

## SOCIAL DETERMINANTS OF MORBIDITY AMONG UNDER FIVES IN A RURAL COMMUNITY OF NORTH-WESTERN NIGERIA.

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### ABSTRACT

The United States Centers for Disease Control defines social determinants of health as life-enhancing resources, such as food supply, housing, education, and health care, whose distribution across populations effectively determines length and quality of life. Every community has social determinants of Health which can affect health either positively (wellbeing) or negatively (morbidity). Understanding the determinants will aid in policy formulation and design of appropriate interventions.

This community-based cross-sectional descriptive study was conducted to assess social factors that determine morbidity of under fives in Gimba village, a rural community of Kaduna State, Nigeria. It was conducted during Community Diagnosis field practical posting of trained final year medical students of Ahmadu Bello University, Nigeria, in July 2012. An interviewer-administered questionnaire was used to collect data from all household heads in the community (total population study). Multivariate analysis was done using SPSS (Version 19). Children of uneducated fathers were more likely to have been ill compared to those of educated fathers (RR = 1.20; 95% C.I = 0.78 – 1.91). Children who were weaned abruptly and transferred to their aunts or grandmothers (geographic weaning) were more likely to have been ill compared to those weaned normally (RR = 1.71; 95% C. I= 0.97 – 2.03). The result indicated that several factors like paternal education and geographic weaning are social determinants of health of under-fives in the study area. Improved access to formal education; Health education on effects of harmful cultural practices; community-based health insurance scheme and rural development are recommended.

### Introduction

The United States Centers for Disease Control defines social determinants of health as "life-enhancing resources, such as food supply, housing, economic and

social relationships, transportation, education, and health care, whose distribution across populations effectively determines length and quality of life".<sup>1</sup> These also include access to care and income.<sup>1</sup> Social Determinants of Health lead to health inequities within and between countries and between the rich and poor in a given community or country. The 2011 World Conference on Social Determinants of Health brought together delegates from 125 member states and resulted in the Rio Political Declaration on Social Determinants of Health. This declaration involved an affirmation that health inequities are unacceptable, and noted that these

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inequities arise from the societal conditions in which people are born, grow, live, work, and age, including early childhood development, education, economic status, employment and decent work, housing environment, and effective prevention and treatment of health problems.<sup>2</sup> It is therefore a contemporary issue and the World Health Organisation recently, in May 2012, endorsed the Rio Political Declaration on social determinants of health. The United States of America also included Social Determinants of Health in its Healthy People 2020 blueprint.<sup>3</sup>

Although Social determinants of health affects all age groups, its impact is more felt by under five children who happen to be the most vulnerable group of people to health risks and environmental conditions. In developing countries, morbidity and mortality is highest among this age group and it is estimated that 12 million U5 children die annually from preventable diseases. More than 70% of the deaths are due to 5 diseases viz: malaria, measles, malnutrition, diarrhea and pneumonia.<sup>4</sup>

Living in an economically and socially deprived community is associated with increased risk of under-five morbidity.<sup>5,6</sup> This explains why the under-five mortality rate for rural communities in Nigeria (167 deaths per 1,000 live births) is higher than that of urban areas (100 deaths per 1,000 live births).<sup>7</sup>

The type of housing, breastfeeding status, vaccination coverage and mother's education were shown to be significant factors affecting morbidity among under five children. Children who live in poor quality houses ,with inadequate water supply and sanitation(as obtainable in

rural communities) are more likely to suffer from acute respiratory infection, diarrhea and malaria fever compared to children who live in better quality houses in urban areas.<sup>8-10</sup>

Knowledge about the determinants of child morbidity at the individual level is insufficient to address the problem.<sup>11-13</sup> This is because the contextual characteristics of the community where a child is raised tend to modify individual- and household-level factors and therefore affect child survival.<sup>12,14</sup> This is why every community has social determinants of Health which can affect health either positively (wellbeing) or negatively (morbidity).

In view of the above concerns, it is important to understand the Social Determinants of Health of U5 children in the study area. Moreover, understanding the determinants will aid in policy formulation and design of appropriate interventions.

### **Methodology**

A community-based cross-sectional descriptive study conducted during Community Diagnosis Posting of final year medical students of Ahmadu Bello University, Zaria, from 25<sup>th</sup> June 2012 to 20<sup>th</sup> July 2012.

The study was conducted in Gimba community, a rural settlement in Soba Local Government area of Kaduna state, North-western Nigeria. It is located between latitude 11.00 to 11.06 N and longitude 7.54 to 7.58E. It is 30 kilometres from Zaria town. The village has a total population of 4,160 people, 686 households that have under-fives (all male-headed), one primary health care centre, one primary school but no

secondary school .<sup>15</sup> Farming is the major occupation. All Household Heads in households with under fives were interviewed (total population study) while those without were excluded. Data was collected by final year medical students using a structured interviewer administered questionnaire in which respondents were asked about their socio-demographic profiles and morbidity amongst U5 children in households. Since it was not possible to study all the social determinants of health, questions were asked on some aspects of each category. For example, for health seeking behaviour, ANC attendance was studied; for harmful cultural practices , geographic weaning was studied and for Disease prevention, malaria prevention was studied since among the five diseases it is the most common cause of morbidity among under-fives in rural Nigerian communities ,occurring up to 3 to 4 times a year .<sup>16-18</sup>

Morbidity in the study, was described as having any of the 5 childhood preventable diseases. Recall period for morbidity was 3 months and names of the five diseases were mentioned in Hausa language before probing if a child suffered from any of them. Formal education in this study is having any or all of the 3: primary, secondary or tertiary education.

Repeated visits for questionnaire administration were conducted to households where the head was not met at first or previous visit. The questionnaire was pretested on 42 randomly selected Household heads in Yakasai Village, a community with similar characteristics with the study area.

Appropriate entry permission to conduct the study was sought from Soba Local

Government Area, Kaduna State and from Gimba community leaders. An informed verbal consent was given by the respondents. Confidentiality and privacy were maintained during data collection, analysis and reporting. After the data collection, all completed questionnaires were checked properly for any error and edited. The data obtained were cleaned and multivariate analysis was done using Statistical Package for Social Sciences (SPSS) Software (Version 19).

The association between variables and morbidity in U5s was evaluated using relative risk regression . Adjusted estimates are not presented because there was no differences between unadjusted and adjusted risk estimates, which indicates that confounding by the measured variables is unlikely to be biasing the results . Results are presented in tabular form.

## Results

A total of 686 (100%) questionnaires were returned within the period of the study. Responses were received from all the 686 Household heads interviewed. The ages of the respondents ranged from 15 to above 92 years.

As shown in Table 1, 32.1% of the respondents were aged between 30 to 39 years. Majority of the respondents (55.4%) were farmers; had no formal education (62.7%); had only one wife (56.1%) and between one to five children (54.2%).

As shown in Table 2, majority of the households (81.8%) own a mosquito net. Out of this proportion, 32.6% own only one mosquito net while 44.6% own only two mosquito nets. A majority of the households received the nets free of charge from hospitals or NGOs .Only 13.7% purchased their mosquito nets

**TABLE 1** Socio-demographic profile of respondents

<b>Variable</b>	<b>Frequency(n=686)</b>	<b>Percentage (%)</b>
<b>Age (years)</b>		
<20	6	0.9
20-29	162	23.6
30-39	220	32.1
40-49	158	23
50-59	80	11.7
>59	60	8.7
<b>Type of Education</b>		
Formal	256	37.3
Non-Formal	430	62.7
<b>Number of wives</b>		
One	385	56.1
> one	296	43.2
None	5	0.7
<b>Number of children fathered</b>		
None	54	7.9
1-5	372	54.2
6-10	171	24.9
>10	89	13
<b>Occupation</b>		
Farming	478	69.7
Non-Farming	478	44.6
<b>Monthly Income</b>		
<N10,000	325	47.4
>N10,000	361	52.6

**TABLE 2** Household Ownership and use of ITNs

<b>Variable</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Household possession of mosquito net(s)</b>		
Yes	561	81.8
No	125	18.2
<b>Number of nets owned by Household</b>		
One	183	32.6
Two	250	44.6
>Two	128	22.8
<b>Source of Mosquito Net(s)</b>		
Purchased from health workers	54	7.9
Obtained free from hospital or NGOs	465	67.8
Purchased from market	40	5.8
Others	2	0.3
<b>Sleeping under net by U5</b>		
<b>The night before survey</b>		
Yes	375	66.9
No	186	33.1

**Table 3:** Multivariate Analysis of Social Determinants of `Morbidity in U5 Children.

Variable	No U5 Morbidity	U5 Morbidity	RR (95% C.I)	p
	n(%)			
<b>Paternal Education</b>				
Uneducated (RG)	41 (16.1)	215(83.9)	1.20 ( 0.78 -1.91)	0.026
Educated(CG)	382(88.9)	48(11.1)		
<b>Maternal Education</b>				
Uneducated (RG)	91 (25.0)	273(75.0)	1.58 ( 1.25-2.24)	0.004
Educated(CG)	214(67.5)	103(32.5)		
<b>Income of HH</b>				
>N10,000 (CG)	278(77)	83(23)	1.08 (0.94-1.23)	0.019
< N10,000 (RG)	34(10.5)	291(89.5)		
<b>ANC attendance by spouse</b>				
Yes (CG)	141(72.3)	54(27.7)	2.24 (1.91- 2.61)	0.031
No (RG)	109(22.2)	382(77.8)		
<b>Access to NHIS</b>				
Yes (CG)	40(83.3)	8(16.7)	2.06 (1.83-2.71)	0.041
No (RG)	92(14.4)	546(85.6)		
<b>Weaning Practice</b>				
Normal (CG)	361(86.2)	58(13.8)	1.71 (0.97-2.03)	0.011
Geographic (RG)	56(21.0)	211(79.0)		
<b>Number of ITN(S) owned by household</b>				
One (RG)	21(11.5)	162(88.5)	1.22 (1.01-1.63)	0.007
Two & above (CG)	264(69.8)	114(30.2)		

RR= Relative Risk. C.I = Confidence Interval. HH = Household Head

from either health workers or market. Most of the households that own a net (66.9%) claim that an U5 slept in a net the night before the survey.

As shown in Table 3, there was a statistically significant association between U5 morbidity and the following: Paternal Education ( $p=0.026$ ); Maternal Education ( $p=0.04$ ); monthly income of less than N10,000 ( $p=0.019$ ); Attendance of ANC by mother of U5 ( $p=0.031$ ); Access to Health Insurance Services ( $p=0.041$ ); Geographic weaning ( $p=0.011$ ) and Household ownership of only one ITN ( $p=0.007$ ). Under five children whose fathers have no formal education were 1.20 times more likely to contract any of the five preventable diseases compared to those of educated fathers (95% C.I. =0.78-1.91). Under five children whose mothers were uneducated are 1.58 times more likely to contract any of the five preventable diseases compared to those U5s whose mothers are educated (95% C.I. =1.25-2.24). Under five children whose mothers do not attend Antenatal Care were 2.24 times more likely to contract any of the 5 preventable diseases compared to those whose mothers have ever attended Antenatal Care (95% C.I.=1.91-2.61). Under five children from households that do not have access to the National Health Insurance Scheme (NHIS) services were 2.06 times more likely to contract any of the 5 preventable diseases compared to those from Households that have access to NHIS services (95% C.I.=1.83-2.71). Children who were weaned abruptly and transferred to their aunties or grandmothers (geographic weaning) were 1.71 times more likely to suffer any of the 5 preventable diseases compared to those weaned normally (95% C.I.=0.97-2.03). Under five children from households that

own only one mosquito net were 2.41 times more likely to contract malaria compared to those from households that own more than one mosquito net (95% C.I = 2.13-2.86). Children whose fathers earn less than N10,000 (\$62.5) monthly were 1.08 times more likely to contract any of the 5 diseases compared to those whose fathers earn more than same N10,000 (95% C.I =0.94-1.23)

There was a statistically significant association between paternal education and the following: spousal ANC attendance ( $p=0.003$ ), access to NHIS services ( $p=0.0210$ ) and household ownership of more than one ITN ( $p=0.011$ )

### Discussion

A significant proportion of the respondents (62.7%) had no formal education. It is due to the low primary school enrolment in the northern part of Nigeria. For example, as at 1975-1976 when most of the respondents were of primary school age, the proportion of primary school enrolments in the Northern Nigeria was just 26.5%, while between 1985-1986, it was 34.3%.<sup>19</sup> This low level of enrolment for Western Education has contributed to lack of formal education among most of the respondents (62.7%).

Paternal Education is a determinant of child morbidity in this study. A possible explanation for this is that formal education enables individuals to better understand a disease, its dangers, susceptibility to it and to take necessary preventive actions that are necessary for a child's health and survival. It enables a household head to make the right decision regarding disease prevention and treatment.<sup>20</sup> Maternal Education is also a determinant of child morbidity in this study.

A possible explanation as to why a monthly income of less than N10,000 (\$62.5) is a social determinant of morbidity in this community is that it is not adequate to cater for an entire household, considering the fact that the average number of children per household alone was 5, which is above the national figure of 4.6 for rural Nigerian communities.<sup>7</sup> Some of the respondents have more than one wife (polygamy). Adequate income improves living conditions of households and indirectly health of U5s. It affects the family environment for the child (e.g., housing, food, supervision, access to good healthcare products and services). Our finding is similar to that of another Nigerian study which shows that poverty is a social determinant of morbidity.<sup>21</sup>

U5 children whose mothers attended ANC were less likely to contract any of the 5 killer diseases. A possible explanation for this is that the mothers receive health talks during antenatal care which they utilize for the prevention of diseases.<sup>22</sup> For example, in the case of malaria, studies have shown that non attendance of Antenatal clinic was associated with non utilization of available ITNs by pregnant housewives.<sup>23</sup>

Variation in level of care and environmental risks is a possible explanation for why children that were weaned geographically tend to be more ill than those weaned normally.

Under five children from households that own only one ITN are more likely to suffer malaria. A possible explanation for this is that if nets are not enough to go round, then they may not be used especially in a polygamous setting where determining who should use the few available nets

may be a serious challenge to the household head. This explanation is supported by a study that showed that lower household number of ITN was associated with non-utilization.<sup>24</sup>

Paternal education is the major social determinant of morbidity in this study since it affects the other determinants either directly or indirectly. Educated household heads are more likely to allow their pregnant wives to attend antenatal care than non educated ones. They are also more likely to be civil servants with access to NHIS (which is presently available only to federal civil servants). Furthermore, they are more likely to appreciate the importance of ITNs and own more than one. This explains the statistically significant association noted between paternal education and spousal ANC attendance ( $p=0.003$ ), access to NHIS services ( $p=0.0210$ ) and household ownership of more than one ITN ( $p=0.011$ ). It therefore follows that to successfully address the social determinants of morbidity in the study area, improvement in male child education (through creation of enabling environment like building a secondary school in or near the study area, provision of scholarships) is necessary. Introduction of Community-based health insurance scheme in the study area will also help in alleviating the problem. However, it is worth noting that Girl child education also needs to be improved since this study and indeed other studies have also shown that maternal education is a determinant of child health because a mother is the one that is mainly involved in childcare. She takes decisions on hygiene, nutrition, and exposure to environmental risks which all influence health of children.<sup>25-</sup><sup>27</sup> Results of a study on social determinants of Morbidity (malaria morbidity) among



under fives in Ghana contradicts our findings. In the study, household income was not a determinant of morbidity.<sup>28</sup> A possible explanation for this is availability of a better health care system in that country. However, the study also confirmed that maternal education and ownership of ITN were determinants of morbidity among under fives.<sup>28</sup>

One limitation of the study is the non-reliability of information on child health obtained from a father, instead of a mother. Others include use of recall for morbidity which is prone to recall bias; lack of clinical examination of the children; use of diagnosis assigned by parents and assessment of morbidity using only the five preventable childhood diseases. Other excluded childhood diseases would have added to the disease burden and shed more light on other social determinants of diseases in the community.

### Conclusion

The result indicated that several factors like paternal education and geographic weaning are social determinants of health of under-fives in the study area. Improved access to formal education ;community based health insurance scheme; health education on effects of harmful cultural practices; pro-poor policies and rural development are recommended.

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