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Residents' Perception of Household Wellbeing on Upland Trees Conservation in Mitigating Flood in Selected Flood-Prone Communities of Oyo State, Nigeria

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ABSTRACT

The rate at which household wellness of most inhabitants in flood ravaged communities is alarming due to their vulnerability to flood. Therefore, the study sought examination of residents' perception of household wellbeing on upland trees conservation, UTC in mitigating flood in flood-prone communities of Oyo state, Nigeria. 4-staged random procedure was used to select 99 residents. A structured questionnaire and interview session were used for information collection. Frequency distribution, percentages, mean scores and ranking were used to explain the objectives while Chi-square was used to test hypotheses. The findings showed that most respondents (68.7%) were female folks with average age of 39 years, married (74.7%), about 72.7% were indigene of the communities and 32.3% of residents had average income of $207.59 on monthly basis. Residents' perception of living in worsen brick house (M=3.4) ranked 1st with rising its rising dilapidation (M=3.2) ranked 2nd. The Chi-square showed that there was significant relationship between UTC and residents' perception of worsen brick house ($\chi^2 = 17.12$) and rising dilapidation of brick house ($\chi^2 = 5.99$) at $p < 0.05$ respectively. Whereas other perception of household wellbeing against UTC were not significant. In conclusion, the study depicts low utilisation which invariably reveals remarkably insignificant use of UTC in mitigating flood in Oyo state, Nigeria.

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1. Introduction

The spate of incessant flood in the low-lying communities of Southwestern Nigeria is devastating and hazardous to the environment and the well-being of the people. Ige-Olumide and Salami (2018) observed that land use change (urban development and deforestation) has increased vulnerability of the environment to flooding in low-lying areas. Flood is a major devastating natural disaster in the Southwestern Nigeria that has affected homes, farmlands, and the general well-being of the people (Emeribeole, 2015). The irreparable havocs in Ado Ekiti, Southwestern Nigeria due to perennial floods of years 2011, 2012, and 2013 led to loss of livelihoods and assets worth millions of dollars (Aladelokun & Ajayi, 2014). As reposed by Aderogba (2012), Ogunpa River in Ibadan, Oyo state, Nigeria killed thousands of people and grounded sources of livelihood of many people between 1980 and 2011. Despite all the aggressive structural land use interventions of the

government viz-a-viz river dredging and channelisation as well as construction of bridges and culverts, flood is still rampant and a nagging issue because the physical structures did not yield the expected outcome.

Furthermore, as buttressed by Amangabara and Gobo (2010), the utilisation of concrete structures cannot solely be used for flood mitigation, apart from being expensive and unfriendly environmentally. The challenge of flooding due to human activities was confirmed by Agbonkhese et al. (2014) that poor environmental practices like blocking of existing drainages with refuse, lack of culverts in some communities and poor planning of settlements, as well as excessive rainfall as responsible for flooding in the Southwestern Nigeria. This was corroborated by Orimoogunje et al. (2016) who reported the incessant plague of the highly populated Osogbo floodplains by flood hazards and attributed it to unsustainable environmental practices. Thus, the need to adopt the nature-based approach to mitigate flooding in Oyo state, Nigeria because it remains cheaper and eco-friendly over a long period of time. Hence, Chandler et al. (2018) corroborates that woodland conservation is a form of nature-based innovation in mitigating flood occurrence in flood-prone areas. Therefore, sequel to the foregoing backdrop, the following objectives: socio-economic characteristics of residents in Oyo state; and perception of household wellbeing of residents were examined.

2. Methodology

2.1 Study Area

The study was carried out in Oyo state, Southwestern Nigeria with focus on residents of flood-prone communities in Ibadan. It shares boundary with the Republic of Benin to the West and interstate boundaries with Osun state to the East, Kwara state to the North, and Ogun State to the South. Oyo state is the home town of Yoruba people having land size of 28,453km². It lies at latitude 8°00´ North and longitude 4°00´ East with estimated population of 7, 840, 864 (2016, Forecast) and a population density of 196. The state accounts for 3.9% of Nigeria's total population. The northern part of the state is wood and tall grass savannah, and the south is mixed forest, savannah and grassland. Agriculture is a major economic activity in the state. Main crops available are corn, cassava, yam, rice and plantain. Cocoa, oil palm, and cashew are major cash crops (https://zodml.org.>states>oyo-state). It has equatorial climate with dry and wet seasons and relatively high humidity. The average temperature ranges between 25°C and 35°C throughout the year. The state receives distribution of rainfall about 120.12mm of precipitation and has 208.28 raining days annually.

2.2 Data Collection, Sampling Procedure and Sample Size

Qualitative data collection with the use of primary data was adopted for the study. Primary data were collected with a structured questionnaire from residents of selected flood-prone communities. In the 1st stage, Oyo state was purposively selected based on the frequent flood occurrences and flood volume in her Local Government Areas. In 2nd stage, LGAs with frequent and pronounced flood occurrence in Oyo state were also purposively selected, thus, Ido and Oluyole were selected in Oyo state. In the 3rd stage, high flood prone communities were purposively selected. The selected communities were Apete/Awotan, Omi-Adio and Idi-Iya in Ido; Odo-ona Elewe/Ikereku, Odo-Ona Kekere, and Odo-Ona Nla in Oluyole LGA of Oyo state. In the 4th, a households listing was carried out in the selected communities in order Ato obtain a sample population. Then the sample size was selected from the listed households with a systematic random sampling whereby every 4th household was selected with a total of 99 respondents. (See Table 1).

2.3 Data Analyses

Some analytical tools were employed for data analyses. Data were analysed with descriptive statistics such as frequency and percentages. Specifically, the demographic characteristics, were analyzed with frequency and percentages, while residents' perception

and forestry land use strategies were with mean scores in the form of a likert scale. The benchmark for the likert scale was obtained thus; 4+3+2+1+0 =10 divided by 5 equals 2. Hence, the following decision rule applies; < 2.0 = Low Upland Trees Conservation, and ≥ 2.0 = Low Upland Trees Conservation. Chi-square was used for test of relationship between two sets of variables of socio-economic characteristics of residents and perception of household wellbeing on upland trees conservation in the study area.

Table 1
Analyses of Sampling Procedures and Sample Size of Residents

State	Selected LGA	Selected Communities	Households Listing	Households' Systematic selection
Oyo	Ido	Apete/Awotan	110	24
		Omi-Adio	75	17
		Idi-Iya	55	13
	Oluyole	Odo-ona Nla	66	15
		Odo-ona Elewe/Ikereku	70	16
		Odo-ona Kekere	60	14
Total				99

Source: Field Survey, 2021

2.4 Analytical Tool

2.4.1 Chi-square

$$x^2 = \sum\left[\frac{(f_0 - f_e)^2}{f_e}\right] \quad (1)$$

Where:

χ^2 = Chi-Square

Σ = Sum total

f_O = frequencies of observed nominal variables such as sex, religion, marital status; that is the socio-economic variables and other qualitative variables for the study.

f_e = expected frequencies of occurrence determined from response categories.

3. Results and Discussion

3.1 Socio-Economic Characteristic of Residents in Flood-Prone Communities

Table 2 shows that most residents (68.7%) were female. This indicates that most of the residents in flood-prone communities, Oyo state, Nigeria were women. This concurs with UNIDO (2015) who submitted that female folks have more knowledge about their immediate ecosystems and make more impactful decisions for their households. Also, 27.3% of them were in the age bracket of 21-30 years (modal age group), followed by those within 31-40 years (26.4%). This implies that majority of respondents were active and productive. This finding corroborates with Akinbile et al. (2018) which puts respondents involved in environmental adaptation strategies in Oyo state as being in their active age. Furthermore, most residents (72.7%) were indigene. This indicates that indigene of locality had experienced flooding for many years. This corroborates Macchi et al. (2008) who submitted that indigenous and traditional people as veteran in environmental challenges and were prone to threat from flooding.

In addition, residents' educational background revealed that the modal group among them possess higher educational qualification (36.4%), followed by those having Bachelor

of Science/Higher National Diploma Certificates (25.3%). This implies that education has significant influence on knowledge required for utilisation of conservation in upland areas. This is line with the submission of Terungwa and Torkwase (2013) who iterated that science and technological education are the enhancer of environmental flood strategies and enforcer of land use control in flood-prone catchment areas. Also, about 74.7% of residents were married. This indicates that marriage could influence their responsiveness and commitment to use of upland trees conservation for flood mitigation.

This corroborates with submission of Akinbile et al. (2018) that marriage contributes towards residents' inclination to utilising environmental adaptation strategies. On impact of funding, it was observed that 32.3% of residents earned little above ₦300,000 ($207.59) on monthly basis. This indicates that if residents' income is paltry, it minimizes their interest and lessen the chances of practicing upland trees conservation. This corroborates Aderogba (2012) that social and economic limitations are responsible for some proportion of rural residents' apathy to nature-based adaptation approaches.

Table 2
Demographic Characteristic of Residents (N = 99)

Variables	F	%
Sex		
Male	31	31.3
Female	68	68.7*
Age (years)		
≤ 20	4	4.0
21-30	27	27.3*
31-40	26	26.4*
41-50	25	25.3*
51-60	13	13.0
≥ 61	4	4.0
Indigene of locality		
Indigene	72	72.7*
Non-Indigene	27	27.3
Education		
No formal	6	6.1
Adult	3	3.0
Primary	6	6.1
Secondary	23	23.1
HND/BSc	25	25.3
Postgraduate/Higher degree	36	36.4*
Marital Status		
Single	24	24.3
Married	74	74.7*
Separated	1	1.0
Household size		
1-4	34	34.4
5-8	62	62.6*
9-12	3	3.0
Income structure of residents (₦ ,000)		
<10	19	19.2
11-50	5	5.1
51-100	6	6.0
101-150	6	6.0
151-200	16	16.2
201-300	15	15.2
> 301	32	32.3*

Note: F = frequencies, % = percentages. Source: Field survey, 2021.

3.2 Residents' Perception of some Household Wellbeing Indices

Examining respondents perceived of housing wellbeing based on some indices on the use of upland trees conservation (UTC), the findings on their housing (Table 3) revealed that the brick house we live in before has become worse (mean = 3.4) which ranked 1st, while there is also much rising dilapidation of brick houses (mean = 3.2) which ranked 2nd. This implies that brick house becoming worse and rise in dilapidation of brick houses were caused by volume and continuous occurrence of flooding in the vulnerable communities which calls for quick deployment of UTC around the housing properties of residents. This indicates that residents' perception of housing wellbeing suggests many housing properties were immensely affected by the destructive tendencies of flooding which calls for deployment of UTC to sustain the ecosystem in the surroundings in which residents live.

Table 3
Residents' Perception of Housing Conditions

Perception statements on Wellbeing	SA	A	UN	D	SD	Mean	Rank
There is much rise in dilapidation of my brick house.	52 (52.5)	37 (37.4)	-	-	10 (10.1)	3.2	2nd
Maintenance cost of brick house has not improved	27 (27.3)	31 (31.3)	-	10 (10.1)	31 (31.3)	2.0	3rd
Serious difficulty in upgrading the mud house to brick house	27 (27.3)	31 (31.3)	-	5 (5.0)	36 (36.4)	2.0	3rd
The dilapidation of my mud house due to lack of maintenance is much	26 (26.3)	31 (31.3)	-	6 (6.0)	36 (36.4)	2.0	3rd
Maintenance cost of mud house is much affordable	1 (1.0)	29 (29.4)	-	6 (6.0)	63 (63.6)	1.0	4th
The brick house we live in before has become worse	63 (63.6)	29 (29.4)	-	4 (4.0)	3 (3.0)	3.4	1st
Living in unimproved mud house is same as before	-	-	5 (5.1)	27 (27.3)	67 (67.6)	0.4	5th
Housing has become much better from mud to brick	-	-	-	34 (34.4)	65 (65.6)	0.3	6th

NB*SA=Strongly Agreed, A=Agreed, U=Undecided, D=Disagreed SD=Strongly Disagreed
Figures in parentheses are in percentages
Source: Field survey, 2021

3.3 Residents' Perception of Electricity Supply

Also, on perceived electricity supply, findings in Table 4 revealed that residents can afford electricity supply to their house through generating set (mean = 3.7) was ranked 1st, while light supply from government power source is not affordable (mean = 3.3) ranked 2nd, but use of local lamp and candle is worse and pose danger to the building (mean = 3.0) ranked 3rd. Electricity is very important as source of energy for livelihood enhancement and improved productivity of the people. It also helps in the passage and wider transmission of information to many people. But when flooding disrupts its supply, epileptic supply emerges, and people tend to resort to generating sets which hampers livelihood progression. Furthermore, it creates gap in the passage or flow of information on flood mitigation. This suggests that diffusion of information on UTC becomes difficult as its utilisation might not trickle down to residents in communities. Hence, low utilisation of UTC in the study area.

3.4 Residents' Perception of Water Sources

Furthermore, on perceived water sources among the residents in the study area, findings (Table 5) revealed that residents' lack of access to portable pipe-borne water (mean= 4.0) ranked 1st. However, residents' perception of Sinking of well much affordable for my household (mean= 3.4) ranked 2nd, while residents also perceived that borehole is

not accessible due to cost of sinking it (mean= 2.7) ranked 3rd. This finding implies that perceived water sources pose challenge to residents in the study area because of pollutant effect of flooding on affordable well-water source could force residents' resort to unaffordable 'sachet-water' for drinking and stream water for domestic chores. Therefore, residents' perception of stream water preference could be due to cleansing of stream water by trees and vegetation. This infers that the more trees are conserved, the more the use of stream water. Hence, this could arouse residents' interest to utilising UTC as an approach which could help purify stream water source for more use among residents in the study area.

Table 4
Residents' Perception of Electricity Supply

Perception Statements	SA	A	UN	D	SD	Mean	Rank
Lighting my house through a generating set is affordable	67 (67.7)	32 (32.3)	-	-	-	3.7	1st
Light supply from government's power source is accessible	67 (67.7)	-	-	-	32 (32.3)	2.7	4th
Lack of frequent supply from government's power source	67 (67.7)	-	-	-	32 (32.3)	2.7	4th
Light supply from government power source is not affordable	65 (65.7)	-	34 (34.3)	-	-	3.3	2nd
There is constant supply of power which is affordable	-	1 (1.0)	-	31 (31.3)	67 (67.7)	0.3	5th
Use of local lamp for lighting my family house is not bad	-	-	-	-	99 (100)	-	6th
The local lamp is available for lighting the house	-	-	-	-	99 (100)	-	6th
Use of local lamp and candle is worse and pose danger to the building	1 (1.0)	98 (99.0)	-	-	-	3.0	3rd

NB*SA=Strongly Agreed, A=Agreed, U=Undecided, D=Disagreed SD=Strongly Disagreed
Figures in parentheses are in percentages
Source: Field survey, 2021

Table 5
Residents' Perception of Water Sources

Perception Statements	SA	A	UN	D	SD	Mean	Rank
Supply of 'sachet-water' for drinking which is not affordable	-	-	-	-	99 (100)	-	4th
Water supply from tanker to the community is not affordable	-	-	-	-	99 (100)	-	4th
Sinking of well is much affordable for my household	61 (61.6)	32 (32.3)	-	-	6 (6.1)	3.4	2nd
Borehole is not accessible due to cost of sinking it	67 (67.7)	-	-	-	32 (32.3)	2.7	3rd
Preference for stream water for domestic use because it is void of chemical	-	-	-	1 (1.0)	98 (99.0)	-	4th
Household prefer stream water for sanitation and domestic use due to its unlimited supply	-	-	-	-	99 (100)	-	4th
No access to portable pipe-borne water	99 (100)	-	-	-	-	4.0	1st
Household prefer buying drinking water from tanker	-	-	-	-	99 (100)	-	4th

supplier							
Have sanitized and boiled stream water	-	-	-	-	99 (100)	-	4th

NB*SA=Strongly Agreed, A=Agreed, U=Undecided, D=Disagreed SD=Strongly Disagreed
Figures in parentheses are in percentages
Source: Field survey, 2021

3.5 Perception of Cooking Utilities

On perceived cooking utilities among the residents, findings (Table 6) revealed residents' preference for gas cooker because it saves time in cooking (mean= 4.0) which ranked 1st even though residents have preference for fuel-wood in household because it gives sweet aroma to cooked food (mean= 2.7) ranked 2nd. This finding implies that flooding could affect residents' cooking utilities especially their preference for fuel-wood because more residents have preference for gas cooker even with its unaffordability. Therefore, the more the perceived use of gas cooker the higher the chances of utilising UTC as an approach to save the ecosystem from loss of trees converted to fuel-wood and other use as well as mitigating flooding.

Table 6
Residents' Perception of Access and Use of Cooking Utilities

Perception Statements	SA	A	UN	S	SD	Mean	Rank
High cost of maintaining gas cooker for cooking in my household	-	-	-	-	99 (100)	-	8th
There is preference for gas cooker because it saves time in cooking	98 (99.0)	1 (1.0)	-	-	-	4.0	1st
Gas cooker is not accessible for cooking in my household	-	-	-	24 (24.2)	75 (75.8)	0.2	7th
Preference for fuel-wood in my household because it gives sweet aroma to cooked food	67 (67.7)	-	-	-	32 (32.3)	2.7	2nd
Charcoal pot is not effective in my family	-	17 (17.1)	-	21 (21.3)	61 (61.6)	1.0	5th
Firewood is worse because it takes longer time for food to be cooked	-	15 (15.2)	-	-	84 (84.8)	0.5	6th
Access to kerosene stove but it is not affordable to maintain	19 (19.2)	17 (17.1)	-	-	63 (63.6)	1.3	4th
Use of fuel-wood in my household is worse due to the smoke generated	29 (29.3)	46 (46.5)	-	-	24 (24.2)	2.6	3rd
Charcoal pot is much better for my household for cooking	18 (18.2)	-	-	-	81 (81.8)	1.0	5th
Kerosene stove is affordable for cooking in my household	-	17 (17.2)	-	-	82 (82.8)	0.5	6th
Use of firewood is much better and affordable	-	-	-	-	99 (100)	-	8th

NB*SA=Strongly Agreed, A=Agreed, U=Undecided, D=Disagreed SD=Strongly Disagreed
Figures in parentheses are in percentages
Source: Field survey, 2021

3.6 Perception of Access to Quality Education

On education, the study (Table 7) revealed that residents' perceived availability of quality education to their children, affordable school enrolment for my wards, cheaper school enrolment outside their communities (mean= 4.0) ranked 1st even though some residents had preference for technical education is preferred for my ward due to

affordability (mean= 4.8) which ranked 2nd. This implies that education among residents builds knowledge of the present and the future generations, raise their awareness and understanding of upland trees conservation as imperative in using UTC for mitigating flooding in flood-prone communities of Oyo state, Nigeria. This suggests that the more educated the residents are, the higher the chances of utilising UTC.

Table 7
Residents' Perception of Access to Quality Education

Perception Statements	SA	A	UN	D	SD	Mean	Rank
Availability of quality education to my children	99 (100)	-	-	-	-	4.0	1st
Accessible and affordable school enrolment for my wards	99 (100)	-	-	-	-	4.0	1st
Enrolment of wards in schools outside the community is cheaper	99 (100)	-	-	-	-	4.0	1st
Preferred school for enrolment of wards is not near the community	-	-	-	-	99 (100)	-	7th
Inability to afford enrolling my children in school	-	-	-	18 (18.2)	81 (81.8)	0.2	6th
Paucity of fund is limiting affordability of higher education	-	-	-	34 (34.3)	65 (65.7)	0.3	5th
Technical education is preferred for my ward due to affordability	8 (8.1)	75 (75.8)	-	-	16 (16.1)	2.6	2nd
Higher education for my wards is easily accessible and affordable	16 (16.1)	-	-	38 (38.4)	45 (45.5)	1.0	3rd
Household have developed more skills from land use strategies	-	-	-	-	99 (100)	-	7th
House is fully immersed in daily activities and land use strategies	-	-	-	70 (70.7)	29 (29.3)	1.0	3rd
Members of my household feels excited, energized and safe with land use activities	-	-	-	65 (65.7)	34 (34.3)	0.7	4th

NB*SA=Strongly Agreed, A=Agreed, U=Undecided, D=Disagreed SD=Strongly Disagreed
Figures in parentheses are in percentages
Source: Field survey, 2021

3.7 Hypotheses Testing

Residents' perception of household wellbeing does not associate with use of upland trees conservation for flood mitigation.

3.7.1 Association of Perceived Housing Condition on the Use of Upland Trees Conservation (UTC) in Mitigating Flood

Examining the impact of residents' perception of their housing condition on their practice of upland trees conservation in the study area, it was found that residents' housing condition influenced the upland trees conservation (Table 8). There is significant relationship between trees conservation in upland areas by residents on their perception of preference for living in mud house (χ^2=10.10, p=1x10^{-2}), brick house becoming worse (χ^2=17.12, p=1x10^{-3}) and rising brick house dilapidation (χ^2=5.99, p=0.05). Hence, this implies that residents' perception of housing wellbeing has great influence on conservation of trees in upland area is being utilised by residents for mitigating flood in Oyo state,

Nigeria. This suggests that perception of housing as an index of wellbeing could significantly impact the utilisation of UTC.

Table 8
Summary of Chi-Square Statistics on Association of Residents' Perception of Housing Condition on Use of UTC in Mitigating Flood

Housing indices	x^2-value	p-value
Preference for living in mud house	10.10	$(1x10^{-2})$*
Brick housing becoming worse	17.12	$(1x10^{-3})$*
Unimproved cost of maintaining brick house	2.37	$(0.49)^{ns}$
Rising brick house dilapidation	5.99	(0.05)*

N.B: χ^2 - values outside parentheses, p-values are in parentheses, ns = not significant, *= significant
Source: Field survey, 2021

3.7.2 Association of Perceived Electricity Supply on the Use of UTC in Mitigating Flood

Summary of Chi-square statistics (Table 9) revealed that there is not significant relationship between residents' perception of electricity supply as depicted by their responses to perception statements and tree conservation in upland areas. Hence, this implies that residents' perceived electricity supply might not have influence on UTC is being utilised by residents for flood mitigation in Oyo state, Nigeria. This suggests that perceived electricity supply does not have significant impact on utilisation of UTC for flood mitigation because of poor passage of information due to will flow from information and communication technologies easily to residents in vulnerable communities.

Table 9
Summary of Chi-Square Statistics on Association of Residents' Perception of Electricity Supply on Use of UTC in Mitigating Flood

Indices of electricity supply	x^2-value	p-value
Generating set is affordable	0.72	$(0.74)^{ns}$
Lack of frequent power supply	0.72	$(0.79)^{ns}$
Use of local lamp/candle pose danger	3.56	$(0.06)^{ns}$
Constant supply of power	3.59	$(0.17)^{ns}$

N.B: χ^2 - values outside parentheses, p-values are in parentheses, ns= not significant, *= significant
Source: Field survey, 2021

3.7.3 Association of Perceived Water Sources and Access on Use of UTC in Mitigating Flood

Summary of Chi-square statistics (Table 10) on the inter-relationship test between wellbeing and use of UTC revealed there is no significant relationship between residents' perception on affordability of well sinking (χ^2 = 2.17, p=0.34) and non-accessibility to borehole (χ^2 = 0.07, p = 0.79) and stream water (χ^2 = 3.56, p=0.59) and use of UTC as an approach to mitigating in the study area. Hence, this implies that residents' perceived water sources do not have influence on trees conservation in upland areas being utilised by residents for mitigating flood. This suggests that perceived water sources do not have significant impact on utilisation of UTC.

Table 10
Summary of Chi-Square Statistics on Association of Residents' Perception of Water Sources on Use of UTC in Mitigating Flood

Indices of water sources and conditions	x^2-value	p-value
Stream water void of chemical & preferred for domestic use	*3.56*	$(0.59)^{ns}$
Sinking of well much affordable	*2.17*	$(0.34)^{ns}$
Borehole not accessible	*0.07*	$(0.79)^{ns}$

N.B: χ^2 - values outside parentheses, p-values are in parentheses, ns= not significant, *= significant
Source: Field survey, 2021

3.7.4 Association of Perceived Cooking Utilities on Use of UTC in Mitigating Flood

Summary of Chi-square statistics (Table 11) revealed that there is no significant association between tree conservation in upland areas and residents' well-being as evidenced by indices of cooking utilities. Implicitly therefore, this implies that residents' perceived cooking utilities do not have influence on how UTC is being utilised by residents for mitigating flood in Oyo state, Nigeria. This suggests that perceived cooking utilities do not have significant impact on utilisation of UTC flood management because as more residents have preference for use of fuel-wood as occasioned by unaffordability of other cooking utilities, thus the less conservation of trees upland in the flood-prone communities in Oyo state, the more occurrence of flood.

Table 11
Summary of Chi-Square Statistics on Association of Residents' Perception of Cooking Utilities on Use of UTC in Mitigating Flood

Indices of Cooking Utilities	x^2-value	p-value
Firewood preferred due to sweet aroma	0.72	$(0.79)^{ns}$
Access to kerosene stove but not affordable	0.72	$(0.97)^{ns}$
Use of firewood worse due to smoke	1.09	$(0.58)^{ns}$
Charcoal pot not effective	0.01	$(0.99)^{ns}$
Kerosene stove affordable	0.01	$(0.92)^{ns}$
Gas cooker not affordable	0.26	$(0.61)^{ns}$
Preference for gas cooker because it saves time	3.56	$(0.06)^{ns}$

N.B: χ^2 - values outside parentheses, p-values are in parentheses, ns= not significant, *= significant
Source: Field survey, 2021

3.7.5 Association of Perceived Access to Education on Use of UTC in Mitigating Flood

Summary of Chi-square statistic (Table 12) revealed that there is no significant relationship between trees conservation in upland area in the study area and residents' perception of access to education. Hence, this implies that residents' perceived access to education does not have influence on how UTC is being utilised by residents for flood mitigation in Oyo state, Nigeria. This suggests that perceived access to education does not have significant impact on utilisation of UTC in mitigating flood despite knowledge, awareness and understanding of UTC garnered by residents through education.

Table 12
Summary of Chi-Square Statistics on Association of Residents' Perception of Access to Education on Use of UTC in Mitigating Flood

Indices of Access to Education	x^2-value	p-value
Technical education preferred for children	5.28	$(0.07)^{ns}$
Household immersed in land use	0.39	$(0.54)^{ns}$
Household energized to practice land use	1.01	$(0.31)^{ns}$

N.B: χ^2 - values outside parentheses, p-values are in parentheses, ns= not significant, *= significant
Source: Field survey, 2021

4. Conclusion and Recommendation

The study documented the influence of socio-economic characteristics of residents and their perceived wellbeing indices viz: housing, access to electricity supply, cooking resource, water sources, and education on the utilisation of upland trees conservation, UTC. The role which residents' perceived wellbeing and socio-economic characteristics played in flood mitigation in flood-prone communities of Oyo state, Nigeria and their prospect in promoting the utilisation of UTC was also observed by the study. On the overall, the study revealed influence of perceived residents' wellbeing of housing, electricity supply, cooking resource, water sources and access to education on UTC as insignificant. In conclusion, the

study showed significantly weak and unpopular utilisation of upland trees conservation for flood mitigation in flood-prone communities of Oyo state, Nigeria. This study recommends that there should be stakeholders' engagement in buffering the low-lying areas of flood-prone communities with tree planting to stabilise stream-banks, and enactment of extant law on tree conservation in upland area by joint efforts of government and stakeholders.

Authors Contribution

Chidozie Chukwuemeka Nwobi-Okoye: study design, data collection, data analysis, data interpretation, write-up**,** drafting

Conflict of Interests/Disclosures

The author declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

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