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Widow's Health Status in Nigeria: A Nexus of Household Environmental Risk Factors and Healthcare Services Accessibility

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Abstract
Studies have infrequently allied widow's health status directly to household environmental risk factors and healthcare services accessibility in Nigeria rather have intensively linked it to widow's subjugation to inhumane burial rites and economic inactiveness. Unsafe environment and poor healthcare facilities have been recognized as some of the major dynamics responsible for the poor health status of widows in Nigeria. Information for 367 widows was extracted from NDHS 2013 irrespective of age differentials. The response variable is widow's health status dichotomized into "1" if widow sought any medical attention and "0" if otherwise. The key explanatory variables are household environmental risk factors and healthcare services accessibility. The explanatory variables are measured by cooking fuels, water source, toilet facility, disposal of youngest child stool, access to electricity supply, main roof material, main floor material, exterior wall materials, distance, money and healthcare worker's attitude. Binary logistic regression was applied. Results showed that poor utilization of medical healthcare services, exposure to smoke emission, poor toilet facilities, poor main roof materials and poor exterior wall materials were significantly associated with widow's health outcome ($p<0.05$). Also, the results of the study show that healthcare services accessibility was significantly associated with the health status of widows in Nigeria ($p<0.05$). Invariably, the study concluded that household environmental risk factors and healthcare service accessibility are significant predictors of widow's health status in Nigeria.
Keywords: widow, health outcome, household risk factors, healthcare services accessibility.

1.1 Introduction

The inhumane condition that a large number of widows in sub-Saharan countries are subjected to, most time is attributed to the sociocultural aspects of the people. In Nigeria for instance, the sociocultural and economic aspect of an average traditional home is still tied to the patriarchal dominated family type. The results of a substantive studies undergone in the country have been able to establish the fact that widows in Nigeria are not only subjected to deprivation but also intimidation, rejection, sexual harassment and disdained treatment (Fadipe, 1970; Faniran-Odekunle, 1978; Fajemilehin, 2000; Deere, 2006; Ethel, 2012; Eboiyehi, 2013). There is no gain-saying that the predominance of the patriarchal family system in the country is one of the major factors that encourages women in the country to see themselves as subjects to their partners in virtually all their aspects of life; women in this country to large extent find it difficult in taking a lead or initiatives in societal leadership both at their localities and the society at large (Fasoranti and Aruna, 2002; Osun State Widowhood Survey [OSWS], 2013). In line with this, a larger proportion of widows in Nigeria most often got themselves engaged in one economic activity and the other prior the death of their partners, but with no major sustainable income generated from such. Consequently, widows in the country are not majorly gainfully employed rather they are working subjects in their late spouses' farms or businesses as the case may be (Oloko, 1997). Therefore, it is apparently established that the African traditional society does allow women to be engaged in agricultural activities in most cases as subjects to their husbands or merchandizes of the farm produces (Aina, 1998; Olurode, 1990; Udegbe, 1990).

Interestingly, the elderly widows in the traditional African society, as a result of their idleness, and their wealth of experiences in home management, are often and culturally conformed to taking up the roles and responsibilities of marriage counsellors to the young married women or young couples, midwives, birth attendants and infants and young children care providers in their households, and communities as occasion demands (Faniran-Odekunle, 1978; Erinosho, 2000; Fajemilehin, 2000; Bhattacharya, 2008). Their rewards for these rendered services are most times too meagre; which in most cases are not substantive enough to meet up with their basic needs of life. Hence, majority of economically engaged women in the traditional African society are finding it extremely difficult to cater for their life sustainability and health needs, particularly the elderly widows. Consequently, a large number of the e widows in virtually all the sub-Saharan countries are not only subjected to isolated life and poor malnutrition but also denial of access to the property of their deceased spouses

there by making life very tough and unbearable for them (Erinosho, 2000; Fajemilehin, 2000; Strickland, 2004; Deere, 2006; Eboiyehi, 2013). Similarly, the death of their spouses translates into loss of rights to acquire their husbands' wealth and property by their relatives. Widows in Nigeria and other sub-Sahara African traditional societies, particularly the young and the middle aged ones are often accused of being responsible for the deaths of their husbands; they are often compelled to undergo burial rites which are injurious to their physical, psychological, emotional and economical status (Okojie, 1994; Owasanoye, 1997; Olusakin, 1998; Sossou, 2002; Ethel, 2012; OSWS, 2013; Eboiyehi, 2013). It is therefore likely possible that the socioeconomic status of a widow has an influence on the type of household environment that she resides, particularly in Nigeria. More so, these findings have shown that widows are not often able to cater for their basic needs of life, their healthcare inclusive as a result of their partial or non-involvement in active and gainfully economic activities that are essential and required for their survival or sustainability in the various communities across Nigeria.

On the other hand, widows cannot be totally said to have been denied of their inheritance. However, gender being a sensitive phenomenon, in rear occasions, women are at the receiving end particularly after the death of their partners. (George and George, 2013). Ahonsi, (1997) in his study's findings, argued that the women were not seen to have the same status as men do, therefore, the basis for widows being maltreated was on the ground of gender inequality. Women, in the African society at the death of their partners have little or no right when it comes to the issue of property ownership or inheritance (Olurode, 1990; Okojie, 1994; Drimie, 2002; Strickland, 2004; Action Aid, 2007). However, the prevalence and persistent rise in the level of abject poverty in most traditional African societies have compounded the health status of the widows on the continent. The pathetic health status that most of them, particularly the elderly widows in the developing counties have found themselves is globally acclaimed to be on a continual rise (Hurd, 1989; Stroebe, Stroebe, & Schut, 2001). A recent report adopted by the World Bank Forecast for 2015 on the extreme state of poverty among widows in the sub-Saharan Africa revealed that widows in this region have experienced the least declination in poverty when compared with other widows in other regions across the world (Loomba Foundation, 2011). The afterwards is that a substantive number of widows in the developing countries, particularly, those in sub-Saharan Africa lack the skills, strength, wealth and supports that could make them live above poverty. Therefore, the deaths of their spouses have left them with nothing most times but neglect, starvation, emotional trauma and low self-esteem. Hence, an ample number of aged widows in developing are least able to provide for themselves the basic necessities of life since the death of their spouse as a result of their lack of sources of livelihood (Ahonsi, 1997; Agarwal, 2007; Aboderin, 2008; George, 2010; George and George, 2013).

A large number of widows in virtually all the developing countries of the world, Nigeria inclusive, are being confirmed to living in a devastating and poor household environment (Kantiyok, 2000). The poor state of household environment that a larger proportion that widows in country has been identified as one of the major factors that is accountable for poor health condition of most of these widows, particularly the poor health status of the elderly ones among them in both the rural settlements and the slums areas in the urban centres across the country (Aina, 1998; UN-HABITAT, 2006; Izumi, 2007). Malnutrition, and infectious but preventable diseases are major killers of elderly widows in most poor environment across the developing regions of the world (Bennett, 1997). The identified causes of death by Bennett in his study's outcome does not exempt the plights of widows in the country. Thus, in Nigeria the present chronic poor health status of most widows has been attributed to malnutrition, poor housing, consumption of unsafe water and poor or absence of sewage facilities. (Erinosho, 2000; Fasoranti & Aruna, 2002; Harma, 2011). Hence, the health status of an average widow in Nigeria to a very large extent is influenced by her exposure to household environmental risk factors. The study is found necessary and timely as evidence suggests that over 2.1 million of women in Nigeria were widows, and the country had the second highest number of widows across the African continent; just behind Egypt (Loomba Foundation, 2011).

1.2 Statement of Problem

It has been widely established from previous studies' outcomes that poverty grows with age in most developing countries, and this is more pronounced among the widows in the sub-Saharan (Aina, 1998; Stroebe, Stroebe, & Schut, 2001; Izumi, 2007; George, 2010; Harma, 2011; OSWS, 2013). Consequently, majority of widows in Nigeria have been relegated to household characterized with poor environmental conditions and this in turn has been identified as one of the major factors responsible for their poor health conditions (Erinosho, 2000; Olaniyan, 2005; UN-HABITAT, 2006; Ethel, 2012; OSWS, 2013; Eboiyehi, 2013). Similarly, it has been empirically established that a good numbers of widows in Nigeria suffer a great deal of deprivations in virtually all the developing countries in the world. These deprivations ranging from poverty, sexual, social exclusion, and denial of access to healthcare services to stigmatization (Aina, 1998; Erinosho, 2000; Kantiyok, 2000; Strickland, 2004; Olaniyan, 2005; Deere, 2006; Izumi, 2007; George, 2010). However, these previous studies have not directly accessed the relationship between the poor health outcomes of widows and household environmental risk factors, neither have the link between the utilization of healthcare services and the health outcome of widows be directly

explored in Nigeria. Hence, this study.

1.3 Objectives of the Study

The general objective of this study is to explore the effect of household environmental risk factors and healthcare accessibility on the health status outcome of widows in Nigeria.

The specific of the study are to:

1. Explore the association between accessibility of medical healthcare facilities and health status of widow.
2. Examine the association between household environmental risk factors and the health status of widow.

1.4 Theoretical Focus

1.4.1 The Social Cognitive Theory

The theory of social cognitive, as propounded by Albert Bandura (1986) postulates that learning transpires in a social context with a dynamic and reciprocal interaction of the persons, environment, and behaviour. It discusses human behavioural attitude in relation to the effects predisposed by individual factors, conservational factors, and persistent interaction among people in their community. Thus, the theory as propounded by Bandura (1986) postulates that learning takes place in a social environment with a dynamic and mutual interaction of the persons, environment, and behaviour. It describes human behavioural attitude in relation to the effects influenced by personal factors, environmental factors, and continual interaction among individuals in their community. In line with this, the immediate social environment where a widow lives goes a long way in determining her health status. Therefore, it is established that a cause-effect relationship exists between the immediate environment where a widow lives and her health status. More so, one of the major arguments propounded by the Theorist is that man's behaviour is a function of the preceding experiences acquired by him in his community; and these acquired experiences in most case are instigated by man's interaction with other members in his immediate environment. Imperatively, the economic status of a widow may go a long way in influencing her accessibility and utilization of medical healthcare facilities within or afar her reach. Hence, it can be concluded that conformity of a widow to her societal norms, beliefs, values and her state of economic wellbeing are intricate determinants of her health status irrespective of her age.

1.5 Data and Research Methodology

1.5.1 Data Source and sample size

This study on the household environmental risk factors and widow's health outcome employs secondary data extracted from the 2013 Nigeria Demographic Health Surveys (NDHS). The study extracted for 367 widows irrespective of their ages. The response or outcome variable is widow health status dichotomized into 'widow sought any medical attention' and 'widow did not seek any medical attention'. Widow's health status was estimated by the prevalence of poor health status as a result of her vulnerability to household environmental risk factors. The unit of analysis for each indicator was the widow who have had diarrhoea or respiratory diseases in the last 2 weeks. The explanatory variables are household environmental risk factors (as measured by source of drinking, toilet facility, disposal of youngest child stool, type of cooking fuel, main roof material, main floor material, exterior wall materials and access to electricity supply) and maternal healthcare services accessibility (measured by distance, money and attitude of healthcare workers). Statistical analyses were performed using Stata version 13. The binary logistic regression was used in the study to examine the association between response and explanatory variables.

1.5.2 Data Analysis

The descriptive analysis of some selected socioeconomic and demographic characteristics of widows, and the extent of their vulnerability to household environmental risk factors were presented in Tables 1 and 2 respectively. Also, the extent of widows' utilization of medical healthcare services, and their health status were presented in Graphs 1 and 2 respectively. Also, the vulnerability of widows to household environmental on widow's health status was analysed. The interactional effects between accessibility of widows to healthcare services and household environmental risk factors on the health status of widows were also analysed using the binary logistic regression statistics. Widow's poor health status caused as a result of her exposure to household environmental risk factors were used to access widow's intention for seeking medical healthcare services Prevalence of infanthood mortality was categorized into two: If the cause of the death of the infant was any of diarrhea or respiratory infectious disease it was categorized as "1 or 0" otherwise. Biogas, natural gas, liquid purified gas and electric stove are categorized into "no smoke emitting cooking fuels, kerosene stove and coal were categorized into "low smoke emitting cooking fuels", while crop wastes, dung and animal dungs were categorized into "high smoke emitting cooking fuel". Flush toilet facilities and ventilated improved pit latrine were categorized into "good toilet facilities; pit latrines, composting toilet, bucket toilet, hanging toilet and open pits were categorized into "poor toilet facilities"; while no facility, bush and filed were categorized into "no toilet facilities". Piped water, bottled water, tube or borehole, public tap, sachet water and tanker water were

categorized into "safe sources of drinking water; while water obtained from its natural sources without being treated were categorized as "unsafe". Cement, stone with lime/cement, bricks and cement blocks were categorized as "good exterior wall", while dirt, cane/palm/trunks, bamboo with mud, wood with mud, ply wood, cardboard, refuse wood, metal zinc, wood planks/shingles were classified as "poor exterior wall". Parquet/polished wood, vinyl/asphalt strips, ceramic tiles, cement and carpet/rug were categorized as "good flooring", while earth/sand/dung, wood planks and palm bamboo were categorized as "poor flooring". Metal/zinc, ceramic tiles, cement and roofing shingles were categorized as "good roofing", while wood planks, cardboard, palm bamboo, rustic mat and thatch/palm leaf were categorized as "poor roofing". Used in toilet/latrine and used toilet/latrine were categorized as "hygienic way of disposing youngest child stool". While rinsed into drains or ditch, buried, threw into garbage, rinsed in river/river banks and left in the open were categorized as "unhygienic way of disposing youngest child stool".

1.6 Results

1.6.1 Socioeconomic and Demographic Characteristics of Widows and their Vulnerability to Household Environmental Risk Factors

The socioeconomic and demographic characteristics of widows, utilization of medical healthcare services and their exposure to household environmental risk factors were explored. The results of the study as presented in Table 1 show that the average age of the widow is 34 years, while approximately a quarter of the widows (25.6%) of the widows were below age 30 and about two-fifth were from ages 30 to 39. Also, only 5.2% of the widows had post-secondary education, while 28.6% had no formal education at all. The outcomes of the study also reveal that more (57.5%) of the widows lived in the urban. Relatively, more than half (56.7%) of the widows were residents in the Southern Nigeria. Majority (73.8%) of the widows were Christians; while only 31.9% of the widows lived within the upper status of wealth. The outcomes of the study show that only 4.6% of the widows were professionals, managers or technicians; and one out every five of the widows (20.2%) were unemployed, while about a third (30.2%) were either domestic, agric. or manual workers. The result also shows that more than half (53.7%) of the widows reported of being accused for the death of their late husbands. Furthermore, the outcome of the study as presented in Table 2 reveals that about more than two-fifth (41.6%) of the widows had no access to safe water for their household consumption. The results of this study further show that approximately only one out every four widows (26.7%) had access to a good toilet facility, while two-third (67.0%) of the widows were exposed to household air pollution as a result of the high smoke emitting fuels that they cooked with in their various households. Similarly, as a result of poor toileting, 43.6% of the youngest child stool were not hygienically disposed by these widows. Also, the outcome of this study shows that more than half (57.5%) of the widows had no roof over their heads; while about 40.0% had no access to a good floor in their various household. More so, the results reveal that more than half (57.5%) of the widows had no access to electricity supply, while two out every five (39.8%) widows either had a poor exterior wall or had no exterior wall decoration at all in their various households.

More so, the results on the occurrences of illness as reported by the widows is presented in Graph 1. The outcomes of the study show that 17.2% of the widows had had cold in the last two weeks prior the survey, while 15.1% had reported to have had fever during the same period of time. The result also reveals that 6.7% of the widows had had diarrhoea in the last two weeks prior the survey. The results on the utilization of medical healthcare facilities by the widows as presented in Graph 2 show that 13.1% of the widows complained that the attitude of medical health workers was one of the factors that discouraged them from seeking medical health services when they were sick. On the other hand, three out of every 10 (30.0%) widows gave the distance to the place of medical healthcare services as a major hindrance to their utilization of medical healthcare services when they ought to seek for it; while more than two-third (68.7%) of the widows admitted that money needed for medical treatment was the major bottleneck discouraging them from utilizing medical healthcare facilities whenever they were sick.

1.6.2 Multivariate Analyses

The outcomes of the study as presented in Table 3 show that the type of toilet facilities, types of household cooking fuel, main house roof materials, household exterior wall materials and the health outcome of widows in Nigeria are significantly associated ($p<0.05$). Relatively, the results of the study also show that occurrence of illness and the utilization of medical healthcare services are significantly associated ($p<0.05$). The results of the study further reveal that the attitude of health workers was significantly associated with the utilization of medical healthcare services by widows ($p<0.05$). Similarly, the distance to medical healthcare centres was found to have significant influence on the utilization of healthcare facilities by widows ($p<0.05$). Also, money and healthcare services utilization by widows in Nigeria were found to be significantly associated ($p<0.05$). In line with this, as presented in Table 3, the results of the odd ratio distribution of this study show widows that had no access to good toilet facility were 55.0% more likely to seek for medical healthcare treatment compared with widows that had access to good toilet facility in their households. Similarly, it is evident from the study's outcome that

widows that had no access toilet facility were 37.4% more likely to seek for medical healthcare treatment than those that had access to good toilet facility at home. Also, it can be deduced from the study's findings that widows that had access to safe water in their various households were not 6.9% more likely to seek for medical healthcare treatment than widows that had no access to safe water for their domestic consumption in their various households. Widows that were confined to poor roofing were 2.3 times likely to seek for medical healthcare treatment compared with widows whose household roofs were in good condition. The results further reveal that widows whose household floors were made with poor materials were 11.6% more likely to seek for medical healthcare treatment than those with good flooring materials. The results on smoke emission coming from cooking fuel is in a two-way direction, while widows that were exposed to high household smoke emission from cooking fuel used were 50.5% less likely to seek for medical healthcare treatment compared with widows that were not exposed to any cooking fuel emission at home; widows that were exposed to low smoke emission as a result of the type of cooking fuel that they used at home were 24.6% more likely to seek for medical healthcare services than widows that were not exposed to any cooking fuel emission in their various households. Widows that had access to electricity supply in their various households were 19.7% less likely to seek for medical healthcare treatment than widows that had no access to electricity supply in their various households. The result on disposal of youngest child stool shows that a widow whose youngest child stool was hygienically disposed was 57.7% less likely to seek for medical healthcare services treatment compared with a widow whose youngest child stool was not hygienically disposed. The outcome of the study further shows that widows with poor or no exterior wall in their households were 52.8% and 47.0% less likely not to seek for medical healthcare services respectively compared with those widows that good exterior wall in their various households. Therefore, the application of binary logistic regression in this study has shown that household environmental risk factors and health outcomes of widows are significantly associated ($p<0.05$).

1.7 Discussion

Household environmental risk factors and medical healthcare facilities utilization have been identified in this study as factors that had influence on the health status outcome of widows in Nigeria. It is evident from the findings of this study that more than a two-third (68.7%) of widows in the country could not seek medical healthcare services not because they were not willing or did not need but as a result of their poor financial status. One would have suggested that the availability of medical healthcare services centres across the country would have served the medical healthcare needs of these widows; however, about a third (30.0%) were not able to access these medical facilities as a result of distant barrier. Therefore, the outcomes of this study are in line with OSWS, (2013); Afolayan, (2011); Fajemilehin, (2000) and Aina, (1998) where the socioeconomic status, particularly employment status and household wealth status were being identified as correlates of the health status outcomes of widows in Nigeria. In the light of these observations, it was evident in the study that the socioeconomic status of widows have a link with their vulnerability to household environmental risk factors. A higher proportions of the widows in the country had no access to electricity (57.5%), no or low smoke emitting household cooking fuel (67.0%), good toilet facility (63.3%), while approximately, two (41.6%) out of every five widows had no access safe water for domestic consumption in their various homes across the country. Hence, it is imperative from the study's evidences an average widow in the country is still subjected poor household environmental which in no doubt could be attributed to her extreme state of poverty. Also, the results of this study has thrown more light on the forecast by Loomba Foundation, (2011) that the health status of widows in developing countries are getting worse, Nigeria inclusive. These findings are also in line with Hurd, (1990); Ahonsi, (1997); Afolayan, (2011) and OSWS, (2013) that the poor environment that most widows are living in Nigeria is a reflexion of the extreme state of poverty in which most of them have found themselves. Therefore, it is evident, and imperative as shown by the outcomes of this study that household environmental risk factors such as toilet type, cooking fuel emission, main roof material, exterior wall material and disposal of youngest child stool are significantly associated with the health status outcome of widows in Nigeria ($p<0.005$).

1.8 Conclusion

This study was designed to explore and access the interactive relationship existing among household environmental risk factors, medical healthcare services utilization and health status outcome of widows in Nigeria using the secondary data from the 2013 Nigeria Demographic and Health Survey (NDHS). The results of this study have been able to show the level of variation in household environmental risk factors that widows were subjected to in the country. Also, the inverse relationship between the socioeconomic and demographic characteristics of widows and their level of utilization of medical healthcare services have been established. A line of connection between the health status of widows and their utilization of medical healthcare centres facilities have been established in this study. It is imperative and obvious that household environmental factors are predictors of health outcomes of widows in Nigeria. Relatively, the utilization of the available healthcare facilities by widows were determined by their socioeconomic factors which in turn showed the extent of penury

lives that these widows have been subjected to. Hence, for the health status of a widows to be improved on, she must be least exposed to household environmental risk factors.

1.9 Recommendation

The outcomes of this study have made the following recommendations necessary and urgent:

1. Micro-financial institutions should be strengthened and directed to provide affordable low interests loans to widows that are still within the working age. This will to a very large extent improve the socioeconomic status of widows and their health well-being.
2. Widows, just like infants, and under-five children should be given the privilege to have access to free medical healthcare services through the establishment of adequate primary medical health centre. Also, adequate facilities, personnel and drugs should be made available; in order to minimize the problems of inaccessibility and financial constraints that are often complained by most of widows in the country.
3. There is a need to make the National Gender Policy more vibrant and functional for the sustainability of programmes for the vulnerable across genders and social groups.

1.10 Limitation of the study

Imperatively, a widow is not only subjected to emotional imbalance, perhaps as a result of the death of her spouse but also due to the negative impact of the inhumane cultural practices that she might have been forced to pass through. Therefore, the health status of a typical widow in Nigeria goes beyond the extent to which she has had access to healthcare services nor to the environmental condition of where she is domiciled. Undoubtedly, the in-depth study on widow's health status requires the availability of complex and multidimensional variables which are not fully available in the 2013 NDHS data set which was extracted in this study. Also, the Survey from which the data used in this study were extracted was a cross sectional designed survey. Hence, significant changes may have occurred in the study beyond the existing data.

Table 1. Distribution of respondents by socioeconomic and demographic characteristics

Variables		
	Frequency (N=367)	**(%)**
Age of respondents (in years)		
< 20	10	2.7
20-29	84	22.9
30-39	144	39.2
40-49	85	23.2
50+	44	12.0
Mean age	***34 years***	
Educational level		
No formal education	105	28.6
Primary	121	33.0
Secondary	122	33.2
Post-secondary	19	5.2
Place of residence		
Rural	156	42.5
Urban	211	57.5
Region		
Northern Nigeria	159	43.3
Southern Nigeria	208	56.7
Wealth status		
Lower	136	37.1
Middle	114	31.1
Upper	117	31.9
Religion		
Christianity	271	73.8
Islam	90	24.5
Traditionalist	6	1.6
Occupation		
Unemployed	74	20.2
Domestic/Agric./Manual	111	30.2
Clerical/Sales/Service	162	44.1
Professional/Manager/Technical	17	4.6
Accused for death of husband		
Yes	197	53.7
No	170	46.3

Source: Author's work, 2018 (Data from 2013 NDHS)

Table 2. Distribution of respondents by household environmental risk factors

Variables		
	Frequency (N=367)	**(%)**
Water source		
Unsafe source	149	41.6
Safe source	218	59.4
Toilet facility		
Good	98	26.7
Poor	110	30.0
No facility	159	43.3
Disposal of youngest child stool		
Hygienically disposed	160	43.6
Not hygienically disposed	207	56.4
Household cooking fuel emission		
No smoke emission	28	7.7
Low smoke emission	93	25.3
High smoke emission	246	67.0
Household main roof material		
Good	51	13.9
Poor	105	28.6
Had no main roof	211	57.5
Household exterior wall		
Good	221	60.2
Poor	135	36.8
No exterior wall	11`	3.0
Access to electricity supply		
No access	211	57.5
Had access	156	42.5

Source: Author's work, 2018 (Data from 2013 NDHS)

Table 3: Odd Ratio for predicting the health status of widow controlling for some selected socioeconomic and demographic variables

Variables	**Odd Ratio (OR)**	**P-value**	**C.I (95%)**
HOUSEHOLD ENVIRONMENTAL RISK FACTORS			
Toilet facilities			
Good	**RC**		
Poor	1.550	0.001**	1.202-1.998
No facility	1.374	0.016*	1.060-1.780
Water source			
Unsafe	**RC**		
Safe	1.069	0.637	0.810-1.411
Household cooking fuel emission			
No smoke emission	**RC**		
Low smoke emission	1.246	0.043*	0.945-1.564
High smoke emission	0.495	0.163	0.218-1.667
Main household roof material			
Good	**RC**		
Poor	2.305	0.031*	1.080-4.896
Main household floor material			
Good	**RC**		
Poor	1.116	0.398	0.864-1.442
Access to electricity			
No access	**RC**		
Had access	0.803	0.062	0.637-1.011

Variables	Odd Ratio (OR)	P-value	C.I (95%)
Household exterior wall material			
Good	**RC**		
Poor	0.472	0.000***	0.3610.618
No exterior wall	0.530	0.065	0.271-1.039
Disposal of youngest child stool			
Not hygienically disposed	**RC**		
Hygienically disposed	0.423	0.000***	0.341-0.526
MEDICAL HEALTHCARE UTILIZATION			
Discouraged by health workers attitude			
Yes	**RC**		
No	1.489	0.005**	1.128-1.966
Distance to medical health centre was a big problem			
Yes	**RC**		
No	1.305	0.015*	1.054-1.617
Had no money for treatment			
Yes	**RC**		
No	0.439	0.000***	0.359-0.536
ILLNESS IN THE LAST 2 WEEKS			
Had diarrhoea			
Yes	**RC**		
No	0.807	0.106	0.622-1.046
Had fever			
Yes	**RC**		
No	0.614	0.000***	0.476-0.792
Had cold			
Yes	**RC**		
No	0.590	0.000***	0.451-0.772

Note: *Significant at p<0.05, **Significant at p<0.01, ***Significant at p<0.001

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