

Exploring the Social and Environmental Determinants of Child Health in Ilorin, Nigeria.

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Abstract:

Death of children under the age of five years is a major challenge to health profile in Africa and the realization of the Millennium Development Goals (MDGs). The Sub-Saharan Africa has been shown to have performed poorly in the effort to realize the goals due partly to the soaring infant and childhood mortality. This study examines the factors-social and environmental- that affect child health in the Sub-Saharan Africa using the example of Ilorin in Nigeria. The study adopts a multi-stage sampling procedure to select 300 nursing mothers from the twenty wards of Ilorin metropolis while structured questionnaires was used to obtain information on the socio-economic characteristics of mothers as well as the residential quality in their households. Thus, ten variables were selected; covering residential quality, socio-economic status, access to health care and health care options mothers often adopt when illness occur in their children. These variables were expected to offer varying degrees of explanation to the observed pattern of child health in Ilorin metropolis. The surrogate adopted for child health in the study was occurrence of childhood diarrhea during the six weeks preceding the survey. A multiple regression analysis was used to determine the relative contributions of the selected variables to the observed pattern of child health. The result shows that the variables in the residential quality domain offer the highest explanation for the occurrence of childhood diarrhea while all other variables also possessed positive relationships. This finding corroborates earlier studies and draws implications for public health in cities of Africa. It particularly advocates for a deliberate intervention by urban administrators in the urban renewal processes that are ongoing in the inner parts of the traditional African cities with a view to providing basic home and environmental services in the old houses in these areas that are being renovated. The study believes that the MDGs are achievable if micro-level interventions were given priority over and above the macro- scale solutions that may fall short of local realities.

Keywords: Under-five mortality, diarrhea, residential quality, MDGs, child health, Nigeria

Introduction

Human health is directly threatened by serious environmental problems that arise in and around people's homes. According to McGranahan, et al (1997), inadequate sanitation, insufficient or contaminated water, smoky cooking fuels as well as insect infestation are all correlated with urban poverty and a lack of environmental services. These pathways are complicated by the socio-economic background of mothers in Sub-Saharan Africa. Within this scenario, children, the elderly and women are particularly vulnerable to health hazards emanating from the home environment because these groups spend longer time in or around the homes. Thus respiratory infections and diarrheal diseases are the two biggest childhood killers being largely the consequence of inadequate home and neighbourhood environments.

Child survival is therefore a function of availability and access to basic needs to support life at both the individual, household and neighbourhood levels. According to WHO (2004), at least three million children die before their fifth birthday due to environment-related diseases. For instance, acute respiratory infections killed an estimated two million children under the age of five years and as

much as 60% of these infections, world-wide, are related to environmental conditions especially contaminated water and inadequate sanitation. The quality of community environment is therefore essential for health of both adults and children. This explains why concerted effort has been directed towards the improvement of environment as a sustainable strategy for the improvement of overall health of the people. This is hinged on the belief that specific diseases and injuries are impacted by environmental risks. It is important to note that the influence of the environment on human health is also mediated by socioeconomic as well as neighbourhood conditions of urban residents. In other words, the magnitude of the impact of various environmental conditions on human health is determined by, among other factors, the household economy, family hygiene, water quality and availability as well as the presence of environmental services at the household and community levels.

The aim of this study is therefore to examine the impact of the domestic and neighbourhood environmental conditions on the morbidity characteristics of children under the age of five in Ilorin metropolis. To achieve this broad aim, the study investigates the joint and individual explanations of the socio-economic status of

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mothers, family size and residential quality on the occurrence of childhood morbidity in the study area. This is with a view to quantifying the contributions of each of the variables in these broad social and environmental domains on the overall health of children in African cities. It is expected that the findings from this study can be replicated in other cities in Africa and other developing world cities with a view to guiding public health policies on child health.

Child Health, the Environment and the MDGs: Issues and Challenges

The environment includes everything that is external to man and all conditions or influences that affect an organism (Davis, 1989). According to Last (2001), the environment can be divided into physical, biological, social and cultural “any or all of which can influence health status of populations...”. By this token, the environment would include anything that is not genetic; although evidences are available that it is possible to quantify environmental influences on genes in the short- or long- term (Pruss-Ustin and Corvalan, 2006). Often, the environmental health perspectives for the purpose of measuring the environmental impact on health is restricted to those parts of the environment that can be modified through deliberate individual, household or institutional level interventions in the short- or long- term to reduce the perceived or observed impacts. It is important to note that approximately one-quarter of the global disease burden and more than one-third of the burden among children is due to modifiable environmental factors (Pruss-Ustin Corvalan, 2006). For instance, out of the 102 major diseases covered by the World Health Report in 2004, environmental risk factors contributed to disease burden in 85 categories (WHO, 2004).

According to the report, diarrhea, lower respiratory infections, malaria and ‘other’ unintentional injuries are the diseases with the largest absolute burden.

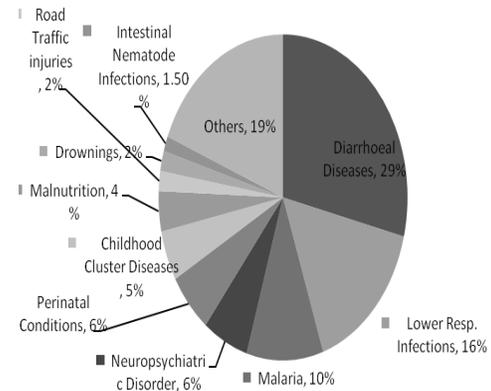


Fig.1: Main Disease Burden Contributing to the Environmental Burden of Diseases Among Children 0-14 years (Source: Adapted from Pruss-Ustin and Corvalan, 2006).

The global distribution of the this burden is such that the total number of healthy life years lost per capita as a result of environmental burden per capita was 15-times higher in developing countries than in developed countries (Pruss-Ustin and Corvalan, 2006). Indeed, the burden per capita of diarrhea due to the environment was 120-to 150-times greater in developing countries than developed countries.

In most cases, these variations are due to differences in exposure to environmental risks and in access to health care. Children also suffer a disproportionate share of the environmental health burden. The per capita healthy life lost in children under five years is 5-times greater than in the total population; and diarrhea, lower respiratory infections and malaria are major contributors to this burden (see Fig. 1).

The effort to tackle the menace of these diseases is therefore consistent with the achievement of the Millennium Development Goals (MDGs). The MDGs are particularly important because “the scale of the diseases and conditions that the goals address is staggering” (Wagstaff, et. al, 2006) and the burden of death and suffering are heavily concentrated in the world’s poorest countries. This has the tendency to reverse the gains of poverty reduction efforts and lower the human development in these countries (Wagstaff and Claeson, 2004).

As far as achieving these goals are concerned, while significant and faster progress has been made in malnutrition, overall progress on

under-five and maternal mortality has been slower. The progress in the Sub-Saharan Africa had been slowest with trends in reducing under-five mortality and underweight in children being barely above zero during the 1990s compared with the target of 4.3%. Indeed only 15% of the countries in this region were listed among the on-track countries (countries that will reach the MDGs if they maintain the rate of progress they have already achieved during the period from 1990 to the present) (Wagstaff and Claeson, 2004).

One major obstacle to the realization of the MDGs is the low-or non- use of existing effective interventions like breastfeeding, hand washing, safe disposal of stool, latrine use, safe preparation of weaning foods, immunizations and a host of prenatal care (Wagstaff, et .al, 2006).

In this study, we examine a host of socio-economic and demographic variables of mothers, factors in residential quality, access to health care and health seeking behaviour as possible explanations for the occurrence of childhood diarrhea. This is with a view to quantifying the relative contributions of the selected variables in the low or non- use of the 'proven effective interventions' as proposed by Wagstaff and others. In doing this, the study considers childhood diarrhea as an appropriate surrogate for child health and explores its relationship with variables selected from the key factors affecting health in cities; namely "the physical environment, social environment, and access to health and social services" (Galea and Vlahov, 2005).

Study Area

Ilorin, the capital city of Kwara State, Nigeria, is the setting for this study. The city is located on latitude $8^{\circ} 10'N$ and longitude $4^{\circ} 35'E$ marking a divide between the southern forest Zone and the Northern grassland of Nigeria. The vegetation, in most parts, is guinea savanna interspersed by trees of different species. The dormant streams are Asa, Aluko, Okun, Amule, and Agba. The Asa River is of particular influence on the direction of growth of the city. The situation of the city between the dry North and the wet South of Nigeria gave Ilorin the apt description as the "gate way" between the North and the South of the country" (Adedibu, 1980). The climate is therefore tropical wet and dry characterized by a distinct wet and dry seasons. The mean

annual temperature is about $26.80^{\circ}C$ with five hours average daily sunshine. The mean annual rainfall is about 125mm. It is important to note that the above locational and physiographic characteristics possess (sometimes significant) implications for human health on one hand and economic and social development on the other. Ilorin is a typical traditional African city whose urban history predates colonialism in Nigeria. The city therefore falls into the category of third world cities described as reputed for their dualistic internal structure (Mabogunje, 1968). The physical development of Ilorin also translates into significant change in the population of the city. For instance, from 36,300 inhabitants in 1911, Ilorin has a population of about 208,546 in 1963, 532,088 people in 1991 and a projected population of about 765,791 by the year 2006 at the rate of 2.84% annually. The facts of urbanization, development of the modern commercial/industrial economy and the multiplier effects of these factors on natural increase had combined to produce the changes in population described above. Frequent rainstorms and flooding in Ilorin has made it one of the most vulnerable cities in Nigeria in the recent past. The number of such incidents has been on the increase in the last few years. This has implications for ground water quality, sanitation and ecology of water related infections in the city.

Methodology

The data required for this study include socio-economic and household characteristics of sampled mothers. The study also requires information on the availability of environmental services like quality and availability of domestic water, availability and location of kitchen, toilets and bathrooms. Besides these, the study required information on the morbidity pattern of children under the age of five in the sampled households. These sets of information were captured using a structured questionnaire administered to the sampled mothers in Ilorin metropolis.

Sample and Sampling

The target respondents for this study are nursing mothers with children under the age of five. These mothers were sampled from households in the twenty wards of Ilorin metropolis. A multi level sampling procedure was adopted to sample mothers from the total number of households in the study area.

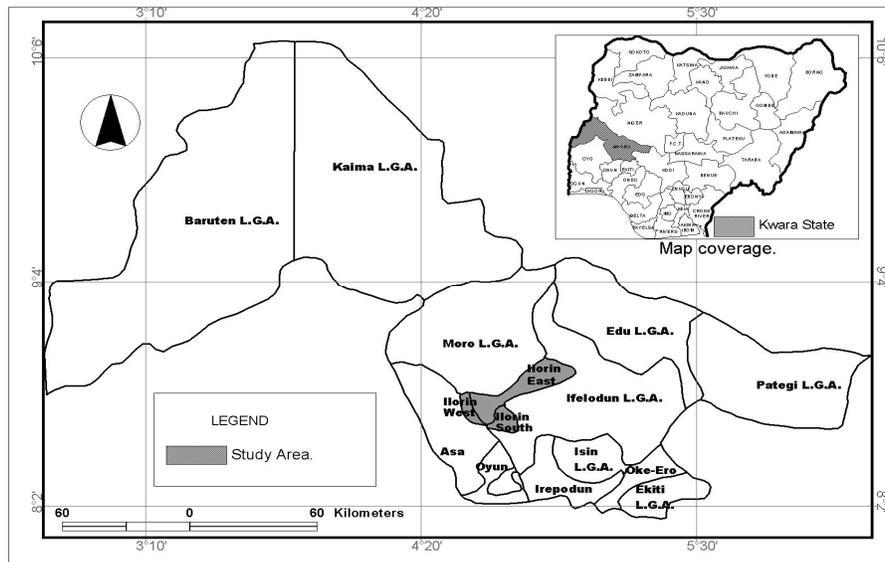


Figure 2 Map of Kwara State Showing Study Area

Ten percent of the total number of households was first sampled in a reconnaissance survey to identify nursing mothers in each ward. Thus, 800 households were involved (see Raheem, 2009). In the second stage, a structured questionnaire was administered to 300 nursing mothers out of the 504 that were identified in the first stage. This accounts for about 60% of the mothers identified in the sample.

Choice and Definition of Variables

In this study, diarrhea has been used as proxy for childhood morbidity in the study area. This is because; it is one of the largest disease burdens attributable to modifiable environmental factors. For instance, an estimated 94% of the diarrhoeal burden of disease is attributable to environment, and associated with risk factors such as unsafe drinking-water and poor sanitation and hygiene (Pruss-Ustin and Corvalan, 2006). Thus, the proportion of mothers that reported childhood diarrhea in their children in the six months preceding the survey was used as a measure of child health.

The environment is a complex term capable of being represented by different indicators depending on the thrust of an ongoing research. Thus for this study, ten environmental and socioeconomic variables were selected as possible explanations for the frequency of diarrhea occurrence among

children aged five years and below. The study departs from many earlier ones that used mortality estimates which are essentially outcome variables of child health. Such variables are unable to provide the critical link between the knowledge of child mortality and the conditions surrounding it (Omoluabi, 1995). These variables were selected to cover socioeconomic, household and residential characteristics of mothers, as well as access to medical care domains. Based on the above, the following variables were selected

- Age of mothers-calculated as the proportion of nursing mothers aged 45years and above (agemthrs).
- Proportion of mothers without at least secondary education (edumthrs)
- Proportion of mothers in informal occupation (occmthrs)
- Proportion of mothers in household with more than 4 members (Famsze)
- Proportion of mothers with more than four children (nochdr)
- Proportion of mothers in households without separate toilet (HHToi)
- Proportion of mothers in households without separate kitchen (HHkit)
- Proportion of mothers in households without separate bathroom (HHbthrm)

- Proportion of mothers located more than 500metres to the nearest public health facility (HHacchlth).
- Proportion of mothers adopting substandard health care option when illness occurs in their children (HHcareopt).

Data analysis

A multiple regression model was built to analyze the nature and degree of explanation offered by each of the above variables. To do this, it is hypothesized that

$$\text{ChdHlth} = f(\text{mothers' social and cultural environment}) \dots (1)$$

Where

Child Health (Chdhlth) is *proxied* by the occurrence of diarrhea in children and mothers' socio-cultural environment by the variables listed above.

The relationship is estimated with a multiple linear regression of the form:

$$\text{ChdHlth} = \alpha + \beta_1 \text{agemthrs} + \beta_2 \text{edumthrs} + \beta_3 \text{occmthrs} + \beta_4 \text{Famsze} + \beta_5 \text{nochdr} + \beta_6 \text{HHToi} + \beta_7 \text{HHkit} + \beta_8 \text{HHbthrm} + \beta_9 \text{HHacchlth} + \beta_{10} \text{HHcareopt} + \varepsilon \dots (2)$$

Where

α = intercept

$\beta_1 - \beta_{10}$ = the estimate parameters associated with the influence of the independent variables to which they are attached

ε = the residual error term.

i) To verify the validity of the model, two major evaluation criteria were used:

The a-priori expectation criterion which is based on the signs and magnitude of the coefficients of the variables being investigated; and

ii) The statistical criterion based on statistical theory which is otherwise referred to as the First-Order Least square Test, consisting of R^2 , F-statistic and t-test. The R^2 is concerned with the overall explanatory power of the regression model while the F-statistic tests the overall significance of the regression analysis.

Drawing from the model, all the variables in the model were expected to possess direct relationship with the dependent variable such that as the proportion of mothers that are older than 45years increases, for instance, it is expected that the proportion of diarrhea reported in their children would also increase (i.e. $\beta_1 - \beta_{10} > 0$).

The result of this equation was discussed and findings were highlighted both for policy and

practice of public health in cities of developing countries.

Analysis, Findings and Discussions

Characteristics of Sampled Mothers

The age of mothers vary between 18years and mothers that that were older than 45years. On the average, about 32.2% of the total sampled mothers were 45years and above. The study adopted 45years as tolerance age for child birth based on the assumption that younger mothers are more likely to be educated and provide proper care for their children, other things being equal.. This is particularly important when viewed against the literacy characteristics of women in African cities. Most mothers were illiterates particularly when they are elderly. For instance, more than half of the mothers sampled for the study (53.1%) did not posses any formal education and about 29% were engaged in non-formal education. Aside this, family sizes were generally high with about 44% belonging to households with more than four members. Moreover, about 38% of mothers had more than four births.

On the average, varying proportion of the sampled mothers lived in households without separate toilets (27.5%), kitchens (28.2%) or bathrooms (21.2%). The quality of human habitation is an important variable in the overall health of children and adults. This is particularly important in the spatial distribution of water washed and insect borne infections like diarrhea and malaria. Finally, 26.6% of the sampled mothers had no access to public health facilities within 500metres of their residence. This has implications for early reporting of ordinarily fatal diseases like diarrhea, cholera and malaria. As a response, 14.6% of the sampled mothers adopted substandard health care options when illness occurs in their children.

Health care options are classified as substandard in this study, when mothers use, as a first health seeking decision during illness, any unorthodox health care provider. This may include traditional medicines prepared by self or purchased from vendors, or medicines prescribed not by trained or qualified health care providers; or use of spiritual healers. These options inherently delay cure or complicate symptoms for such diseases like diarrhea which require medical intervention within a short period of onset. These characteristics served as the background for

average nursing mother in Ilorin metropolis. The characteristics described above were obtained for the twenty wards in the city and the proportion of mothers in each ward were calculated as shown in Table 1.

A regression analysis of the Table was carried out with child health as the dependent variable (y) while other columns were treated as x_1-x_{10} (see equation 2).

The result of the regression analysis shows that the r^2 is 96.6 percent. This shows the variation in the occurrence of childhood diarrhea explained by the selected explanatory variables, while less than 4% of the variation is explained by extraneous variables not captured by the model. Moreover, at 5% level of significance, the F-statistics shows that the model is useful in determining the influence of the explanatory variables on the dependent variable ($F_{cal}=25.6 > F_{tab}=1.98$).

At the level of individual variables, residential quality and variables related to the home environment showed the highest correlation coefficients. For instance, the r-values for access to separate toilets, bathrooms and kitchens were 0.95, 0.79 and 0.58 respectively. This indicates that there is a 90% likelihood that children of mothers living in houses without separate toilets would report diarrhea per unit of time compared to mothers in households using separate toilets. This likelihood is 62.55 and 33.6% for mothers in households that share bathrooms and kitchens respectively.

This finding is consistent with the earlier studies like that of Dackham N' Gatchou, (1987) whose study attached as much importance to 'other factors' like housing location and living conditions as it did to maternal education in explaining child mortality in west Africa. M'backe and Vande Walle (1987) also found that the level of post neo-natal mortality was explained more by housing quality, among other variables.

Maternal Socio-Economic characteristics and Child Health in Ilorin Metropolis

The study found inverse relationships between mothers' socio-economic characteristics and the health of their children. In this regard, mothers in informal occupation were shown to possess 23% likelihood of their children falling sick compared to mothers in other categories of occupation ($r=0.48$). On the other hand, children of illiterate mothers had 15.4%

likelihood of diarrhea occurrence than the children of educated mothers ($r=0.39$). In households with large family sizes, the likelihood is higher by 16.9% compared to households with smaller family sizes (see Table 3). Omoluabi (1995) had earlier emphasized that "children of educated women, especially if the latter had completed secondary education, have much higher survival chances than children of illiterate mothers" this is because maternal education works through three different pathways. It influences the socio-economic level of households, governs mothers' attitude and influences her behaviour (including health seeking) on issues relating to the health of their children. The positive relationship between economic status of households and health of children in such households are also well documented (Okediji, 1973, Ho, 1984). In all, the United Nations Organization concludes that at least half of the decrease in mortality experienced by educated women compared to illiterate ones is due to the higher economic level of the former's households (United Nations, 1985).

Implications of Access to Health Care and Health Seeking Behaviour for Child Health

Access to public health facility also had an r-value of 0.89 while the health care option adopted by mothers during the diarrhea occurrence also possessed a correlation of 0.23 with child health.

The implication of this is that degree of access to public health facility at minimum distance is a very important factor in determining the fatality of the disease in children. It must be understood that while accessibility to health care facility is by no means a causative factor, it is a major determinant of the type of care a sick child receives during a few hours of the onset of diarrhea. In situations where such facilities are too far to the mother or too costly, the mother may use other substandard health care providers. In both cases, the implication is high on the child mortality due to diarrhea in Sub-Saharan Africa.

Conclusions and Recommendations

In this study, we have considered the health of children in a typical urban Africa. The result shows that residential quality as epitomized by the availability of environmental services like kitchens; bathrooms and toilets were more important determinants of child health. These

variables show high correlations with occurrence of childhood diarrhea while mothers' socio-economic background also showed positive but lower correlations with childhood diarrhea. These findings demonstrate the fact that the explanations offered by residential and environmental services are typically interrelated. Put together, the function of these facilities is "to sever potentially hazardous environmental interconnections in and around the home" (McGranahan, et al 1997). Availability of kitchens and bathrooms ensure that waste water is piped out effectively while feces are sealed off from air and insects and flushed away with the waste water. Absence of these facilities may mean contamination of groundwater with feces finding its way into solid waste and to the open land, drainage ditches and generally in contact with other people. Thus in households with toilets and kitchens, flies breed on human waste leading to microbial food contamination. Various diarrhea and other diseases are spread through this process via fecal-oral routes (McGranahan, et al, 1997). In all these cases, improvement of environmental services in homes holds great promise for the reduction of childhood diarrhea.

Given the significance influence of diarrhea to the incidence of under-five mortality, human feces, its disposal and handling remains the world's hazardous pollutant while sanitation inadequacies still constitute one of the world's most serious environmental problems. An important component of the transmission of all fecal-oral diseases is the human behavioural

aspect of the transmission pathway. This includes hygienic behaviours and practices that are determined by among other factors, the age, and level of education and occupation of mothers. These variables as shown in this study correlate positively with the occurrence of childhood diarrhea. This also implies that where mothers are composed of illiterate old women engaged in informal occupations as is usually the case in the inner parts of most pre-colonial African cities, children of such mothers and in such locations possess high tendencies of being ill with diarrhea and other water and sanitation related diseases. This is because the presence of these conditions tend to precipitate the occurrence of the disease since educated and younger mothers are more likely to adopt the 'proven effective interventions' that are available for the reduction of under five mortality.

It is recommended in this study that urban administrators should take deliberate steps to improve housing conditions in the inner parts of African cities. This should include construction of public toilets and deliberate interventions in the urban renewal processes in these areas. Aside this, mothers must be educated on such demographic best practices as family planning, child spacing breastfeeding and prenatal and neonatal cares. This must be treated as top and urgent priority of governments so as to reduce the rate of under-five deaths with a view to achieving the MDGs.

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Table 1: Factors Influencing Child Health in Ilorin Metropolis.

Ward	Child Health	Age	Education	Occupation	family Size	No of Children	HH Toilet	HH Kitchen	HH bathroom	HH Acc Health	Hlth care Opt
Adewole	0.11	0.2	0.27	0.13	0.6	0.08	0.08	0.15	0.13	0.12	0.18
Ajikobi	0.13	0.47	0.6	0.14	0.6	0.48	0.25	0.13	0.03	0.14	0.14
Alanamu	0.06	0.53	0.82	0.52	0.31	0.58	0.08	0.08	0.08	0.08	0.11
Are	0.12	0.49	0.69	0.19	0.31	0.8	0.15	0.2	0.13	0.16	0.17
Babaoko	0.15	0.32	0.48	0.31	0.54	0.15	0.08	0.43	0.23	0.25	0.16
Badari	0.27	0.33	0.45	0.33	0.57	0.3	0.23	0.33	0.43	0.33	0.18
Balogun Fulani	0.07	0.34	0.46	0.19	0.55	0.15	0.08	0.18	0.08	0.11	0.13
Balogun Gambar	0.37	0.4	0.64	0.35	0.53	0.6	0.43	0.43	0.43	0.43	0.14
Ibagun	0.46	0.46	0.69	0.42	0.58	0.13	0.58	0.4	0.5	0.49	0.12
Mogaji Geri	0.1	0.29	0.44	0.13	0.23	0.3	0.1	0.35	0.13	0.19	0.18
Okaka	0.09	0.27	0.68	0.19	0.11	0.43	0.1	0.08	0.13	0.3	0.11
Ogidi	0.27	0.23	0.6	0.5	0.66	0.23	0.4	0.58	0.35	0.44	0.16
OjuEkun	0.33	0.24	0.66	0.23	0.42	0.4	0.45	0.43	0.2	0.36	0.16
Oke ogun	0.46	0.34	0.82	0.53	0.65	0.63	0.55	0.4	0.33	0.43	0.11
Oloje	0.48	0.31	0.55	0.49	0.42	0.7	0.6	0.25	0.38	0.41	0.17
Sabon Geri	0.18	0.17	0.25	0.39	0.46	0.48	0.33	0.08	0.08	0.16	0.14
Sabon Geri 2	0.13	0.12	0.18	0.09	0.06	0.15	0.15	0.13	0.13	0.14	0.09
Ubandawaki	0.23	0.34	0.54	0.28	0.31	0.33	0.18	0.5	0.23	0.3	0.18
Zango	0.09	0.19	0.21	0.28	0.37	0.33	0.15	0.15	0.08	0.13	0.16
Zarumi	0.38	0.4	0.58	0.11	0.42	0.33	0.53	0.35	0.15	0.34	0.12

(Source: Authors' Survey, 2008)

Table 2: Model Summary for the regression analysis of Socio-Environmental correlates of child Health.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.983 ^a	.966	.928	.03834	.966	25.555	10	9	.000

a. Predictors: (Constant), HCAREOPT, FAMSZMTH, HHKIT, HHTOIL, OCCMTH, AGEMTH, NOCHDMTH, HHACCH

Table 3: Coefficient of correlation between child health and Social and Environmental Variables of Mothers in Ilorin Metropolis.

Correlations												
	CHDRR	AGEMTH	EDMTH	OCCMTH	AMSZMT	NOCHDMT	HHTOIL	HHKIT	HHBTHPL	HHACCH	HCAREOP	
Pearson Correla	CHDRR	1.000	.147	.392	.483	.411	.224	.949	.584	.791	.887	.225
	AGEMTH	.147	1.000	.745	.190	.197	.426	.125	.070	.141	.099	.709
	EDMTH	.392	.745	1.000	.435	.179	.514	.371	.318	.323	.477	.768
	OCCMTH	.483	.190	.435	1.000	.412	.346	.463	.293	.558	.480	.493
	FAMSZMT	.411	.197	.179	.412	1.000	-.108	.403	.400	.419	.350	.079
	NOCHDMT	.224	.426	.514	.346	-.108	1.000	.284	-.152	.017	.105	.670
	HHTOIL	.949	.125	.371	.463	.403	.284	1.000	.456	.634	.806	.191
	HHKIT	.584	.070	.318	.293	.400	-.152	.456	1.000	.667	.740	.153
	HHBTHPL	.791	.141	.323	.558	.419	.017	.634	.667	1.000	.871	.258
	HHACCH	.887	.099	.477	.480	.350	.105	.806	.740	.871	1.000	.269
	HCAREOP	.225	.709	.768	.493	.079	.670	.191	.153	.258	.269	1.000
Sig. (1-tailed)	CHDRR	.	.268	.044	.015	.036	.171	.000	.003	.000	.000	.170
	AGEMTH	.268	.	.000	.211	.202	.031	.300	.385	.276	.339	.000
	EDMTH	.044	.000	.	.028	.225	.010	.054	.086	.082	.017	.000
	OCCMTH	.015	.211	.028	.	.036	.068	.020	.105	.005	.016	.014
	FAMSZMT	.036	.202	.225	.036	.	.324	.039	.040	.033	.065	.370
	NOCHDMT	.171	.031	.010	.068	.324	.	.113	.261	.471	.330	.001
	HHTOIL	.000	.300	.054	.020	.039	.113	.	.022	.001	.000	.210
	HHKIT	.003	.385	.086	.105	.040	.261	.022	.	.001	.000	.260
	HHBTHPL	.000	.276	.082	.005	.033	.471	.001	.001	.	.000	.136
	HHACCH	.000	.339	.017	.016	.065	.330	.000	.000	.000	.	.126
	HCAREOP	.170	.000	.000	.014	.370	.001	.210	.260	.136	.126	.
N	CHDRR	20	20	20	20	20	20	20	20	20	20	20
	AGEMTH	20	20	20	20	20	20	20	20	20	20	20
	EDMTH	20	20	20	20	20	20	20	20	20	20	20
	OCCMTH	20	20	20	20	20	20	20	20	20	20	20
	FAMSZMT	20	20	20	20	20	20	20	20	20	20	20
	NOCHDMT	20	20	20	20	20	20	20	20	20	20	20
	HHTOIL	20	20	20	20	20	20	20	20	20	20	20
	HHKIT	20	20	20	20	20	20	20	20	20	20	20
	HHBTHPL	20	20	20	20	20	20	20	20	20	20	20
	HHACCH	20	20	20	20	20	20	20	20	20	20	20
	HCAREOP	20	20	20	20	20	20	20	20	20	20	20