
Indigenous Mushroom Harvesting and Strategies among Rural Women in Ikwerre Kingdom, Rivers State, Nigeria

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Abstract

The study analysed indigenous mushroom harvesting and marketing among rural women in Ikwerre Kingdom of Rivers State, Nigeria. The data collected was through primary source, extracted using structured interview schedule. A multi-stage sampling technique was used to select 100 mushroom farmers by purposefully selecting ten (10) communities from Three Local Government areas that made up Ikwerre kingdom, namely: Ikwerre, Emuohua, and Obi/Akpor. Data were analysed using descriptive statistics such as mean score, percentage and frequency. The study revealed that a higher number (40%) of the respondent were between the age bracket of 50-59 years, the majority (65%) of the respondents were married, 67% had no formal education, 47% had 11-15 years harvesting experience and they harvested pleurotus astate mushroom (45%). A higher number (68%) of the respondents were into mushroom harvesting and trading. Mushroom harvesters (wholesale) sell a basket of mushroom for ₦500.00, while the retailers incur a total variable cost (TVC) of ₦550.00 and earn total revenue (TR) of ₦1,500.00, realizing a profit of ₦950. The major benefit of mushroom harvesting to rural women was that it serves as a source of income (57%). Major constraints to harvesting and marketing of mushroom were: non availability (85%) and religion (13%). The study recommends that government and extension agents should educate indigenous mushroom harvesters on new techniques of how to grow and cultivate mushrooms to all year round.

Keywords: Indigenous mushroom, harvesting, marketing

Introduction

The word Mushroom may mean different things to different people and countries. In a broad sense, mushroom is a macro fungus with a distinctive fruiting body, which can be either epigeous or hypogeous and large enough to be seen with naked eye and to be picked by hand (Raphael, 2015). Mushroom belongs to two subdivisions of fungi, vast majority belongs to Basidiomycetes, and a few belong to Ascomycetes. According to

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(Raphael, 2015), it is estimated that about 140,000 different species of mushroom exist in the planet; however, only about 10% are known. He also stated that there are about 2000 species of Mushrooms that are safe for consumption and 700 species are known for possessing some pharmacological properties. Edible mushrooms are attractive because of their flavour, taste, and delicacy. Although many species of edible mushrooms exist in nature, less than 20 species are used as food and only 8 to 10 species are regularly cultivated in significant extent.

Mushrooms offer tremendous applications as they can be used as food and medicines besides their key ecological roles. They are among one of the world's greatest untapped resources of nutrition and palatable food of the future. Due to the high amount of protein found in them, they can be used to bridge the protein malnutrition gap. Edible mushrooms have been widely utilized as human foods for centuries and have been appreciated for texture and flavour as well as some medicinal and tonic attributes (Raphael, 2015). He stated further that mushrooms are considered as healthy food because they are low in calories and fat but rich in proteins and dietary fibers; mushrooms protein contains all the nine essential amino acids required by humans. In addition to their good protein content, mushrooms are a relative good source of nutrients like phosphorus, iron and vitamin, including thiamine, riboflavin, ascorbic acid, ergo sterol, and niacin.

Mushroom harvesting used to be a popular hobby among youths and rural women in rural communities who use it as a source of income. Many edible species have been described and identified in Nigeria. *Auricularia auricular* is a type of mushroom eaten by many people in rural areas (Raphael, 2015). They are traditionally collected on wet logs on the woods during the rainy season or on log under shades in the forest. Mushrooms are either marketed fresh as soon as harvested or preserved by whatsoever means as quickly as possible. In other to effectively preserve mushroom, they should be kept cold with storage temperature of 0-2⁰C within five hours of picking or sun-dried, especially in the tropics during the dry season (Simeon and Sadiat, 2012). It is equally advisable to sundry as soon as it was harvested.

The need for mass consumption of mushroom and mushroom delicacies as an alternative source of protein and vitamins has not been well appreciated by majority of our people, even when the market prices of meat and fish have increased enormously. The superstitious beliefs that mushrooms are distasteful and poisonous are mysteries that have overwhelmed the minds of many toward the consumption of mushroom. This is as a result of inability to distinguish edible mushroom from poisonous types thereby not allowing the rural people from knowing the importance of mushroom (Raphael, 2015). The over dependent on natural available mushroom has led to mushroom scarcity and shortage in supply. This is simply because mushrooms are seasonal and edible ones are selective in their natural habitat. Therefore, to solve the problem of mushroom scarcity, mushroom has to be cultivated all year round.

Mushroom is now an accepted food among many households in Ikweree kingdom. It is harvested and marketed by mostly women as women in Ikweree kingdom go to the forest to harvest edible mushrooms. The common material used to harvest mushroom is the basket. Mushroom harvesting and marketing has become a source of livelihood for some rural women. Information on indigenous use and harvest of mushrooms had been passed orally from one generation to another (Simeon and Sadiat, 2012). It is possible that some of this

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undocumented information had been lost. According to them, the women who sell vegetables and mushrooms and elderly people are usually most helpful in supplying information about ethno mycological uses of mushrooms in south west of Nigeria and in Ikwerre kingdom in particular. In essence, the younger generation in Nigeria has little or no knowledge about ethno mycological uses of mushrooms. The purpose of this study was to assess and identify the edible mushrooms in Ikwerre kingdom and Rivers State in general and to determine the economics of mushroom to rural women in the study area. The study specifically:

- described the socio-economic characteristics of mushroom harvesters;
- identified the type of edible mushroom;
- determined the economics of mushroom harvesting and marketing.
- examined the benefits of mushroom to the rural people; and
- ascertain constraints to mushroom usage and cultural harvesting.

Methodology

Ikwerre kingdom is made up of three local government areas namely Ikwerre, Emohua and Obio/Akpor. The headquarters of Ikwerre is Isiokpo, Emohua is Emohua and Obio/Akpor is Rumuodomaya. The LGAs have large massive land and is endowed with mineral resources. Thus, the major occupation of the people is farming, fishing, and hunting etc. Ikwerre LGA is made up of twelve (12) communities and towns. These communities include: Isiokpo, Omagwa, Omudeme, Elele, Omuanwa, Apani, Ipo, Omerelu, Igwuruta, Ubima, Ozuaha and Aluu. Emohua is made up of five clans namely Rundele, Ibaa, Odegu, Emohua and Elele-Alimini While Obio/Akpor is four clans namely Akpor, Apari, Evo and Obio. Multi stage sampling technique was used to select the respondents in the study area. Firstly, two communities where mushroom harvesting was high were purposively selected from each clan, giving a total of ten communities. Secondly, ten women were systematically selected from each community, giving a total of 100 respondents which was used for the study. Data were collected using structured interview schedule and were analysed using descriptive (percentage, frequency and mean scores) and inferential statistics such as multiple regression and t-test.

Results and Discussion

Socio-economic characteristics of the respondents

The socio-economic characteristic of the respondents is shown in Table 1.

Entries in Table1 reveal that a higher proportion (40%) of the respondents were between the age brackets of 50-59 years. The mean age is 44.5 years. This indicates that the women involve in mushroom harvesting are middle-aged women; this may be as a result of urban rural migration of the youths, leaving the aged women in the village. However, the mean age of 44.5 years implies that the women involved in mushroom harvesting are active, young, vibrant women who are in their productive stage. This disagrees with Idio and Obinaju (2013) who observed that the majority of mushroom farmers were between 31-40 years. The majority (65%) of the respondent were married. This implies that the women involved in mushroom harvesting are married and have the responsibility of helping their husbands to provide the basic needs of the family. According to Albert and Nne-cosy

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(2014) marriage makes people to show sense of responsibility towards the family in the area of taking care of the children and meeting family needs. Also, a majority (67%) of the respondents had no formal education.

Table 1: Socio-economic characteristics of the respondents

Variables	Percentage(n =100)	Mean
Age (years)		
20-29	2.0	
30-39	18.0	
40-59	30.0	44.5 years
50-59	40.0	
60-69	10.0	
Total	100.0	
Female	100.0	
Marital status		
Single	10.0	
Married	65.0	
Separated	8.0	
Widow	17.0	
Total	100.0	
Household size		
1-4	17.0	
5-8	50.0	
9-12	23.0	8 persons
13-16	10.0	
Total	100.0	
Education		
Primary	20.0	
Secondary	4.0	
Non-formal	67.0	
Total	100.0	
Harvesting experience		
1-5	15.0	
6-10	28.0	
11-15	47.0	10.5 years
16-20	10.0	
Total	100.0	
Monthly Income from mushroom harvesting		
5,000 – 10,000	28.0	
11,000-15,000	52.0	₦12460.00
16,000 – 20,000	20.0	
Total	100.0	
Secondary occupation		
Farmer	73.0	
Petty trader	14.0	
Public service	3.0	
Civil service	2.0	
Herbalist	8.0	
Total	100.0	

Source: Field Data, 2017

This implies that women who are involved in mushroom harvesting had low education while some had no education. Illiteracy on the part of the mushroom harvesters could serve as a barrier in getting good knowledge on how to grow mushrooms around them. The mean years of harvesting experience is 19.5years. This indicates that the mushroom harvesters

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have been long in the business of harvesting and therefore will have enough knowledge of mushroom harvesting to give a good and accurate account of its marketing and challenges. Albert, Nnodim and Cookey (2013) stated that years of experience help in giving account of events. Greater percentage (52%) of the respondents in mushroom harvesting earn up to ₦11,000- ₦15,000 monthly. This implies that mushroom harvesting has high-income rate and therefore it is a good source of income to the women.

Relationship between Socio-economic Characteristics and Mushroom Harvesting

The linear model showed a positive sign of R square = 0.6021 and f-ratio of 0.323 at a p-value of 0.005 indicating a significant relationship between socio-economic characteristics such as age, sex, marital status, education, household size, years of experience, income and secondary occupation and mushroom harvesting. (Table 2)

Linear

$$Y = 6.32 + 1.23x_1 + 4.71x_2 + 1.82x_3 + 3.00x_4 + 2.45x_5 + 7.02x_6 + 3.34x_7 + 0.65x_8 + 0.5309$$

$$R^2 = 0.6021$$

Table 2: Regression of socio-economic characteristics on women involved in mushroom harvesting

Parameters	Linear	Semi-log	Double-log
Multiple R Square (R ²)	0.6021*	-0.091	-0.22033
f-ratio	0.323*	-1.766	-0.4908
P-value of the f. ratio	0.005*	-2.432	-2.30103
Variables	0.087	-0.764	-1.06048
Intercept	6.32(1.54) [†]	-4.03(1.05) ^{ns}	0.80(0.18) [†]
Age	1.23(0.76)*	1.43(0.12)*	0.08(-0.11)
Sex	4.71(1.97) [†]	0.54(2.34)	0.67(0.29)*
Marital Status	1.82(0.22) [†]	-6.43(-0.32)	0.26(-0.65)
Household Size	3.00(1.87)*	9.54(0.76)	0.47(0.27)*
Education	2.45(0.03)*	8.40(2.43)*	0.38(-1.52)*
Harvesting Experience	7.02(2.76)*	12.23(3.15)*	0.84(0.44)*
Monthly Income	3.34(1.54)*	1.41(0.21)*	0.52(0.18)*
Secondary Occupation	0.65(1.02)	-1.34(0.65)*	-0.18(0.01)

Figures in parentheses are t ratios; *P≤0.05. **Source: Field survey, 2017**

Types of Edible Mushroom in the Study Area

Table 3 reveals that a higher number (45%) of the respondents harvest *pleurotus astreatus*, followed by 30% of the respondents that harvest *Auricularia aricular-judea* and 23% of the respondents harvest *pleurotus tuber-regium*. The remaining 20% of the respondents harvest *Agaricus bioporus*. This implies *pleurotus astreatus* and *auricularia aricular-judea* mushrooms were the most harvested types of mushroom. This is probably the most

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available mushroom in the study area and probably accepted and eaten by the rural people.

Table 3: Types of edible mushroom in the study area

Variables	Percentage %
<i>Auricularia auricular-Judea</i>	30.0
<i>Pluerotus tuber-regium</i>	23.0
<i>Agaricusbiosporus</i>	2.0
<i>Pleurotusostreatus</i>	45.0

Source: Field Data, 2017

Multiple Responses

Economics of Mushroom Harvesting

Table 4 shows that 68% of the respondents were involved in harvesting and trading of mushroom while 32% only harvest mushroom. This disagrees with Onwubuya et al (2015) that observed that mushroom farmers harvest mushroom for household consumption in Abia State.

Table 4: Economics of mushroom marketing

Economic issues	Cost
Trade on mushroom	68% (yes)
Wholesale	
Farmer sell a basket of mushroom	- ₦500.00
Retailers	
A. <u>Total variable cost (TVC)</u>	
A basket of mushroom	- ₦500.00
Labour	- <u>₦50.00</u>
₦550.00	
B. <u>Total revenue(TR)</u>	
Retailer shed for ₦ 50.00	
From a basket 30 sheds	- ₦1,500.00
Profit	- ₦950.00
Gross margin (GM)= TR – TVC = ₦1500 – ₦550 = ₦950	
GM = ₦950	

Source: Field Data, 2017

Table 4 also shows that the mushroom harvesters (wholesale) sell a basket of mushroom for ₦500.00, while the retailers incur a total variable cost (TVC) of ₦550.00 and earn total revenue (TR) ₦1, 500.00 from shading mushroom for ₦50.00 into 30 places from a basket. The gross margin is ₦950 which implies that mushroom business or trading is a profitable one and the retailers make more profit than the mushroom harvesters. Idio et al (2013) stated that mushroom business is a profitable venture.

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Benefits of Mushroom to the Rural Women

Table 5 reveals that more than half (57%) of the respondents indicated that the benefit from mushroom harvesting is that it is a source of income. The result indicates that the major benefit of mushroom harvesting is that it is a source of income to the rural women who deals on sale of mushroom and a source of livelihood to the rural women who harvest and sell mushroom. Mushroom is also important in the use of the treatment of various ailments.

Table 5: Benefits of mushroom to the rural women

Benefits	Percentage
Livelihood	20.0
Employment opportunity	3.0
Source of income	57.0
Alternative source of protein	8.0
Treatment of disease	12.0

Source: Field survey, 2017

Constraints to Mushroom Usage

Table 6 shows that majority (85%) of the respondents indicated that none availability of these mushroom is the major constraints to mushroom harvesters as they are seasonal fungi. While only 2% of the respondents indicated taste as their reasons for not eating mushroom. This implies that the major constraints to the usage of mushroom in the study area was none availability of the mushroom while taste has little effect on the usage of mushroom. This is contrary to Albert and Tasi (2016) and Albert and Okidim (2017) that taste influence the utilization of most food eaten by people.

Table 6: Constraints to mushroom usage

Constraints	Percentage %
Belief	0.0
Religion	13.0
None availability	85.0
Taste	2.0

Source: Field survey, 2017

Conclusion and Recommendation

Mushroom harvesting and trading is a profitable venture. Mushroom harvesting has advantages or impact in the life of rural women in the study area as it is a source of income and livelihood to them. However, it has some constraints such non-availability of mushroom in the area and religion. Government should create awareness or educate indigenous mushroom harvesters, about the new techniques on how to grow and cultivate these mushrooms around them in order for it to be available to them all year round. Educate the mushrooms harvesters in the rural communities on the benefit of mushrooms as food and

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as medicine and to make them aware that not all mushrooms are poisonous and distasteful.

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