



Gender Roles in Cooking Energy-Related Tasks among Rural Households in Oji-River Local Government Area, Enugu State, Nigeria

Amah, N. E.*; Adisa, T.A.*; Mitu, B. S.**

Department of Agricultural Extension and Management, Federal College of Animal Health and Production Technology, Vom, Plateau State, Nigeria*

E-mail: nasoyamah@yahoo.com

Department of Agricultural Economics and Extension, Faculty of Agriculture and Agricultural Technology, Abubakar Tafawa Balewa University, Bauchi, Nigeria**

Abstract

The study assessed gender roles in cooking energy-related tasks in Oji-River Local Government Area (LGA) of Enugu State, Nigeria. Data were collected from a sample size of 180 respondents in 6 communities using questionnaire. Percentage, mean score and standard deviation were used for data analysis. Results of the study revealed that firewood (96.1%), palm fronds (83.9%) and palm kernel shell (75.6%) and kerosene (83.3%) cooking energy sources were available in the study area. Findings confirmed that rural women were exclusively responsible for cooking of food (97.4%), child care (94.6%), energy sourcing/gathering (88.5%), carrying energy sources home on their heads (86.2%) and fetching of water (85.1%) while the men were responsible for cutting of tree branches/twigs (64.2%), farm work (56.3%) and sales/marketing of energy sources (54.6%). Furthermore, the results demonstrated that procurement and consumption of cooking energy sources leads to air pollution ($\bar{x} = 3.47$), causes cataracts and blindness (eye problem) ($\bar{x} = 3.05$), leads to respiratory diseases ($\bar{x} = 2.97$), causes injuries and falls from trees ($\bar{x} = 2.53$) and could cause abortion ($\bar{x} = 2.51$). It is recommended that in order to reduce hardship and health hazards associated with energy-related tasks rural, the respondents should be encouraged to consider using cleaner cooking energy sources which lessen drudgery and hardship and saves time involved in cooking and energy source procurement and utilization, reduces air pollution, improves ventilation and women's health.

Keywords: Gender, roles, cooking energy, health, rural women



Introduction

Household cooking energy constitutes energy sources used for domestic cooking (Energy Sector Management Assistance Programme (ESMAP), 2003). In any household cooking involves the use of solid and non-solid fuels. Solid fuel consists of coal which is a fossil fuel and biomass fuel (BMF) like wood, charcoal, dung and crop residues; the non-solid fuel consists of kerosene, liquefied petroleum gas (LPG), natural gas and electricity (World Bank, 2004; Torres-Duque, Maldonado, Pérez-Padilla, Ezzati and Viegi (2008). Christof and Neelesh (2008) reiterated that rural households generally use a combination of household energy sources for cooking that can be categorised as traditional energy such as dung, crop residues, fuel-wood and charcoal or modern/clean energy such as LPG, biogas, plant oils, kerosene and electricity. Yahaya, Nabinta, and Olajide (2007) reported that many of the different types of households' fuels in use in developing countries come under the category of "traditional", which include animal dung, crop residues and wood fuel (firewood and charcoal).

The largest single energy requirement for rural households is fuel for cooking (Modi, McDade, Lallement and Saghir, 2005). The household sector however, is the largest cooking energy consumer accounting for about 90 % of traditional cooking fuels and 25 % of clean cooking fuels (Karekezi, Kimani and Onguro, 2008). In rural areas of developing countries traditional fuels such as fuel-wood, charcoal and agricultural wastes constitute a major portion of total household cooking energy consumption (Reddy, Marg and Goregaon, 2004; World Bank, 2006). Rural households collect cooking fuels from various sources: animals, forest land or open land surrounding their villages, local retailers, etc. Traditional cooking fuels (bio-fuels) are being consumed mostly by rural households because of easy availability and their relative affordability (Aina, 2001; ESMAP, 2004).

In developing countries, especially in rural areas, over 2.5 billion or about 52 % of the population depends on traditional cooking fuels (biofuel) as their primary source of fuel for cooking. However, a proportion of this population is highest in sub-Saharan Africa (World Health Organisation (WHO), 2006). In order to meet households' cooking energy needs, about 70 % of rural households in sub-Saharan Africa rely on fuel-wood, charcoal, kerosene or wood wastes (International Energy Agency (IEA), 2006). Nabinta, Yahaya and Olajide (2007) affirmed that in Nigeria, 86 % of households in rural areas and 42 % of households in urban areas use traditional cooking fuels as fuel-wood, charcoal, kerosene or wood wastes.



In most rural households of Africa and the developing countries, acquisition and management of cooking energy sources is primarily a woman's responsibility. Women are the users, collectors and managers of household cooking energy sources especially traditional fuels (Oyekale, Dare and Olugbire, 2012; Amah, 2017). The acquisition of household cooking energy is a major expense especially in a resource-poor household, be it in terms of time and energy, money or both. While men are having greater access to cash income activities, women's daily activities revolve around a subsistence economy. Much of women's lives and time mainly revolved around non-monetized work such as collecting fuel, fetching water, cooking, child care, cleaning and household maintenance (World Bank, 2006). According to ESMAP (2004), In developing world, the average time spent collecting wood per household per week and the average distance travelled to collect one head load varies between kilometres, usually taken for granted and are seldom monetized. The opportunity cost of these activities prevents rural women from undertaking income generating activities.

Women and children play important role in making energy available for household use. They are the ones who bear the difficulties of chopping, loading and transporting heavy loads of wood. In the rural areas, more than 80% of energy related work is done by women (Gwagwa, 2000). They play significant role in the household energy system by procuring, processing and managing cooking fuel for their families. Human power is used through head loading or the use of wheelbarrows in carrying cooking fuels thus women's participation in other development activities is impaired.

The involvement of men in sourcing the household energy is relatively low. It is only when the wood is collected for sale or where social constraints restrict women from leaving their homes (for example, when they are heavily pregnant) that men participate. Nevertheless, the involvement of men arises strongly where household cooking energy decisions are to be made.

The time spent gathering and utilising traditional energy sources has implications above and beyond a woman's health and hardship. The 'woman' has to compromise her time spent on housework, paid work and leisure in order to meet cooking energy needs of the household (UNDP /ESMP, 2004). Rural women on the average work 12 hours a day doing house chores and spend only 2 hours pursuing paid work (World Bank, 2006). The activities of women are closely connected to performing household chores which includes processing food, cleaning dishes and house (ESMP, 2004). However, due to a variety of reasons, women's role in cooking energy management system is being neglected (Oyekale *et al.*, 2012; Yahaya *et al.*, 2007). This paper therefore assessed gender roles in cooking energy-related tasks among rural households in Oji- River Local Government Area of Enugu State, Nigeria.



Specifically, the study sought to:

- i. identify the existing sources of cooking energy available to rural households in the study area;
- ii. identify roles played by men and women in cooking energy-related tasks among rural households in the study area; and
- iii. determine perceived effects of cooking energy procurement and utilization on women's health status.

Methodology

The study was conducted in Oji-River Local Government Area (LGA) in Enugu State, Nigeria. Oji-River LGA is one of the 17 LGAs in Enugu State. The LGA is located between latitudes 7°45' and 7°56' North and longitude 8°34' and 8°41' East and covers a land area of about 3,370km². The estimated population of Oji-River is about 1,045,821 persons which comprise 487,147 male and 558,674 female (National Population Commission (NPC), 2016) with about 9,500 households.

Oji-River is located in the southern guinea savannah vegetation zone of Nigeria. The vegetation consists mainly of dense grasses and variety of tall trees and shrubs. Much of the natural vegetation is being depleted due to persistent and unrestrained deforestation, bush burning, and rigorous cultivation of the arable agricultural land. Agriculture is the main stay of the inhabitants in the study area. The inhabitants' also engage in petty trading, palm wine tapping, commercial driving, pottery, handicrafts and hunting.

The population of the study sample comprised all rural households in the LGA. All the six (6) communities in the LGA, namely; Oji urban, Ugwuoba, Inyi, Akpugo-eze, Achi, and Awlaw were used purposively for the study. In each of the six communities, thirty (30) respondents were chosen using simple randomly sampling method which gave a sample size of one hundred and eighty respondents used for the study. Data were collected by means of questionnaire. Purposive and simple random sampling techniques were used to select the respondents.

Results and Discussion

Household Cooking Energy Sources Available to rural households in Oji-River LGA

Table 1 shows that firewood (96.1 %), palm frond (83.9 %), kerosene (83.3 %), palm kernel shell (75.6 %), charcoal (57.8 %), coconut shell (56.1 %), electricity (54.4 %), cooking gas (51.1 %) and saw dust (50.6 %) were energy sources available for cooking in the LGA while coal (16.7 %), leaves/litters (16.7) and animal dung (15.6) were not identified as major sources of household cooking energy available in the area. This implies that both traditional (firewood, charcoal, and agricultural wastes) and clean (kerosene, cooking gas and electricity) energy were available as household cooking energy sources in the study area. The availability of especially



palm frond, palm kernel shell and coconut shell could be as a result of tree crops predominant in the area, climatic condition which support the growth of the tree crops, agricultural practices prevalent in the area and geographical location of the region. This agrees with Sanchez *et al.* (2009) who asserted that availability, cost and usability of locally obtained biomass fuels depend on a range of local factors including rainfall, population density, settlement patterns and choices about farming, land use, and household wealth and labour constraint. This finding also, concurs with the work of Cecelski (2002) who established that most households in developing countries rely on firewood, charcoal, agricultural waste as their energy sources.

Table 1: Distribution of Respondents According to Cooking Energy Sources Available to rural households in Oji-River LGA (n=180)

Energy source	Percentage (%)		
	A	B	C
Firewood	96.1*	78.9	35.6
Charcoal	57.8*	18.3	30.6
Coal	16.7	-	-
Leaves/litters	16.7	-	-
Animal dung	15.6	4.4	-
Saw dust	50.6*	14.4	18.9
Corn stalk	38.8	8.3	5.6
Palm fronds	83.9*	37.8	9.4
Coconut shell	56.1*	22.2	10.0
Rubber	38.9	13.9	3.9
Palm kernel shell	75.6*	30.0	10.6
Groundnut shell	27.2	8.3	15.0
Kerosene	83.3*	-	77.2
Cooking gas	51.1*	-	30.0
Electricity	54.4*	-	30.0

Source: Field Survey, 2016 * Available household cooking energy source ($\geq 50.0\%$)

Note: A: Energy sources **found** within the locality

B: Energy sources **collected** from the farm, bush and landscape

C: Energy sources **purchased** by household

Roles played by men and women in cooking energy-related tasks among rural households

Role played by men and women in cooking energy-related tasks among rural households is presented in Table 2. Tasks with scores $\geq 50\%$ were considered as “undertaken” by respondents. The result reveals that tasks such as cooking of food (97.4%), sourcing and gathering energy sources (88.5%) and burden of carrying energy sources home on the head (86.2%) were taken by women. This implies that women exclusively undertook the responsibility of cooking in the



households and were involved in painstaking and time consuming energy-related tasks like energy collection, processing and storage which are considered as domestic energy-related chores. This finding is congruent with World Bank (2002) who observed that women's lives mainly rotate around non-monetized work such as collecting fuel, fetching water, cooking, and housework. It also, agrees with ESMAP (2004) which reported that women are the primary cooks in the households, engaging in some kind of cooking related task virtually every day and are involved in housework which includes processing of food, cleaning dishes and house, taking care of children, fetching water and fuel collection. However, the collection of firewood entails the most drudgery. Staton and Harding (2000) confirmed that large amounts of human energy are spent gathering firewood in many parts of the world and the burden tends to fall more heavily on women and the girl children.

Table 2 also, reveals that the men were involved in tasks like cutting of tree branches and twigs (64.2%), farm work (56.3%) and sales/marketing of cooking energy sources (54.6%). This implies that men were responsible for the tedious and monetized energy-related tasks. The result also divulges that the men were involved in about 30% of energy related tasks in the study area. This concurs with the assertion of Gwagwa (2000) who stated that in the rural areas; more than 80% of energy related work is done by women. This result is supported by the assertion of World Bank (2006) which reiterated that women are generally considered as not strong enough for tasks as chopping and felling of trees. Gwagwa (2000) opined that men have greater access to energy cash income activities while women and children play important role in making energy available for household use.

Table 2: Roles played by men and women in cooking energy-related tasks among rural Households

Tasks	Percentage (%)	
	Men	Women
Energy sourcing/gathering	11.5	88.5
Energy processing	42.3	57.7
Energy storage	27.2	72.8
Household energy supply	42.9	57.1
Farm work	56.3	43.7
Fetching water	14.9	85.1
Child care	5.4	94.6
Cooking of food	2.6	97.4
Burden of carrying fuels home on the head, neck or back	13.8	86.2
Washing pots, utensils and clothes	31.7	68.3
Transporting home energy sources	51.5	48.5
Cutting the tree branches and twigs	64.2	35.8
Sales/ marketing of energy fuel	54.6	45.4

Source: Field Survey, 2016

*Task undertaken (≥ 50)



Perceived Effects of Cooking Energy Procurement and Consumption on Women's Health

Table 3 reveals the perceived effects of cooking energy procurement and consumption on women's health. The study indicates that procurement and consumption of energy sources leads to air pollution ($\bar{x} = 3.47$), burns/fire ($\bar{x} = 3.10$), eye problems ($\bar{x} = 3.05$), electric shock ($\bar{x} = 3.02$), running nose ($\bar{x} = 2.97$) and heat ($\bar{x} = 2.88$). Other effects were cough ($\bar{x} = 2.82$), asthma ($\bar{x} = 2.79$), bronchitis ($\bar{x} = 2.74$), sneezing and wheezing ($\bar{x} = 2.60$) and chest pain ($\bar{x} = 2.51$).

This result is in pact with UNDP/ESMAP (2003) which confirmed that incidences of respiratory infections and cataracts in some rural areas have been linked to emitted smokes from biomass fuels. This also, agrees with the findings of Naeher *et al.* (2007) who opined that consumption of traditional biomass fuels by households is associated with high levels of indoor air pollution and an increase morbidity and all-cause mortality both in adults and children. A study by Desalu *et al.* (2010) in South Western Nigeria demonstrated that there is increased risk of respiratory symptoms and poor lung function test in women using firewood, agricultural waste and charcoal when compared with those using non biomass fuels.

However, the result revealed that procurement and consumption of cooking energy sources does not cause tuberculosis ($\bar{x} = 1.96$). This finding disagrees with Lam *et al.* (2012) who expounded that kerosene used for cooking or lighting provide some evidence that emission may impair lung function and increase infectious illness (including tuberculosis) asthma, and cancer risk.

Table 3: Perceived Effects of Cooking Energy procurement and Consumption on Women's Health

Perceived Effects	Mean score	Std. Deviation
Air pollution	3.47*	0.832
Burns /fire (flames)	3.10*	0.728
Cataracts and blindness (Eyes problems)	3.05*	0.843
Running nose	2.99*	0.903
Respiratory disease	2.97*	0.959
Heat within the environment	2.88*	1.013
Cough	2.82*	0.849
Poisoning of children(drinking of kerosene)	2.80*	1.002
Asthma	2.79*	0.946
Bronchitis	2.74*	0.941
Sneezing and wheezing	2.60*	0.966
Chest pain	2.57*	0.891
Injuries and falls from trees	2.53*	1.090
Abortion	2.51*	0.963
Skin irritation	2.46	0.975
Snake bites	2.23	0.995
Pneumonia and other illnesses to children	2.22	0.949



Low birth weight	2.13	1.082
Lung cancer	2.11	0.812
Heart attack and stroke	2.07	0.892
Premature births	2.02	0.977
Tuberculosis	1.96	0.850

Source: Field survey, 2016

Cut-off mean ($M \geq 2.50$)

Conclusion and Recommendations

The study assessed gender roles in cooking energy-related tasks among rural households. Findings revealed that firewood, palm fronds, palm kernel shell and kerosene were cooking energy sources available to rural women in meeting household energy needs in the study area. It established that women undertook the task of cooking of food, fetching water, child care, household energy source procurement, processing and utilization, and also the burden of carrying household energy sources home on their heads while the men were responsible for cutting down tree branches, farm work and sales of the fuel wood. The study also identified some perceived health effects of procuring and utilizing household energy sources which include indoor air pollution, injuries and fall from trees, burns, eye problems and respiratory diseases.

In order to alleviate the drudgery and hardship inherent in general household energy management undertaken by women and reduce health hazards associated with household energy procurement and utilisation, consumption of clean energy such as use of gas and electricity should be encouraged among the respondents. The use of fuel wood efficient stoves could be a possible option to combat air pollution and smoke associated with healthy problems.

The study recommended that respondents should consider using cleaner cooking energy which reduces drudgery associated with household energy procurement and utilisation reduces air pollution and improves women's health and environment.

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