MERIT RESEARCH JOURNALS
www.meritresearchjournals.org

Merit Research Journal of Medicine and Medical Sciences (ISSN: 2354-323X) Vol. 4(8) pp. 367-373, August, 2016
Available online http://www.meritresearchjournals.org/mms/index.htm

Original Research Article

Evaluation of the Effects of Pastoral Nomadism on the Public Health of Crop Farmers in Ohafia, Abia State, Nigeria

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Abstract

This study evaluated the effects of pastoral Nomadism on the public health of crop farmers in Ohafia, Abia State, Nigeria. Purposive and multi-stage random sampling techniques were adopted to survey 8 directly Nomad affected and 3 unaffected out of the 26 communities. Primary data were sourced using structured questionnaire, a non-participatory observation scheme and interview for the non-literate crop farmers and nomadic respondents. Using questionnaire and hospital line list the origin and migratory pattern of the nomads, the healthiness of the affected and unaffected farmers were compared across time. Indicators like frequency of hospitalization (illness), use of diagnostic laboratories and/or self medication and estimated direct and indirect cost of the outbreak of the Nomads were used. Results showed that the activities of the Nomads caused pollution of lands and water bodies and transmission of zoonotic diseases through litter from the livestock; higher rates of hospitalization and more cost in chemotherapy by affected crop farmers. Authors advocate construction of sedentary resident for the nomads and development of fiscal and land tenure policies that shall provide the nomads with user rights; stopping attacks from either party.

Keywords: Nomadism, Zoonoses, Ohafia

Abbreviations

FAO: Food and Agricultural Organisation
DFID: Department for International Development
PME: Planning Monitoring and Evaluation
NGN: Nigerian Naira
Hct. Hectare (of farmland)

INTRODUCTION

The protein intake per caput per day in Nigeria dropped from 6.7gm in 1961 to 5.6gm in 1988 (F.A.O., 1993) and dropped lower in 1999 to less than 2.8gm (F.A.O., 2000). After the Nigerian Civil war, Nomads migrated southwards from Northern Nigeria in order to dispose of their cattle. Cattle that were not immediately disposed of were grazed on available vegetation and watered using community water bodies. The Nomads aggregated around Okigwe, Awka, Oji River and Ohafia in the South Eastern Nigeria (Delgado, *et. al.,* 1999; Arua, 2000). Although the origin of Nomadism in South Eastern Nigeria pre-dates the civil war, the encroachment of the Nomads in Ohafia, our study area is closely tied to the end of the civil war (Kalu, 2000). In Ohafia the pastoral Fulbe nomads of Nigeria have been identified (Njoku, 2001; Awotona and Daramola, 1996). Generally, pastoral Nomadism has been closely linked to transmission of Zoonotic diseases (Coleman, 2002) and communal

clashes between the host community and the Nomads (Arua, 2001; Njoku, 2001), etc. The dung of the cattle poses health care hazards to the herds, the nomads and the host communities through whose farm lands and waters bodies they transverse (DFID, 2006). Zoonotic diseases of economic importance which are associated with ruminants that are facilitated through Nomadism include the following, among others; brucellosis, tuberculosis, salmonellosis; echinococcosis or hydatidosis; fascioliasis and anthrax (DFID 2006). In addition the dung is believed to desecrate shrines and church premises besides its assault on aesthetic sensibility. Clashes, harassment and even killings between the nomads and the villagers have been observed in Ohafia during the periods of 1995 and 2001 respectively (Arua, 2001). There are limited works in available literature on the effects of pastoral nomadism on crop farmers in Nigeria, and none specifically on crop farmers in Ohafia, Abia State Nigeria. The objective of this study was to evaluate the effects of pastoral Nomadism on the public health of crop farmers in Ohafia, Abia State.

METHODOLOGY

The Study Area

The study area is Ohafia in Abia State. Ohafia covers over 176 square kilometers in the western part of middle Cross River uplands and marks a part of the eastern limit of Igbo land in that area in southeast Nigeria. It is a border community consisting of 26 villages. Ohafia has both Igbo and non-Igbo neighbours (Kalu, 2000). The population of Ohafia has been rising over years. In the 1960's her population density was 500per sq/mile, but between the 1980's and 1990's it has risen from 124,000 people, to about 700per sq/km. (Ukaegbu in Anya, 1998; Njoku, 2001). However, the density may be higher than claimed because the hilly areas enforce a much heavier density on the available residential and cultivable lands. Features of rural-urban migration exist, because of the undulating and hilly character of the terrain (Njoku, 1981). Ohafia is bounded approximately by latitude 5 33' to 5 45' north; longitude 7 45' and 55' east (Kalu and Njoku, 1981). Topographically, Ohafia is an area of undulating moderate hills (Anya, 1990). The climate of Ohafia is undeniably tropical; relatively hot all year round. Rainfall cannot be said to be even. Annual daily maximum and minimum temperature of about 31_oC to 23_oC respectively occur (PME report, 1997). Ohafia possesses vegetation that is predominantly lowland rain forest (Okarima and Nwogu, 1997). The general land use pattern is communal, subsistence with attendant bush fallow system; land is cultivated by shifting slash and burn method with a ratio of two year's cultivation to five or seven years fallow to allow regeneration (Arua, 1981; Njoku, 2001). Although land may be leased at most minimal cost, it is never sold. The staple crop, the farming calendar, organization and unit of labour, the techniques and tools of production have not changed in any significant particulars. Yam (Discorea spp.) remains the king of crops, at least from a cultural perspective (Arua, 1981; Njoku, 2001). Tree crops and economic crops are enormous. Crop farming in Ohafia shows a well-marked cycle of activities throughout the year commencing from November with clearing of farmlands and cultivation of yam, harvesting starts around August of the next year (Arua, 1981). Ohafia soils are poor in plant nutrients; the soil is generally porous and prone to erosion. The choice of the study area was informed by the fact that the nomads concentrated their activities in 8 out of 26 villages in Ohafia (Kalu, 2000). Furthermore, in 2001, at the time of this study, there was a bloody clash between the pastoral nomads and the indigenes of Ohafia whose farm lands were affected either directly or indirectly.

Sampling Procedure

A combination of purposive and multi-stage random sampling techniques was adopted for this study. Out of the 26 villages in Ohafia, 8 of these villages, which were the only affected villages and 3 of the unaffected villages, were purposively selected for study.

Selection of Project Villages

Out of the 8 affected villages, 3 affected were selected by simple random method; these are Amaekpu, Ebem and Elu. Three villages were also selected from the non-affected villages, these are Akanu, Uduma-awoke and Okon; making a total of 6 villages

Selection of Farmers

Farmers were sampled by the convenience method; being that most farmers were un-cooperative; claiming that the Abia State Government failed to pay a promised compensation for their damaged farmlands and crops. However, proper representation of the population and validity of the sample figures were ensured. A total of 120 farmers were sampled; 60 from affected villages and 60 from un-affected villages. Due to some missing and un-returned questionnaires only 50 questionnaires from each category of villages were used for analysis giving a total of 100 questionnaires.

Interaction with Nomads

The Nomads were mostly not literate. Questions con-

tained in the questionnaire were thus administered to 20 out of 50 Nomads by oral interviews using an interpreter, since they were mostly non-literates.

Collection of Hospital Line List and Diagnostic Laboratory Results

Hospital Records were collected from 2 hospitals\medical Centres in 3 affected villages and from 2 hospitals\medical centers in the 3 un-affected villages giving a total of 12 hospital line lists. Frequencies of occurrence of zoonotic diseases facilitated by Nomadism; evidenced with laboratory results with or without treatment of patients were compared for affected and non-affected villages before and during the emergence of the Nomads. Diseases researched for are: Brucellosis, Tuberculosis, Salmonellosis; Echinococcosis or Hydatidosis; Fascioliasis and Anthrax.

Data Collection and Analysis

Data for this study was sourced and collected from both primary and secondary sources. The primary data were sourced using structured questionnaires, a well- planned, non-participatory observation scheme and an in-depth interview for the non-literate respondents. Seventy two (12 each of the six villages) copies of questionnaires were administered but fifty were recovered. Secondary data were sourced from hospital records, medical laboratory records.

Descriptive statistics such as means, percentages and Standard Deviation was utilised to analyse the data.

RESULTS

Preliminary Socioeconomic Description of Ohafia Crop Farmer Respondents

There are more female (60%) than male (38%) crop farmers; having 54% married, 20% widowed and 12% divorced and unmarried respectively. About 56% of the respondents are aged above 50 years old. Non-literacy level is high since only about 25% of the crop farmers attended above secondary school education. Female respondents make up about 68% of the less than secondary school level respondents. Family size is on the high averaging 9 persons. Majority (82%) of the farmers practice multi-cropping shifting cultivation or bush fallowing, this latter point agrees with the claims of Njoku (2000). Although monoculture exists with some patches of crop rotation, there are few traces of continuous-cropping. About 68% of the farmers operate full time whereas 32% operate part time

Socio-economic Description of Nomads

The Nomads were mostly illiterate. About 10% of the Nomads had settled down in Ohafia; married to Ohafia women and were raising children. The Nomads men married Ohafia women but Ohafia men did not marry Nomads women. Average herd size was 40 Cattle, 60 Sheep, 20 goats. The sedentary Nomads, in addition to herding their animals, operated meat shambles, barbecues security services and petty trading

Effects of Pastoral Nomadism on the Public Health of crop farmers in Ohafia

The pastoral Nomads roam around the 8 out of 26 villages in Ohafia. About 86% of farmers in the affected communities and 10% of farmers in un-affected villages claimed that the Nomads and their herds polluted the soil; also 80% of the crop farmers claimed that the Nomads polluted the water and play grounds respectively whereas 6% and 0% of the farmers claimed that the Nomads polluted their water and play grounds respectively in the un-affected villages. Forty percent of the crop farmers in un-affected villages noticed deforestation and erosion but as high as 90% of crop farmers in affected villages noticed deforestation and erosion in their farmers (Table 1). Before the advent of the Nomads 22% of the affected farmers and 8% of the un-affected farmers visited hospital annually; this figure rose to 66% for the affected farmers and 10 % for the un-affected farmers during the advent of the Nomads; similarly, 24% of the affected farmers and 14% of the un-affected farmers conducted diagnostic laboratory examination annually prior to the advent of the Nomads, this figure rose to 80% for the affected farmers and 12% for the un-affected farmers. The use of self medication among affected famers rose from 24% to 70% annually before and after the emergence of the Nomads respectively but rose from 18% to 20% among the un-affected farmers before and after the emergence of the Nomads (Table 2). Before the advent of the Nomads, about 46% of the crop farmers living in the Nomad affected villages and 40% of the crop farmers living in the Nomad un-affected villages suffered worm infection but during the advent of the Nomads, this figure rose to about 62% for the unaffected famers but remained at 44% for the un-affected farmers. Similarly the incidence of hard coughing rose from 6% among affected crop farmers and 4% among un-affected farmers before emergence of Nomads to 26% among affected farmers and 6% among unaffected crop farmers after the emergence of the Nomads. About 36% and 24% of the farmers in the affected villages and 34% and 26% of farmers in the un-affected villages suffered sleeping sickness and skin diseases respectively before the advent of the Nomads, but during the advent of the Nomads, these figures rose to 60% and 70% respectively for farmers in the affected villages but remained as low as 38% and 30% among farmers in the Nomad un-

Table 1. Distribution of Crop Farmers according to their Perception of Changes in their Farms

Type(s) of Change	Affected Farmers		Un-Affected Farmers	
	Frequency	Percentage	Frequency	Percentages
Deforestation	44/50	88	15/50	30
Erosion and Desertification	45/50	90	20/50	40
Pollution of Soil	43/50	86	5/50	10
Pollution of Water	43/50	86	3/50	6
Pollution of Play Ground	40/50	80	0/50	0
Hard pan (difficulty in tillage)	45/50	90	8/50	16
Stunted growth of plants	42/50	84	8/50	16
Loss of soil fertility	41/50	82	12/50	24

Table 2. Incidence of Hospitalisation, Laboratory Testing and use of Medication by Crop Farmers

	Before Nomadism		After Nomadism	
	Affected	Un-affected	Affected	Un-affected
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Visit to Hospital	11/50 (22)	4/50 (8)	33/50 (66)	5/50 (10)
Visit to Diagnostic Lab.	12/50 (24)	7/50 (14)	40/50 (80)	6/50 (12)
Use of Self Medication	11/50 (24)	9/50 (18)	45/50 (70)	10/50 (20)

Table 3. Incidence of Ruminant-borne Diseases and Symptoms among Crop Farmers

Zoonosis	Before Nomadism		After Nomadism	
	Affected	Un-Affected	Affected	Un-Affected
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Worm Infection	23/50 (46)	20/50 (40)	31/50 (62)	22/50 (44)
Sleeping sickness	18/50 (36)	17/50 (34)	30/50 (60)	19/50 (38)
Skin Disease	12/50 (24)	15/50 (30)	35/50 (70)	15/50 (30)
Hard Coughing	3/50 (6)	2/50 (4)	13/50 (26)	3/50 (6)

Table 4. Estimated Direct Economic Effects of the Public Health Effects of Nomadism on Farmers

Extra Expenditure	During Nomadism		After Nomadism	
	Affected	Un-Affected	Affected	Un-Affected
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Hospital Bills	31 (62.00)	10 (20.00)	23 (46.00)	6 (12.00)
Purchase of drugs	30 (60.00)	9 (18.00)	18 (36.00)	5 (10.00)
Laboratory Tests	40 (80.00)	12 (24.00)	12 (24.00)	4 (8.00)

affected villages. (Table 3). Table 4 shows that whereas 60% of affected farmers spent extra money on hospital bills during the advent of the Nomads, this figure dropped to 46% after the advent of the Nomads. Sixty percent of affected farmers spent money on purchase of medication only, during the advent of Nomads but this figure dropped to 36% after the containment of the Nomads. And finally, 80% of affected farmers spent money on carrying out laboratory test during the advent of Nomads; this figure dropped to 24% after the containment of the Nomads. Among the unaffected farmers, percentage of farmers that spent extra money on hospital bills dropped from 20% during outbreak of Nomads to 6% after outbreak of Nomads; whereas percentage of farmers who spent money on purchase of drugs dropped from 18% during outbreak of Nomads to 10% after outbreak of Nomads and similarly percentage of farmers who carried out laboratory test dropped from 12% during outbreak of Nomads to 8% after outbreak of Nomads.

Before the advent of the Nomads 24% of affected farmers and 6 % of unaffected farmers employed support labourers to work in their farms, this figures dropped to 12% and 8 % after the advent of the Nomads. Again, before the advent of the Nomads, 18% of affected crop farmers and 8% of the unaffected farmers lost money due to their absence in their farms when they were sick. This figures rose to 50% and 8% respectively for affected and

Table 5. Estimated Indirect Economic Effects of the Public Health Effects of Nomadism on Farmers

Description	Before Nomadism		During Nomadism	
	Affected	Un-Affected	Affected	Un-Affected
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Farmers that Employed support labourer when sick	12 (24.00)	3 (6.00)	16 (32.00)	4 (8.00)
Farmers that Lost Money due to their absence when sick	9 (18.00)	4 (8.00)	25 (50.00)	4 (8.00)

Table6. Distribution of Laboratory Test Results for Incidence (new cases) of Zoonotic Diseases facilitated through Nomadism

Zoonosis	Before Nomadic Devastation		During Nomadic Devastation				After Nomadic Devastation	
	1999		2000		2001		2002	
	Number	%	Number	%	Number	%	Number	%
Malaria	40	12.58	70	12.78	75	13.11	61	13.32
Salmonellosis	42	13.21	85	15.51	92	16.08	96	20.96
Skin Disease	11	3.46	74	13.50	89	15.56	34	7.42
Tuberculosis	6	1.89	12	2.19	14	2.45	15	3.28
Tape Worm	5	1.57	34	6.21	41	7.17	23	5.02
Brucellosis,	Not Confirmed	----	Not confirmed	----	Not confirmed	----	NC	----
Fascioliasis	14	4.40	23	4.20	31	5.42	20	4.37
Anthrax	----	----	----	----	----	----	----	----
Others	200	62.90	250	45.62	230	40.21	209	45.63
Total Test	318	100.00	548	100.00	572	100.00	458	100.00

Source: Compilation from Hospital Line List from 12 Hospitals across 6 communities, 2002
NC: Not Confirmed

unaffected farmers during the emergence of the Nomads (Table 5,6).

DISCUSSIONS

There are more female than male crop farmers in Ohafia but gender biases against women in acquisition of farmlands exist. Illiteracy level and average family sizes are high. Agricultural system is subsistent but fast developing. Majority of the farmers operate full time than part time thus, a disruption in normal farming programme like famine, or nomad devastations portends gross negative soicio-economic and environmental effects (Uchendu, et. al., 2015)

Emergence of the pastoral Nomads in Ohafia has been estimated to just after the Nigeria civil war (1970-1975). This is not unconnected with the building of the Military Barracks at Ebem Ohafia just after the Nigerian Civil war. The Barrack afforded the Nomads requisite psychology of security for their animals and family. The nomads in Ohafia have cattle, sheep and goat in their flock; a finding that disagrees with the earlier claims of Baker (1970) that these nomads wander with only cattle. Our finding further confirms that Nomadism is a possible source of widespread zoonoses (involving different species of farm animals) in Ohafia. Nomads also wander with their families; with the young boys actually hoofing the animals whereas the women stay back in their "home" to take care of the other flock. Some nomads male are married to Ohafia ladies but not vice versa. By 2001-2002, the time of this research, no pastoral Nomad possessed a paddock or any form of enclosure for their animals. Their migratory adventure and settlement are not definite as their itinerary, which encompasses farmlands, stream, sacred forest, churches, play grounds e.t.c. depends largely on availability of nourishment and water for their animals. Defecates and exudates of these herds apart from constituting aesthetic unacceptability, serve as medium for transmission of infectious (animal to animal) and zoonotic diseases (animal to man). A high percentage of crop farmers in the Nomad un-affected villages noticed deforestation and erosion, poor fertility and stunted growth of plants as well as in Nomad affected villages. It is probable that apart from the effect of Nomadism on the soil, the Ohafia soil is naturally prone to erosion; and this result agree with the findings of Arua (1981) that the Ohafia soils are poor in plant nutrients, generally porous and prone to erosion

The wide margin between the percentage of farmers living in the Nomads affected villages and the farmers living in the Nomad un-affected who visited hospitals, underwent diagnostic laboratory examination and used self medication during the emergence of the Nomads, and the eventual drop of these figures after the containment of the Nomads shows a strong association

between the emergence of new diseases and higher incidence of zoonotic diseases and the emergence of the nomads. These health implications have been shown to have both direct and indirect effect on the economy of the crop farmers.

Similarly increases in the incidence of worm infection, hard coughing, sleeping sickness and skin diseases among crop farmers in Nomad affected villages during the emergence of the Nomads but dropped after the containment of the Nomads further buttresses the claims of Daramola (1996), Coleman (2002) and DFID (2006); all of whom have traced the close association between Nomadism and transmission of zoonotic diseases of economic importance. This point is further validated by the fact that among the Nomad affected villages there was no significant difference in the percentages of crop farmers who suffered worm infection, hard coughing, sleeping sickness and skin diseases, during and after the advent of the Nomads. Furthermore, the increase in incidence of skin diseases can be linked to the animals defecate and urine, which pollute streams in Ohafia. These streams serve as the only source of drinking and bathing water for the people of Ohafia, whereas hard coughing is not unconnected to Tuberculosis.

Although visits to hospital and use of self medication among crop farmers in Nomad affected villages in Ohafia increased following the emergence of the Nomads but not among crop farmers in Nomad un-affected villages, majority of the farmers were unable to afford health care services because of lack of funds. In other words, the nomads transmitted zoonotic diseases leading to an increase in incidence of zoonotic disease among crop farmers Ohafia, but due to their destructive effect of the Nomads on the farmers' products, consequently shocking their economy, the farmers could not afford the necessary medication.

It is worthy of note that the activities of the Nomads constituted direct and indirect negative effect on the socio-economy of the crop farmers in the Nomad affected communities.

RECOMMENDATIONS

Given the above, we therefore recommend as follows:-
Nomadism is culturally and economically beneficial in that it provides employment for the Fulani tribe of Nigeria and considering that about 95% of cattle consumed in Nigeria come through Nomadism (Oyenuga, 1967; Richard, 1992), it is recommended that Nomads should not be made to leave Ohafia or any other parts of Nigeria that they exist. Instead an integrated scheme of agro-pastoral animals farming both by use of ranches or enhanced mixed farming should be developed and adopted by nomads and crop farmers especially in Ohafia and the entire southern agricultural zones. Furthermore, Nomads should be integrated into the main national agricultural systems in order to maximize their practice. Education on areas of Animal Health and Husbandry should be made available to both nomads and settled livestock farmers in Ohafia and Nigeria as a whole. A key policy question for Nigeria government is the development of organized fiscal policies that can provide for collection of tax and tariffs from these nomads. This policy should provide the Nomads with user rights protecting them from being attacked by villagers through whose farmland and forest they hoof. Such policies have become a matter of utmost importance.

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