

The Influence of Religious Affiliation and Church Attendance on Climate Change Awareness, Perception, and Action: The Role of Churches through Environmental Education in Nigeria

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Abstract

Churches can serve as platforms for environmental education, fostering a sense of responsibility towards the environment among their congregations. This study examined the influence of religious affiliation and attendance on climate change awareness, perception, action and perceived role of the church through environmental education in Nigeria. Churchgoers from Catholic, Anglican, and Pentecostal churches from the six geopolitical zones of Nigeria completed the Climate Change Awareness Questionnaire (CCAQ); Climate Change Perception Questionnaire (CCPQ); Churches' Role Perception Scale (CRPS); and Climate Change Action Assessment Scale (CCAAS) and also provided relevant demographic information. Results of statistical analysis indicated that there was a significant difference between the religious denominations in climate change awareness, perception, action and perceived role of the church. The results also showed that more frequency of attendance to church activities was associated with increased climate change awareness, perception of climate change, climate change action, and perceived role of the church in addressing climate change. Churches must continue incorporating environmental teachings into their religious practices and advocating for environmentally-friendly behaviors among members as ways of contributing to the campaign against climate change.

Keywords: climate change, religious affiliation, religious attendance, churchgoers, Catholic, Anglican, Pentecostal

Introduction

Climate change remains a daunting challenge to the international community. The floods that recently swept through Germany, US, China, Turkey, Spain, Ethiopia, Afghanistan, Bangladesh, Nigeria, etc. (see Aljazeera, 2021) attest to this. Other events such as frequent long-term drought, desertification, land degradation, loss of biodiversity, wildfires and extremes of heat and cold that have been ravaging many communities especially in developing countries (see Haider, 2019; Sadowski, 2021) serve as an additional evidence. In Nigeria, for instance, climate change is experiential as many communities have been suffering the severity of these events in different sectors such as —agriculture, health and sanitation, livelihood, energy, infrastructure, human settlements, and housing, etc. (see Ebele & Emodi, 2016; Ajaero et al., 2009; BNRCC, 2011; NEST & Woodley, 2012). In its report released on 9 August 2021, the Intergovernmental Panel on Climate Change (IPCC) notes that human-caused changes in the earth's climate are not only observable in every region, but also promise a very bleak future for millions of people across the world if nothing drastic is done (IPCC, 2021). This calls for urgent action on climate change.

To achieve an effective climate action especially at the individual or local levels, people would need to be knowledgeable about climate change and also have science-based

perceptions about the phenomenon. This is because research shows that knowledge and perceptions impact strategies developed to address climate change (Chowdhury et al., 2021; Scannell & Gifford, 2013). However, different factors shape climate change knowledge, perceptions as well as action; some of which are education, economic/social status, gender, religious beliefs, affiliation and attendance, etc.

The present study focuses on the influence of religious affiliation and attendance (on weekly basis or more). Studies show that religious affiliation relates to climate change perceptions, greenhouse gas emissions, and energy use both on the individual, national and international levels (Pew Research Center, 2010; Skirbekk et al., 2020a, 2020b). Religious attendance on the other hand, has also been found to determine peoples' beliefs and actions on climate change (Alper, 2022; Barone, 2022; Bardon, 2020). However, these findings have been established largely in the global north. Little is known with respect to the influence of religious affiliation and attendance on climate change awareness and perceptions in the global south. This is despite the fact that the impacts of climate change are expected to be more severe in the global south. This is also confirmed by Jenkins et al. (2018) who after an extensive review of literature on religion and climate change, concluded that "there is not yet a substantial body of quantitative research about the relationship between religious identity and climate change opinions outside of North America and Northern Europe" (p.87). The few published quantitative studies (e.g., Murphy et al., 2016; Nunn et al., 2016) which basically treated religion/spirituality as an instrument of mobilization for climate change mitigation and adaptation) that focus on other regions, according to these authors, "suggest that the patterns of denominationally organized climate polarization that characterize environmental politics in the United States (and Canada and Australia to lesser degrees) do not adequately account for the relationship between religion and climate change in many Global South societies" (p.87). These authors therefore highlighted the need for social scientific research on the connection between religion and climate change from beyond the global north.

It is indeed important to understand how religious affiliation and attendance shape climate change attitudes in the global south not only because majority of the population are religious and that religion plays critical roles in the daily lives of the people (Skirbekk et al., 2020a; 2020b), but also because such understanding will help in the design of issue and context specific policies in that part of the world. Hence, in order to contribute to the debates from global southern perspective, the present study examined the influence of religious affiliation and attendance on climate change awareness, perception, action and perceived role of the church in Nigeria. With over 200 million religious persons with 45 percent Christian population (Sasu, 2022), religion is not only prevalent in Nigeria; it also plays critical roles in the lives of Nigerians. This further justifies the focus of this study.

Religious affiliation, attendance and climate change/environmental attitudes

Studies especially the ones conducted in the United States, Europe and Australia have shown that religion matters in climate change knowledge, attitudes and behaviours. However, in some cases differences in environmental attitudes across religious groupings may reflect socio-demographic variables, political conservatism or scientific knowledge (Morrison et al., 2015). For instance, people who are affiliated with a religion were found to be more likely to perceive the environment as sacred because it is created by God and also express greater willingness to engage in environmental action (especially in their personal consumer behaviours) (Dietz et al., 1998). At the international level, nations with high religious affiliation have been found to use fewer natural resources and emit less green house gases (Skirbekk et al., 2020a; 2020b). However, it is the religiously unaffiliated that are more likely to believe that

climate change is happening due largely to human activities (Pew Research Center, 2015). Other studies have found no difference between religiously affiliated and unaffiliated with respect to climate change beliefs and behaviours across nations (Hayes & Marangudakis, 2000; 2001)

Within the Christian circles, there are also differences between denominations with respect to environmental/climate change beliefs and behaviours. While members of Baptists and Mormon groups were reported to hold human-dominion-over-nature views, those of Episcopal and Methodist churches expressed stewardship of nature beliefs (Hand & van Liere, 1984). Also, Catholics were found to be more likely to support environmental spending in line with their perception of God as a Gracious and generous being than other denominations like Presbyterian churches (Agliard, 2014; Townsend 2014). The Catholics are also less likely than Anglicans and Pentecostals to hold end-time beliefs about climate change; to be more knowledgeable and willing to take action to address climate change (Nche, 2020a; 2020b). Although, some evangelicals have been reported to be concerned and willing to do something about climate change (Smith & Leiserowitz, 2013), they are generally less likely than non-evangelicals to believe that global warming is happening; caused mostly by human activities; and causing serious harm (Alper, 2022; Smith & Leiserowitz, 2013; Swartz, 2008). This is largely due to their Republican affiliations and their anti-government sentiment (Swartz, 2008). Likewise, Pentecostals (especially their leaders) have been repeatedly found to express the weakest pro-environmental stance and the least active in terms of environmental activities (e.g. implementation of energy and water saving measures at church buildings, the usual inclusion of environmental concerns in worship, and the celebration of a day or a season with an environmental theme in the previous five years) compared to other denominations such as the Uniting Church, Catholic and Anglican churches (Pepper & Leonard, 2016a; 2016b; Pepper & Powell, 2013a, 2013b). The Pentecostals' subscription to dominion and end-time beliefs largely explains their weak pro-environmental stance (Guth et al., 1995; Hand & van Liere, 1984; Nche, 2020b; Pepper & Powell, 2013a, 2016b; Readfearn, 2021).

With respect to religious/church attendance, studies have also shown that it shapes climate change beliefs and actions. For instance, church goers who frequently attend worship on weekly basis or more have been found to show stronger pro-environmental attitudes (Eckberg & Blocker, 1996) and more likely to engage in pro-environmental actions especially when other variables such as fundamentalism and political conservatism are controlled (Black, 1997; Kanagy & Willits, 1993; Woodrum & Wolkomir, 1997). However, frequent church goers care less about animal welfare (Deemer & Lobao, 2011). Similarly, while frequent church attendees may engage in some pro-environmental behaviours especially at the individual levels, they have been found to give less support to the policy prioritization of environmental protection (Black, 1997; Eckberg & Blocker, 1996; Kanagy & Willits, 1993; Sherkat & Ellison, 2007; Woodrum & Wolkomir, 1997), neither are they in support of political environmental activism (Sherkat & Ellison, 2007). This is perhaps because people with high church attendance rate (i.e. religious commitment which is measured by how often people pray and how often they attend religious services) are less likely to see human activities as the major causes of climate change (Alper, 2022; Barone, 2022; Bardon, 2020).

Method

The Study Location

The six geo-political zones formed the clusters into which the researcher divided Nigeria. With the exception of North East (Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe states) on the basis of security challenges, the researcher listed all the states in these respective geo-political zones in an alphabetical order. These geo-political zones alongside their states include south – south (Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers states), south-east (Abia, Anambra, Ebonyi, Enugu, and Imo states), south-west (Ekiti, Lagos, Ogun, Ondo, Osun and Oyo states), north-central (Abuja [the Federal Capital Territory], Benue, Kogi, Kwara, Nassarawa, Niger, and Plateau states) and north-west (Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara states).

The third states in each of these geo-political zones were selected using systematic sampling technique. In this sense, the selected states include Cross River, Ebonyi, Ogun, Kogi, and Kano states. Then, the capital cities in these selected states were purposively selected for the study. This is because capital cities and urban areas have more educated congregations as well as populated churches than the rural areas. This, however, did not apply to Kano state where most of the local government areas are dominated by Muslims, except for the Sabon-garri area where foreigners and mostly Christians occupy in the state. Hence, the researcher randomly selected churches in the Christian dominated area in Kano state. The selected capital cities in the other four states accordingly included Abakaliki (Ebonyi state), Abeokuta (Ogun state), Calabar (Cross river state), and Lokoja (Kogi state). Finally, the specific locations of churches within the selected cities were randomly selected.

Participants

Participants for the study were n=1500 drawn from Catholic, Anglican and Pentecostal churches/denominations. These participants were divided among these denominations (i.e. 500 participants from each denomination) in five geopolitical zones (i.e. 300 participants from each geopolitical zones) in Nigeria. These geopolitical zones are south – south; south-east; south-west; north-central; and north-west in Nigeria. The north east was excluded on the basis of security challenges occasioned by boko haram insurgency. In each of these geopolitical zones, three churches (Catholic, Anglican and Pentecostal churches) were studied and in each of these churches, 100 selected participants were requested to fill the study questionnaires. However, of the 1500 questionnaires that were distributed to participants, only 582 were valid and analyzable. The rest were discarded due to incomplete responses.

Instruments

The following measures or instruments were used for the study: Climate Change Awareness Questionnaire (CCAQ); Climate Change Perception Questionnaire (CCPQ); Churches' Role Perception Scale (CRPS); and Climate Change Action Assessment Scale (CCAAS). These instruments were developed by the researcher and pilot tested. However, some of the items especially in CCAQ and CCPQ were drawn from the 27-item Multidimensional Climate Change Awareness Questionnaire developed by Chukwuorji et al. (2015) to measure climate change awareness among University students. Nevertheless, the present researcher conducted a pilot study involving 110 participants drawn from randomly selected churches in Nsukka, Enugu state of Nigeria. These churches included: The Holy Trinity Station, Amenu Edem-ani (i.e. Catholic church [35 participants]), St. Paul's Cathedral

Nsukka (i.e. Anglican church [40 participants]), and the Redeemed Christian Church of God, Zonal Headquarters, No. 11 Obollo Road, Nsukka (i.e. Pentecostal church [35 participants]). It should be noted that these participants were not included in the main study. The outcome of the pilot study is discussed below:

An alpha of .83 was obtained when item analysis was performed on the 16-item Climate Change Awareness Questionnaire (CCAQ). After a review of the output, 5 items (1, 2, 6, 11, & 16) with corrected item-total correlation less than .3 were reviewed and found to be either ambiguous or confusing and so was removed from the scale. Cronbach's alpha of .88 was obtained after removing the items. Factor analysis on the awareness scale also showed a good fit ($KMO = .87$, $BTS = 298.46$, $p < .001$) and a uni-dimensional model better for the 11 items than for the original 16 items. Hence the revised 11 item model was adopted. This was therefore used to measure the level of climate change awareness among Catholic, Anglican and Pentecostal churches in Nigeria. This covers the general awareness of the processes of climate change, its consequences and mitigation strategies. Sample items include "I have heard of greenhouse gases", "Climate change is adversely affecting the plants and animal species of the universe", "If some greenhouse gases are captured, it will reduce climate change" etc. Participants rated each item on a 5-point Likert scale, indicating to what extent they agree, from 1 (strongly disagree) to 5 (strongly agree).

For the CCPQ, an alpha of .76 was obtained for the original 21 items. However, 6 items (5, 9, 10, 17, 18, & 19) were found to have corrected item-total correlations below .3. After further reviews and re-computations and additional 4 items (20, 6, 7 & 8) were found to be inconsistent in the scale with low item-total correlations and so were removed. A final Cronbach's alpha of .80 was obtained with 11 items. Factor analysis on the remaining 11 items produced a better fit ($KMO = .73$, $BTS = 249.54$, $p < .001$) and confirmed a one-dimensional structure for the questionnaire. This 11-item questionnaire was used to measure the perceptions these three churches have about climate change in Nigeria. Items 1, 3, 4, and 9 were scored in reverse order. Sample items include: "There is nothing like climate change, the world is only coming to an end", "Human activities cause climate change", "Climate change can be addressed/tackled" etc. Participants were expected to rate these items on a 5-point Likert scale, indicating the extent to which they agree, from 1 (Strongly disagree) to 5 (Strongly agree).

On examining the reliability of the Churches' Role Perception Scale (CRPS), item analysis on the initial 12 items resulted in a Cronbach's alpha of .75. Four items (9, 10, 11, & 12) were removed on account of poor item-total correlation. A re-run of analysis yielded an improved alpha of .90. Factor analysis on the 8 items also confirmed goodness of fit ($KMO = .89$, $BTS = 332.43$, $p < .001$) as well as a single factor structure of the scale. The 8-item scale was used to measure the perceptions the churches have about their roles in climate change mitigation and adaptation in Nigeria. Sample items include: "Churches can help raise awareness about climate change adaptation", "Churches can help mitigation climate change." Participants were expected to rate these items on a 5-point Likert scale, indicating to what extent they agree, from 1 (strongly disagree) to 5 (strongly agree).

A Cronbach's alpha of .83 was obtained for initial analysis on the Climate Change Action Assessment Scale (CCAAS). A review of the inter-item correlation promoted the removal of 6 items (3, 6, 8, 4, 7 & 11). Re-computation with the remaining 17 items gave an alpha of .89 for the remaining 17 items. Factor analysis on the scale was of good fit ($KMO = .79$, $BTS = 515.31$, $p < .001$) and supported a one-dimensional model for the scale. This scale was used to assess climate change actions or pro-environmental behaviours among the churches in Nigeria. The 17-item scale covers two principal ideas which are: (a) Climate change mitigation

and (b) Climate change Adaptation. Participants' actions were assessed along two dimensions: (a) actions carried out by self toward climate change mitigation and adaptation and (b) teaching and encouragement of others to carry out such actions toward climate change mitigation and adaptation. Sample items include: "I plant trees", "I recycle waste (paper)", "I encourage people to plant trees", "I donate money to help climate change victims (victims of flood & other disasters)" etc. Participants were expected to rate each item on a 4 – Likert scale, indicating if they carry out any climate change action and how often they carry out such actions, from 1 (Not at all) to 4 (Always). The item number 9 was scored in reverse order.

Procedure

The researcher recruited two research assistants who were trained to assist in the collection of data. Alongside these assistants, the researcher always sought for a formal permission from priests/pastors, Deacons/Deaconesses, elders or leaders of congregations as the case may be, before administering questionnaires to church members. And this was usually at the end of Sunday or midweek services as the case may be. Members were approached and asked to participate in the study. Those who gave their consent were given questionnaires. The researcher explained the nature of the study to the participants orally or through the Study Information Sheet indicating what they were required to do and who is undertaking the research. They were also encouraged to answer the questions as honestly as possible. In a situation in which a church could not provide up to a hundred (100) participants, the researcher endeavoured to make it up from a nearest branch of the same church within the local government area/state. All information gathered from any church was handled with high level of confidentiality and prudence by storing them in a password-protected computer.

Analysis

The study employed one-way Analysis of variance and Pearson's correlation in analyzing the data. One way ANOVA was conducted to examine the differences among the religious denominations in climate change awareness, perception, action and perceived role of the church. Correlation allows researchers to make predictions by implying a certain amount of common or shared variance (Urbina 2014). A correlation analysis, therefore, was conducted to reveal the relationships that exist between the variables. The data obtained from various participants were analyzed using Statistical Package for Social Sciences (SPSS) version 25.

Results

Table 1. *Test of significant differences between the religious denominations in climate change awareness, perception, action and perceived role of the church in climate change*

Variables		Sum of Squares	DF	Mean Square	F
Awareness	Between Groups	727.48	2	363.74	11.83***
	Within Groups	17798.84	579	30.74	
	Total	18526.32	581		
Perception	Between Groups	4224.13	2	2112.06	66.70***
	Within Groups	18333.02	579	31.66	
	Total	22557.15	581		
Action	Between Groups	1828.73	2	914.37	10.97***
	Within Groups	48272.33	579	83.37	
	Total	50101.06	581		

Church's role	Between Groups	137.30	2	68.65	4.42*
	Within Groups	8996.05	579	15.54	
	Total	9133.35	581		

Note. *** $p < .001$; ** $p < .01$; * $p < .05$

Results of the one-way Analysis of variance in Table 1 showed that there was a significant difference between the religious denominations in climate change awareness, $F(2, 579) = 11.83, p < .001$. Post-hoc tests of the significant effects showed that Catholics had higher scores in climate change awareness ($M = 48.78, SD = 5.89$) compared to the Anglicans ($M = 46.37, SD = 5.37$) and Pentecostals ($M = 46.81, SD = 5.18$), Mean Difference = 2.41, $p < .001$, and 1.97, $p < .01$, respectively. Anglicans did not significantly differ from the Pentecostals in climate change awareness, Mean Difference = .44, $p > .05$.

There was also a significant difference between the religious denominations in perception of climate change, $F(2, 579) = 66.70, p < .001$. Post-hoc tests of the significant effects showed that Catholics had higher scores in perception of climate change ($M = 47.54, SD = 5.80$) compared to the Anglicans ($M = 42.08, SD = 5.56$) and Pentecostals ($M = 41.96, SD = 5.42$), Mean Difference = 5.46, $p < .001$, and 5.57, $p < .001$, respectively. Anglicans did not significantly differ from the Pentecostals in climate change awareness, Mean Difference = .12, $p > .05$.

Results further showed that denominational affiliation significantly impacted climate change action, $F(2, 579) = 10.97, p < .001$. Post-hoc tests of the significant effects showed that Catholics had higher scores in climate change action ($M = 44.58, SD = 8.63$) compared to the Anglicans ($M = 40.65, SD = 9.37$) and Pentecostals ($M = 41.87, SD = 9.59$), Mean Difference = 3.93, $p < .001$, and 2.71, $p < .05$, respectively. Anglicans did not significantly differ from the Pentecostals in climate change awareness, Mean Difference = 1.22, $p > .05$.

Denominational affiliation significantly influenced the participant's perceived role of the church in addressing climate change, $F(2, 579) = 4.42, p < .05$. Post-hoc tests of the significant effects showed that Catholics had higher scores in perceived role of the church in addressing climate change ($M = 35.86, SD = 4.02$) compared to Pentecostals ($M = 34.71, SD = 3.46$), Mean Difference = 1.15, $p < .05$. Catholics did not differ from Anglicans ($M = 34.99, SD = 4.11$) in perceived role of the church in addressing climate change, Mean Difference = .87, $p > .05$. Anglicans did not significantly differ from the Pentecostals in perceived role of the church in addressing climate change, Mean Difference = .29, $p > .05$.

Table 2. *Correlations of frequency of attendance to church with climate change awareness, perception, action and perceived role of the church in climate change*

Variables	1	2	3	4
1 Attendance	-			
2 Awareness	.16***	-		
3 Perception	.13**	.41***	-	
4 Action	.11**	.11**	.05	-
5 Church's role	.10*	.28***	.28***	.32**

Note. *** $p < .001$; ** $p < .01$; * $p < .05$

Table 2 showed that more frequency of attendance to church activities was associated with increased climate change awareness ($r = .16, p < .001$), perception of climate change ($r = .13, p < .01$), climate change action ($r = .11, p < .01$), and perceived role of the church in addressing climate change ($r = .10, p < .05$). Climate change awareness was also positively related to perception of climate change ($r = .41, p < .001$), climate change action ($r = .11, p < .01$), and perceived role of the church in climate change ($r = .28, p < .01$). Perception of

climate change was not significantly related to climate change action ($r = .05, p > .5$), but there was a positive association between perception of climate change and perceived role of the church in climate change ($r = .28, p < .001$). Climate change action had a positive relationship with perceived role of the church in climate change ($r = .32, p < .001$).

Discussion

Since churches play a significant role in Nigerian society, it is crucial to understand the influence of religious affiliation and church attendance on climate change awareness, perception, and action among their members. This study has shown that religious affiliation and attendance do influence climate change awareness, perception, action as well as perceived role of the church in addressing climate change in Nigeria. For instance, unlike the Anglicans and the Pentecostal participants, Catholics were found to be more aware of climate change; have more science-based perceptions about the phenomenon; have performed climate actions more regularly; and believe that the church (i.e. in its collective sense as “the body of Christ”) has an important role to play in addressing climate change in Nigeria. These findings are consistent with the findings of previous studies that Catholics are less likely than Anglicans and Pentecostals to hold end-time beliefs about climate change. They are also found to be more knowledgeable and willing to take action to address climate change; as well as more likely to support environmental spending (Agliardo 2014; Nche 2020a; 2020b; Townsend 2014).

The Catholic Church has a long history not only with environmental engagement (see Pope Francis, 2015), but also with science (i.e. seeing science as “a partner of faith” (see Faggioli, 2015; Nche et al., 2022a) which predisposes adherents to appreciate and believe the science of climate change. The Catholic Church has also demonstrated leadership in the area of climate change awareness creation especially in Nigeria. Through its educational institutions, the Catholic Church in Nigeria has organized some conferences (see: Proceedings of the Conference of the 22nd CIWA Theology Week held on 21st -25th March 2011 in Port Harcourt, Nigeria) and also published academic journals addressing the issue of climate change (see: African Journal of Contextual Theology, vol. 2) in the country (Nche et al., 2017; Nche, 2020a). Also, in September 2015, the Catholic Bishops Conference of Nigeria (CBCN) released a Communiqué at the end of the plenary meeting at the Pastoral Centre, Igwuruta, Port Harcourt, Rivers State, Nigeria. This communiqué addressed the issue of climate crisis as espoused in the Encyclical Letter of Pope Francis, *Laudato Si'* (Nche 2018). Furthermore, some Catholics have been reported to be engaging in private climate change awareness creation activities in Nigeria (see Egwu, 2020). All these and more could explain why the Catholic participants in this study were found to have the highest scores with respect to climate change awareness, perception, action and perceived role of the church in Nigeria.

On the one hand, these findings suggest that progress is being made especially as Catholics appear to be more positively disposed towards the campaign against climate change. This progress increases the prospects of winning the war against climate change in Nigeria as the Catholics have a substantial population in the country (Pentin, 2022). However, on the other hand, these findings raise serious concerns as the Anglicans and Pentecostals (both with very large number of adherents in Nigeria, see Facsar, 2018; McKinnon, 2020) seem to be both theologically and ecclesiastically reluctant in accepting the reality of climate change and taking action towards addressing the phenomenon. For instance, previous studies in Nigeria reported that Anglican and Pentecostal leaders interpreted climate change as a sign of end time and performed less climate actions especially at the organizational (i.e. church) levels

(Nche, 2020a, 2020b). This is also the case outside Nigeria (see Pepper & Leonard, 2016a; 2016b; Pepper & Powell, 2013a, 2013b). This suggests that future climate change campaign efforts and strategic engagements should focus largely on bringing these religious groups (i.e. Anglicans and Pentecostals) on board. Also, future research should focus on understanding how the strongly held beliefs of these groups interact with climate change and how best to engage them on the issue of climate change.

The study also found that those who attended church frequently had increased climate change awareness, science-based perception of climate change, performed climate action more regularly and believed that the church has important role to play in addressing climate change in Nigeria. These findings correspond with the findings of previous studies that people who frequently attend worship show stronger pro-environmental attitudes (Eckberg & Blocker, 1996) and are more likely to engage in pro-environmental actions (Black, 1997; Kanagy & Willits, 1993; Woodrum & Wolkomir, 1997). This is interesting because frequent religious attendance is a measure or feature of religious commitment (see Pew Research Center, 2018) and people with high religious commitment especially in the US are often conservative in their approaches towards social issues such as science and climate change in particular. They are the least likely to say global climate change is extremely or very serious and the most likely to say it is not a serious problem (Alper, 2022). They are also less likely to see human activities as the major causes of climate change (Alper, 2022; Bardon, 2020; Barone, 2022). Hence, these findings open up important perspectives which suggest that unlike the case in the US, people with high rate of church attendance (weekly or more) in Nigeria show more pro-environmental attitudes and perform climate actions more regularly.

Perhaps the explanation for these contradicting findings lies in the context of the studies especially with respect to the roles of leaders or ministers of the churches or religious worships that are frequently attended. If a minister or priest does not teach pro-environmental theologies or speak about the need to address climate change during sermons or routine church services and perform environmental behaviours in his/her own daily life, the members will not appreciate the dangers of climate change and the need to address it, their frequent religious attendance notwithstanding. But if ministers/priests do otherwise, it would reflect in the perceptions and daily lives of their frequent religious attendants.

This highlights the critical place of religious leaders in the campaign against climate change especially in Nigeria. Studies have argued that religious leaders have moral authority among the faithful, and can through their vast networks and pulpits influence actions among their congregations especially in matters of personal ethics and social justice which are key to shaping attitudes towards the environment and climate change (Djupe & Hunt, 2009; Nche, 2020a, 2020b; Tsimpo & Wodon, 2016). In a country with a Christian population of about 87 million (Diamant, 2019) and where religion generally plays critical roles in people's lives, the leadership of Catholic, Anglican and Pentecostal churches have enormous influence. Hence, the leadership of Christian denominations in Nigeria needs to do more about creating climate change awareness in their respective local parishes or branches. This is important because despite the finding that regular church attendees show more pro-environmental attitudes, climate change awareness is generally poor in Nigeria (see Statista Research Department, 2021). Yet, merely teaching or encouraging pro-environmental attitudes among congregations is not enough to make congregations to perform climate actions or environmentally friendly behaviours. The church leaders, according to Holland and Carter (2005), also need to put their words into practice to be able to get the congregations to be active in carrying out climate actions.

The fact that two sets of the participants (e.g., the Catholics and those who attend church more frequently) supported the position that the church has a critical role to play in addressing climate change is instructive. This reinforces the Nche's (2020b) findings among Catholic, Anglican and Pentecostal church leaders in Nigeria who did not only support the church's intervention or involvement in the campaign against climate change, but also suggested specific roles the church can play. These roles include climate change awareness creation, charity for disaster victims, and prayer. A similar finding was also made among Muslim and Christian leaders in the northern Nigeria (Abdussalam & Abukur, 2021; Mustapha et al., 2020). Nevertheless, this finding suggests that some religious people are willing to take actions on climate change in Nigeria.

The intuitive nature of the findings in which high climate change awareness corresponds with science-based perception about climate change, regular climate action and positive perception of the role of the church in addressing climate change, is worth attention. This pattern reinforces the scholarly position that a significant change in climate change awareness not only affects the public perception about climate change, but also translates into noticeable changes in people's behavior towards the phenomenon (Rucht & Sommer, 2019; Venghaus et al., 2022; Yuana et al., 2020). Climate change awareness is indeed the first and important step to achieving successful climate mitigation and adaptation especially in developing countries (Muller & Wood, 2021; Shahid & Piracha, 2016) of which Nigeria is among.

Implications of Findings for Environmental Education by Churches/Church Leaders

The study findings present crucial implications for churches and church leaders in Nigeria regarding their role in environmental education. Firstly, recognizing the significant differences in climate change awareness, perception, and action among different denominations, church leaders should adopt a targeted and denomination-specific approach to environmental education. For instance, acknowledging that Catholics exhibited higher scores in climate change awareness and action, church leaders from other denominations can collaborate with Catholic counterparts to understand and implement successful strategies. Developing denomination-tailored environmental education programs will help bridge the awareness and action gaps within specific church communities, fostering a more unified and collective effort toward addressing climate change.

The identified influence of denominational affiliation on the perceived role of the church in addressing climate change emphasizes the need for church leaders to actively engage in shaping the environmental narrative within their congregations. Given the variations in perceived roles between Catholics, Anglicans, and Pentecostals, church leaders should incorporate climate change discussions into their sermons, teachings, and community activities, emphasizing the importance of environmental stewardship and sustainable practices. Through proactively guiding their congregations towards a shared understanding of the churches' role in addressing climate change, church leaders can inspire positive action and contribute to the formation of a collective, faith-driven environmental consciousness.

The positive correlation between frequency of attendance and various aspects of climate change engagement suggests that church gatherings can serve as powerful platforms for environmental education. Church leaders can integrate climate change awareness, action, and discussions into regular congregational activities, leveraging the community bonds and trust within the church to disseminate information effectively. Organizing workshops, educational events, and initiatives that align with the positive relationships identified in the study can further enhance the impact of environmental education within the church setting,

fostering a holistic approach to climate change awareness and action among congregants in Nigeria.

Conclusion

In Nigeria, denominational affiliation and frequency of attendance to church activities were associated with increased climate change awareness, perception of climate change, climate change action, and perceived role of the church in addressing climate change. This study highlights the critical place of religious leaders in the campaign concerning climate change in Nigeria. Churches play an important role in promoting climate action through sermons, educational programmes, and community outreach. The churches can play a substantial role in promoting environmental consciousness among their members through environmental education. They have a crucial role in raising awareness about the environment through religious-focused environmental education and advocacy. In other words, promoting environmental education within churches can be an effective strategy for improving climate change awareness, perception, and action in Nigeria. Nigeria can leverage the influence of churches to address climate change by encouraging sustainable practices and collective action across religious denominations. However, it is necessary to consider potential barriers to climate action among churches, such as differing doctrines. Further research is needed to investigate the relationship between religion, climate change, and sustainable development in Nigeria. Future research could focus on the specific beliefs, practices, and attitudes of various religious traditions towards climate change actions among church members. Furthermore, the environmental impact of churches should be investigated to identify opportunities for sustainable practices. Furthermore, education, socioeconomic status, and cultural factors should be investigated to see how they influence church members' perceptions and actions regarding climate change.

Acknowledgment

The researcher wishes to thank the respondents for participating in this study and provided the relevant data for the research.

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