

Perception and practice of hand washing in Kuramo Community, Lagos, Nigeria

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doi: 10.3396/ijic.v9i1.006.13

Abstract

Diarrhoea and respiratory tract infections are common causes of morbidity and mortality among children aged less than five years, particularly in low and middle-income countries and children in the lowest socio economic quintile have higher morbidity and mortality. Contaminated hands are an important mode of transmission from infected persons to susceptible hosts. This cross-sectional baseline assessment was carried out during the months of March – May 2011 in Kuramo beach community, an urban slum on the coastline of Lagos state, Nigeria. The approach was to assess the perception and practice of hand washing, as well as perceptions of the prevalence and aetiology of diarrhoea and upper respiratory infections in the community. Upper respiratory tract infections (URTI) defined as a cough and catarrh was used as an indicator for the transmission of respiratory pathogens. A total of 1000 people from 1000 of an estimated 3000 households were interviewed, of these 47.8% were women. The mean age of the respondents was 29.4 years \pm 10.4 standard deviation. Diarrhoea and URTI were among the most common infections amongst adults and children in Kuramo. There was little knowledge of the role of the hands in the aetiology of diarrhoea and URTI. Under-fives were more likely to have had multiple episodes of diarrhoea and URTI in the preceding 3 months than older children ($p < 0.001$). Over 75% of respondents knew hand washing required soap but only 46% wash their hands before eating, 3.6% after cleaning a child's bottom and 0.3% after cleaning a child's runny nose. This community would benefit from provision of water, and toilets as well as increased training to improve the practice of hand washing.

Key words

Hand disinfection; Diarrhoea and epidemiology and prevention and control; Respiratory tract infections and prevention and control and epidemiology; Nigeria

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Introduction

Bacterial pathogens causing diarrhoea are usually transmitted through the faecal-oral route.¹ The most important risk factors are behaviour that encourages human contact with faecal matter which includes improper disposal of faeces and lack of hand washing after handling faeces and before handling food. From a public health perspective slum dwellers are the most in need of interventions to reduce the risk of infection. It has been shown that hand washing may substantially reduce the risk of diarrheal disease by almost half^{2,3} and respiratory tract infections by 16%.⁴ It is a sustainable intervention that works and is cost effective.⁵ In this paper, we set out to investigate the perception, understanding and practice of hand washing and its relationship to common diseases among urban slum dwellers in Kuramo beach community. We also investigated their perception of the frequency and aetiology of the most common diseases afflicting their society as a first step in undertaking a hygiene promotion strategy.

Background

Globally, infectious diseases remain leading causes of childhood morbidity and mortality accounting for 64% of all deaths in children under 5 years of age.⁶ Pneumonia and diarrhoea account for a third of all deaths. In Nigeria, the under-five mortality rate is 157/1000 live births and child mortality rate is 75/1000 live births.⁷ Diarrhoea is responsible for 19% of all childhood mortality and pneumonia for 16%. For Nigeria to attain its 4th Millennium Development Goal, it has to reduce its under-five mortality rates to 40/1000 live births by 2015.⁶ Strategies that will significantly reduce diarrheal and respiratory diseases will have a positive impact on the attainment of the country's targets. Across all indicators of health, children from poorest neighbourhoods fare worse than those from the wealthiest socioeconomic strata. For example the under-five mortality rate in Nigeria for children from the highest socioeconomic group is 87/1000 while those in the lowest economic group have a mortality rate of 219/1000 live births.⁷ Children from poor, overcrowded slums fall into the lowest socioeconomic groups and are therefore more vulnerable to infections including diarrhoea and respiratory tract infections.

Hand washing/hygiene breaks the chain of transmission of these infections. The first documented report of

the impact of hand hygiene on the transmission of pathogens on the hands of healthcare workers was by Semmelweis in 1861. He noted that maternal mortality rates were more than double (16% to 7%) in the clinic run by doctors as opposed to that run by nurses. He was able to bring down the mortality rates from 16% to 3% by the simple act of ensuring that all doctors washed their hands in chlorinated lime.⁸ Since then there have been many articles showing the association between hand washing and reduction in disease transmission.⁹⁻¹¹

There is a significant dearth of data from Nigeria implicating poor hand washing with prevalence of disease. In many studies there is an allusion to promote hand washing as an intervention but no attempt was made to link hand washing to reduction of disease. Studies have examined poor hygiene habits and poor hand washing habits of mothers of children under the age of five years,^{12,13} food handlers,¹⁴ hospital workers,¹⁵ laboratory staff¹⁶ and school children.¹⁷ This paper examined hand washing habits of urban slum dwellers and any linkage they perceive between disease occurrence and hand hygiene.

Methods

Kuramo beach community is a sprawling urban slum on the coastline of Lagos in the Iru/Victoria Island Local council development area under the Eti-Osa Local Government in Lagos State Nigeria. The houses are shacks and are made of wood, plastic bags, and tarpaulin. It has an estimated population of 10000 inhabitants in 3000 households most of whom are Nigerians with a few from neighbouring West African Countries such as Republique du Benin, Togo, Ghana and Niger republic. This cross sectional descriptive study was conducted between March and May 2011. The target population consisted of males and females between the ages of 14-89 years.

One thousand households were selected by systematic sampling using a sample interval of 3 and one eligible respondent per household was selected by balloting. They were interviewed using a questionnaire that consisted of four parts, an introduction explaining the study and soliciting the consent and cooperation of respondents while facilitating rapport, followed by a section on the demographics and then the third section which sought information on the perception of cause

Table I. Socio-demographic characteristics of respondents

Variables	Frequency (N = 1000)	Percent (%)
Age group (years)		
< 21	143	14.3
21 - 30	519	52.0
31 - 40	207	20.7
41 - 50	76	7.6
51 - 60	28	2.8
61 - 70	11	1.1
71 - 80	4	0.4
81 - 89	1	0.1
Non-response	9	0.9
Sex		
Male	522	52.2
Female	478	47.8
Education		
None	153	15.3
Primary	217	21.7
JSS	162	16.2
SSS	382	38.2
Tertiary Institution	86	8.6
Marital status		
Single	486	48.6
Married	457	45.7
Separated	41	4.1
Divorced	5	0.5
Widowed	11	1.1
Occupation		
Pretty trading	217	21.7
Food seller	96	9.6
Housewife	43	4.3
Artisan	237	23.7
Bar tender	66	6.6
Bar owner	25	2.5
Civil servant	34	3.4
Other business	282	28.2
Ethnicity		
Yoruba	545	54.5
Ibo	151	15.1
Hausa	53	5.3
Others	251	25.1

of cough and catarrh (taken as an indicator for URTI) and diarrhoea, frequency of these two conditions and perception of hand washing. The fourth section sought information on practices of hand washing and sanitary habits of respondents. The questionnaire was pretested in Mushin Local government among a similar population.

Ten interviewers were trained for two days on the administration of the questionnaire. In addition, interviewers were trained to observe for the presence of hand washing facilities and faecal waste disposal facilities.

Data was analyzed using Epi-info statistical software (version 3.4.1) and Chi-squared test was used to test for associations in bivariate analyses. P-value of less than 0.05 was considered statistically significant.

Results

The 1000 respondents were made up of 522 men (52.2%) and 478 (47.8%) women. Majority of the respondents (869/1000) were 40 years and below while the mean age of respondents was 29.4 ± 10.4 . Majority (54.4%) of the respondents had secondary school education though only 38.2% completed their senior secondary school. Most respondents had a means of livelihood, majority of these were low skilled jobs and petty trading (Table I).

Diarrheal diseases (cholera, typhoid, watery stools) were considered as the most prevalent diseases in adults in the community, mentioned by 56.7% of respondents followed by malaria (51.7%), cough and catarrh (27.7%). Malaria and diarrheal diseases were perceived as the most common diseases of children by 40.1% and 39.9% of respondents respectively, followed by cough and catarrh at 35.5% (Figure 1).

When asked about the aetiology of cough and catarrh, 74.7% believed it was due to exposure to cold air, 24.9% believed it was due to dust, 20.2% believed it was due to smoking while 15.6% believed it was as a result of "bad air". A very small percentage associated it with people living in close proximity ("closeness"). On being asked about the aetiology of diarrhoea, 43.2% thought it was as a result of eating spoiled food, others attributed it to dirty water (38.6%), dirty environment

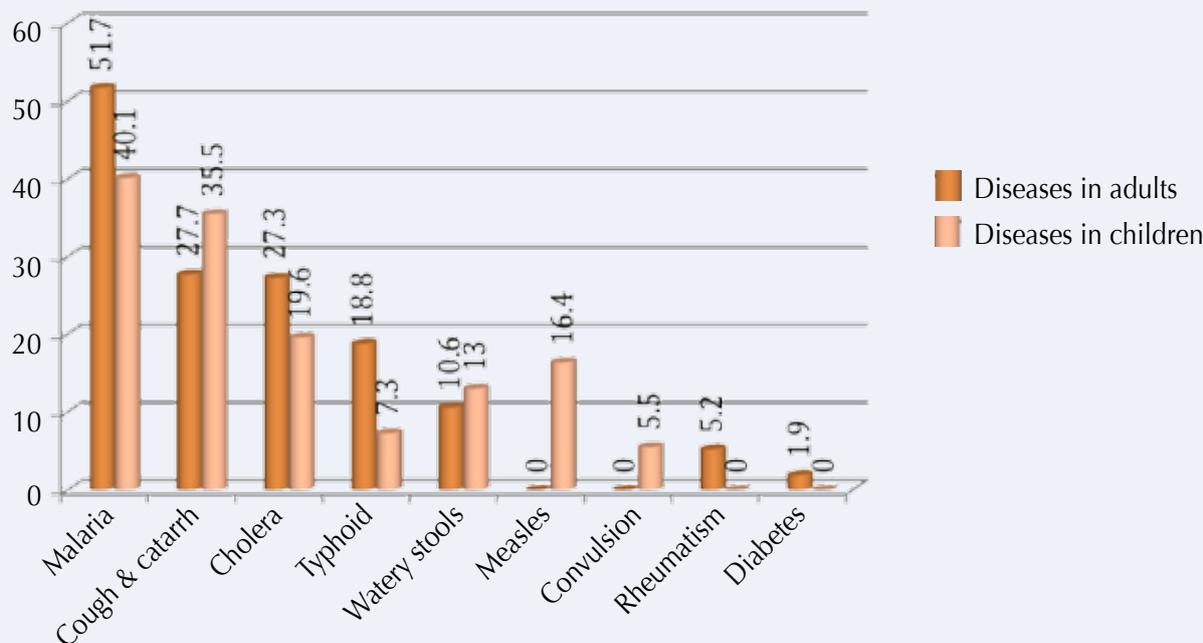


Figure 1: Respondents' perception of common diseases in the community

(27.4%), flies (10.4%) and teething (8%). Only 5.9% mentioned dirty hands and only 2.1% recognized the role of faeces in diarrhoea (Table II).

Among the respondents who had children (438/1000), 59.4% and 40.4% of their children had at least one episode of URTI and diarrhoea respectively in the three months preceding the survey. Higher proportions of the under-fives had increased episodes of URTI and diarrhoea than older children and this was found to be statistically significant (Table III).

The reported frequency of diarrheal and URTI in the preceding three months of adults was also determined. Forty six percent and 66.1% of adults did not have URTI or diarrhoea respectively while 24.9% and 14.1% had one and two episodes of URTI respectively and 16.8% and 9.0% had diarrhoea once and twice respectively.

Table IV shows the respondents' perception of and reasons for hand washing. Over 75% of respondents knew that hand washing required soap but 22% felt washing with water only was adequate. Most of the respondents washed their hands to prevent diseases (63.1%), to keep them looking clean (34.2%) and to remove stains (29.2%). Higher education was significantly associated with the practice of hand washing in order to prevent diseases ($p < 0.001$).

Table II. Respondents' perception of the causes of cough catarrh and diarrhoea

Causes of cough and catarrh mentioned by respondents	Frequency N = 1000	Percent (%)
Exposure to cold air	747	74.7
Dust	248	24.8
Smoking	202	20.2
Bad air	156	15.6
Closeness	43	4.3
Coconut	37	3.7
Dirty hands	11	1.1
Flies	8	0.8
Measles	1	0.1
Others	93	9.3

Causes of diarrhoea mentioned by respondents	Frequency	Percent (%)
Spoilt food	432	43.2
Dirty water	386	38.6
Dirty environment	274	27.4
Flies	104	10.4
Teething	80	8.0
Dirty hands	59	5.9
Worms	38	3.8
Exposure to cold air	34	3.4
Contact with faeces	21	2.1
Smoking	16	1.6
Measles	6	0.6

Multiple responses allowed

Table III. Contribution of the under fives to frequency of cough and catarrh and diarrhoea

Ages of children	Frequency of cough and catarrh in preceding 3months					Total
	None Freq (%)	Once Freq (%)	Twice Freq (%)	3 times Freq (%)	> 3 times Freq (%)	
<5 years	78 (31.6)	59 (23.9)	61 (24.7)	22 (8.9)	27 (10.9)	247 (100)
>5 years	100 (52.4)	36 (18.8)	39 (20.4)	11 (5.8)	5 (2.6)	191 (100)
Total	178 (40.6)	95 (21.7)	100 (22.8)	33 (7.5)	32(7.3)	438 (100)
Statistical test				X² = 25.17 df = 4 p-value <0.001		

Ages of children	Frequency of diarrhoea in preceding 3months					Total
	None Freq (%)	Once Freq (%)	Twice Freq (%)	3 times Freq (%)	> 3 times Freq (%)	
<5 years	129 (52.2)	45 (18.2)	25 (10.1)	20 (8.1)	28 (11.3)	247 (100)
>5 years	132 (69.1)	28 (14.7)	22 (11.5)	7 (3.7)	2 (1.0)	191 (100)
Total	261 (59.6)	73 (16.7)	47 (10.7)	27 (6.2)	30 (6.8)	438 (100)
Statistical test				X² = 26.25 df = 4 p-value <0.001		

About 62.6% of respondents use soap to wash their hands after defecation, 46% before eating and 26.3% when hands are visibly dirty. Only 4.1% wash their hands with soap before feeding their children, 3.6% after cleaning the child’s bottom and only 0.3% after cleaning the child’s nose.

Reasons for using soap for hand washing were varied, 42.6% used soap because it removed germs from their hand. Others (35.0%) believed it was better than water alone and 14.7% used soap to remove stains. A few people (6.2%) used soap because it made their hands smell nice. Those who do not use soap to wash their hands were asked to give reasons; most (73.8%) felt it was unnecessary, 19.3% felt soap was too expensive, 3.2% felt it wasted water, 2.1% felt it tasted in their food and 0.9% said it gets into nails.

Lack of water (26.1%) was perceived as the most common hindrance to hand washing while fatigue, lack of time, laziness and a lack of importance accounted for 21% of responses. Lack of soap would hinder only 3.5% and distance to water was the reason 4.2% of respondents would not wash their hands. Many respondents (44.6%) reported that they would always find a way to wash their hands.

Table IV. Respondents’ perception of and reasons for hand washing

	Frequency (n = 1000)	Percent (%)
Perception of hand washing		
Washing with water and soap	763	76.3
Washing with water	220	22.0
Cleaning with sand	2	0.2
Cleaning with water and sand	3	0.3
Wiping with wet cloth	3	0.3
Wiping with dry cloth	1	0.1
No response	4	0.4
Others	3	0.3
Reasons for hand washing		
To prevent diseases	631	63.1
To keep them looking clean	342	34.2
To remove stains	292	29.2
To make them smell nice	21	2.1
Religion	16	1.6
To appeal to people	15	1.5
Others	7	0.7
Multiple responses allowed		

Table V. Sanitary habits of respondents

Variables	Frequency (n = 1000)	Percent (%)
Sites of defecation		
Beach side	486	48.6
Lagoon	209	20.9
DMT	206	20.6
Pit latrine	14	1.4
Nylon	59	5.9
Sources of water		
Water hawkers	416	41.6
Tap water	340	34.0
Sachet water	300	30.0
Well water	266	26.6
Lagoon	43	4.3
Ocean	12	12.0
Methods of water storage		
Keg	580	58.0
Bucket with lid	125	12.5
Drum	72	7.2
Bucket without lid	46	4.6
Plastic bottle	19	1.9
Ceramic pot	1	1.0
Does not store water	197	19.7
Multiple responses allowed		

Table V shows the respondents' sanitary habits. Most of them defecate at the beachside (48.6%), purchase their water from hawkers (41.6%) and store their water in kegs (58%).

Discussion

The community members in Kuramo were not able to make the link between dirty hands and diarrhoea or respiratory tract infections. There was some misconception linking upper respiratory tract with exposure to cold air. This perception of weather conditions as a cause of upper respiratory infections has also been reported in other poorly educated communities such as Hispanics in USA.¹⁸ Such misconceptions need to be addressed when planning

health education interventions so that community members are able to use the right measures to prevent infectious diseases.

Hand washing rates with soap in Kuramo community were higher than observed in other community-based studies.¹⁹ These studies however differed from our own by using structured observations as opposed to self-reporting, which can result in over-reporting of a socially desirable behaviour²⁰ and might be responsible for the higher rates in this study. Respondents identified poor access to water as the main reason for not washing hands. Water in Kuramo is purchased from hawkers. This relationship between poor access to water and low hand washing rates was also reported in a study among care-givers of under-fives in a peri-urban population in Nigeria.²¹ As in all slums there is lack of basic sanitary facilities such as sanitary latrines and potable water, which is probably a contributory factor to the high prevalence of diarrhoea and upper respiratory infections in the community. Water and sanitation access have been identified as determinants of hand washing practice²² and urban slum dwellers remain a high-risk population who need targeted interventions to address poverty levels, environmental hygiene and access to social amenities.

The self-reported diarrhoeal and upper respiratory infection rates in the children in Kuramo community were higher than other studies that used the same time of recall for diarrhoea²³ and one month recall for respiratory tract infections.²⁴ The 2008 National Demographic and Health Survey (NDHS) observed rates of 10% and 3% for diarrhoea and acute respiratory infections (ARI) among under-fives respectively. However, the recall interval for the NDHS was two weeks and symptom for ARI included short, rapid breathing (indicating more severe disease) making direct comparison with this study difficult.⁷ The high rates observed in this study pose a challenge if we are expected to attain the 4th Millennium Development Goal of reducing child deaths by two-thirds by 2015; diarrhoea and respiratory tract infections have been identified as leading causes of child mortality.⁶ This threat appears to be compounded by the increasing numbers of slum dwellers as a result of the trend of rapid urbanization in Nigeria.²⁵

There was misconception of when hand washing was necessary. A higher proportions of the respondents washed their hands after defecation and before eating and but much fewer of them washed hands before feeding their children and after cleaning their child's bottom or nose. It would seem that they were less conscious of hand washing in the course of caring for their children which could contribute to the higher prevalence of diarrhoea and upper respiratory infections reported among their children. Children and their mothers have been shown to suffer more from diarrhoea when they fail to recognize child's faeces as a source of diarrhoea.²⁶ It therefore presents an intervention point to assist care-givers to link these actions to diarrhoea and URTI, such as placing emphasis on the polluting nature of babies' faeces and the need for hand washing when there has been any contact.

The most common motivating factors for hand washing included prevention of diseases and aesthetics (clean looking hands). It would seem that the respondents in this study had some idea that washing of hands could prevent diseases but they were unsure of the link specifically to diarrhoeal diseases and URTI, two of the most common diseases in their community. Respondents with higher education were more likely to wash their hands to prevent diseases and this was statistically significant in our study; the same has been previously reported in a study in rural India.²⁷

Sanitary conditions in Kuramo are grossly deficient. To corroborate some of the self-reported responses, we were able to observe that there were no toilets, hand washing facilities or source of water supply. We also observed trucks bringing in large quantities of water in sachets for sale to the community members. The nearest safe toilet is about 10-15 minutes walk from the community. This is characteristic of most slums and their existence consistently place Nigeria within a group of countries with the most unfavourable socio-economic conditions in the world.²⁵

In conclusion, this study has demonstrated that respondents did not link poor hand washing practices and inadequate sanitary facilities with the transmission of organisms responsible for the high diarrhoeal and URTI rates. It is clear that interventions that will reduce

rates include raising the awareness of the link between common childhood diseases and poor hand hygiene, emphasizing the effectiveness of washing hands with soap over mere use of water, addressing the perception that respiratory tract infections are not infectious in origin, provision of safe sources of water and disposal of faeces. Strategies to motivate the community to sustain hand washing also need to be developed.

Funding: The authors would like to thank Unilever Nigeria Plc for funding this study

Competing interests: None declared

Acknowledgements

The authors would like to thank Karale Association for AIDS Prevention for assisting in carrying out the fieldwork and Mr. Seun Ayankola for his assistance in data analysis.

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