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COPING STRATEGIES AND CONSUMPTION SMOOTHING AMONG HIV-AFFECTED HOUSEHOLDS IN NORTH-CENTRAL NIGERIA

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Abstract

This study was undertaken to determine effects of Human Immuno-Deficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) scourge on agricultural households in North-Central Nigeria. The population of the study comprised all farming households in North Central Nigeria. Benue, Nasarawa and Plateau States were purposively selected based on their high HIV prevalence rates. Random sampling was used in selecting 408 respondents. The analytical tools used were descriptive statistics and logistic regression model. Results showed that majority (68.6%) of the respondents were males, and married (64.0 %) with average household size of 9 persons. Up to 83.1% had primary or secondary education having farming (51.2 %) as a major occupation with a mean farming experience of 20 years. Land ownership was mainly through inheritance (66.9 %) while most (87.5%) farms ranged from 1.0 – 6.0 hectares in size with a mean farm size of 3.75ha. Majority (65.69%) of the respondents had annual farm incomes ranging from N 1 – N, 200,000 with a mean annual farm income of N 173,290. The major coping strategies against the scourge were withdrawal of money from savings (63 %), borrowing from friends and relatives and reduction in quantity and quality of meals eaten (61 %), changing children's schools to cheaper ones (58.6 %), taking up secondary occupation (55.6 %) and reduced consumption of other goods (50.4 %). Marital status, annual income, level of education, farm size, civil servant farmers, sale of assets and de-saving, had positive relationship and were statistically significant with the consumption of such goods and services. However, household size was negative to it. The study concluded that HIV and AIDS constitute a heavy financial and economic burden on households through catastrophic health expenditures and adversely reduced agricultural productivity. Social security programmes like National Health Insurance Scheme are recommended for poor

households to help them smooth consumption.

Key words:HIV/AIDS, **Strategies, Consumption, Smoothing, Households**

Introduction

Acquired Immune Deficiency Syndrome (AIDS) is a human viral disease that ravages the immune system, undermining the body's ability to defend itself from infection and disease. It is caused by the Human Immunodeficiency Virus (HIV). AIDS leaves an infected person vulnerable to opportunistic infections. These are infections by microbes that take advantages of a weakened immune system and cause life-threatening effect on people with AIDS, whereas such infections are usually not serious in healthy people. Not only has the cure for the disease not been found to date, but the rate of its spread, morbidity and mortality has been overwhelming (UNGASS, 2014).

It is widely recognized that serious illness has significant adverse effects on households' composition, labor supply and income generation (Umeh, 1991). It affects not only household food production, cropping patterns, livestock production, labor-time allocation and access to productive assets, but also children's education, access to consumption of goods and services essential for household maintenance and reproduction (Russell, 2004; Russell, 2005). Coping strategies are vitally important for poor households faced with illness cost shocks, since the costs associated with serious illness can absorb a large proportion of the household budget and therefore require the mobilization of substantial additional resources. Even minor illness costs can exceed the low and insecure daily or weekly budgets of the poor, who often survive on daily wage that is barely enough to meet minimum food requirements (Russell, 2001). Ability to cope with the extra costs of minor illnesses, let alone more serious ones, is therefore essential for the health and livelihoods of poor households.

Yu and Wilkes, (1998) and Jiang and Braun (2005) summarized household strategies in coping with ill-health risk: using cash and savings; selling livestock; selling other assets; changing productive activities; borrowing from friends and relatives; borrowing from moneylenders; receiving in-kind help from friends and relatives; delaying payment to private health care providers; being exempted from medical fees; receiving support from children; receiving reimbursement from medical schemes and receiving social relief. Ding and Chen (2001) and Chen and

Ding(2005) found that rural households generally followed the following sequenced in coping with economic hardship: reducing consumption expenditure, using savings, borrowing from friends and relatives, borrowing form moneylenders, working longer, selling durables and productive assets, leaving home to work outside, begging for food, breaking up the household and finally committing crimes.

In the literature on understanding household coping strategies, several analytical frameworks have been proposed. Coping strategies are generally categorized into ex ante and ex post. Holzmann and Jorgensen (2000) proposed a framework highlighting a Social Risk Management (SRM) matrix, which outlined three types of strategies that households employ to cope with adverse shocks: 1) prevention strategies - to reduce the likelihood that the household will experience the shock; 2) mitigation strategies – to decrease the potential impact of a future shock, including portfolio diversification, insurance, hedging/risk exchange; 3) coping strategies – to relieve the impact once the shock has occurred. In health research, household coping strategies for reducing the likelihood of illness incidence or decreasing the damaging impact of a potential illness can be seen as ex-ante coping strategies, while strategies designed to relieve the actual impact of an illness can be considered as ex-post strategies.

In assessing the effectiveness of household strategies in coping with health-related risks, Jiang *et al* (2003) proposed three criteria: risk transfer (whether the risk has been transferred or not); risk reduction (whether the negative impact on household production was reduced or not); and risk protection (whether household well-being/assets were protected or not). Yu and Wilkes(1998) believed that short-term strategies can lead to a loss of production opportunities, and decrease the ability to fight against future risk. Most households that borrowed could maintain normal production activities, and the majority of households who sold residual assets did not lose more assets.

Consumption smoothing is an economic concept that is used to express the desire of people to have a stable path of consumption (Wikipedia, 2011). Investopedia (2011) defines consumption smoothing as the ways in which people try to optimise their lifetime standard of living by ensuring a proper balance of spending and saving during the different phases of their life. This is based on Friedman's Permanent Income Theory (Friedman 1957) and Modigliani and

Brumberg's (1954) Life Cycle Model, which postulated the idea that agents prefer a stable path of consumption over their lifetime. Friedman's theory argues that consumption is linked to the permanent income of agents and not their current income. Thus, for example, when income is affected by transitory shocks, agents' consumption should not change since they can use savings or borrowings to adjust. This is based on the assumption that agents are able to finance consumption with earnings that are not yet generated, thus, it assumes perfect capital markets. Consumption smoothing mechanisms insure consumption levels against shocks to income.

Households are exposed to a wide range of risks and shocks such as illness, disability or death of a household member, job loss, crop failure, loss of assets amongst many others which are idiosyncratic in nature. Economic theory suggests that uncertainty about future income and consumption reduces the expected satisfaction that risk adverse households can derive from it. At the same time, this represents a motivation for households to respond to the risks threatening their future wellbeing. When such actions are successful, households are able to smooth consumption over time, even when faced with income shocks.

In Nigeria, households have developed various strategies to cope with the adverse health-related shocks. However, these strategies have not been adequately studied. This paper examines the coping strategies of farming households affected by HIV/AIDS in North-Central Nigeria.

The broad objective of the study is to examine the coping strategies of farming households affected by HIV/AIDS in North-Central Nigeria. Specifically the study intendstoanalyze the socio-economic characteristics of household in the study area; identify the coping strategies employed by households to smooth consumption when amember is affected with HIV/AIDS; and analyse the effects of HIV/AIDS on consumption smoothing by affected households.

Methodology

The study area

The study area is the North Central Geopolitical Zone of Nigeria. The Zone has a land area of 296,898 km^2 representing nearly 32 percent of the country's total land area.

It comprises Benue, Kogi, Kwara, Niger, Nassarawa, and Plateau States, as well as Federal Capital Territory. The zone is situated between latitudes 6^0 30'N and 11^0 2' N and longitudes 3^0E and 14^0E (Fig. 10). The zone has 20,369,956 people (NPC 2006) with an average population density of 80 persons per sq.km, which is less than half of the national average. The rural population constitutes 77 percent of the population in the zone. Total arable land in the zone is estimated at 24.7 million ha, but only 6.6 million hectares are currently under cultivation. The mean annual rainfall for the zone ranges from 1000-2,000 mm with an average of 187-220 rainy days per annum. The major crops of the central zone are maize, rice, millet, sorghum, cowpea, groundnut, yam, cassava, melon, mango and orange. Livestock production in the zone involves pastoral, agro-pastoral and sedentary systems. Various species account for 16% to 49% of national herd production. The Central Zone has contributed progressively less to total artisanal fish production in the country.

Data Analysis Techniques

Both descriptive and inferential statistics were used in the study. Descriptive statistics such as means, frequencies and percentages were used to assess the socio-economic characteristics of the respondents.

The logit regression analysis was used to analyse the effect of HIV/AIDS on consumption of goods and services by households. F-statistic was used to test whether coping strategies adopted were able to smooth household consumption.

Model Specification

The following logit regression model was adopted for household consumption expenditure

$$S_{ih} = K_{ih} + m\log(TY_h) + C_h + X_h + U \quad \text{..... equation 1}$$

Where S_{ih} is the expenditure share of good i for household h, TY_h is the total income of household h, C in the set of coping strategy dummy variables (DSAV, BOR, SALE, OTHER)

X is the set of socio- economic variables (SEX, AGE, HOUSEHOLD SIZE, LEVEL OF EDUCATION) and U is a random error term. The general form of the equation is:

CSM = f(TY, DSAV, BOR, SALE, LE, HS, SEX, AGE)..... equation 2

Specific form:

$$CSM = K_o + K_i TY_h + K_2 DSAV + K_3 BOR + K_4 SALE + K_5 OTHER + K_6 LE$$

$+ K_7HS + K_8SEX + K_9AGE + U_4$ ..... equation 3

Where,

CSM= log of consumption, showing change in consumption levels of commodity(goods and services) of the i^{th} household affected by a health shock

TY =total household income in Naira

DSAV =de-saving in Naira

BOR =amount borrowed in Naira

SALE =sale of assets in Naira

LE =years of education of household head

HS =household size

SEX =sex of household head

AGE =age of household head

K =parameters to be estimated

U =random error term

Results and Discussion

Socio-economic Characteristics of Respondents

The socioeconomic variables examined were sex, age, marital status, main occupation, land ownership, educational level, household size, farming experience, farm size and farm income . The result is presented in Table 1.

The distribution of the respondents according to sex showed that male-headed households were dominant in Benue State (78.1%) and Nasarawa State (76%) while female-headed households dominated slightly in plateau state (52.1%). The pooled result for the three states showed that male-headed households dominated (68.6%) while female-headed households made up 31.4%. This result agrees with those of Abu (2010) and Nyiatagher (2015) that males are usually the household heads and take major decisions of the household. The age distributions of the respondents revealed that majority of them were within the age bracket 21-69 years with a pooled percentage of 94.8%. Those below 21 years and above 60 years constituted 1.2% and 3.9% respectively. The same trend was observed in the three states. This

implies that majority of the respondents are within the economically active age bracket of 20-60years and can effectively use their energies and mental endowments for increased agricultural production.

The marital status of the respondents showed that 74.3% of those in Benue State were married compared to 54.8% in Nasarawa and 57% in Plateau States respectively. The pooled result showed that 64% were married while 36% were single. Married farmers are more responsible and can take measures to safe guard the health of their families against HIV/AIDS compared to single persons. This finding agrees with that of Daudu *et al* (2006).The main occupations of the respondents were farming, civil service and business. Full time farmers constituted 53% in Benue State 47.1% in Nasarawa State and 52.1% in Plateau state. Civil Service (or office work) was the next major occupation with 24% for Benue State, 44.2% for Nasarawa State and 26.4% for Plateau State. Pooled result showed that 51.2% were full-time farmers, 29.9% were office workers while 18.9% had business as their main occupation. This participation in agricultural production by office workers and businessmen could result to increased agricultural output in North Central Nigeria which has the potential to feed the nation.

Land ownership is mainly, through inheritance with 61.2% for Benue State, 75% for Nasarawa State and 69.6% for Plateau State. When pooled, land ownership through inheritance constituted 66.9%, followed by hiring (23.3%), outright purchase (7.1%), pledged (1.7%) and communal (0.9%). Land ownership through inheritance can result to fragmentation as well as family and communal conflicts (Biam*et al*., 2008). Outright purchase of land is not popular in North-Central Nigeria as land owners do not have absolute right over the land to sell it. Such powers are vested in the community.On education, majority of the respondents had secondary education in Benue State (76%) and Nasarawa State (57.7%). Primary school qualification followed in magnitude, with Benue having 14.2%, Nasarawa 34.6% and Plateau 33.1%. Overall, 58.1% had secondary education, 25% had primary education and 6.1% had tertiary education. Collectively they constituted 89.2% of the respondents. This result shows that farmers are fairly educated to take necessary measures for prevention and control of HIV/AIDS in the study area.

Table 1: Socio-economic Characteristics of Respondents

Variable	Benue n=183	Nasarawa n=104	Plateau n=121	Pooled n=408
Sex				
Male	143 (78.1)	79 (76)	58 (47.9)	280 (68.6)
Female	40 (21.9)	25 (24)	63 (52.1)	128 (31.4)
Age (years)				
1-20	00 (0.0)	34(32.69)	1 (0.8)	(5 (1.2)
21-40	108 (59.0)	39 (37.5)	61 (50.4)	238 (58.3)
41-60	72 (39.3)	31 (29.8)	46 (38.0)	149 (36.5)
Above 60	3 (1.6)	00 (0.0)	13 (10.7)	16 (3.9)
Mean	39.02	29.92	42.24	39.13
Marital Status				
Married	136 (74.3)	57 (54.8)	69(57.0)	261 (64.0)
Single	47 (25.7)	60 (45.6)	52 (43.0)	147 (36.0)
Main Occupation				
Farming	97 (53.0)	49 (47.1)	63(52.1)	209 (51.2)
Civil Service	44 (24.0)	46 (44.2)	32(26.4)	122 (29.9)
Business	42 (23.0)	9 (8.7)	26(21.5)	77 (18.9)
Land Ownership				
Inheritance	112 (61.2)	78 (75.0)	83(68.6)	273 (66.9)
Hired	63 (34.4)	9 (8.7)	23 (19.0)	95 (23.3)
Purchased	7 (3.8)	12(11.5)	10 (8. 3)	29 (7.1)
Pledged	1 (0.5)	3 (2.9)	3 (2.5)	7 (1.7)
Communal	0 (0.0)	2 (1.9)	2 (1.6)	4 (0.9)
Education				
Non formal	4(2.2)	7(6.7)	83 (27.3)	44 (108)
Primary	26 (14.2)	36 (34.6)	40 (33.1)	102 (25.0)
Secondary	139 (76.0)	60 (57.7)	38 (31.4)	237 (58.1)
Tertiary	14 (7.7)	1 (1.0)	10 (8.3)	25 (6.1)
Household Size				
2-5	18 (9.8)	9 (8.7)	48 (39.7)	75 (18.4)
6-10	131(71.6)	68 (65.4)	45 (37.2)	244 (59.8)
11-15	15(8.2)	15 (14.4)	19 (15.7)	49 (12.0)
16-20	11(6.0)	9 (8.7)	9 (7.4)	29 (7.1)
Above 20	8 (4.4)	3 (2.9)	0 (0.0)	11 (2.7)
Mean	9.1	9.6	7.7	8.8
Farming Experience(years)				
1-5	5(2.7)	6 (5.8)	12 (9.9)	23 (5.6)
6-10	39(21. 3)	51 (49.0)	28 (23.2)	116 (28.4)
11-15	42(23.0)	19 (18.0)	19 (15.7)	82 (20.1)
16-20	64(35.0)	16 (15.4)	17 (14.2)	97 (23.8)
Above 20	33 (18.0)	12 (11.5)	45 (37.2)	90 (22.1)
Farm Size (Ha)				
0-1-2.0	20(10.9)	36 (34.6)	48 (39.7)	104 (25.5)
2.1-4.0	81 (44. 3)	26 (25.0.)	29 (24.0)	136 (33. 3)
4.1-6.0	63(34.4)	33 (31.7)	21 (15.7)	117 (28.7)
6.1-8.0	16(8.7)	6 (5.8)	9 (7.4)	31 (7.6)
8.1-10.0	3 (1.6)	1 (1.0)	9 (7.4)	13 (3.2)
Above 10.0	0 (0.0)	2 (1.9)	5(4.1)	7 (1.7)
Mean	3.96	3.45	3.68	3.75
Farm Income (N'000)				
1-100	50(27. 32)	52 (50.0)	51 (42.15)	153 (37.5)
101-200	56 (30.60)	28 (26.9)	31 (25.62)	115 (28.19)
200-300	38(20.8)	15 (14.4)	12 (9.9)	65 (15.9)
301-400	27(14.8)	3 (2.9)	14 (11.6)	44 (10.8)
401-500	12 (6.6)	6 (5.8)	13 (10.7)	31 (7.6)
Mean	193.02	138.0	173.64	173.29

Source: field survey, 2016

Household sizes of 6-10 members were dominant in Benue (71.6%) and Nasarawa (65.4%) with Plateau State having more families of 2.5 members. Pooled result shows that 59.8% had 6-10 members, 18.4% had 2.5 members, 12% had 11-15 members, and 7.1% had 16-20 members while 2.7% had family members of 21 and above with a mean household size of 8.8. This implies that family labour could be readily available for agricultural production in the study area. This in turn can guarantee increased income and lead to improved standard of living. This agrees with the findings of Bogbenda (2012).The pooled analysis on farming experiences showed that 28.4% of the respondents had experience of 6-10 years, 20.1% had experience of 11-15 years, 23.8% had experience of 16-20 years and 22.1% had been farming for more than 20 years. Only 5.6% had been farming for 1-5 years. This clearly shows that 94.4% of the respondents have farming experience of more than five years which place them in a good position to integrate preventive and control measures against HIV/AIDS and agricultural production.

Farm size varied from 1 hectare in the more densely populated peri-urban areas to more than 10 hectares within the rural environment. Result of the pooled sample showed that 87.5% of the respondents had farm sizes ranging from 1.0-6.0 hectares with a mean farm size of 3.75ha. Only 1.7% had farm sizes above ten hectares. This shows that they are small-holder farmers that may find it difficult to realize adequate money to help them in the prevention and control of HIV/AIDS in their households.

On the basis of farm income, majority of the respondents earned N200, 000 and below (65 %) when pooled with a mean farm income of N173,390. Benue State had a combined score of 57.9%, Nasarawa 76.9% and Plateau 67.7%. Yet a few of the respondents earned above N400, 000 with Benue having 6.6%, Nasarawa 5.8% and Plateau 10.7%. The low level of farm income could place these farmers in a difficult position in the prevention and control of HIV and AIDS.

Strategies adopted by households to cope with HIV/AIDS

Households adopted a number of strategies to cope with the effects of HIV/AIDS. The percentage of respondents that adopted these strategies differed from one state to another and also among the different strategies as can be seen in Table 2. The most commonly used strategy was the withdrawal of money from savings (63.7%). This

was closely followed by borrowing from friends and relatives (61.5%) and reduction in the quantity and/or quality of meals eaten in a day (61.0%). Other coping strategies included transferring children to cheaper schools (58.6%), taking up secondary occupation to earn more income (55.6%) and reduction of household consumption of other goods (50%). Withdrawal of children from school and sale of household items like pieces of furniture, electrical and electronic appliances were strategies adopted by 40.7 percent of respondents in each case. Few respondents (15.4%) received financial and material support from government agencies, non-governmental organizations or individuals that helped them in cushioning the effects of the HIV/AIDS scourge.This agrees with the findings of Steinberg (2002). Yet when household, are stripped of their productive assets, the chances of recovering and rebuilding their livelihoods become even slimmer.One of the more unfortunate responses to the death of parent(s) in poor households is the removal of children from school, as they are now looked after by grandparents or relatives who do not have enough resources to take on additional financial burden. As men and women of productive age die or are affected by HIV/AIDS, farm production falls resulting to reduced farm income and falling standard of living.

Table 2: Strategies Adopted by Households to Cope with HIV/AIDS

Coping Strategies	Benue	Nasarawa	Plateau	Pooled
1. Withdrawal of children from school	97 (53)	43 (41.3)	26 (21.5)	166 (40.1)
2. Reduced household consumption of other goods	118 (64.5)	48 (46.2)	38 (31.4)	204 (50.4)
3. Increased the hours of work to earn more money	111 (60.7)	37 (35.6)	42 (34.7)	190 (46.6)
4. Changed children's school to a cheaper one	148 (80.9)	29 (27.9)	62 (51.2)	239 (58.6)
5. Took up secondary occupation	135 (73.8)	29 (27.9)	63 (52.1)	227 (55.6)
6. Reduced quantity and quality of meals	152 (83.1)	53 (51.0)	44 (36.4)	249 (61.0)
7. Borrowed money from friends and relatives	145 (79.2)	50 (48.1)	56 (46.3)	251 (61.5)
8. Withdrawal of money from savings	137 (74.9)	51 (49.0)	72 (59.5)	260 (63.7)
9. Received financial and material support	25 (13.7)	9 (8.7)	29 (24.0)	63 (15.4)
10. Sold some assets	77 (42.1)	45 (43.3)	44 (36.4)	166 (40.7)

Figures in brackets are percentages
Multiple responses
Source: Field survey, 2016

Consumption Smoothing by Households with HIV/AIDS

The ability of HIV/AIDS affected households to smooth consumption in terms of the number and quality of meals eaten in a day, the type of dwelling place, school attended by children, type of water taken and other considerations were considered and the result presented in Table 3. Household that we are able to maintain their level of consumption in the face of the scourge formed 57.8 % of the respondents, while those that could not constituted 42.2 %.

Of the 236 households that were able to smooth their consumption, 189 (80.1 %) were correctly predicted. Similarly, among the 172 households that were not able to smooth their consumption, 88 (51.2 %) were correctly predicted. The overall correct prediction was 277 (67.9 %). This implies that the result is reliable, and demonstrates that the disease has contributed to lowering of living standards in affected households as shown in Table 3.

Table 3: Consumption Smoothing by Households with HIV/AIDS

Consumption	Frequency	Percentage	Predicted		Percentage
			Correct	Wrong	Correct
Able to smooth	236	57.8	189	47	80.1
Not able to smooth	172	42.2	88	84	51.2
Overall correct prediction			277		67.9

The result of logistic regression of consumption smoothing by HIV/AIDS affected households is presented in Table 4.

The sex and age of the household head and the amount of money borrowed all had positive and direct relationship with the ability to smooth consumption, but were not statistically significant. All the other variables were significant at varying degrees of probability. Married couples (0.098) are - more likely to smooth consumption compared to single – headed households. Also, as the educational level of the household head increases, the ability to adopt strategies to smooth consumption also increases. Similarly, as the households' income and farm size

increase the probability to smooth consumption increases. The occupation of the household head was significant at 1 %, indicating that civil servant farmers could augment their farm income with their salaries to smooth consumption. Sale of assets and drawing from savings (de-saving) were also statistically significant at 5 % and 1 % respectively, as money realized increase the probability to smooth current consumption.

On the other hand household size was statistically significant at 1 % but related negatively. This mean that as household size increases, the ability to smooth consumption becomes difficult.

The chi –square value of 51.281 and the log likelihood value of 504.246 which are both high and significant (Table 4) shows that the effect of HIV/AIDS significantly reduces consumption of goods and services by affected households in the study area.

Table 4: Logistic Regression Results of Consumption Smoothing by HIV/AIDS Affected Households

Variable	Coefficient	Standard error	Sig.
Constant	-1.460**	0.717	0.042
Sex	0.422	0.298	0.157
Age	0.000	0.150	0.997
Marital status	0.098***	0.374	0.001
Level of education	0.040*	0.175	0.090
Household income	0.298***	0.060	0.000
Household size	-0.353***	0.120	0.004
Farm size	0.028**	0.030	0.044
Farming(civil servant)	0.854***	0.333	0.040
Sale of assets	0.984**	0.313	0.032
De-saving	0.258***	0.070	0.000
Amount borrowed	0.124	0.077	0.108
Chi-square	51.281		
Log likelihood	504.246		
Cot & smell R^2	0.418		
Nagelkerke R^2	0.591		

***** (**) (*) significant at 1%, 5% and 10% respectively**

Conclusion and Recommendations

The study concludes that HIV/AIDS devastates households and undermine their economic and social security making them to incur catastrophic health expenditures. These make them even more vulnerable to more infection and adversely affect agricultural production in the area. Hence, social security programmes like National Health Insurance Scheme (NHIS) to poor households to help them smooth consumption in the face of HIV/AIDS is recommended.

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