

# **ASSESSING CLIMATE CHANGE AWARENESS AND MITIGATION KNOWLEDGE AMONG UNDERGRADUATES IN PUBLIC TERTIARY INSTITUTIONS IN OYO STATE, NIGERIA**

**Adewale Samuel Oloruntoba**

Department of Geography, School of Secondary Education (Arts and Social Sciences), The College of Education, P.M.B. 001, Lanlate, Oyo State, Nigeria

**DOI:** 10.5281/zenodo.14899819

## **Abstract**

This study assessed the level, factors, sources and channels of information of sentience of Climate Change (CC) on undergraduates in public tertiary institutions in Oyo State, Nigeria. Descriptive survey research design was adopted; a purposive sampling strategy was used to select 350 respondents from four tertiary institutions. Analysis involved descriptive statistics, frequency counts, graphs, mean rating and cross-tabulation. 175 male and 63 female undergraduates were aware about rise in temperature, 168 male and 68 female undergraduates noticed change in the pattern of rainfall. On general note, 181 male 58 female undergraduates reported that the climate is changing, 172 male and 62 female undergraduates were conscious of the adverse effects of CC. Surprisingly, 88 male and 27 female undergraduates were not aware of mitigation measures of CC. Personal experience, public source and general education influenced the level of undergraduates' awareness about CC. The commonest information sources were: their lecturer, document, book, mate, internet site, telephone, journal, pamphlet and television. It was recommended that there should be clear information, students should be well-informed and there should be intensification and inclusion of CC education in schools' curricula. Resuscitation and setting up of geographical gardens in schools, training and re-training of teachers and residents should be conscious of adverse effects of CC.

**Keywords:** : Climate Change, Temperature, Rainfall, Awareness, Information Sources and Channels, Mitigation Measures

## **Background to the Study**

With the increasing emissions of greenhouse effect, population growth, burning of fossil fuels and the consequent 1.1°C rise in global temperature, it is real that Climate Change (henceforth referred to as CC) is happening and its impact is felt by man, plant and animal on this planet Earth. This obvious CC leads to inequality, conflict and crisis, in worst case arm struggle. The negative consequences of CC on physical, biological and human systems could be very severe, more so that viruses and other life-threatening pathogens otherwise trapped in the glaciers could be released with the melting ice into earth's surface. This could lead to widespread of strange and known

diseases. There could also be shortage of fresh-water, reduction in food production, increase in the number of deaths of man, plant and animal arising from floods, storms, heat waves and droughts that were induced by CC. Developing countries, such as Nigeria, that do not have capacity in terms of resources to adapt socially, technologically and financially to mitigate these adverse effects of climate change will be greatly hurt. The youths of such countries are likely to be affected mostly by the agonizing consequences of CC.

Several authors such as Rai and Gurung (2005) sounded a note of warning. According to the scholars CC is happening and people have begun to feel its impacts on their daily lives. Clear indications of these impacts can be seen on Himalayan glaciers, which are melting at rapid rates and consequently forming massive glacial lakes, with a risk of catastrophic Glacial Lake Outburst Floods (GLOFs). GLOFs result in loss of lives, property and costly infrastructure, as well as displacement of local people. Other authors, Mugambiwa and Dzomonda (2018), also warned against the adverse effects of CC. In their words, “CC is expected to pose grave consequences to communities around the world. It is predicted that many people, mostly in the developing world, will experience shortages of water and food as well as numerous healthrelated effects because of CC. Therefore, rigorous global action is needed to enable developing countries to adapt to the effects of CC. Universities play a pivotal role in addressing these issues and their impacts, through research and technological innovations. Hence, assessing the extent to which university students understand CC and its impacts display the extent of hope in mitigating future changes in climatic conditions”. The authors concluded, “the knowledge and awareness of CC by university students is of paramount importance as it equips them with skills to deal with its future impacts”.

This study aimed at assessing the level of sentience on CC of selected undergraduates in public tertiary institutions in Oyo state, Nigeria, with the specific objectives of the study stated below.

- i.** To assess the level of sentience about CC of undergraduates in tertiary institutions in Oyo State, Nigeria.
- ii.** To examine the factors which undergraduates in tertiary institutions in Oyo State, Nigeria perceived to significantly influence their level of sentience about CC.
- iii.** To examine the sources and channels of information undergraduates in public tertiary institutions in Oyo State, Nigeria perceived as important in improving their level of sentience on CC.

The study answered the following research questions.

- i.** What is the level of sentience about CC of undergraduates in tertiary institutions in Oyo State, Nigeria?
- ii.** What factors do undergraduates in tertiary institutions in Oyo State, Nigeria perceived to significantly influence their level of sentience about CC?
- iii.** What are the sources and channels of information do undergraduates in tertiary institutions in Oyo state, Nigeria perceived as important in improving their level of sentience about CC?

Owing to time and resource constraints, this study would only consider the views of undergraduates in all public tertiary institutions in Oyo State, Nigeria about their level of sentience on CC. Invariably, the views of undergraduates in private tertiary institutions would not be considered. Respondents would not also be bordered about the meaning and identification of CC. However, other studies could examine all these using triangulation strategy in assessing the level of sentience of undergraduates on CC. Since qualitative data procedure and analysis have the limitation of not capturing all the data, this makes the deployment of appreciative inquiry relevant and useful in this study. This is so because appreciative inquiry strategy has the advantage of a particular way of asking guided questions that encourage positive thinking and respondent-to-researcher interaction. This study would add to available scientific information and could be useful as a benchmark for evaluating curriculum and other academic activities that border on the level of sentience of students of tertiary institutions on climate change.

### **Literature Review**

In terms of general awareness of CC, Adebayo, Mubi, Zemba and Umar (2013) examined the general level of awareness of CC impacts and adaptations in Adamawa State, Nigeria, using primary data and multistage sampling technique. The results showed a high level of awareness of CC among the citizens of the state. Respondents' assessment of climatic elements in the last 20 -30 years agreed with the experts reports; that is, temperature is increasing while rainfall is decreasing and frequency and length of dry spells are also on the increase. Sourcing water and fuel wood were the major domestic activities mostly affected by CC.

As regards the level of awareness of youths, Barreda (2018) investigated the level of awareness of youth studying in a state university in the Philippines. Specifically, the study employed the descriptive survey method, evaluated the awareness level on CC as experienced by first, second, third and fourth year students. The essay examined the powerful role of youth in impacting CC and how different societal forces influence students' understanding on CC. There was a correlation drawn among first, second, third and fourth year students on where their knowledge of CC was obtained from. There appeared to be a deepened developmental awareness of CC that was correlated besides age.

About CC and sustainable development, Agboola and Emmanuel (2016) investigated the level of awareness of CC and sustainable development among undergraduates at the University of Ibadan and Ladoke Akintola University of Technology, Ogbomoso both in Oyo State, Nigeria. The work adopted a survey design, while the population of the study consisted of three hundred (300) undergraduates. The results showed that undergraduates possessed high level of awareness on the concept of CC. The access they have to the sources of information and factors of personal experience, public sources and education greatly influenced their awareness. The results further showed that there was no significant difference in the level of CC and sustainable development awareness

**Research Article**

in term of gender ( $t = 0.733 > 0.05$ ) and the level of awareness of undergraduates on the concept of CC based on school ownership ( $t = 0.013 < 0.05$ ). The study concluded that CC education should be structured and embedded in the curricula of schools at all levels and that training, re-training, empowerment or enlightenment of the public and stakeholders in CC should be carried out without bias, discrimination or marginalization of any form.

While assessing the knowledge and understanding of undergraduates about CC, Mugambiwa and Dzomonda (2018) assessed the knowledge and understanding of CC and its impacts on students at an institution of higher learning in South Africa using quantitative approach and a descriptive design. Self-administered questionnaires were utilised in a survey to collect data from the participants. A sample of 90 university students participated in the survey. Data analysis included descriptive statistics and *t-test*. The study discovered that university students had low knowledge and understanding of CC. As a result, the study concluded that if students could be well-informed about CC issues, they could positively contribute to the development of their communities by crafting smart CC mitigation and adaptation skills.

In another article, Akrofi, Antwi and Gumbo (2019) examined how the regional manifestations of CC effects and students' involvement in various climate-related clubs and activities influenced their knowledge and awareness of CC. A total of 300 students from 26 African countries participated in the survey. Descriptive statistics, Relative Importance Index (RII) method and the chi-square test of independence were used to analyze the data. Results showed that regional manifestations of CC effects and students' involvement in CC-related workshops and campaigns significantly influenced their knowledge levels whilst their membership of climate-related student clubs had no significant influence. Key knowledge gaps with regards to how factors such as meat consumption and waste generation could lead to CC were also identified. Students were also less knowledgeable about how CC affects key issues such as conflicts, gender inequalities and job insecurity. Intensification of CC education beyond the most common causes and effects is highly recommended among the youths. Various environment-related student clubs are also encouraged to tailor their activities in this direction.

From the foregoing, it appears the literature is replete with scholarly works on awareness of CC both in Nigeria and elsewhere. Such extant studies concentrated on awareness of university undergraduates, little attention was paid to undergraduates of other tertiary institutions. Similarly, the sources and channels of information available to them were not considered. This is the knowledge gap this study intends to fill. Hopefully, this study would add to the existing literature on youths' awareness about CC. More so, that youths especially those in schools are resilient and active, as such their understanding and awareness will give great assurance in mitigating adaptation to CC.

**Methodology**

This study adopted a descriptive survey research design. The population of the study comprised all geography teacher trainees in Oyo State, Nigeria. However, purposive sampling technique was used to select 350 respondents from four tertiary institutions in Oyo State, Nigeria. Owing to the limited resources available at the disposal of this research, all institutions in Oyo State could not be covered. As such, the institutions selected to participate in the study were as follows. i) The Ibarapa Polytechnic, Eruwa. ii) The College of Agriculture, Igboora. iii) Emmanuel Alayande College of Education, (EACOED) Oyo. iv) The College of Education, Lanlate. Respondents (n = 350) were selected randomly among the undergraduates' population.

The respondents were stratified by their academic levels. They were distributed as follows: Freshman (First Year) – 107; Sophomore (Second Year) – 75; Penultimate (Third Year) – 97; and Graduating (Fourth Year) – 71 respectively. The Triangulation strategy (combination of questionnaire, inventory and interview) of data collection instrumentation was employed in this study. This maximized the strength of each data collection instrument and minimized the risks that would arise if only one of them was used. All the items in the instruments were retained after modifications based on the experts suggestions.

The major instrument (SSCC scale) consisted of two parts. The first part collected data on demographic characteristics of students such as age, sex, school and academic level. The second part collected data on respondents' level of sentience, available sources and channels of information and the factors that influenced their sentience level of climate change. The reliability of the usefulness of SSCC's scale was tested using the Cronbach alpha reliability. The Cronbach's alpha coefficients ranged from 0.6 to 0.9; more than the acceptable minimum level of 0.6 in all the items. The analysis of the data in this study involved descriptive statistics such as simple frequency counts, graphs and measures of central tendency such as the mean rating. Cross-tabulations of frequencies with certain demographic characteristics were also used to describe the general distribution and trends in the data.

**Finding and Discussion***Demographic Characteristics of Respondents**Table 1: Demographic characteristics of Respondents*

## Research Article

Age	No	%
Freshman	107	30.57
Sophomore	75	21.43
Penultimate	97	27.71
Graduating	71	20.29
Gender	No	%
Male	247	70.57
Female	103	29.43
Total	350	100

\***Source:** Author's Analysis, 2019.

Table 1 showed the demographic characteristics of respondents. Male respondents formed the majority, 247 (70.57%), while only 103(29.43%) were female.

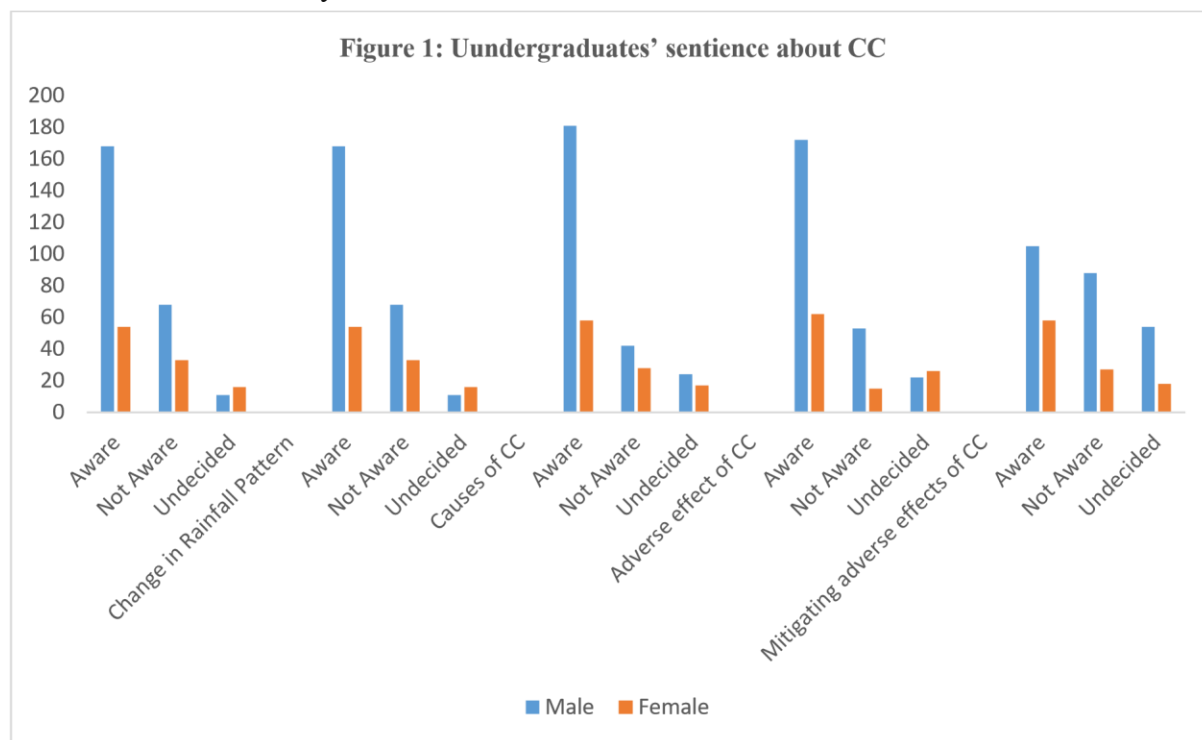
**Table 2: Undergraduates' sentience about CC**

Gender			Class/level				
Male	Female		Freshman	Sophomore	Penultimate	Graduating	Total
Undergraduates' awareness about rise in Temperature							
175	50	Aware	60	48	67	46	221
63	35	Not Aware	30	17	14	14	75
09	18	Undecided	17	10	16	11	54
Undergraduates' awareness about change in Rainfall Pattern							
168	54	Aware	70	52	68	37	227
68	33	Not Aware	20	09	18	25	72
11	16	Undecided	17	14	11	09	52
Undergraduates' awareness aboutcauses of CC							
181	58	Aware	77	48	64	39	228
42	28	Not Aware	19	13	17	22	71
24	17	Undecided	11	14	16	10	51
Undergraduates' awareness aboutadverse effect of CC							
172	62	Aware	68	36	57	38	199

## Research Article

53	15	<i>Not Aware</i>	28	25	24	24	101
22	26	<i>Undecided</i>	11	14	16	09	50
<b>Undergraduates' awareness about mitigating adverse effects of CC</b>							
105	58	<i>Aware</i>	58	28	48	39	173
88	27	<i>Not Aware</i>	39	33	33	27	132
54	18	<i>Undecided</i>	10	14	16	05	45

**\*Source:** Author's Analysis, 2019.



**\*Source:** Author's Analysis, 2019.

Table 2 presented the analysis of the awareness of undergraduates in public tertiary institutions in Oyo State, Nigeria on CC, while Figure 1 showed the trend graphically. While assessing the awareness of undergraduates about CC, the analysis singled out two major elements of weather: temperature and rainfall. From Table 2 and Figure 1, 175 male undergraduates stated that they were aware that there was obvious rise in temperature; another 63 male undergraduates were not conscious of the rise. 63 female undergraduates were aware that there was rise



in temperature; while 35 other female undergraduates were not. As regards rainfall variability, 168 male undergraduates noticed change in the pattern of rainfall in their localities, only 68 male undergraduates were not aware of any change in rainfall pattern. This finding corresponds with that of Adebayo, Mubi, Zemba and Umar (2013). The authors found out that temperature was increasing while rainfall was decreasing and frequency as well as length of dry spells were also on the increase in Adamawa State, Nigeria. Sourcing water and fuel wood are the major domestic activities mostly affected by CC.

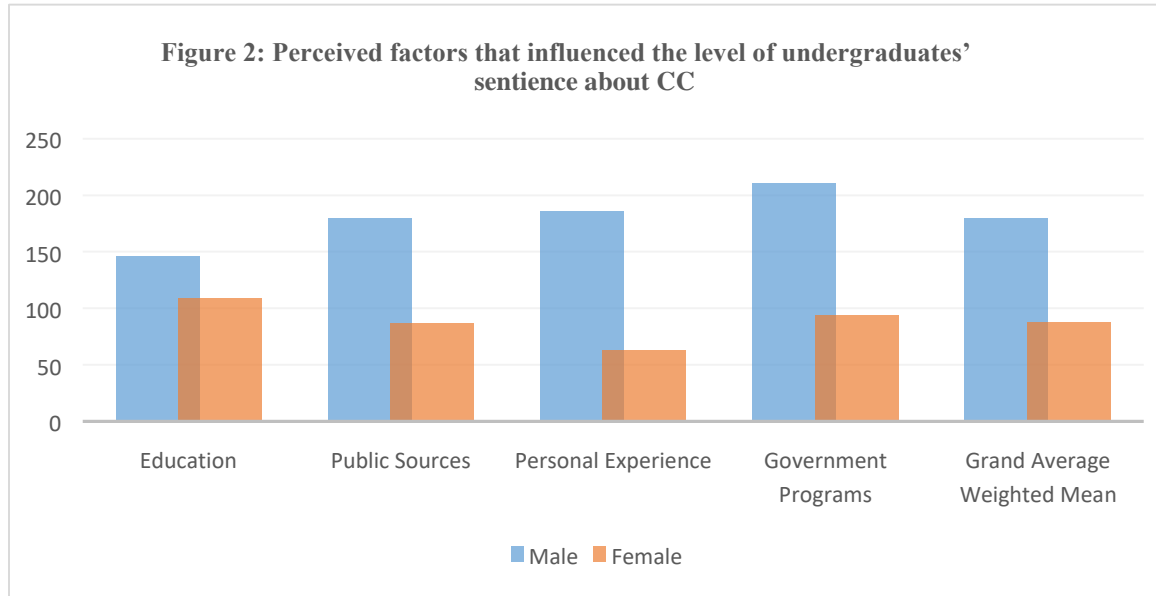
On a general note, the 181 male undergraduates returned that the climate is changing. Another 58 female respondents were not aware of CC. The analysis also revealed that 172 male undergraduates and 62 female undergraduates respectively were conscious of the adverse effects of CC. Surprisingly, 88 male undergraduates and 27 female undergraduates respectively were not aware of mitigation measures of CC. Another 54 male and 18 female undergraduates were undecided about mitigating measures of CC. This could be considered worrisome and should therefore call for the attention of policy makers, curriculum planners and lecturers. This finding is also in tandem with Mugambiwa and Dzomonda's (2018). The scholars discovered that university students in South Africa have low knowledge and understanding of CC and concluded that students should be well-informed about CC issues, such that they could positively contribute to the development of their communities by crafting smart CC mitigation and adaptation skills.

### 3: *Perceived factors that influenced the level of undergraduates' sentience about CC*

Gender		Factors	Weighted Mean			
Male	Female		Freshman	Sophomore	Penultimate	Graduating
146	109	<b>Education</b>	3.71(Agree)	3.73(Agree)	3.54(Agree)	3.89(Agree)
180	87	<b>Public Sources</b>	3.65(Agree)	3.64(Agree)	3.67(Agree)	3.67(Agree)
186	63	<b>Personal Experience</b>	3.81(Agree)	3.79(Agree)	3.45(Agree)	3.54(Agree)
211	94	<b>Government Programs</b>	3.65(Agree)	3.53(Agree)	3.68(Agree)	3.62(Agree)
180	88	<b>Grand Average Weighted Mean</b>	3.71(Agree)	3.67(Agree)	3.59(Agree)	3.68(Agree)

\**Source:* Author's Analysis, 2019.





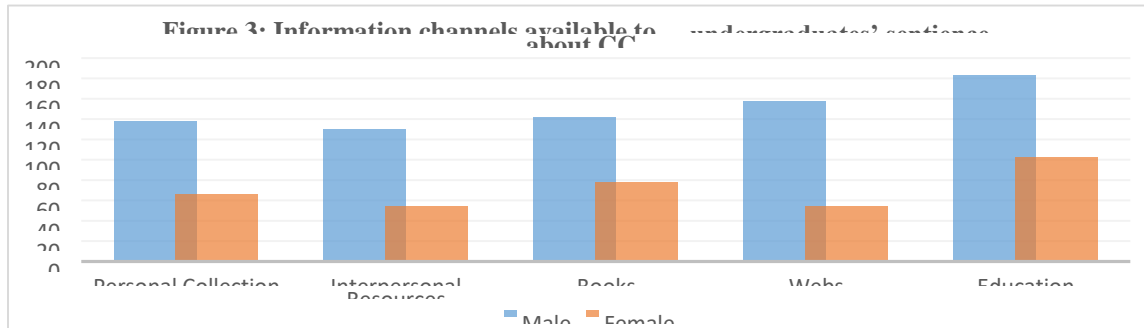
**\*Source:** Author's Analysis, 2019.

Table 3 presented those factors that influenced the level of undergraduates' awareness about CC while Figure 2 graphically showed the trend. Both Table 3 and Figure 2 revealed that government programme was commonest as 211 male and 94 female undergraduates attested to this. Personal experience, public sources and general education, in that order, were other factors that influenced the level of undergraduates' awareness about CC in the study area.

Gender		Information Channels	Class/Level				
Male	Female		Freshman	Sophomore	Penultimate	Graduating	Total
138	66	Personal Collection	49	38	54	63	204
130	55	Interpersonal Resources	37	43	38	67	185
142	78	Books	48	51	55	66	220
158	55	Webs	43	58	67	45	213
183	103	Education	90	80	59	57	286

*\*Source:* Author's Analysis, 2019.

#### 4: Information channels available to undergraduates' sentience about CC



*\*Source:* Author's Analysis, 2019.

The study also examined information channels available to undergraduates in tertiary institutions in Oyo State, Nigeria about CC. The result was as presented in Table 4 and Figure 3 respectively. Education as information channel took the lead as confirmed by 183 male and 103 female undergraduates respectively. In order of importance, it is followed by webs, books, personal collection and interpersonal resources.

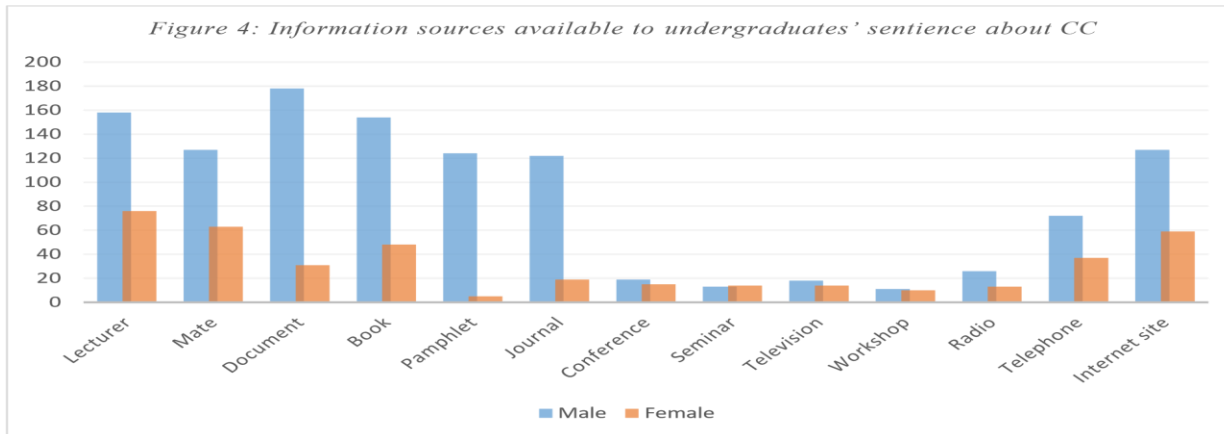
Gender		Information Sources	Class/level				
Male	Female		Freshman	Sophomore	Penultimate	Graduating	Total
158	76	Lecturer	68	73	59	34	234
127	63	Mate	23	49	65	53	190
178	31	Document	59	44	62	44	209
154	48	Book	39	48	63	52	202
124	5	Pamphlet	16	35	42	36	129
122	19	Journal	26	36	33	46	141
19	15	Conference	03	08	09	14	34
13	14	Seminar	03	07	08	09	27
18	14	Television	07	09	11	15	42
11	10	Workshop	02	05	06	08	21
26	13	Radio	06	07	12	14	39
72	37	Telephone	22	26	28	33	109
127	59	Internet site	47	38	53	48	186

---

**\*Source:** Author's Analysis, 2019.

### ***5: Information sources available to undergraduates' sentience about CC***

Further, the study examined information sources available to undergraduates in tertiary institutions in Oyo State, Nigeria about CC. The result was as presented in Table 5 and Figure 4 respectively. The commonest information source of awareness about CC among the undergraduates was their lecturer. 158 male and 76 female undergraduates attested to this. Document as information source followed with 178 male and 31 female undergraduates respectively attested to it. Others information sources include book, mate, internet site, telephone (including GSM), journal, pamphlet and television. Interestingly, conference, seminar and workshop were not common as information sources about CC among undergraduates in the study area.



**\*Source:** Author's Analysis, 2019.

### Recommendations

Arising from the findings of this study, the following were recommended towards increasing the level of awareness of undergraduates about Climate Change in Oyo State in particular and Nigeria in general.

- There should be clear information about climate change.
- Youths (students) should be well-informed about climate change issues so as to positively contribute to the development of their communities by crafting smart climate change mitigation and adaptation skills. In doing this, intensification of climate change education beyond the most common causes and effects is highly recommended among the youths. Various environment-related student clubs are also encouraged to tailor their activities in this direction. For instance, youths could be motivated to plant trees
- Climate change education could be included in the curricula of schools at all levels in Nigeria. Resuscitation and setting up of geographical gardens in schools is also highly recommended herein.
- Training, re-training, empowerment or enlightenment programmes should be organized for teachers.
- Finally, residents should be conscious of adverse effects of Climate Change.

### Conclusion

Youths in Nigeria and other countries that do not have adequate capacities in terms of resources to adapt socially, technologically and financially to mitigate these adverse effects of climate change will be greatly hurt. Invariably, youths should be prepared to mitigate the agonizing effects of climate change. One way is to enhance their awareness of climate change and another is to empower them by deploying resources and competencies to mitigate the effects climate change and help in adapting to the climate change. More so, that youths of today are not only adults of tomorrow, but future leaders and rulers.

**References**

- Adebayo, A. A., Mubi, A. M., Zemba, A. A. and Umar, A. S. (2013). Awareness of climate change impacts and adaptation in Adamawa State, Nigeria. *International Journal of Environment, Ecology, Family and Urban Studies (IJEEFUS)*, 3(1): 11-18.
- Agboola, O. S., and Emmanuel, M. (2016) Awareness of Climate Change and Sustainable Development among Undergraduates from two Selected Universities in Oyo State, Nigeria. *World Journal of Education*, 6(3).
- Akrofi, M. M., Antwi, S. H. and Gumbo, J. R. (2019). Students in Climate Action: A Study of Some Influential Factors and Implications of Knowledge Gaps in Africa. *Environments*, 6(2), 12; <https://doi.org/10.3390/environments6020012>
- Barreda, A. B. (2018). Assessing the Level of Awareness on Climate Change and Sustainable Development among Students of Partido State University, Camarines Sur, Philippines.
- Mugambiwa, S. S. and Dzomonda O. (2018). Climate change and vulnerability discourse by students at a South African university, *Jàmbá: Journal of Disaster Risk Studies* 10(1), a476. <https://doi.org/10.4102/jamba.v10i1.476>
- Rai, S. C. and Gurung, A. (2005). Raising Awareness of the Impacts of Climate Change: Initial Steps in Shaping Policy in Nepal. *Mountain Research and Development*, 25(4):316-320. [https://doi.org/10.1659/0276-4741\(2005\)025\[0316:RAOTIO\]2.0.CO;2](https://doi.org/10.1659/0276-4741(2005)025[0316:RAOTIO]2.0.CO;2)