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Knowledge of Ethnobotany, Conservaton and Health Benefits of Indigenous Leafy Vegetables Species among Pregnant Women Attending Health Centers in Ondo West Local Government Area, Ondo State

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Abstract

The study investigated the knowledge of ethno-botany, conservation and health benefits of indigenous leafy vegetables species among pregnant women attending health centers in Ondo West Local Government Area, Ondo State. Three specific objectives with three corresponding research questions and two null hypothesies guided the study. A cross-sectional survey research design was adopted for the study.The population for the study was 3,500 pregnant women attending the healthcare centers in the study area. The proportionate sampling techniques was used to select 420 pregnant women. The Instrument for data collection was the researcher designed "Knowledge of Ethno-botany, Conservation and Health Benefits of Indigenous Leafy Vegetables Species Questionnaire". Frequencies and percentages were used to answer all the research questions while chi- square statistic were used to test null hypotheses at 0.05. The findings revealed that pregnant women possessed (AK) average knowledge (57.1%) and (HK) high knowledge (70.2%) of ethno-botany of indigenous leafy vegetables. Chi-square statistic indicated that there was no significant different in the knowledge of ethno-botany and conservation of indigenous leafy vegetables among pregnant women based on the level of education and age. The study recommended that child bearing women and pregnant women needed to be educated on the importance of knowledge of ethnobotany, conservation and health benefits involved in the consumptions of indigenous leafy Vegetables and frequent antinatal visits during pregnancy so that they can have more knowledge on their nutritional health status in order to give birth to healthy baby.

Keywords: Conservation, Ethno-botany, Indigenous Leafy Vegetables (ILVs), pregnant women, Health Centers, Knowledge.

Introduction

Globally, the loss of biodiversity due to the neglect and extinction of these traditional vegetables is a concern. Regionally, the displacement by commercial crops can lead to a loss of cultural heritage and traditional knowledge related to their cultivation and consumption. Locally, the lack of promotion and awareness of (ILVs) can contribute to their decline in popularity and availability (Abukutsa, 2020).

Conversely, conservation of living resource spec youifically is concerned with plants, animal and microorganisms and with those non-living elements of the environment on which they depend (Abukutsa, 2020; Jonathan, 2017). The diversity of indigenous leaf vegetables from woody forest species of Nigeria is being seriously go into an extinction as a result of multiplicity of environmental factors (Biotic and abiotic factors), political and socio-economic factors (Okafor, 2019).

Several studies show ILVs fill nutrition gaps by offering affordable, nutrient-dense food substitutes with essential nutrients. Such nutrients include minerals (zinc, calcium, magnesium, iron and potassium), vitamin A, vitamin C and fiber and they are extremely low in fat and carbohydrates (Gupta, 2017 & Ranum, 2014).

Knowledge enhances positive attitude and practice. Knowledge refers to familiarity, awareness or understanding of something, such as facts, information, description or skills which is acquired, through experience or education. (Dobby, 2015). Knowledge can be influenced by age, education, experience, repetition of information, and problem-based learning. Knowledge is important to man's quality of life because adoption of health promoting behaviors such as attendance of antenatal care services depend on the level of knowledge on conservation and health benefits of indigenous leafy vegetables pregnant women possess (Onwurah & Nwimo, 2015).

Ethno-botany is a term used to describe the scientific study of the relationship that exists between people and plants. It refers to how human beings make use of plants for their benefits either as food or medicine. Vegetables are a class of food usually eaten either in the form of leaves, seeds, fruits, flowers or pods (Gupta, 2017).

In terms of ethnobotany conservation of indigenous leafy vegetables in Africa, there are various initiatives and research projects aimed at preserving and promoting the use of these traditional plants. Nigeria, being a country rich in biodiversity, has a significant focus on the conservation of indigenous leafy vegetables through both governmental and non-governmental efforts. Organizations such as the Nigerian Conservation Foundation (NCF) and research institutions like the National Institute for Pharmaceutical Research and Development (NIPRD) are actively involved in projects related to the conservation and sustainable use of indigenous leafy vegetables. These efforts are crucial for preserving traditional knowledge, promoting biodiversity, and ensuring food security in the region (NCF, 2020).

In Ondo State, Indigenous leafy Vegetables are recognized by different names to identify them such as: **English Name: Fluted Pumpkin Leaves:** Local Name: Ugwu (Igbo), Efo Apeje (Yoruba), Ikong –ubong (Akwa Ibom), Kabewa (Hausa), Botanical Name: Telfairia occidentalis, Ugwu is ILVs which is used in Nigeria for both culinary and medicinal purposes. It is rich in minerals such as calcium, potassium, magnesium, iron and folic acid which makes it highly nutritious.

English name: Jute leaf (Slimy leaves): Local name Ewedu (Yoruba), Ahinghara (Igbo), Rama (Hausa), Botanical Name: Corchorus olitorius. In the western part of Nigeria, it is used in the preparation of Ewedu soup. Once ground, it's got a slimy consistency just like Okra. It's a good source of fiber, low in calories but high in vitamins. In herbal medicine, it is used to control or prevent dysentery, worm infestation and constipation (Oluwafemi and Dobby, 2021).

English Name: Bitter Leaf: Local Name: Onugbu (Igbo), Efo Ewuro (Yoruba), Shakwa shuwaka (Hausa), Etidot. (Cross River State of Nigeria) Botanical Name: Vernonia amygdalina. The bitterness is usually removed by boiling before the leaves are cooked as soups or added to soups made with other vegetables or eaten like spinach. It is rich in vitamins and minerals. In traditional Nigerian medicine, it is used to treat Fever, malaria, hepatitis, diarrhoea, dysentery, and cough. The leaves are also used as medicine for Stomach ache, Headache, Scabies, Gastrointestinal disorders (FAO, 2014 and WHO, 2015).

English Name: "Wild spinach" or African Jointifr: Local Name: Afang leaves (Efik/Ibibio), Ewe Ajokotale; Ajaabaje (Yoruba), Okazi/Ukazi (Igbo), Yala (Ogoja), In

Cameroon it is known as Eru, okok, mfumbua or fumbua. Botanical Name: Gnetum africanum.Okazi is a climbing plant like Ugwu leaf and Uziza. It's got a tough (hard) papery glossy texture and is somehow tasteless without any distinctive smell. As an indigenous leafy vegetable in Nigeria, it is used in the preparation of Afang soup and Okazi soup, egusi soup. Locally, it's used as a remedy for sore throats, nausea, and reduction of pain during childbirth or as a dressing for warts (Arowosegbe, 2017).

English Name: False cubeb leaves: The seeds from the plant are known as mkpuru uziza (uziza seeds), Local Name: Uziza leaves (Igbo) or Ashanti pepper, Iyere, (Yoruba), Botanical Name: Piper guineense. In the local Nigerian market, it is known as hot leaves. It is peppery and is usually used in small quantity to add flavor and a very nice aroma to soups like Ofe nsala, Vegetable soups and sometimes Egusi soup. It is rich in anti-oxidants and has preservative properties (Seremba, 2017)

English Name: Bushbuck: Local Name: Utazi (Igbo), 'Arokeke' (Yoruba), Botanical Name: Gongronema latifolium. Utazi leaves is a tropical rain forest plant primarily used as spice and vegetables in traditional folfs medicine(Ugochukwu and Babady, 2014; Ugochukwu, et al.,2015) very Sharp-bitter and sweet and is used in small quantity in preparing soups like Nsala soup, Ugba Sauce, Yam and also in garnishing dishes like Abacha Ncha, Isi ewu, Nkwobi e.t.c. It is also used locally in the treatment of cough, intestinal worms, dysentery, dyspepsia and malaria. It is also taken as a tonic to treat loss of appetite and alsoiIn the treatment of diabetes and high blood pressure (Ugochukwu, 2015).

English Name: Clove Basil (Scent leaf): Local name: Nchuawun (Igbo), Efirin (Yoruba), Daidoya (Hausa), Ntong (efik), Aramogbo (Edo). Botanical Name: Ocimum gratissimum. Is used in the preparation of foods such as pepper soup, Ofe akwu in ibo land, Yam porridge, Vegetable soups e. t. c. And as the name implies, it gives a wonderful aroma to the meals it's prepared with. In traditional medicine, it is used to lower blood pressure as well as reduce blood sugar level, treatment of piles. It is said to be useful in the medication for people living with Human Immunodeficiency Virus (HIV), and Acquired Immuno Deficiency Syndrome virus AIDS (Okafor, 2018; Dobby, 2015).

English Name: Curry leaf "sweet neem leaves": Local Name: Efirin Oso (Yoruba), Marugbo sanyan (Yoruba). Botanical Name: Murraya koenigii it is an indigenous leaves vegetables in Nigerian meal preparation, it is added to stews, meats, fish to add flavor to the dishes. It's got small pinnate leaves which are highly aromatic. Other uses include a good remedy for nausea and indigestion, the leaves are chewed to lose weight, it is known to improve eyesight and also prevent cataract, it is used to improve hair colour (Oluwafemi, 2021; Seremba, 2017).

English Name: Waterleaf. Local Name: Gbure (Yoruba), Mgbolodi (Igbo), Alenyruwa(Hausa). Botanical Name: Talinum Triangulare. According to scientific studies, it is said to be rich in mineral salts and amino-acids as well as having anti-scorbutic properties i.e prevention against the scurvy disease (Ugochukwu, 2023).

English Name: Spinach, plumed cockscomb, quail grass, silver cock's comb. Local Name: Shoko yokoto (Yoruba). Botanical Name: Celosia argentia. Oduduwa Spinach: Commonly known as Shoko yokoto was believe to the best vegetables leaves taken by Oduduwa the originator of Yoruba in Ile Ife Osun state from the western part of Nigeria (Adebayo, 2014). It's also the main leaf used in the preparation of efo riro, a popular vegetable soup. Sometimes, the leaves are crested with Purplish/Red discolorations in the middle. It is rich in Beta-Carotene, Folic Acid, Ascorbic acid, Calcium, Iron, and Protein.

English Name: African spinach, "Green" Local Name: Inine (Igbo), Efo Tete Abaiaye or Tete Eleegun(yoruba), Allayahu (Hausa), Botanical Name: Amaranthus hybridus Known as "Green" in the local market due to its colour, this leafy vegetable is the second most popular leafy vegetable after Ugwu. It's used in the preparation of various Nigerian dishes. This ILVs is widely used in the pharmaceutical industry to produce medicinal products against atherosclerosis, stomach ulcers, tuberculosis as well as anticeptics, antifungal, and anti-inflammatory preparation (Khare & Kuma, 2014).

English Name: African eggplant leaf (Garden egg leaf), Gboma. Local Name: Akwukwo Anara (Igbo), Efo Igbo (Yoruba), Ganyen gauta (Hausa), Botanical Name: Solanum aethiopicum. Generally, ILVs contain bioactive components such as phenolic compounds, flavonoids, dietary fiber, carotene content and vitamin C that confer health benefits on consumers. Several studies have demonstrated that regular and adequate consumption of vegetables reduces risks of chronic conditions such as diabetes, cancer, metabolic disorders such as obesity in children and adults, as well as cardiovascular disease (Oluwafemi & Opeyemi, 2021).

Furthermore, the major problems encountered by farmers during conservation of these ILVs includes gradual loss of genetic diversity, over gracing by animals, lack of cash, lack of knowledge on germination/growing techniques of species, lack of water. Therefore, conservation of indigenous leafy vegetables is a significant issue that needs to be addressed on a global, regional, and local level (Ayodele, 2019; Arowosegbe, 2018).

Purpose of the study

The purpose of this study was to determine the Knowledge of ethno-botany, conservation and health benefits of indigenous leafy vegetables species among pregnant women Attending Health Centers in Ondo West Local Government Area, Ondo State. Specifically the study determined:

1. Knowledge of ethno-botany of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west LGA.
2. Knowledge of conservation of indigenous leafy vegetables species among pregnant women attending health centers in Ondo based on age
3. Knowledge on health benefits of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on education.

Research Questions

The following were the research questions that guided the study

1. What is the knowledge of ethno-botany of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west?
2. What is the knowledge of conservation of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on age?
3. What is the knowledge on health benefits of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on education?

Hypotheses

Ho: There is no significant difference in the knowledge of conservation of ILVs species among pregnant women attending health centers in Ondo west based on age

Hi: There is no significant difference in the knowledge on health benefits of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on education.

Methods

Research Design

A Cross-sectional survey research design was adopted. This is an observational research that analyses data of variables collected at one given point in time across a sample population.

Area of Study

The study was conducted in Ondo town in Ondo state. The LGA consists of the districts and seven villages known as Enuowa, Obolalu, Ajagba Alafia, Gbaghengha, Ifore, Gbongbo and others The researcher observed that child bearing mother and pregnant women from these villages die in their numbers due to non-feeding well with the leafy vegetables during pregnancy and child birth as they suffered under nutrition and this may due to lack of conservation and knowledge of health benefits embedded in indigenous leafy vegetables. Thus, the researcher deemed the area appropriate suitable for the study.

Population of the Study

The population of the study comprised 3,500 mothers of age 20 - 49 years pregnant women who have experienced pregnancy or child birth attending the healthcare centers in seven villages found in Ondo West local Government Area, Ondo State.

Sample for the Study

The sample for the study consisted of 420 pregnant women living in Ondo west LGA, Ondo State. The sample was selected by the aid of Cohen, Mainon, and Morrison (2017). Proportionate sampling technique was used to select 70 pregnant women and child bearing age women each from the (6) six communities in Ondo west local government area. This process yielded 420 respondents for the study.

Instrument for Data Collection

The Instrument used for data collection was a researcher designed questionnaire Knowledge of Ethnobotany, Conservation and Health Benefits of Indigenous leafy Vegetables Questionnaire consisted of three sections A, B and C. Section A consisted of three items on the respondent's demographic variables of age, religious and education. Section B consisted of 16 items on knowledge of ethno-botany and conservation of indigenous leafy vegetables among pregnant women. Section C consisted of knowledge on health benefits of indigenous vegetables species among pregnant women. Knowledge levels was categorized into low, average and high. The instrument was validated by three experts in research work. The experts' suggestion were used in producing the final draft of the questionnaire. The reliability coefficient of 0.75 was obtained. The instrument was therefore deemed reliable for the study.

Method of Data Collection

A total of 420 copies of questionnaire were administered and collected back by the researcher and two research assistants.

Method of Data Analysis

Generated data were analyzed using frequency counts, percentage and chi-square statistic was used to test the hypotheses at 0.5 level of significance. By these a scores: below 20% was interpreted very low knowledge (VLK), a score 21-39% was interpreted (LK) low knowledge, a score of 40-59% was interpreted (AK) Average knowledge, a score 60-80% was interpreted

(HK) High knowledge and a score 80% and above was interpreted very high knowledge (VHK).

Results

Table 1: **Socio-Demographic Characteristics of the respondents (n=420)**

Age	Frequency(F)	Percentage (%)
20-29 yrs.	150	35.7
30-39yrs.	148	35.2
40-49yrs.	122	29.1
Religious		
Christians	255	60.7
Muslims	165	39.3
Educational Qualification	85	20.2
Non-Formal	37	8.80
Education	175	41.7
Primary Education	123	29.3
Secondary Education		
Tertiary Education		

Table 1 shows the characteristics of the participants who participated in the study. The table further revealed that the aged 20-29 years (35.7%) is higher than that of age 30- 39years (35.2%) while age 40-49(29.1%) is the lowest. The percentages of respondent in religious; Christians (60.7%) is higher than that that of Muslim (39.3%). The result further shows that the percentage of respondent in secondary education (41%) had higher percentage than those in tertiary education (29%) and Non formal education (20.2%) while the percentage of respondents in primary education(8.80%) is the lowest. The results further shows that those between ages 20-29yrs, Christians and secondary education qualification are the major respondents.

Table 2: **The knowledge of ethno-botany of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west? (n=420)**

S/n	Items on knowledge of Ethno-botany of ILVs	Knowledge Responses Yes F (%)	NO F (%)	Level of Knowledge
1	Knowledge about ethno botany of various leafy vegetables in your villages	295(70.2)	125(29.8)	HK
2	knowledge of ethno-botany of ILVs is good for you and your household	285(67.9)	135(32.1)	HK
3	Knowledge of eating about 400g of vegetable per day can help to reduce the risk of NCDs Non Communicable Diseases	279(66.4)	141(33.6)	HK
4	Knowledge of 1 eating vegetables always can help improve your health	240(57.1)	180(42.9)	AK
5	Knowledge of adequacy consumption of various leafy vegetables is important during pregnancy	230(54.7)	190(45.2)	AK

6	You can identify various leafy vegetables through conservational knowledge of indigenous leaf from woody forest.	225(53.6)	195(46.4)	AK
7	Knowledge about washing the vegetables leaves first before cutting them?	245(58.3)	175(41.7)	AK
8	Through Knowledge of conservation of ILVs you can make right vegetables choices for your meal?	235(55.9)	185(44.0)	AK
9	Knowledge on the fruits and ILVs should be consumed in pregnancy	239(56.9)	181(43.1)	AK
10	knowledge that various ILVs groups should be combined in a meal/diet	240(57.1)	180(42.9)	AK
11	Knowledge that it is important to eat plenty of ILVs like water leaf daily during pregnancy	131(31.2)	289(68.8)	LK
12	knowledge that it is important to eat water leaf during pregnancy to improve your health status	290(69.0)	230(54.7)	HK
13	Knowledge that intake of small amount of coffee with ILVs like fluted pumpkin juice Telfairia occidentalis is good in pregnancy	150(35.7)	270(64.3)	LK
14	knowledge that intake of ILVs like (Talinum triangulae) waterleaf in pregnancy will booster your immune system	230(54.8)	190(45.2)	AK
15	knowledge that it is dangerous to eat stale ILVs in pregnancy	245(58.3)	175(41.7)	AK
16	knowledge on ILVs would help you to avoid the intake of vegetables that are not healthy in pregnancy	250(59.5)	170(40.5)	AK
	Ground Percentages	56.7%	44.8%	AK

Below 20= VLK, 20-39= LK, 40-59=AK, 60-80= HK, 80 and Above =VHK

Table 2 shows the percentage of pregnant women with ethno-botany knowledge of ILVs. Majority (70.2%) knows about various leafy vegetables while (31.2%) do not realize the importance of eating ILVs like water leaf daily during pregnancy. The table also indicates knowledge percentage on intake of ILVs like waterleaf (54.8%), consuming 400g of vegetable daily to reduce the risk of (NCDs) Non Communicable Diseases (66.4%), and having a small amount of coffee with ILVs like fluted pumpkin juice is good in pregnancy (35.7%). Overall, 56.7% of pregnant women in the study area have (AK) average knowledge of ILVs during pregnancy.

Table 3: **The knowledge of conservation of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on age? (n=420)**

S/n	Items on Knowledge of Conservation of ILVs	Knowledge responses 20-29yrs. (n=150)	30-39yrs.(n=148)	40-49yrs.(n=122)
		F (%)	F (%)	F (%)
1	Knowledge of having idea of how to plant some of the ILVs	79(52.7)	68(45.9)	90(73.8)
2	knowledge that planting ILVs improves food security	80(53.3)	65(43.9)	85(69.7)
3	knowledge about post-harvest	78(52.0)	59(39.9)	30(24.6)

	processing methods needed for ILVs like sundry for future use			
4	knowledge that unavailable ILVs can be introduced in your area	50(33.3)	70(47.3)	75(61.5)
5	knowledge that ILVs can be grown in open land, dumping sites and backyard	85(56.7)	68(45.9)	120(98.4)
6	Knowledge of washing ILVs with water and small amount of salt before cooking	80(53.3)	78(52.7)	110(90.2)
7	Knowledge that ILVs can be eating raw on meal?	55(36.7)	20(13.5)	113(92.6)
	Ground Percentages	48.3%	41.3%	72.9%
	Level of Knowledge	AK	AK	HK

Below 20= VLK, 20-39= LK, 40-59=AK, 60-80= HK, 80 and Above =VHK

Table 3 shows knowledge of conservation of indigenous leafy vegetables by pregnant women in Ondo West based on age. Respondents aged 40-49 had very high knowledge (VHK) that ILVs can be grown in open land, dumping sites, and backyard, with high knowledge (HK) at 72.9%. Those aged 30-39 had average knowledge (AK) on washing ILVs with water and salt before cooking, at 52.7%. Knowledge of conservation through planting ILVs improves food security, with 53.3% showing average knowledge (AK). Total percentage on the table is 48.3%.

Table 4: **The knowledge on health benefits of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on education? (n=420)**

S/n	**Items on Knowledge of Health Benefits of ILVs**	**Knowledge responses**		
		Non-Formal Education (n=85) F (%)	**Primary Education (n=37) F (%)**	**Secondary Education (n=175) Tertiary Education (n=123) F (%)**
1	knowledge on ILVs are rich sources of polyphenols, flavonoids, amino acids, minerals, vitamins A and C, β-carotene and dietary fiber	32(37.6)	25(67.6)	100(57.2) 98(79.7)
2	knowledge that intake of ILVs like (Talinum triangulae) waterleaf in pregnancy will booster your immune system	20(23.5)	35(94.6)	90(51.4) 120(97.6)
3	Believe that knowledge on ILVs would help you to avoid the intake of ILVs that are not healthy in pregnancy	23(27.1)	25(67.6)	85(48.6) 100(81.3)

4	knowledge that intake of small amount of coffee with ILVs like fluted pumpkin juice Telfairia occidentalis is good in pregnancy	10(11.8) 100(81.3)	20(54.1)	50(28.6)
5	knowledge of eating about 400g of ILVs per day can help reduce the risk of NCDs	20(23.5) 30(24.4)	16(43.2)	70(40.0)
6	knowledge on Bitter leaf also reduces the sugar level of the body drastically and repairs the pancreas and kidneys which makes it great for diabetic patients	40(47.1) 85(69.1)	30(81.0)	130(74.3)
7	knowledge on eating Spinach, plumed cockscomb (Celocia argentia) gives you Beta- Carotene, Folic Acid, Ascorbic acid, Calcium, Iron, and Protein	30(35.3) 50(40.7)	32(86.5)	75(42.9)
	Ground Percentages	29.4 53.8	70.7	49.0
	Level of Knowledge	LK AK	HK	AK

Below 20= VLK, 20-39= LK, 40-59=AK, 60-80= HK, 80 and Above =VHK

Table 4 shows pregnant women's knowledge of health benefits of indigenous leafy vegetables in Ondo West LGA based on educational qualifications. Secondary education has highest respondents for Bitter leaf's effects on sugar levels and organs, with an Average Knowledge level of 49.0%. Tertiary education has highest respondents for waterleaf's immune system boosting effects, with an Average Knowledge level of 53.8%. Non-formal education has lower knowledge levels. However, Primary education has highest respondents for waterleaf's immune system boosting effects, with a High Knowledge level of 70.7%.

Table 5: **Summary of Chi-square Analysis of No significant Difference on the knowledge of conservation of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on age (n=420)**

		Knowledge responses					
Variables Age	**N**	**Yes O(E)**	**No O(E)**	**x^2**	**Df**	**P-value**	**Decision**
20-29 Years	150	56(91.8)	94(58.2)	**63.7**	**2**	**0.00**	**Rejected**
30-39 Years	148	99(90.6)	49(57.4)				
40-49 Years	122	102(74.7)	20(47.3)				

Data in table 5 showed the chi-square value for the hypothesis of no significant difference in the knowledge of conservation of indigenous leafy vegetables (x^2 =63.7 , df= 2, p=0.00 < .05) since the P-value was less than .05 level of significant difference at 2 degree of freedom , the hypothesis was therefore rejected. This implies that a significant difference existed in the

knowledge of conservation of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west Local Government Area, Ondo State based on age.

Table 6: **Summary of Chi-square Analysis of significant difference in the knowledge of health benefits of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west based on education (n=420)**

		Knowledge responses					
Variables Education qualification	**N**	**Yes O(E)**	**No O(E)**	**x^2**	**df**	**P-value**	**Decision**
Non-Formal education	85	50(50.1)	35(91.5)	249.27	3	0.00	Rejected
Primary education	37	28(25.7)	9(39.8)				
Secondary Education	175	104(121.7)	71(188.3)				
Tertiary Education	123	110(85.5)	13(132.4)				

Data in table 6 show the chi-square value for the hypothesis of no significant difference in the knowledge of conservation of indigenous leafy vegetables (x^2 =249.27, df= 3, p=0.00, < .05) since the P-value was less than .05 level of significant difference at 3 degree of freedom, the hypothesis was therefore rejected. This implies that significant difference existed in the knowledge of health benefits of indigenous leafy vegetables species among pregnant women attending health centers in Ondo west Local Government Area, Ondo State based on education.

Discussion

The finding of the study in Table 1 showed the characteristics of the participants who participated in the study. The table further revealed that the percentage in aged 20-29 years is higher than that of age 30- 39 years while percentage in age 40-49 is the lowest. This finding was expected because majority of the participant are adults of child bearing age. This is in consonant with the finding of Weinhardt (2019) who asserted that conservation of indigenous leafy vegetables among childbearing age women is vital to the health of both mothers and child. Also, the percentages of respondent in religious; Christians (60.7%) is higher than that that of Muslim (39.3%). This finding was expected as Christians are the main inhabitants of the study area. Despite the co-existence of Christians and Muslims, the higher number of pregnant women in the study area are Christians. Percentage of respondents with secondary education (41%) is higher than those with tertiary education (29%) and non-formal education (20.2%). Respondents with primary education (8.80%) are the lowest. Those aged 20-29yrs, Christians, and with secondary education are the major respondents.

The finding of the study in table 2 shows the overall percentage of pregnant women that have ethno-botany knowledge of indigenous leafy vegetables. The majority of the respondents (70.2%) knows about ethno-botany of various leafy vegetables in the villages and the lower knowledge is (31.2%) who do not know that it is important to eat plenty of ILVs like water leaf daily during pregnancy. The table shows respondent knowledge on intake of ILVs like waterleaf in pregnancy (54.8%); eating 400g of vegetable per day can reduce NCDs risk (66.4%); small amount of coffee with fluted pumpkin juice is good in pregnancy (35.7%). Pregnant women had average ILV knowledge (56.7%). The findings agree with the

explanation of Reddy and Pattanaik (2007) who asserted that adequate proportions of nutrition before and during pregnancy has a higher potential for a long term health of both mothers and child. Eating indigenous leafy vegetable during pregnancy helps mother feel better, have energy, reduce health problems, and maintain weight. Adebayo (2014) explained that eating well during pregnancy ensures proper child growth, reduces pregnancy complications, and improves sleep, ease, and prevents back pains.

The finding of the study in Table 3 shows the level of knowledge of conservation of indigenous leafy vegetables by pregnant women in Ondo west local government area based on age. The percentage of respondents aged 40-49 with VHK on ILVs grown in different locations was 98.4%, with HK at 72.9%. Ages 30-39 had AK in washing ILVs before cooking at 52.7% and 41.3% respectively. 53.3% had AK on conservation through ILV planting, with a total of 48.3%. This finding was expected because majority of the participant are adults of child bearing age. This aligns with Weinhardt's (2019) discovery that the preservation of indigenous leafy vegetables among women of childbearing age is crucial for the well-being of both mothers and offspring. The extensive knowledge possessed by expectant mothers regarding the conservation of ILVs may be attributed to the heightened awareness and education prevalent in our society concerning the preservation and health advantages of indigenous leafy vegetables for pregnant women.
The finding of the study in Table 4 reveals the knowledge on health benefits of indigenous leafy vegetables possessed by pregnant women in Ondo west LGA in Ondo state based on their level of educational qualifications. The secondary education 130(74.3%) have the highest respondent on the variables that Bitter leaf also reduces the sugar level of the body drastically and repairs the pancreas and kidneys which makes it great for diabetic patients with Average knowledge (AK)level of 49.0% as the grand percentage, The education qualification of tertiary institution 120(97.6%)on the knowledge variable that intake of ILVs like (Talinum triangulae) waterleaf in pregnancy will booster your immune system have highest respondent with (AK) average knowledge level of (53.8%) as a grand percentage, while non- formal education 40(47.1%) have highest respondent with (LK)lower knowledge of (29.4%) as the grand percentage. However, the education qualification of primary education level 35(94.6%) have the highest respondent on the variable that intake of ILVs like (Talinum triangulae) waterleaf in pregnancy will booster your immune system with (HK) high knowledge of (70.7%) as the grand percentage. The findings were expected because studies have shown that maternal education is linked to knowledge of ethno-botany, conservation, and health benefits of indigenous leafy vegetables. The findings align with Nafiu, Kabir, and Adiukwu's (2016) study on high death rates in pregnant women due to lack of health knowledge. It also supports Amaoo and Ajayi's (2019) finding on education as a barrier to knowledge acquisition. The findings agree, with the assertion of Adai (2015) who reported that ethno-botany and conservation of ILVs education for women relate positively with utilization of maternal health services. The higher the level of education of a woman, the more likely she is to utilize maternal health care services, and to take better care of herself which consequently may improve her economic power and ensure a better social and legal status for her.

The finding of the study in Table 6 revealed pregnant women with education qualification of primary education level 35(94.6%) (LK) lower knowledge and non- formal education 40(47.1%) have (AK) respondent with (LK) lower knowledge of (29.4%) as the grand percentage respectively. The finding in table 6 also showed that there was significant difference in the knowledge of ethno-botany and conservation of ILVs among pregnant women attending health center in Ondo West, Ondo State. The findings were expected and not surprising as studies have shown that a woman's educational level strongly influences her

exposure to knowledge of conservation and health benefits in ILVs.The findings agree with the findings of Oluwafemi and Bolaji, (2023) and also Schippers,(2017) who reported that knowledge of use of maternal health services was higher among those with formal education than those without former education irrespective of their gender or age.

Conclusion

Based on the findings, the following conclusion were drawn; the findings showed that pregnant women in Ondo West had average knowledge and high knowledge of ethno botany and conservation of Indigenous leafy Vegetables. Pregnant women with non-formal education had low knowledge on indigenous leafy vegetables in Ondo west LGA Ondo state. Pregnant women with primary education had high knowledge on indigenous leafy vegetables in Ondo west LGA Ondo state. Based on findings, pregnant women in Ondo West had varying knowledge of ethno-botany and conservation of indigenous leafy vegetables. Also, education level influenced their knowledge. Significant differences in knowledge based on age were observed among pregnant women in Ondo West Local Government Area, Ondo State.

Recommendations

Based on the findings and of the study, the following recommendation were made:

1) Post-harvest processing techniques and crop diversification can definitely help improve handling, reduce losses, extend shelf-life, and add value to indigenous leafy vegetables this is important for sustainable food security, especially for pregnant women.
2) Cultivation and consumption of Indigenous leafy Vegetables should be promoted and indigenous knowledge on various preparation, food processing and cooking methods should be disseminated, in order to enhance their utilization.
3) Addressing the conservation of indigenous leafy vegetables requires a multi-faceted approach involving education, policy support, and community engagement to ensure their preservation for future generations.

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Appendices

1. **English Name: Fluted Pumpkin Leaves,** Local Name: Ugwu (Igbo), Efo Apeje (Yoruba), Ikong –ubong (Akwa Ibom), Kabewa (Hausa), Botanical Name: Telfairia occidentalis

2. **English name: Jute leaf (Slimy leaves)**
Local name Ewedu (Yoruba), Ahinghara (Igbo), Rama (Hausa)
Botanical Name: Corchorus olitorius

3. **English Name: Bitter Leaf,** Local Name: Onugbu (Igbo), Efo Ewuro (Yoruba), Shakwa shuwaka (Hausa), Etidot (Cross River), Botanical Name:Vernonia amygdalina

4. **English Name: "Wild spinach" or African Jointifr**
Local Name: Afang leaves (Efik/Ibibio), Ewe Ajokotale; Ajaabaje (Yoruba), Okazi/U (Igbo), Yala (Ogoja), In Cameroon it is known as Eru, okok , mfumbua or fumbua
Botanical Name: Gnetum africanum

5. **English Name: False cubeb leaves**: The seeds from the plant is known as mkpuru uziza (uziza seeds) Local Name:Uziza leaves (Igbo) or Ashanti pepper, Iyere, (Yoruba), Botanical Name: Piper guineense

6. **English Name: Bushbuck**
Local Name: Utazi (Igbo), 'Arokeke' (Yoruba)
Botanical Name: Gongronema latifolium

7. English Name: Clove Basil (Scent leaf)
Local name: Nchuawun (Igbo), Efirin (Yoruba), Daidoya (Hausa), Ntong(efik), Aramogbo (Edo)
Botanical Name: Ocimum gratissimum

9. English Name: Waterleaf
Local Name: Gbure (Yoruba), Mgbolodi (Igbo), Alenyruwa(Hausa)
Botanical Name: Talinum Triangulare

11. English Name: African spinach, "Green" Local Name:Inine (Igbo), Efo Tete-abaia or Tete Eleegun(yoruba), Allayahu (Hausa), Botanical Name:Amaranthus hybridus

8. English Name: Curry leaf "sweet neem leaves"
Local Name: Efirin Oso (Yoruba), Marugbo sanyan (Yoruba)
Botanical Name: Murraya koenigii

10. English Name: Spinach, plumed cockscomb, quail grass, silve
Local Name: Shoko yokoto (Yoruba)
Botanical Name: Celosia argentia

12. English Name: African eggplant leaf (Garden egg leaf), Gboma
Local Name: Akwukwo Anara (Igbo), Efo Igbo (Yoruba), Ganyen gauta (Hausa), Botanical Name: Solanum aethiopicum