

*Full Length Research Paper*

# Profiling of community directed distributors on key household practices in resource-poor setting: A case study of Anambra State, Southeast Nigeria

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Improving malaria control, hygiene and sanitation in households is a challenge in the health system. Hence, several countries have used community directed distributors (CDDs) to assist in delivering health information and services. Despite their use there is little attempt to profile this group of workers. This was a cross sectional study conducted in 2014 involving 297 CDDs from 3 rural communities in Anambra Central Senatorial Zone of Anambra State. A structured questionnaire was used to obtain information from the respondents during their training in various town halls. Most (44.4%) of CDDs fell within the age range of 29 to 38 years. Only 2.0% of the respondents had no formal education. Major source of water to the household is from water vendors (39.1%) and it takes 87.2% of them less than 30 min to get water. Flush toilet system is mostly used (49.2%) while 9.4% have no toilet facility in the house. Almost 8% throw garbage into the street while majority either burn, bury or take the garbage to public dump site or disposal bin. About 71 and 16.5% wash hands with soap after using the toilet and before eating, respectively. Also 74% of the respondents make use of mosquito net while 64% take child for treatment outside home. Key household practices among CDDs on sewage and refuse disposal and personal hygiene are sub-optimal. Hence, project managers should consider the profile of those selected to be CDDs and establish training programs to improve their habits.

**Key words:** Key household practices, community health workers, health promotion.

## INTRODUCTION

Poor water supply, sanitation and hygiene are associated with high incidence of diseases, death, low productivity, income and development especially in rural communities of developing countries. In 2010, globally a total of 2.6 billion people lacked improved latrine while about 884

million people lacked access to improved source of drinking water.<sup>1</sup> In 2012 the World Health Organization/United Nations Children's Fund Joint Monitoring Programme reported that only 30% of the population in sub-Saharan Africa use improved private

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sanitation and hygiene facilities, which is the lowest figure for any region of the world. In Nigeria, in 2011, about 39% do not have access to improved water supply while 69% do not use improved sanitary facilities (WHO and UNICEF, 2013). This figure differs from one part of Nigeria and from rural to urban settings.

Now being 2015 it has become obvious that the MDG 7 which aims to halve by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation (Ekane et al., 2012) will not be achieved in Nigeria. Another key household practice that impacts on family health especially on children and pregnant mothers is malaria control. Malaria has remained one of the greatest killers of under-fives in sub-Saharan Africa. Hence in 1998 the Roll Back Malaria Initiative was launched by World Health Organization/United Nations International Children Education Fund (WHO/UNICEF) and other partners. The success of malaria control programmes relies heavily on community perception and practices in the prevention, treatment and control of the disease (Iwueze et al., 2013).

A question that has therefore been asked is: why has there been slow progress in the household malaria control, personal/community sanitation especially in sub-Saharan Africa? Some of the reasons may be due to insufficient investment in health issues, poorly coordinated interventions, governance deficiencies and a lack of political commitment and leadership (Ekane et al., 2012). While these may be true, government alone cannot achieve much to improve sanitation and hygiene without active participation of people. This now brings to the fore the need for people to be enlightened on good hygiene practices and consequences of poor hygiene. To fill gaps in knowledge and health service provision Community Directed Distributors or Community health volunteers have been of immense help in distributing health commodities.

Community-directed distributors (CDDs) are men and women who are trained to deliver drugs, help educate their peers about health issues and participate actively in disease control activities. They are selected by their communities (Weldegebreel et al., 2014) and most of them are non-medical people who can administer the drugs with minimal training. The people selected to become CDDs are generally perceived by the community as being honest and trustworthy, having good conduct, integrity and literacy. As volunteers, they are motivated mainly by gains in recognition, self-esteem and knowledge, rather than cash incentives.

CDDs have previously been used in several health programs. One of such programs is ivermectin distribution in the control of onchocerciasis (Weldegebreel et al., 2014). For them to be effectively used in health programs, there is great need for them to be knowledgeable in the program they are engaged in. For instance in carrying out community program on Key Household Practices, it is important to obtain their views and habits on some of the Household Practices which are

key for child survival, growth, and development. Hygiene and sanitation of CDDs may impact on the information and assistance they provide to the community. Since they are respected members of the community and community members look up for guidance in personal hygiene, health promotion and disease prevention, it therefore becomes necessary to X-ray the behaviors/life habits of these CDDs with view to formulating/modifying future training programs. The objective of this paper is to determine some of the Key Household Practices (malaria control practices, sanitation and hygiene practices) of CDDs in a resource-poor setting.

## METHODOLOGY

This was cross sectional study done in February, 2014 and involved 297 community directed distributors from 3 rural communities (Ozubulu, Ihiala and Osumenyi) in Anambra Central senatorial zone in South Eastern Nigeria with population of about 158,885 people (Brown et al., 2006). The community directed distributors were selected by their various communities on volunteer basis. Ethical permit was obtained from Ethics Committee of University of Nigeria Enugu Campus and verbal consent was obtained from the participants. The questionnaire used was adapted from Child health/IMCI household level survey questionnaire (Child health/IMCI, 1999). The questionnaire was administered to the respondents during training conducted in various town hall centers and covers the disease prevention aspects of household practices that is, water supply, sewage and refuse disposal, hand washing and malaria control. Completed questionnaires were checked for completeness, errors and inconsistencies, any detected were verified and corrected by the respective interviewers.

Data analysis was done with statistical package for social sciences (SPSS) version 16. For purposes of this study, improved water supply include those sources that provide safe drinking water that is, water sources from piped water into dwelling or into yard, public tap or borehole. Unimproved sources of water supply are those with unsafe water that is, well or unprotected spring, rainwater, pond/stream/river or water vendor. Sanitary sewage disposal include flush toilet system and covered ventilated improved latrine. Unsanitary methods include pit latrine, uncovered ventilated improved latrine and open defecation in bush. Results were presented in frequencies and percentages.

## Study limitation

Only those who attended the training workshop were enrolled and may not be true representation of other CDDs who were not at the training.

## RESULTS

A total number of 297 CDDs were studied: 66.0% were females and the modal age group was 29 to 38 years (44.4%). Only 2.0% did not have any formal education (Table 1). The main sources of water for drinking and domestic purposes are tanker/truck vendors and pond/stream/river and most times getting the water does not take them up to 30 minutes (Table 2). The commonest method (49.2%) of sewage disposal method was flush toilet system. Faeces from their children away

**Table 1.** Demographic characteristics of respondents and index children.

<b>Demographic variables</b>	<b>Frequency</b>	<b>Percent</b>
<b>Gender</b>		
Male	101	34.0
Female	196	66.0
<b>Age group (years)</b>		
18 – 28	35	11.8
29 – 38	132	44.4
39 – 48	26	8.8
49 – 58	67	22.6
59 – 68	37	12.5
<b>Education</b>		
No formal education	6	2.0
Primary education	84	28.3
Secondary education	156	52.5
Tertiary education	51	17.2
<b>The head of household</b>		
Mother	21	7.1
Father	267	89.9
Other Relative	6	2.0
Others	3	1.0
<b>Primary care giver of the child during the day</b>		
Mother	229	77.1
Father	13	4.4
Other family member	16	5.4
House help	33	11.1
Neighbour	6	2.0
<b>Primary care giver of the child at night</b>		
Mother	223	75.1
Father	26	8.8
Other family member	19	6.4
House help	9	3.0
Neighbour	20	6.7

Mean age = 38.0 years.

also often disposed of in similar way. In a few cases (7.7%) garbage are disposed of by throwing them onto the street while most times they are collected and disposed of at public dumpsites (Table 3). About 71 and 16.5% wash hands with soap after using the toilet and before eating, respectively (Table 4).

In terms of malaria control, about 25.9% of the household did not sleep under a mosquito net a night before the study. For those who slept under the net, the

commonest reason (62.3%) is to avoid mosquito bite. When a child is sick they often are taken to a health facility (63.6%) but in some cases (20.9%) they are first treated at home (Table 5).

## DISCUSSION

Improving key household practices is essential to

**Table 2.** Sources of Water Supply in CDD Homes.

<b>Parameter</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Main source of water for household members</b>		
Piped into dwelling	19	6.4
Unprotected well or spring	29	9.8
Rainwater	17	5.7
Piped into yard/plot	27	9.1
Pond/stream/river	58	19.5
Public tap	20	6.7
Tanker-truck or vendor	116	39.1
Tube well or borehole	11	3.7
Total	297	100.0
<b>Time taken to get water (min)</b>		
Less than 30 min	259	87.2
30 min to less than 60 min	23	7.7
60 min or more	15	5.1
<b>Distance from house to main source of water supply</b>		
Water source is within the compound	251	84.5
Water source is less than 1 km away	17	5.6
Water source is more than 1 km away	24	8.1
I don't know	5	1.8

\*Summary of source of water supply: Improved water source (sources from piped water into dwelling or into yard, public tap or borehole) frequency = 77; percent = 25.9%. Unimproved water source i.e. Unprotected well or spring, rainwater, pond/stream/river or water vendor frequency = 220; percent = 74.1%.

reducing morbidity and mortality and hence achieve MDG goals 4, 5 and 7. In the present study, most of the CDDs were females. The higher proportion of females used in present study was incidental. Several other studies among CDDs and volunteers have shown greater tendencies of using females as volunteers in programmes (Ehigiegba et al., 2014; Bang et al., 2005; Brown et al., 2006; Douthwaite and Ward, 2005). Indeed in an iron and folic acid supplementation program in Nepal only women were used as volunteers (WHO, 2014). One of the reasons for choosing only females in such program is that there are cultures that may not accept the males in their homes. Hence interventions that would need visiting women and children become difficult if men are the CDDs. However, this is not always the case and no study has shown any effect of gender on efficacy of program. For instance, in another study, a greater proportion of the CDDs were males (Micronutrient Initiative, 2014).

Most of CDDs studied had at least secondary education. Some level of education is required in carrying out any health program. Hence the level of education of CDDs is important for effective delivery of programs. This is partly because this will determine how they perceive

their role, the message they give to the community and the importance they attach to the healthcare program. Many programs therefore require some level of literacy from volunteers. However, level required differ from one program to the other (Ehigiegba et al., 2014; Brown et al., 2006). It is expected that with improved education the CDDs will be better at hygiene and sanitation.

However, the CDDs are faced with same social challenges as the rest of the communities where they reside. Hence poor/inadequate water supply, sewage disposal methods etc are also present in homes of CDDs. Source of water to household is mainly through tanker or vendor while some got their water from pond, stream, river, spring and even unprotected well. Water supplies from most of these sources are not portable. It is generally recognized that water scarcity or lack of safe drinking water is one of the world's leading problems affecting more than 1.1 billion people globally especially in developing countries (WHO, 2004). Previous studies done in 2008 (UNICEF, 2008) and 2012 (WHO and UNICEF, 2013) in same state of Anambra showed access to improved water source as 30.8 and 56.1%, respectively. Surprisingly present study done in 2014 showed that only 25.9% had access to improved water

**Table 3.** Sewage and Refuse Disposal Methods used by CDDs In their Homes.

<b>Parameter</b>	<b>Frequency</b>	<b>Percent</b>
<b>Toilet facility used by the household</b>		
Flush toilet system	146	49.2
Uncovered pit latrine	42	14.1
Covered pit latrine	40	13.5
Ventilated Improved Pit latrine (covered)	31	10.4
Ventilated Improved Pit latrine (uncovered)	10	3.4
No toilet (Bush/Field)	28	9.4
<b>Main disposal method of children's sewage</b>		
Children always use the latrine	93	31.3
Child's feces are thrown outside the yard	16	5.6
Child's feces are thrown into the latrine	133	44.8
Child's feces are rinsed away	15	5.1
Child's feces are buried in yard	24	8.1
Child's feces are not disposed of	7	2.4
Child's feces are thrown outside dwelling	9	3.0
<b>Main garbage disposal method</b>		
Garbage is thrown into street or yard	23	7.7
Garbage is taken to public dump	76	25.6
Garbage is burned	83	27.9
Garbage is collected	13	4.4
Garbage is buried	28	9.4
Garbage is thrown into waste disposal bin	74	24.9

**Table 4.** Hand-washing practices by CDDs.

<b>Parameter</b>	<b>Frequency (N = 297)</b>	<b>percent</b>
<b>On which occasion do you commonly use soap while washing hands</b>		
After use of toilet	211	71.0
Before eating	49	16.5
After attending to child who has defecated	18	6.1
After eating	6	2
Before preparing food	11	3.7
Before feeding child	2	0.7
<b>On which occasion do you wash hands without using soap</b>		
After use of toilet	84	28.3
Before eating	107	36.0
After attending to child who has defecated	16	5.4
After eating	54	18.2
Before preparing food	25	8.4
Before feeding child	11	3.7

source. One would have expected better access to improved water supply since present study is more recent

and done among people who had better level of education than the general population in the state and

**Table 5.** Opinions and actions taken by CDDs to protect their children from malaria.

<b>Actions taken to protect from malaria</b>	<b>Frequency (N = 297)</b>	<b>Percent (100.0)</b>
<b>Did anyone in household sleep under mosquito net last night?</b>		
Yes	220	74.1
No	77	25.9
<b>Number of house members who slept under mosquito nets</b>		
None	77	25.9
1 – 3	140	47.1
4 – 6	62	20.9
7 – 9	18	6.1
<b>Was this net treated with insecticide?</b>		
Yes	146	49.2
No	49	16.5
I don't know	25	8.4
I do not use net	77	25.9
<b>Reasons why people sleep under mosquito nets*</b>		
To avoid mosquito bite	185	62.3
To avoid other insects	88	29.6
To prevent malaria	183	61.6
To sleep comfortably	64	21.5
<b>Other mosquito repellants/insecticide used in the past two weeks</b>		
Mosquito repellant spray	61	20.5
Mosquito repellant cream or oil	26	8.9
Mosquito coil	17	5.7
Insecticide	50	16.8
None	143	48.1
<b>Support given to sick child</b>		
Provides home treatment	62	20.9
Takes child for treatment outside the home	27	9.1
Comforts the child (holding, cuddling, singing)	189	63.6
Pays extra-attention (e.g. providing more food or liquids)	7	2.4
Pays for child's medical care	3	1.0
	9	3.0

moreover some had been involved in previous health programmes and therefore are expected to be more knowledgeable on the health effects from unsafe water. The present study observed that it took some respondents 30 to 60 min or even more to get to the source of water. This often forces those living in water-deprived regions to turn to unsafe water sources, which contributes to the spread of water associated diseases including malaria, typhoid fever, cholera and dysentery.

Sewage disposal methods used by some CDD households were poor. Most of the respondents use insanitary methods to dispose of their children's feces. Sanitary sewage disposal facilities are defined as facilities that ensure hygienic separation of human excreta from human contact for example, connection to a public sewer; connection to a septic system; simple pit latrine and ventilated improved pit latrine. The lowest coverage of improved sanitation facilities is found in sub-

Saharan Africa and in Southern Asia (WHO, 2014). Previous studies done in 2008 (UNICEF, 2008) and 2012 (WHO and UNICEF, 2013) also showed that in study area of Anambra state 85.0 and 75.9%, respectively used sanitary sewage disposal method. These findings are similar to present study where it was observed that 73.1% used sanitary method of sewage disposal. This showed there had been no improvement in sanitary method of sewage disposal in few years following previous studies.

Sanitary refuse disposal just like other wastes help in preventing disease transmission, maintain the aesthetic value of the environment and prevent air pollution. Despite these, present study observed that refuse disposal method used by some CDDs are not sanitary. Some of them throw garbage onto the street while others burn them. With such behavior it will be difficult to expect these CDDs to preach appropriate hygiene methods. Similar open dumping of refuse and indiscriminate sewage disposal was practiced in other studies done among dwellers of similar community (Ngozi, 2011; Nnubia, 2014). The consequences of such poor refuse disposal methods are well established both on the health of persons (breeding of flies and reptiles) and on environment (flooding, water and air pollution) (Ellett et al., 2008).

Granted that the CDDs should be selected from within the community where they reside and are well known, a cause for concern when such environment is unwholesome is that the CDDs may be often plagued by the diseases which they hope to control and hence reduce their effectiveness. Furthermore, psychologists opine that the environment one lives may affect his/her perception of events (Ellett et al., 2008; Kyle et al., 2004; Loggia et al., 2008). Hence he/she may not see the reason to emphasize on some health issues like environmental sanitation (good water supply, proper waste disposal, etc) and good personal hygiene.

Personal hygiene of the CDDs is also poor. Hand washing with soap was commonest after defecating. Most CDDs do not wash their hands with soap before preparing food, before and after eating, after attending to child who has defecated, and even before and after feeding child. This may be because of lack of water and/or soap or they do not see the need to do so. Clean hands save lives by preventing faeco-oral transmission of diarrhea-causing disease (Curtis and Cairncross, 2003; Fewtrell et al., 2005). For a most effective hand washing, water and soap are required (where there are no water and soap an alcohol-based hand sanitizer can be used) (CDC, 2014).

Interestingly, most of the households in this study sleep under treated net. Present study showed that higher proportion of CDDs sleep under the insecticide treated net compared to findings of many other Nigerian studies (Auta, 2012; Onyeneho, 2013; Oresanya et al., 2008). This high utilization of insecticide treated net may be due

to involvement of CDDs in other health programs and consequently increased awareness and access to the insecticide treated nets. Also similar to a previous study (Micronutrient Initiative, 2014), the use of insecticides is a common practice.

## Conclusion

More educated females were selected as CDDs. Though key household practices among these CDDs like use of insecticide treated nets are good, others are not good especially waste disposal and personal hygiene. Hence, project managers should consider among other things, the profile of those selected to be CDDs and establish training programs to reinforce the good habits and improve on personal and environmental hygiene.

## Conflict of interest

Authors have none to declare.

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## Appendix 1. Questionnaire on key household practices

1. What is the gender of the caregiver being interviewed? Tick off the box that applies.  
Female  Male
2. Age last birthday (yrs)
3. What is the educational qualification of the caregiver?  
No formal education , Primary education , Secondary education ,  
Tertiary education
4. How many children less than 5 years old (that is less than 4 years, 11 months and 29 days), including newborns, are living in this household? 1-3 , 4-6 , 7-9
5. Who is the primary caregiver for the children during the day? Tick off the box that applies. Mother  Father   
Female Relative  Male Relative  Female Neighbour  Male Neighbour  Female Household Help  Male  
Household Help  Other Female  Other Male
6. Who is the primary caregiver for the children at night? Tick off the box that applies. Mother  Father   
Female Relative  Male Relative  Female Neighbour  Male Neighbour  Female Household Help  Male  
Household Help  Other Female  Other Male
7. Who is the head of this household?  
Mother  Father  Female Relative  Male Relative  Female Child  Male Child  Other Female  Other  
Male
8. What is the source of water for members of your household?  
Piped into dwelling.  Unprotected dug well or spring, rainwater  Piped into yard/plot.  Pond, river or stream   
Public tap  Tanker-truck or vendor.  Tube well or borehole.  Protected dug well or protected spring  Other  
(specify) \_\_\_\_\_
9. How long does it take to get to this source, get water and come back?  
Record number of minutes and/or distance unless there is water available on the premises or the respondent does not  
know.  
Approximate number of hours and/or minutes: \_\_\_\_\_ Approximate distance in kilometres: \_\_\_\_\_ Water on  
premises  Doesn't know
10. Do you store water, either outside or inside your home?  
YES  NO  DOESN'T KNOW
11. What kind of toilet facility does your household use?  
Flush toilet system  Uncovered latrine  Pipe ventilated latrine (covered)  Uncovered latrine without an  
enclosed structure  Pipe ventilated latrine (uncovered)  No facilities/bush/field  Covered latrine
12. How do you handle or dispose of childrens' feces?  
Children always use the latrine  Child's feces are thrown outside yard  Child's feces are thrown into the latrine   
Child's feces are rinsed away  Child's feces are buried in yard  Child's feces are not disposed of  Child's  
feces are thrown outside dwelling  Other (specify) \_\_\_\_\_
13. How do you dispose of garbage or other material waste?  
Garbage is thrown into street or yard  Garbage is taken to public dump  Garbage is burned  Garbage is  
collected  Garbage is buried  Garbage is thrown into waste disposal bin   
Other (specify) \_\_\_\_\_
14. On which occasions do you use soap when washing your hands?  
After use of toilet  Before eating  After attending a child who has defecated  After eating  Before  
preparing food  Before feeding child  Other (specify): \_\_\_\_\_

15. On which occasions do you wash your hands without using soap?  
After use of toilet [ ] Before eating [ ] After attending a child who has defecated [ ] After eating [ ] Before preparing food [ ] Before feeding child [ ] Other 7 (specify):\_\_\_\_\_

16. Did anyone in this household sleep under a mosquito net last night? 1-3 [ ], 4-6 [ ], 7-9 [ ]

17. Was this net ever treated with a product to kill mosquitoes?  
YES [ ] NO [ ] DOESN'T KNOW [ ]

18. Why do people use insecticide treated mosquito nets? (Tick all that are mentioned)  
To avoid mosquitoes [ ] To avoid other insects [ ] To prevent malaria [ ] To sleep comfortably [ ] Other (specify)\_\_\_\_\_

19. In the last two weeks, were any other mosquito repellents or insecticides used in this household?  
YES [ ] NO [ ] DOESN'T KNOW [ ]  
If the answer is "no" or "doesn't know," proceed to the next question. If the answer is "yes," ask: Which repellents were used?  
Prompt if there is hesitation only. Tick all that are mentioned.  
Mosquito repellent spray [ ] Mosquito repellent cream or oil [ ] Mosquito coils [ ] Insecticide [ ] Other (specify)\_\_\_\_\_

20. How do you provide your children with a stimulating environment in which to grow up in?  
Do not prompt. Tick off responses mentioned as listed below.  
Teaches the child about nature [ ] Exposes the child to experiences that address cultural or traditional practices [ ] Takes child on special outings [ ] Takes child to visit relatives and/or friends [ ] Takes child to church [ ] Ensures that child attends school [ ] Other (specify)\_\_\_\_\_ Doesn't know [ ] Does nothing [ ]

21. How do you respond to your children if they have misbehaved?  
Do not prompt. Tick off responses mentioned, as per those listed below.  
Discusses behaviour with child [ ] Disciplines child [ ] Defers response to other parent or caregiver [ ] Does nothing [ ] Other (specify)\_\_\_\_\_

22. How do you respond if your children have behaved pleasingly?  
Do not prompt. Tick off responses mentioned, as per those listed below.  
Gives praise to child [ ] Hugs or kisses child [ ] Gives the child special food or drink [ ] Provides another gift/treat for the child [ ] Allows the child to carry out a special activity [ ] Other (specify)\_\_\_\_\_ Doesn't know [ ] Does nothing [ ]

23. What kind of support do you give to your children if they are sick?  
Do not prompt. Tick off responses mentioned, as per those listed below.  
Provides home treatment [ ] Takes child for treatment outside the home [ ] Takes the child to a health facility [ ] Comforts the child (holding, cuddling, singing [ ] Pays extra attention (e.g. providing more food and/or liquids) [ ] Pays for child's medical care [ ] Other (specify):\_\_\_\_\_ Does nothing [ ]