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Effect of household sanitation and hygiene on children's health in Nigeria: A case study of Hadejia Local Hovernment

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Abstract
Inadequate Sanitation has been found to be a major problem in primary communities and now as Nigerian free primary education begins to offload pupils into the secondary community system, the same problem might begin to affect the communities. This study therefore sets out to investigate the adequacy and utilisation of Sanitation facilities in communities in Hadejia local government. Four objectives were considered in this study namely: To find out the different kinds of Sanitation facilities available in selected communities in Hadejia local govemment; assess the adequacy of Sanitation facilities in selected communities in Hadejia local government; assess the utilisation of Sanitation facilities in selected communities in Hadejia local government; and to examine communities' awareness of the consequences of poor Sanitation The required information was gathered using four methods namely in-depth interviews, survey, focus group discussions and observation. Four categories of respondents were used including head teachers, teachers, health inspector and communities. It was found that although the communities in Hadejía local government own variety of Sanitation facilities, there is generally inadequate coverage of Sanitation facilities in the communities in Hadejia local government and this is particularly worse-off in Slum based communities and the phenomenon is exacerbated by the ever increasing student population due to increase in enrolment for secondary education resulting from Universal Primary Education. Additionally, the available Sanitation facilities are poorly utilized which is a result of many factors including communities' background and upbringing, discipline regarding personal hygiene and community and weakness in implementation of Sanitation and hygiene policies. The cleanliness of the available Sanitation facilities is not at its best and this forms part of the reasons why some of the communities ignore using the facilities and instead opt for use of bushes around the communities. It was recommended that there is need to develop Sanitation programs under which the challenge should be tackled right from the root rather than attempting to manage the resultant unpleasant consequences. Community administrations need to prioritize the aspect of Sanitation and hygiene.

Keywords: Sanitation facilities, adequacy of sanitation, utilisation of sanitation facilities, community hygiene, secondary education enrolment, universal primary education (UPE)

Introduction

Back ground of the study

The World Health Organization (2004) estimated that as of 2002 approximately 1.I billion people globally had no access to a supply of safe water and 2.6 billion did not have basic sanitation. Overall, more than 2.2 million people, mostly in developing countries, die each year from diseases associated with poor sanitation (WHO/UNICEF, 2004). Over 250 million people each year suffer from diseases related to water and sanitation and 6000 children die from them every day (WHO, 2004). Sub-saharan Africa bears the blunt of these diseases, especially children aged five years and below (Hacker, 2003).

Sanitation encompasses the isolation of human excreta from the environment, maintenance of food and personal hygiene, safe disposal of solid and liquid wastes, safe drinking water chain and vector control (Ministry of Health, 1997). The National Sanitation guidelines (2000) define sanitation as a process where people demand, develop, and sustain a hygienic and health environment for themselves erecting barriers to prevent the transmission of disease. The process thus involves building, use and maintenance of latrines and other sanitation facilities; such as construction of urinals, hand washing facilities, anal cleansing materials and safe water supply. It also involves learning, behavior change, organization, and collective action with other community members.

Utilization involves proper human waste disposal, water handling form the source to the point of consumption and effective washing hands with soap after using the toilet. (Water kayn, 2000). National sanitation guidelines (2000) defines adequacy of sanitation facilities as the state of cleanliness of the facilities, it involves presence of clean latrines and urinals, functioning hand washing facilities with soap and water.

Statement of the Problem

According to the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) an estimated 2.6 billion people or 39% of the world's population lack access to improved facilities for the disposal of human exereta, such as a basic pit latrine, a toilet connected to a septic tank or piped sewer system, or a composting toilet (WHO/UNICEF 2010). It was also reported by the WHO and UNICEF in that same year of 2010 that in low-income regions, where people are most vulnerable to infection and disease, only one in two people is covered by improved sanitation resulting in more than one billion people still practicing open defecation. (WHO/UNICEF, 2010).

Concern about the effects of unhealthy environments on children's health was strongly expressed at international level (WIHO, 2004). The concern stems from increasing evidence that children are especially susceptible and may be more exposed than adults to many adverse environmental factors including: unsafe home environments; road traffic,

chemical and microbiological contamination of air, water, food, and soil, and physical agents such as radiation and noise (Byre *et al*, 2005; Rao *et al*,, 2005).

It is well known that acute diarrhea disease is one of the most important causes of morbidity and mortality in children under five years of age (Setel *et al*., 2006). As such there has been reported sustained increase in childhood diarrhea from a low of 15% in 2000 to a high of 19% in 2007 (MoH, 2007). Again childhood diarrhea diseases are the second most prevalent group of diseases after upper respiratory infections. These cases are mainly a function of water, sanitation and hygiene (water quality). This is because the water quality coverage in the densely populated areas of Hadejia has been consistently been under 50% since 1998 (NCWSC, 2007). How this impacts on childhood diarrhea burden is not known. It is thus important to estimate the impact of inadequate water quality conditions on child health for efficient health intervention programming.

Research Questions

1. What is the different kinds of sanitation facilities available in Hadejia Local government?
2. How adequate are the sanitation facilities in Hadejia Local government?
3. How do the community use the sanitation facilities to prevent the spread of disease in Hadejia Local government?
4. How aware are community members of the consequences of poor sanitation?

General Objective

To examine the investigate status of the level of household sanitation and hygiene and how it affects their health.

Specific Objectives

1. To find out the different kinds of sanitation facilities available in Hadejia Local government.
2. To assess the adequacy of sanitation facilities in Hadejia Local government.
3. To assess the utilization of sanitation facilities in Hadejia Local government
4. To examine community's awareness of the consequences of poor sanitation in Hadejia Local government

Conceptual Review

Hand washing facilities in communities has not been considered important. Yet from a preventive health perspective hand washing is absolutely crucial. Without hand washing, all investment in fancy latrine construction is a complete waste of time and resources as faecal contamination from hand to mouth, food, friends etc is virtually guaranteed (Water kayn, 2000).

Three types of latrines are encountered in Uganda. The traditional pit latrine is one whose floor is made of rammed earth. The walls are usually composed of mud and wattle and roofing may be accomplished by temporary thatch materials like grass. These are temporary structures which are abandoned on filling. They have a disadvantage of being difficult to keep clean and free from flies although they are cheap to construct. The wittiness of the area near the squat hole renders them clammy and lucrative places of hook warm transmission and houseflies bleeding. Improved traditional pit latrines have concrete platform (the sun plat) surrounding the squat hole. This renders them easier to keep clean than the traditional ones but for a higher cost. The sanitation facilities (VIP) have a concrete slab covering the whole floor, and a vent communicating from just under the slab to the atmosphere. At the atmospheric end the vent is covered with a fly screen. Bad smells are led away from the pit into the atmosphere. Flies which are attracted from the pit into the atmosphere by light are attracted by the screen and die of heat and gases in the vent. VIPs therefore have least smells and the slab could be re-used or the pit emptied by a cesspool emptier (Water kayn, 2000). They are however more expensive to construct.

Male urinals are important as they reduce pressure on the use of latrine pits and are very convenient to use and easy to construct. They also have the advantage that they tend to help reduce the urine build up in the pits which is essentially helpful when considering the optimum requirements for good compost production where moist conditions are better than saturated ones. Female urinals are less common but still relative cheap to construct and are very well worth installing as they provide the same benefits as with the male (Water kayn, 2000).

Safe water and Sanitation facilities and knowledge of hygienic behavior are the greatest of all public health breaks through. And the priority of human health and development in the early years of the 21" century must be to make sure that their benefits are finally made available to all (Water Sanitation facilities and Hygiene, 1999). Studies on water handling during collection, storage and use have shown that there is progressive contamination from source to the point of consumption due to lack of Sanitation facilities and inadequate/inappropriate hygiene. A Slum water and Sanitation facilities study showed that only 9% of 57 household surveyed were consuming acceptable quality of water (WHO, 1999).

There is lack of up-to-date statistics on the level of coverage of water supply in Uganda and what is available is somewhat differing. The State of Environmental Report for Uganda (1998) reports that there is low level of domestic water supply in the country with only 40% and 75% coverage for Slum and urban areas respectively. In the urban areas of Kampala, Entebbe, Mpigi and Jinja the current water demand is 27.5 Million cubic meters per year

1. Adequacy of Sanitation facilities

Adequate Sanitation facilities is the foundation of development but it has been found a half of the people in the world do not have access to toilets or latrines. The percentage of those with access to hygiene Sanitation facilities has declined slightly over the 1990's, as construction has fallen behind population growth (UNICEF, 1997). Each method of waste disposal has its drawbacks. Reusing glass bottle can require more energy than in their initial manufacture, as they have to be sterilized. Incineration is a source of greenhouse gases and toxic chemical like dioxins and produce large qualities of methane gas. They must be managed so that pollutants do not sleep into ground therefore be kept dry, but this slows down the rate of decomposition.

Good Sanitation facilities and improved hygiene means of disposing their waste. This is a growing nuisance for heavily populated areas, carrying the risk of infectious diseases, particularly from diseases that lower their resistance. Lack

of controlled waste also means daily exposure to unpleasant environment. The buildup of faucal contamination in rivers and waters is not just a human risk; other species are also infected threatening the ecological imbalance of the environment. The disadvantages of untreated waste water and excrete into the environment affects human health by several routes;

- By polluting drinking water
- Entry into food chains for example via fruits, vegetables and fish
- Bathing, recreation and other contact with contaminated water.
- By providing bleeding sites for flies and insects that spread diseases.
- Lack of nutrition from loss of important fish protein source due to environmental pollution.

2. Utilization of Sanitation facilities

- Improving water and Sanitation facilities does not necessary lead to a decrease in water and Sanitation facilities related diseases. To bring about real improvement in health. The installation of facilities has to go hand in hand with their proper use and maintenance, hygiene promotion aims to ensure the proper use and maintenance of facilities by motivating people to change their behavior (IRC 2004).
- Proper latrine Use is a behavior much beyond structures. Using a latrine, hand washing after maintaining a latrine in an adequately sanitary state, is in many cases, more of latrine use, factors of attitude and habit than existence of structures. In Hoima local government 24% of studied subjects normally used the bush (Burfacderi *et al*, 1993) while in Tororo 36% did so Karamagi & Aboda, 1993). In Kwale and South Nyanza local governments of Kenya only 30-35% of people had access to adequate excreta disposal facilities.
- According to Abwoka (1998), over 70% of children in primary community's in Mpigi local government knew washing hands before meals and after latrine use and brushing teeth were important from disease prevention and also that indiscriminate disposal of excreta caused diseases. Cholera count result from drinking contaminated water and that water can be made safe to drink by boiling it. A less of children knew the qualities of a good latrine.
- In many cases improving Sanitation facilities can be as simple as installing a well-designed ventilated pit latrine (VIP) or compositing latrine, However in other cases improving Sanitation facilities will be more challenging particularly in rapidly growing urban slums; moreover, while building improved Sanitation facilities is a crucial intervention, the full health benefit will not be realized without proper used and maintenance of the facilities and good personal and domestic hygiene (Carr and Stauss, 2001) [8].
- The provision of safe water and Sanitation facilities facilities in community's is a first step towards a healthy physical learning environment benefiting both learning and health. However, the mere provision of facilities does not make them sustainable or produce the desired impact (WELL, 2003). It is the use of technical facilities and the related appropriate hygiene behaviors of people that provide health benefits. In community's, hygiene education aims to promote those practices that will help prevent water and Sanitation facilities-related diseases as well as promoting healthy behavior in the future generation of adults (Burgers, 2000 cited by WELL, 2003)
- A study conducted by Child Health and Development Centre, Makerere University (CHDC, 2006), found that almost all community's surveyed did not meet the minimum Sanitation facilities and hygiene community standards. Government efforts have focused on Construction of toilet facilities in government-aided community's through the Community Facilitation Grant (SFG), UPE funds and Local Government Development Programme (LGDP). As such the, emphasis has been on facility development with less focus on changing practices in Sanitation facilities and hygiene in community's. With regard to Sanitation facilities practices in community's, a study done by UNICEFNEWAS (2005) revealed that the practice of hand washing after using a latrine was not being done by the pupils in the camp community's in northern Uganda. The study however noted that this could be because latrines in most camp communities do not have hand washing facilities, except for those camps that have benefited from "mobilets" (crest tank latrine superstructures) that are supplied with hand washing facilities.

3. Theoretical Framework

1. Students' Awareness of the consequences of lack of Sanitation facilities

- Richford (1995), argues that in Uganda today, diarrhea diseases rank second among the five killer diseases being transmitted mainly through swallowing faecal germs. This has been mainly because of the lack of disposal of faecal and unprotected water source. He further reveals that the provision of safe water resource and Sanitation facilities is very important, but constructing latrines and digging wells would have little effect on health unless people use these facilities.
- One gram of faeces can contain ten million virus, one million bacteria, one thousand parasite cysts and a hundred warm eggs, That is what makes the safe disposal of faeces the most important of all public health priorities. Still today, the majority of illnesses in the world is caused by the fact that faecal matter enters the human body because of lack of safe Sanitation facilities and lack of hygiene. To prevent this huge burden of illness, safe water and Sanitation facilities are only half of the answer. The other half is getting people to use them wisely and well. Millions of people have still not been adequately informed about the link between faeces and diseases (Water, Sanitation facilities and Hygiene, 1999).
- Sanitation facilities reduces or prevents human faecal pollution of the environment thereby reducing or eliminating transmission of diseases from the source. Effective Sanitation facilities isolates excreta and inactivates the pathogens or within faeces. High technology solutions are not necessarily the best, Some simple latrines can be very effective while untreated sewage distributes pathogens in the environment and can be a source of diseases. Interventions that work in Slum areas may not be very different from those in urban areas.

- The majority of the people living in developing countries are suffering from diseases, hunger and ignorance. In most cases problems are interlinked. Due to lack of knowledge the people are exposed to hunger while having enormous resources around them. Over half of the population suffers from diseases caused by lack of Sanitation facilities when simple sanitary measure can make a big difference. Lack of Sanitation facilities, hygiene and inadequate water supply are also related to the spread of other diseases, including tropical diseases such as schistosomiasis (sometime called Bilharzias) rank second in terms of socio-economic and public health importance in tropical and subtropical areas (Esrey 1994), The diseases are endemic in 74 developing countries Uganda inclusive, infecting more than 200 million people of these, 20 million suffer severe consequences from the disease. 40% of the world population still have no basic Sanitation facilities; many people do no realize the health benefit to individuals, community and to the society from improving Sanitation facilities. The high cost of improving Sanitation facilities is often cited as a barrier to implementing Sanitation facilities projects.

Methodology

This will be a descriptive and cross-sectional study. It utilized both qualitative and quantitative methods of inquiry. The quantitative aspects were used to capture quantifiable patterns and the qualitative aspect was be used to explore in-depth the issues at hand. The study was cross-sectional survey given that the issues involved concern more than one section of the study population. For example, the community authorities must see to the adequacy of Sanitation facilities but the issue of utilization and the practices involved in this rest more with the communities.

2. Data analysis and result

Quantitative data: After collection, survey data will be edited and coded. This is where data will be examined for errors and omissions and corrected where necessary and possible. In the coding process, data will be organized into categories after which, numerals will be assigned to each item before entering them into the computer. After entering using SPSS programme, the computer was used to generate quantitative results including the percentages, frequencies, means and averages.

Qualitative data: After collection, will be coded and analyzed. Editing involved examining data for errors and omissions after which, corrections will be done accordingly where possible. Coding involved organizing data into classes/categories in relation to the themes of

The study. After this, interpretations will be made before making conclusions.

Table 1: Sanitation Material and Facilities

		Sanitation Facilities & Material					
	Secondary Communities	**Pit Latrines**	**Flush Latrine**	**Urinals**	**Hand Washing Facilities**	**Sources of Water Facilities**	**Anal cleansing material**
	A	3	-	2	2	2	For teacher
	B	2	1		2	2	For teacher
	C	3	-	2	2	2	For teacher
	D	2	1	2	2	2	For teacher
	E	2	-	2	None	3	-
	F	2	-	2	1	2	-
	G	2	-	2	None	3	-
	H	2	-	2	1	2	-
	I	2	-	2	None	3	-
	J	2	-	2	1	2	-
Men		2.25	0.25	2.0	1.25	2.25	

Source: Field Data

On the other hand, the communities sampled from the slum area areas also indicate fair availability and distribution of Sanitation facilities especially the urinals. However through observation, it was clear that the facilities in the Slum area areas were not in good condition as those in the urban areas. For instance, in two of the Slum area communities, the walls looked quite old and dirty signaling that the latrines were old. Beside, some of the doors that has been fixed in the entrance to ensure privacy had been broken and some had been completely removed thus defeating the overall purpose.

Through interview about the same issues of availability of sanitation facilities and materials, communities were asked to state the types of Sanitation facilities present in their respective communities. As in the previous table, these were grouped into toilets and urinal facilities. The table that follows presents finding from communities' responses on this matter:

Table 2: Types of Latrine facilities

Toilets	**Percentage**	
	Slum Area	**Urban**
Pit Latrines	50	45.0
Flush Latrines	-	5.0
Total	50	50
Urinals		
Cemented urinal	21	35
Soak Pit	4	10

Nearby Bush	25	5.0
Total	50	50
Other Facilities & Materials		
Hand washing container (Cans with water	18	48
Anal cleansing issue (Toilet paper rolls	6	34

Sources: Field Data

Majority (45%) of the communities in the urban communities indicate that their communities have pit latrines as toilet facilities while only 5% reported the use flush toilets with running water but by teachers as places of convenience. In the Slum area communities there were not flush toilets.

As for urinals, majority of communities use cemented types of urinals (21%-Slum area and Urban -35%) while 10% in the urban communities have soak pits. However, 30% of the communities reported that in their communities, the bush is used as urinals.

Beside the pit latrine and urinals, information from the key information interviews revealed availability of bathrooms, open rubbish dumping pits and composite pits for solid waste but these were not mentioned by the communities. On the same objective, the study went ahead to find out the general level of cleanliness and condition of the available sanitation facilities. The communities were asked to rate and the responses are as presented in the figure that follows

Table 3: Rations of Sanitation Facilities and Materials to Communities

	Community	Pit Latrines stances		Flush Toilet		Urinals		Hand washing facilities	
		Male	Female	Male	Female	Male	Female	Male	Female
Urban	A	1:110	1:115	-	-	1:220	1:310	1:220	1:310
	B	1:100	1:140	-	-	1:200	1:280	1:200	1:280
	C	1:99	1:113	-	-	1:212	1:261	1:212	1:273
	D	1:121	1:119	-	-	1:191	1:259	1:201	1:269
Slum Area	E	1:180	1:162	-	-	1:360	1:224	None	-
	F	1:130	1:136	-	-	1:162	1:172	1:224	-
	G	1:128	1:134	-	-	1:158	1:169	1:172	-
	H	1:142	1:151	-	-	1:162	1:155	1:155	-
	I	1:137	1:142	-	-	1:159	1:161	1:161	-
	J	1:129	1:139	-	-	1:160	1:128	1:128	-

Sources: Field Data

The values presented above indicate big deficit of Sanitation facilities and material in the ten sampled communities of Hadejia Local Government. The ration are evidently poorer in the Slum area communities and there is a lot that needs to be done so as to rectify the situation. Given that hand washing facilities are part of the Sanitation framework, the study went ahead to find out whether the sampled communities have these facilities. The finding are represented in the table that follows:

Table 4: Types of hand washing facilities Available

Responses	Percentage	
	Slum Area	Urban
Metallic Cans & Plastics Jerricans	12	25
Not available	32	20
No response	6	5
Total	50	50

Sources: field Data

Half of the communities (25%) in urban communities indicate that their respective communities have metallic cans and plastic jerry cans as hand washing facilities followed by 40% who indicate that their communities do not have easing facilities. However, 4% of the communities is not respond to this. A proportion of 12% of the communities in Slum area communities reported that metallic cans and plastics jerryicans as hand washing facilities. Therefore, communities are fairly equipped with and washing facilities but still more is needed to cover the missing 50% which is quite unsafe.

Given the number of people that frequency Sanitation facilities in communities, the hand washing facilities are subject to high rate of wearing out. Communities were therefore asked to tell whether the facilities are functional. The finding are tabulated as follows:

Conclusions

Although the communities in Hadejia local government own variety of Sanitation facilities, there is generally inadequate coverage of Sanitation facilities in the communities and this is particularly worse-off in Slum area based communities. The phenomenon is exacerbated by the ever increasing student population due to increase in enrolment for secondary education resulting from output from Universal Primary Education. Community administrations seem to find a big challenge with increasing the quantity of the facilities saying that it required relatively large budgets to set-up the facilities.

There is considerable congestion for communities trying to access community latrine in most of the communities in Hadejia local government. This leads to unhygienic conditions and greatly increases the risk of cross contamination and infection. The useful life of a latrine is reduced to a fraction of what it should be, a ratio of 180: 1 rather than 40:1 which means a feeling rate or five times faster, thus a pit which should have a designed life of five years is reduced to one year. Land availability becomes a problem if latrines need to be replaced so frequently (after every I to 5 years).

Recommendations

There is need to develop Sanitation programs under which the challenges should be tackled right from the root rather than attempting to manage the resultant unpleasant consequences.

Community administrations need to prioritize the aspect of Sanitation and hygiene. The excuse of inadequate financial resources is not genuine enough to explain the inadequacy of the Sanitation facilities in the communities. It is expected that the increase in enrolment comes with increase in income to the communities. It is therefore strongly recommended that a separate budget is put aside and strictly observed by the communities to cater for this indispensable service in the communities.

Proper planning for the communities' carrying capacity needs to be considered. This should guide the recruitment of communities into the communities where community administrations should not only focus on the income benefits but the wellbeing of the communities who enroll. The Ministry of Education it self should conduct regular monitoring and evaluation of community Sanitation and hygiene standards as part of its regulatory roles. Communities which do not meet the standards should be closed until they upgrade to desirable and acceptable Sanitation standards.

Fundraising drives can be ensured by community administrations especially through community parents, networks of old communities associations, Sanitation and hygiene program funding agencies, the Ministry of education and several external links that may include friends of the communities and corporate institutions.

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