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Household Size As Correlates of Household Income And Health Expenditure Among Low Income Earners' Households In Central Senatorial District, Delta State, Nigeria, Implications For Health Education

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Abstract: *The purpose of the study was to assess the extent to which household size determines household income and health expenditure in Central Senatorial District, of Delta State, Nigeria. The study used questionnaire/interview on the household head for 270 household heads. The cross-sectional survey of the expost facto design of a descriptive study was the design. Data were analysed using descriptive and Pearsman moment correlation coefficient at 0.05 alpha. It was found that household sizes ranges between 1 – 7 with a mean of 4 household size. Monthly income ranges between ₦9,385 to ₦49,646 per month while healthcare expenditure ranges between ₦846 – ₦5,183 per month. It was found in this study that household size was not significant with household income (no correlation). However, household size was significant with household health expenditure (correlated). This study concluded that there is need for small household size and health expenditure should be included in household budget like it is done to shelter, food, education, among others. This finding supports policy for better households access to good health.*

Keywords: *Health income; Household, Health Expenditure; Household budgeting; Delta – State, Nigeri*a.

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I. Introduction

One of the factors influencing assessment of Health Services is affordability. Hence Odwee Okurut and Adebue (2006) described medical care demand as income inelastic. Health education as a discipline and practice is interested in the accessibility of healthcare service as one of the means to attain better health.

Household health expenditure, also known as out-of-pocket health expenses is the aggregate of money spent individually or collective spending on health in a household within a specific time. Harphan (2001) saw household health expenditure as money used by individual or group within the household to promote, maintain the status - quo of family health in the event of failing health. Optimal health expenditure puts members of the household in state of optimal productivity as a contributor to the gross-domestic product. Hence Ogbe (2007) states "for one to contribute to the GDP of a nation's economy, he/she must be in a state of optimal production and able to attain a remarkable percentage of his/her production capacity".

Household income describes the aggregate of money earned by members of the family as individual or collectively. International Labour Organisation (2003) stated that it is income in kind or cash received by the household members within a year or at a shorter period. According to Loveday (2003), income describes all earned income including salaries, rent, allowances from others and payment for causal labour, wife or children in the household; also included is income from selling among members of the household. However, Gilbert (2007) claimed that it is gross income into the household from household members who are 15years and above. Sources of household income according to International Labour Organisation (2003) include; income form employment, property income, income from household production of domestic services, transfer received in cash and goods and transfer received as services.

Household size is the number of persons staying together under a common roof and eating from a common pot. It could be individual, such a bachelor or a spinster or a nuclear family or an extended family in which cousins, nephews or even aged parents stay together. Hornby (2001) define household "as all people living together in a house." These may include the father, the mother and their children. Sometimes the household may include other close relatives or extended family members and friends. Gilbert (2007) added that the "residents of the household do not have to be related to the head of the household living together". Health is maintained when a substantial part of the household income is spent on promoting health. Health is described by World Health Organization (WHO) (1948) "as a state of complete physical, mental and social well-being and

not merely the absence of disease or infirmity. Components of health care include preventive, restorative/curative and rehabilitative/promotive. Health education on the other hand is all process by which health information is passed to individual or group for positive health altitude and behavior. WHO (2016) described Health education "as any combination of learning experiences designed to help individuals and communities improve their health by increasing their knowledge or influencing their attitudes."

Household size sometimes determines household income and expenditure. Health expenditure is always current and recurrent yet provision is not made in monthly budget for health in household budget in many households. Understanding the pattern of health expenditure will promote family budgeting that will bring about provision for preventive and curative health among the households.

Determining household income and health expenditure will provide health educators with working stool to use in guiding the families on family budgeting and making provision for health expenditure as it is done for food, shelter, and education among others. Families exposed to the result of this study will benefit from the use of the finding as it will provide bases for health expenditure for the purpose of adequate budgeting. Findings of the study will guide government policies on subsiding healthcare or provision of free healthcare services.

This study will determine household average income and household average health expenditure.

Research Questions

To guide this study, three research questions and two hypotheses were postulated;

1. To what extent does household size determines household income earned per month among household in Delta Central Senatorial District, Delta State.
2. To what extent does household size determines household health expenditure per month among households in Delta Central Senatorial District, Delta State.
3. Do households budget their earning per month?

Hypotheses

1. There is no significant correlation between household size and household income per month among households in Central Senatorial District, Delta State.
2. There is no significant correlation between household size and household health expenditure per month among households in Central Senatorial District, Delta State.

Reviewed Related Literature on Household Income and Health Expenditure

Substantial studies are available in literature on household and health expenditure:

Viet Nam (2013) reported Viet Nam 2002 – 2010; the national Living Standard Survey and found that 4 – 5% of households incurred health expenditure more than 40% of household income (catastrophic health expenditure), 3 – 4% of the households were made poorer or pushed into poverty (impoverished) by their health expenditure. The survey was based on health expenditure 12 months re-call.

Oluwatimilehin (2014) studied household income and expenditure in a survey conducted by Kenya Bureau of Statistics 2004/05 using 1340 sampled households; Household size varies between 1 to more than 8 household size with household health expenditure between 73.7 – 120.8 kshs (1 US dollar = 79 Kenya Shillings). The study reported, that household with more members incurred less health expenditure (73.7 kshs) against households with 2 and less spending of 120.8kshs. It was also found that household with formal education spent more on health (university graduates and above spent 128.9kshs) against no education spending 49.4kshs). The survey also found that the lower the income (<5000 kshs spent as such 117.5 kshs) against high income earner (> 2000 kshs spent 58.2 kshs).

In another study, Basar, Brown and Hole (2012) analysed household budget survey 2002 – 2008 and found that as poverty increases, healthcare expenditure decreases. Sambo, Ejembi, Adamu and Aliyi (2004) studied out-of-pocket health expenditure for under-five illness and found that economic status was a determinant of health expenditure and added that the state of poverty pose a serious treat to health expenditure.

Hjortberg (2002) summarized part of her study in Zambia and found that the followings: households health expenditure directly correlates total monthly expenditure; size of the household reflects expenditure; poorer households used healthcare less than higher earning households and by implication, less health expenditure for poorer households.

Su, Kouyatwe and Flessa (2005) found in their study that households with the highest health demand had low health expenditure as a result of low priority on health issues. The authors stated further that chronic disease was found to be important factor in catastrophic health expenditure while economic status was also found to be associated with catastrophic health expenditure.

Arising from the reviewed literature, the following assumptions were adopted for the study.

- Influence of income on health expenditure: the aggregate income of the family will determine their expenditure and Visa-vis their health expenditure.
- The more money that comes, the better the nutrition, shelter and hygiene and therefore less ill-health. It implies that the less the income the less the quality of life and the more the health expenditure. Hence Cochrance (1980) stated "that per capital income of most households is highly correlated with their live expectancies."
- Family size: A large household will have to cope with high spending on health. This is because the larger the household, the less is the quality of life and hence much more will be spent on health. Hence, Loveday (2001) stated that with many wives and children, the rate of expenditure generally and particularly on health expenditure will be higher than a man with one wife and two children, though both may be receiving the same salary. Many wives and many children usually results in catastrophic out-of-pocket health expenses.
- Health Education and Health Expenditure: Household budget has direct bearing with health expenditure. Health expenditure must be seen in the light of current and recurrent need in the family. Hence, Health education teaches and influences the quality of life through budget instruction. According to Awake (2011) "Having known your earning, your expenditures should not be made to exceed your income. Further more Awake (2011) stated that: "creating a successful budget can be a rewarding family project that will be within the household's income. Hence budget harmony and health within the household. World Bank (1993) pose that "the overall economic growth – particularly poverty reducing growth and education are central to good health".

II. Materials And Method

The method was in line with other serialized study by Ogbe and Erutase (2016A). The study a descriptive survey of the expost facto design. The population was five thousand five hundred and thirty three (5533) household heads (Ministry of Health, Delta State – Nigeria).

The sample size was obtained on the formula of Rainer' Arnfried, Hans and Werner (1997) n = 4 x px (100 – P)/25. Where n = sample size, p = expected prevalence. Thus two hundred and seventy households were calculated from the population. Base on the distribution of 40% urban and 60% rural population of Nigeria (Nigeria Population Statistics, 2006), 11 urban centres and 17 rural centres in Delta Senatorial District, Delta State were identified (Delta State Government 2010). Sixty percent of the rural and forty percent of the urban communities were sampled by simple ballot techniques to give a total of 270 households and 270 house heads. The inclusion factor was any household below monthly income of seventy-five thousand naira (₦75,000) and willing to participate in the survey. www.howwemadeitinafrica.com/nigeria-mobile-how-we-live-and-we and the exclusion factor was any household above seventy-five thousand naira (₦75,000) or not willing to participate in the survey.

Each of the 270 households were seen as a cluster made up of many settlements. A settlement is a health community in a Local Government Area. It is made up of between 20 – 30 housing units. A settlement was sampled through simple ballot sampling technique. Houses in a sampled settlement were numbered and put in sample frame. Using systematic sampling technique with an internal of two for large settlement and one for smaller settlement, one house unit was obtained. A total of 270 house units were obtained. From each house unit, one household was obtained using a table of random. The starting point of the survey was obtained by spinning a bottle and to where ever the bottle points become the starting point of the study. The house head was administered the questionnaire of the study.

The instrument was self design questionnaire. The questionnaire was in four sections: Section A: biodata, Section B; household sources of income, section C; Household health expenditure using 1 month recall, section D; health education and household health expenditure. The questionnaire was subjected to validity test with face and content validity through two health education experts and three test and measurement experts. The items were adjudged to be fit for the study. Cronbach alpha method was used to test the reliability as to determine the internal consistency of the statement items. Thirty households outside the study area in Bayelsa state, Nigeria was sampled. The Cronbach alpha stood at 0.69 at 0.05 alpha.

The instrument was administered to household heads through the researcher and his Assistants. The study took place between July and December 2012. Two hundred and seventy questionnaires were administered. The return rate was 100%. Both descriptive statistics of frequency counts, percentages and Pearson Product Moment Correlation coefficient statistics at 0.5 alpha were used to analyse the data.

III. Findings

The followings were the findings of the study.

Table 1: ***Summary of frequency counts and percentages of the ranges of the Household heads/respondents***

Age Range (Yrs)	Frequency	Percentages
18 – 27	42	15.6%
28 – 37	51	18.8%
38 – 47	60	22.2%
48 – 57	42	15.6%
58 – 67	45	16.7%
68 and above	30	11.1%
Total	**270**	**100%**

Table 2 revealed that 42 households heads were 18 – 27 years (15.6%), fifty – one household heads were 28 – 37 years (18.8%); sixty household heads were 38 – 47 years (22.2%); forty – two household heads were 48 – 57 years (15.6%) forty – five household heads were 58 – 68 years (16.7%) while thirty household heads were 68 years and above (11.1%).

Table 2: ***Summary of frequency counts and percentages of the highest educational level of the ranges of the Household heads***

Educational	Frequency	Percentages
Illiterate	20	7.4%
Primary school	54	20%
Secondary school	147	54.4%
Higher education	48	18.2%
Total	**270**	**100%**

Table 2 shows that household heads with higher education were 48 (18.2%); those with secondary school education were 147 (54.4%), those with primary school education were 54 (20%) while those without any formal schooling were 20 (7.4%).

Table 3: ***Frequency count and percentage of household perception of household budgeting and spending.***

S/N	Statement	Yes	%	No	%
1	Do you plan for number of children	27	10	200	90
2	Do you keep money aside for health issues	20	7.40	207	96.60
3	Do you plan your expenditure guided by your income	10	2.70	260	97.60
4	Do you spend more money than you earn	155	94.40	15	5.55

Table 3 revealed that most households hardly make budget for their monthly spending. Only 20(7.40%) made provision for health spending. Fifteen (15) (5.55%) claimed to spend more money than their income.

Table 4: ***Summary of frequency counts of the various household sizes and their average income and average health expenditure***

HHS	Frequency	Mean H.H Income	Mean H.H. Health Expenditure
1	14	₦ 9,385	₦ 846
2	27	₦ 25,370	₦ 2,570
3	62	₦ 22,700	₦ 1,986
4	82	₦ 29,895	₦ 2,694
5	52	₦ 40,752	₦ 3,971
6	26	₦ 45,646	₦ 3,971
7	6	₦ 49,646	₦ 5,183
More than 7	2	₦ 17,750	₦ 3,550
Total	**270**		

HHS – Household Size; H.H – Household Income; H.H. House Hole.

Table 4 revealed that household size of one had an average income of ₦9,385 against an average health expenditure of ₦846; a household of 2; have average income of an average of ₦25,370 against an average health expenditure of ₦2,570; a household of 3 had an average income of ₦22,700 against a health expenditure of ₦1,986; a household of 4, has average income ₦29,895 against an average health expenditure of ₦2,694; a household of 5, has an average income of ₦40,752 and an average health expenditure of ₦3,971; a household of 6 has an average income of ₦45,646 against health expenditure ₦3,971; a household of 7 has an average income

of ₦49,646 against average health expenditure of ₦5,183; while household of more than 7 has average income of ₦17,750 against average health expenditure of ₦3,550.

Table 5: ***Pearson Moment Correlation Coefficient between household size and household income***

	Income	**Household size**
Income/month: Pearson Correlation	1	0.020
Sig (2 tailed)		0.745
N	270	270
Income/month: Pearson Correlation	0.02	1
Sig (2 tailed)	0.75	
N	270	270

Table 4 shows the correlation between household size and household income per month. It revealed a non-significant correlation with Pearson moment correlation coefficient (r) of 0.020 and alpha at 0.745. Thus there is no significant correlation between household size and household in income among households in Central Senatorial District, Delta State.

Table 5: ***Pearson Moment Correlation Coefficient between household size and recalled household health expenditure***

Recalled H.H. Health Expenditure		**Household size**
Recalled H.H. health expenditure	1	0.23
Sign (2 tailed)		0.00
N	270	
Household size Pearson correlation	0.23	1
Sig (2 tailed)	0.00	
N	270	270

Table 5 shows that there was significant correlation between recalled household health expenditure and household size. Pearson Moment Correlation Coefficient (r) of 0.232 and significant at 0.01 alpha was found significant.

IV. Discussion

from the descriptive statistics of the study, it was observed that the sizes of households' ranges from 1 – above 7 but the average household in this study was four (4). It was found that the size of the household do not actually reflects the income. This is true because not all members of the household may be productive. It was found that household size has bearing with household health expenditure. This is true because all members of the household were venerable to ill-health or took preventive measures which may attract cost. Also found was that household income has relationship with household health expenditure. Thus, as income increases, the amount spent on health also increases.

From table 3, it becomes vivid that households hardly plan their spending. They do not plan for the number of children; they do not plan for health issues; they do not plan for their expenditure guided by income. The implications for health education is that the household should be taught and guided by health education on household budgeting to save the embarrassment that arises when health issues suddenly occur.

From the hypothesis, it was found that household size was not significant with household income. Think of it; can a newly born child of the household generate income? Or can children below the ages of 15years who are still in school be financially productivity? The findings collaborate the findings of Thomas (1990), Love – day (2003) and Gilbert (2007) who stated that household income is dependent on the productivity or contributory members of the household or on members of the household of 15years and above.

It was found in this study that there was significant relationship between household size and household recalled health expenditure. It reflects that larger household spent more money on health. This can be explained with larger household spending much on basic human needs such as shelter, food, clothing e.t.c. it may be difficult to obtain adequate nutrition and necessities, thus, health may fall and more money have to be spent on restorative health, promotive health and rehabilitative health. This finding was supported with the findings of Loveday (2001) who stated that the larger household will have to cope with high spending on health, because the larger the household, the less is the quality of life and hence much more will be spent on health. This finding also tally with the findings of Hjortsberg (2002) who found in his study that household health expenditure has direct correlation or bearing on household size. Thus, the larger the household the more the health expenditure. Though this findings was at variance with the findings of Oluwatimilehin (2014) who found that households with more members incurred less health expenditure (73.7 ksh) against household with two or less, spending (120.8 ksh).

V. Conclusion

This study has empirically correlated household size against household income. It was found that most household's size in Central Senatorial District were about one to seven. Household size averaged four (4). Households Income in the study range from ₦17,750 to ₦49,646 a month. It was found in this study that household size does not reflects income of the household, as not all members of the household were productive as children of 15 years and below were expected to be in school and cannot contribute to household income. It was found that household size was significantly correlated with household health expenditure. It was expected as the household size increases so do health expenditure increases.

VI. Recommendations

Arising from this study, the following were recommended:

(1) Household size should be small so as to reduce health expenditure and maintain good health.
(2) Health spending should be included in the household monthly/annual budget as it is done to shelter, food, electricity and others.
(3) Household budget should be practice to guide income against spending especially on health.
(4) Healthcare should be given priority in our day to day spending.

Implications for Health Education

- Health education should constantly be concerns with teaching and influencing attitude and behavior toward manageable family size; hence family planning should be a constant topic while speaking to men and women within child bearing age.
- Household budget should be taught to fathers and mothers so as to guide the use of household limited income. Health expenditure like shelter, food, electricity and education should be planned for and not seen as irregular expenses.
- Family should learn to plan expenditure including health expenditure within family income. Thus catastrophe out-of-pocket health expenditure being avoided.

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