



RESEARCH PAPER

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Assessment of water availability and excreta sanitation in health centres in Owerri West, Imo State, Nigeria

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Abstract

Safe means of excreta disposal and water availability remains a challenge in developing countries. A cross sectional study was conducted to assess water availability and excreta sanitation in Primary Health Centres (PHCs) in Owerri West, Imo State. Interview with questionnaire, survey tool/checklist, onsite observation and picture-taking were employed to collect data on water availability and safe excreta management. Data were analyzed using descriptive statistical analysis and results presented infrequency and percentages. The most common method of excreta disposal was the use of Flush system (79%). It was observed that about 78.6% of PHCs had functional toilets and 71.4% of the toilets were visibly cleaned. Only 14.3% of the PHCs had access to community water supply source, while the remaining 85.7% made use of their individual water sources. About 64.3% of the PHCs reported to have had experienced insufficient water supply all year round and 71% had water at the time of the report. It was observed that 28.6% PHCs had complete anal cleansing materials. Majority 92.8% of nursing mothers who visited the PHCs took home their babies' soiled diapers. Inadequate water supply and functional toilet facilities for proper excreta management reported in some of the PHCs has been associated with the spread be bacterial, viral and parasitic infections such as typhoid, diarrhea diseases, cholera, amoebiasis, ascariasis, and a host of other fecal-oral transmitted infections. There was inadequate provision of water and toilet facilities in the PHCs, and this could hinder safe excreta management and jeopardize the health of staff and patients.

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Introduction

Water, Sanitation and Hygiene (WASH) is an essential need for patient and staff safety, which also determines the quality of care delivery, towards realizing Sustainable Development Goal 3: “Ensuring healthy lives and promoting well-being for all”. Access to healthcare services in low- and middle-income countries (LMICs) is hampered in part, by insufficient facilities, total absence of water, sanitation, and hygiene (WASH) (WHO, 2020a). Water is required for total and comprehensive sanitation in every establishment and inadequate water supply will definitely undermine efforts to maintain good sanitary practices. Inadequate water supply and poor excreta management have been positively associated with high prevalence of infectious diseases recorded in developing countries (Mosisa *et al.*, 2021; Ugboko *et al.*, 2020). According to Akoteyon (2019) and Gbadegesin and Olorunfemi (2009), inaccessibility to clean water has enormous consequences on personal hygiene, which puts the health of about 40 million Nigerians in danger. Improper management of human excreta have been implicated in the transmission of many infectious diseases such as cholera, ascariasis, cryptosporidiosis, typhoid fever and so on (WHO, 2022; Shirel *et al.*, 2020). According to World Health Organization (2022) and Giri *et al.* (2022), over 2.2 million people die annually from diarrhoeal diseases. Ten percent (10%) of the population of the developing nations are severely infected with intestinal parasites related to improper excreta management (Biniyam, 2019; Mulogo, *et al.*, 2018).

Improvements in WASH around the world are the key public health issues within international development and are the focus of Sustainable Development Goal 6 (WHO, 2017). Access to excreta disposal facility (sanitary toilet) is a fundamental human right and the key indicator of sustainable development (WHO, 2017). Proper hygiene and sanitation acts as a primary barrier in breaking the transmission cycle of these diseases, for example, provision of toilets alone can reduce the incidence of diarrhea and deaths of children below 5 years by more than 30%, including malnutrition that is associated with diarrhea (WASH, 2020).

In developing countries, mostly in the rural areas, there is inadequate access to potable water and other sanitary facilities (Mutschinski and Coles, 2021). This could be attributed to poor funding, corrupt practices, lack of clear policy direction, lack of coordination, poor water infrastructural maintenance culture and poor community participation (Chukwuma, 2017). In the healthcare facilities, where water and excreta management facilities are lacking or not functional, proper excreta management becomes a challenge.

A sanitation system includes the capture, storage, transport, treatment and disposal or reuse of human excreta and wastewater (WHO, 2019). Another component of excreta hygiene is proper anal hygiene, which entails cleaning the anus with dry tissue paper or washing the anus with (WHO, 2002). This is followed by proper hand washing with soap and running water to avoid contamination. The anal cleansing materials (tissue, soap and water), where not available can hamper with proper anal hygiene practice. According to Herbst (2006), the absence of anal cleansing materials in households has been correlated to the number of diarrhea episodes per household.

Soiled disposable diapers contain untreated urine and feces which increase the threat of bacteria and parasites leaching into ground water and surface. The process of decomposition of disposable diapers long because of the presence of durable plastics and super absorbent polymer that it is made of (Justinah, 2020; Pynthamil and Amarnath, 2011), and serve as a source of contamination to the environment. According to WHO (2020a) statistics on the global access to basic WASH facilities in PHCs, 1.8 billion people use PHCs facilities with no basic water services and 800 million people use PHCs with no toilets.

Provision of adequate water and proper excreta management is necessary as primary healthcare serves as the entry point into national health care system (UNICEF, 2014). The main objective of establishing primary healthcare is to address key health issues at a community level through the

provision of promotive, preventive, curative, and rehabilitative services (Bryant and Richmond, 2009). There is need to regularly assess the availability of water and excreta sanitation practices in primary healthcare centres with the target of establishing their WASH status, as the key role of PHCs can be totally actualized through provision of basic facilities such as WASH facilities. So, the study was carried out to identify the methods of disposal of excreta; ascertain the functionality and sanitary state of toilets and determine the availability of water in health centers in Owerri West.

Materials and methods

The study was conducted in Owerri West area of Imo State, Southeast Nigeria. Owerri West was carved out of the former Owerri Local Government Area in 1996. Owerri West is positioned between longitudes of 5.485°N and latitudes of 7.035°E in the equator. Owerri is bordered by Otamiri River to the East and Nworie River to the South (Acholonu, 2008). It has an area of 295 km² (114 sq mi) and a population of 99,265 (2006 census). There are fourteen (14) Primary Health Care Centres in Owerri West, Imo State. The health centers served approximately a population of 99,265 as at 2006 census.

Fourteen Government-owned Primary Health Centres were assessed in a cross-sectional study. All the primary health care centers in Owerri West were included in the study.

Data collection and analysis

The researcher sought the consent of the Heads of selected primary health centers and got approval before the study was carried out. Interview, survey tool/checklist on WASH in health care facilities of UNICEF (2018) and Observational method of data were employed for data collection as follow:

Interview with well-structured questionnaire

The participants were staff members (ideally more than one member – head nurse and technician).

Onsite checks/observations

For questions that should exclusively be answered based on the onsite observation of the data collector on the days of the visit.

Picture-taking

Aimed at supporting data entry, evaluation and dissemination of results.

The questionnaires were completed on the spot. The WASH profile was carried out by assessing each PHC to ascertain the type of water source, type of toilet facility, and hand washing and anal-cleansing materials stations.

Data analysis

Data were analysed using descriptive statistical analysis and results presented infrequency and percentages.

Results

Water availability in primary health centers within Owerri west

The result in Table 1 shows that about 85.7% of the PHCs in Owerri West had private/individual water sources, while 14.3% of the PHCs utilized community water source. At the time of visit, 71.4% of the health centers actually had water, while 28.6% of the health centers had no water.

Water was consistently available in 35.7 % of the PHCs while 64.3% experienced insufficiency of water. However, about 64.3% of the health centers had alternative water supply from storage reservoir though, 7.1% received alternative water supply from water tanker trucks and the remaining 28.6% utilize alternative water supply from homes close to the health centre.

Availability of toilet facilities in PHCs in Owerri west

Table 2 shows that all the PHCs visited in Owerri West had available toilet facilities. It shows that the most available (78.6%) type of toilet facility was water cistern toilet, followed by Flush Pour-flush toilet (7.4%). About 10 PHCs (71.4%) had their toilet sited within 30 meters within their premises.

Table 1. Availability of water in primary health centers in Owerri west

Facilities	Frequency	Percentages (%)
Individual water supply	12	85.7
Government/Community water supply	2	14.3
Was water currently available at the time of the study?		
Yes	10	71.4
No	4	28.6
Is the water always available and sufficient?		
Yes	5	35.7
No	9	64.3
Alternative source of water		
Truck (mobile)	1	7.1
Storage reservoir(s) (500-1000 litres)	9	64.3
Unimproved individual/self-supply on site	4	28.6

Table 2. Availability toilets in health centres in Owerri west

Facility and features	Frequency	Percentages (%)
Availability of latrine at the PHCs		
Yes	14	100
No	0	0
Total	14	100
The type of toilets/latrines are at the facility		
Water cistern toilet	11	78.6
Flush / Pour-flush toilet to sewer connection	2	14.3
Flush / Pour-flush toilet to pit connection	1	7.1
Are toilets/latrines for patients available within 30 meters from the point of care?		
Yes	10	71.4
No	4	28.6
Total	14	100
Total number of latrines in each Centre	2	

Table 3. Functionality and sanitary state of toilets in health centres in Owerri west

Facility and features	Frequency	Percentages (%)
Evidence that the toilets were in use		
Yes	11	78.6
No	3	21.4
Total	14	100
Presence of cover for the toilet/latrine		
Yes	7	50
No	7	50
Total	14	100
Were toilet facilities visibly clean?		
Yes, very visibly clean	0	0
Somehow visibly clean	4	28.6
Not visibly clean at all	10	71.4
Total	14	100
Up-to-date records of toilet cleaning visible and signed by the cleaners		
Yes, signed by the cleaners	3	21.4
No signatures or outdated records	11	78.6
Total	14	100
Signs of open defecation observed		
Yes	5	35.7
No	9	64.3
Total	14	100
Excreta management for filled soak away		
Evacuate by sewage disposal managers	12	85.7
Abandoned filled pits to dig a new one	2	14.3
Total		100

The functionality and sanitary state of toilets PHCs in Owerri west

Evidence on ground and report from the respondent showed that 21.4% of the toilet facilities were not in use. Only 28.6% of the toilet facilities were clean, while 71.4% were not clean. There was evidence of open defecation practice in 5(35.7%) of the Primary Health Centres studied. Twelve (85.7%) evacuate their filled-up soaker-away while 14.3% abandoned filled pits and dug a new one (Table 3).

Disposal methods of soiled diapers

As shown in Table 4, 92.8% of health centers reported that nursing mothers took home their baby’s soiled diapers while 7.2% of the respondents reported that mothers disposed in waste bin.

Disposal bin for soiled diapers were available at 12 (85.7%) of the PHCs while others didn’t provide.

Availability of hand washing and anal cleansing facilities

Result in Table 5 indicates that four (4) PHCs (28.6%) had functional hand washing facilities, 28.6% had no functional hand washing facility while 48.9% had no hand washing facility. Nine (42.9%) of the PHCs showed evidence that their hand washing facility were in use. 35.70 of the PHCs had complete materials (tissue, water and soap) for anal cleansing while 64.30% had only water. Four (35.70%) had water running from tap for hand washing after making use of the toilet.

Table 4. Methods of disposal of soiled diapers by nursing mothers

Disposal methods	Frequency	Percentage (%)
Take home soiled diapers	13	92.8
Disposal in waste bin at the health centre	1	7.2
Total	14	100
Availability separate disposable bin		
Yes	12	85.7
No	2	14.3
Total	14	100

Table 5. Availability of hand-washing and anal cleansing materials in the toilets

Materials	Frequency	Percentage (%)
Availability of hand washing materials in the PHCs		
Yes, hand washing materials were available and functional	4	28.6
Yes, hand washing materials were available but not functional	4	28.6
No, hand washing materials were not available	6	42.8
Total	14	100
Availability of anal cleansing materials		
Tissue, water and soap	5	35.7
Only water	9	64.3
Total	14	100
Source of water for hand washing		
Water running from tap	5	35.7
Water stored in big plastic rubber	9	64.3
Total	14	100

Discussion

Provision of adequate potable water and safe management of human excreta is paramount for effective control and prevention of faecal-oral disease transmission (WHO, 2017). The result of the assessment of water availability and excreta sanitation in Primary Health Centers in Owerri West L.G.A. Imo State showed that majority of the PHCs provided water for its use. An interaction with the

respondents in the Primary Health Care Centers assessed indicated that 35.7% of PHCs had adequate quantity of water all year round. According to WHO (2002) all the PHCs should have 24hours water supply to promote hygiene and sanitation and prevent disease.

About 64.3% of the PHCs reported to have had experienced insufficient water supply all year round.

About (71.4%) of PHCs had water as at the time of the study. Inadequate water supply is a setback in achieving Sustainable Development Goal five in Africa. To protect health workers and patients, and promote the delivery of quality health care services, adequate potable water must be made available and accessible in Health facilities all year round. According to Aregbeshola and Khanm (2017), inadequate WASH facilities have the capacity to hinder the effectiveness of healthcare services. Water inadequacy in healthcare settings can jeopardize the health and safety of patients and their families, staff and surrounding communities (Kapwata *et al.*, 2018; John-Dewole, 2012).

Investigations into availability, accessibility, functionality and sanitary state revealed that all the Health facility assessed had one toilet and/or latrine for staff and one toilet facility for patients.

The most available type of toilet facility was the cistern toilet (78.6%), the study identified that toilet facilities were not in-use in three (3) of the Health facilities due poor maintenance culture, inadequate water supply and poor funding as reported by the people in-charge. This implied that the staff and patients may have resorted to the practice of open defecation, which was also observed within the facility by the researcher. This practice has been strongly associated with the high prevalence of diarrheal diseases in developing countries (Amawulu *et al.*, 2020; Mara, 2017), and this supports this observation of evidence of open defecation by the researcher during the visit. Inadequate or lack of functional toilet facilities for proper excreta management reported in some of the Primary Health Care has its health implications on the spread of infectious diseases such as typhoid and paratyphoid fever, dysenteries, diarrhea diseases, cholera, hookworm, ascariasis, viral hepatitis, schistosomiasis, and a host of other intestinal and parasitic infections (WHO, 2022; Mosisa *et al.*, 2021; Ugboko *et al.*, 2020). This result of this study aligns with previous studied conducted in many part of Nigeria, which according to UNICEF (2020), reported that the state of WASH facilities in

many PHCs in Nigeria was as poor. The researcher reported 28.6% their toilet sited more than 30 meters away from the point of care, which in contrary to known standards for easy proximity (WHO, 2002). An observational check by the researcher revealed that majority (78.6%) of the toilets were not visibly clean, (this was defined by presence of flies, strong odor, broken toilet seater with dirty water). Only three (21.4%) Health Centres had up-to-date records of toilet cleaning duly signed by the cleaners. This ugly situation can affect access to PHCs because of its likelihood to serve as a vehicle for disease transmission (Akoteyon, 2019; Gbadegesin and Olorunfemi, 2009), and affect patience's confidence (WHO and UNICEF, 2020).

Furthermore, it was observed that about 92.8% of the Primary Health Care Centre reported that nursing mothers took home their babies' soiled diapers homes. There may be a cultural inclination to this practice as observed by (Shirel *et al.*, 2020). This practice is unhygienic and unacceptable because of associated health and social implications. Improper disposal of soiled have been reported as source of environmental contamination (Maluni, 2020; Pynthamil and Amarnath, 2011). Diapers soiled with urine and feces can contain harmful bacteria and pathogens, packaging soiled diapers home, increase the risk of cross-contamination and the spread of infections such as cholera, typhoid crytosporidiosis, ascariasis (Kimani *et al.*, 2015).

It is worthy to know that the result of the investigation indicated that few Health Centres (28.6%) had complete anal cleansing materials (tissue, running water and soap). Provision of complete and adequate anal cleansing materials will not only promote anal hygiene but break the chain of disease transmission through oral-fecal means. According to Igwe *et al.* (2020) and McMahan *et al.* (2011) inadequate materials can lead to inappropriate anal cleansing practices which can lead to fecal hand contamination, thereby undermining the goal of proper hand washing practice. Herbest *et al.* (2019) in a study reported that pupils were could not relieve

themselves in schools due absence of anal cleansing materials.

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