.05.007

Stoddard J., Stocker R. & Billet S. (2018). Climate change and health: Roles for nurses. Nursing Outlook, 66(5), 469 – 476.

The World Bank Group (2021). Climate Risk Profile: Nigeria. Accessed on: 28th June, 2023. Available on: https://climateknowledgeportal.worldbank.org/sites/default/files/2021-07/15918-WB_Nigeria%20Country%20Profile-WEB.pdf

Tongo I., Adekola O. A. & Yusuf F. A. (2019). Assessment of climate change knowledge, attitude and adaptation among secondary school students in Osun state, Nigeria.

Tsiga-Ahmed, F. I., Amole, T. G., Musa, B. M., Nalado, A. M., Agoyi, O. B., Galadanci, H. S., &Salihu, H. M. (2021). COVID 19: Evaluating the Knowledge, Attitude and Preventive Practices of Healthcare Workers in Northern Nigeria. *International journal of MCH and AIDS*, *10*(1), 88–97. https://doi.org/10.21106/ijma.418

United Nations Development Programme, UNDP. (2016). Knowledge, attitudes & practices study on climate change adaptation & mitigation in Guyana. Accessed on: 22nd of April, 2023. Available on: https://www.undp.org/sites/g/files/zskgke326/files/migration/latinamerica/UNDP-RBLAC-ClimateChangeGuyanaBB.pdf

United Nations Development Programme, UNDP. (2016). Knowledge, Attitudes and Practice Study on Climate Change. Japan- Caribbean Climate Change Partnership Project, Belize. Accessed on: 22nd of April, 2023. Available on: https://www.adaptation-undp.org/sites/default/files/resources/knowledge_attitudes_and_practice_study_on_climate_change_in_belize.pdf

Vishvaja S., Shweta N., Punita K., Pooja K., Adithya P. (2022). Knowledge, attitudes and practices related to climate change and its health aspects among the healthcare workforce in India – A cross-sectional study. The Journal of Climate Change and Health. Volume 6, 100147. ISSN 2667-2782. https://doi.org/10.1016/j.joclim.2022.100147.

Watts et al. (2018). The Lancet countdown on health and climate change: from 25 years of inaction to a global transformation for public health. The Lancet, 391 (10120), 581 – 630. https://doi.org/10.1016/S0140-6736(17)32464-9

World Health Organization. (2018). Climate change and health. https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

World Health Organization. (2014). Climate change and human health: impacts, vulnerability and public health. Geneva, Switzerland.

World Health Organization. (2021). Climate Change and Health. Accessed on: 15th of April, 2023. Available on: https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health

World Health Organization. (2008). Protecting health from climate change: Global research priorities. https://www.who.int/globalchange/publications/research_priorities_climate/en/

Yang, L., Liao, W., Liu, C., Zhang, N., Zhong, S., & Huang, C. (2018). Associations between Knowledge of the Causes and Perceived Impacts of Climate Change: A Cross-Sectional Survey of Medical, Public Health and Nursing Students in Universities in China. *International journal of environmental research and public health*, *15*(12), 2650.https://doi.org/10.3390/ijerph15122650

Yumkella F., Conteh I., Yumkella M. &Sesay S. (2017). Assessment of knowledge, attitudes and practices of health workers on climate change and health in Sierra Leone. Journal of Environmental and Public Health, 2017, 1 – 9. https://doi.org/10.1155/2017/2195280