



Water, Sanitation and hygiene services (Wash) in healthcare facilities in a Nigerian coastal settlement of Oron: A preliminary survey

John O Esin

Ph.D, Department of Hydrology and Water Resources Management, Maritime Academy of Nigeria, Oron, Akwa Ibom State, Nigeria

Abstract

In spite of the overwhelming importance of WASH in healthcare delivery services, there is observed gap on the availability of adequate data set on the water, sanitation and hygiene practices in healthcare facilities in developing countries like the coastal settlement of Oron in Akwa Ibom State, Nigeria. Water, sanitation and hygiene in healthcare facilities are prerequisites for providing good and quality health care services. The deficiency of these services in healthcare delivery facilities has attendants' consequences on the health status of vulnerable populations. Aside the prevention of infectious disease, the existence of WASH services in healthcare facilities also helps in protecting health personnel, patients and preserves the dignity of exposed populations. Through the use of pilot study and reconnaissance survey of all the eight public health facilities in the coastal settlement, the water, sanitation and hygiene services in the healthcare facilities and their level of compliance with WHO standards were assessed while a laboratory analysis of the microbial properties of the water samples in the health facilities were carried out. The study revealed that 80percent of the medical wastes in the health facilities were disposed of through open-incineration while majority (95percent) of the health facilities do not have access to safe drinking water and improved toilet facilities. It was concluded that the WASH services provided in the coastal settlement do not comply with the global standards set by the WHO and, could be said to be incompatible to the health needs of vulnerable populations. The presence of opportunistic bacteria such as *Escherichia Coli* (E.coli) and total coliform count in most of the water samples further confirms the water sources in the health facilities as grossly unhygienic. The study recommends a large scale study covering the entire State to be carried out as this could give a better picture of WASH situation and the extent of government commitment in meeting the health needs of the state.

Keywords: hygiene services, escherichia coli

Introduction

Healthcare facilities are identified by the World Health Organization as environments with a high incidence of infectious agents where patients, staff, caregivers and neighbours' of healthcare facilities are exposed to unacceptable risks of infection if the environmental health is inadequate (Adams *et al.*, 2008) ^[2]. Studies (Allegranzi, *et al.*, 2013; Raka and Mulliqi-Osmani, 2012) ^[12] have shown that on average, healthcare associated infection affects at least 7% of hospitalized patients in developed countries and about 15% of people in developing countries, while hospitals are known as the main facilities for the risk of infection during delivery. This calls for a serious concern. In spite of the fact that adequate water, sanitation and hygiene (WASH) are indispensable components of providing basic health services, many health care facilities in developing countries such as Nigeria still lack basic WASH services, which impede the ability to provide safe healthcare services, which poses serious health risks to those seeking treatment. This observation is applicable to the health situation in the coastal settlement of Oron. Acceptable WASH services are critical for the delivery of basic health care. A 2015 World Health Organization (WHO) survey of health care facilities in developing countries found that 38% lack a clean water supply, 19% do not provide improved sanitation while 35% do not have soap for hand washing. Among facilities that have a water supply, about half of the cases studied have

unsafe water source and in some cases, the water source was not consistently available (WHO, 2015) ^[24].

Lack of adequate access to water, sanitation, and hygiene (WASH) services in health care facilities has far-reaching implications to human health and well-being. It is observed that:

1. Globally, primary health care facilities have significantly lower WASH coverage than hospitals, thwarting their ability to deliver the first point of care, respond to outbreaks, and serve the most vulnerable (WHO, 2015) ^[24].
2. Health-care associated infections affect hundreds of millions of patients every year, with 15% of patients estimated to develop one or more infections during a hospital stay (Allegranzi *et al.*, 2011) ^[4] increasing bed days, contributing to antimicrobial resistance, and affecting staff health and productivity.
3. Access to quality health care may be prevented by a lack of water, sanitation, and hygiene (WASH) in facilities. For example, some women in labour are dissuaded from accessing care in facilities that require them to bring their own water for delivery, preventing birth attendance by skilled practitioners (WaterAid, 2016).

WASH services provide for water availability and quality, presence of sanitation facilities, and availability of soap and water for hand washing (WHO, WHO/UNICEF, 2015) ^[24].

A joint WHO/UNICEF report shows that globally, provision of WASH services in health care facilities is low, and the current levels of service are far less than the required 100% coverage by 2030. The report also notes that large disparities in WASH services in health care facilities exist between and within countries (WHO/UNICEF, 2015) [24]. Provision of water is lowest in the African Region, with 42% of all health care facilities lacking an improved source on-site or nearby. However, provision of sanitation services was much better with only 16% of all health care facilities in the African Region lacking access to improved sanitation (WHO/UNICEF, 2015) [24]. It has also been reported that large variations have been observed at subnational level, by settings and by type of health care facility within the same country, with smaller facilities often low and health care providers often transmit infection. As a result, health care facilities area are source of infection and patients seeking treatment fall ill, and potentially die for the lack of basic elements of a safe and clean environment (Cronk and Bartram, 2018) [5]. Further, poor water and sanitation infrastructures and hygiene practices at health care facilities affect health care seeking behavior among catchment communities due to the fear of contracting infections (Mensah, Montgomery and Baller, 2017) [10].

The effects of poor WASH services in health care facilities are profuse. Health care related infections affect hundreds of millions of patients every year, with 15% of patients estimated to develop one or more infections during a hospital stay (Allegranzi *et al.*, 2011) [4]. The weight of infections is especially high in new-borns. Sepsis and other severe infections are major killers projected to cause 430,000 deaths annually. The risks associated with sepsis are known to be 34 times greater in low income settings (Oza *et al.*, 2015) [11]. Inadequate access to water and sanitation in health care facilities may discourage women from giving birth in these facilities or cause delays in care-seeking (Velleman *et al.*, 2014) [16]. Conversely, improving WASH conditions can help establish trust in health services and encourage mothers to seek pre-natal care and deliver in facilities rather than at home - important elements of the strategy to reduce maternal mortality (Russo *et al.*, 2012) [13].

Arising from the overwhelming importance of WASH in health care facilities, a proposed target of universal basic coverage of WASH in health care facilities by 2030 has been recommended for inclusion in post-2015 UN Sustainable Development Goals (WHO/UNICEF, 2014a) [19]. Global health initiatives such as 'Every Woman Every Child', the integrated 'Global Action Plan against Pneumonia and Diarrhoea', and quality of care during childbirth highlight the importance of basic, universal WASH services in health care facilities (WHO/UNICEF, 2012; WHO, 2014) [20, 24]. Additionally, the Director General of the World Health Organization (WHO) has professed that improving WASH in health care facilities is an urgent priority (WHO, 2013) [21]. The large number of actors and funds committed to universal health coverage provides an opportunity to highlight the crucial role of WASH in achieving this aim (Action for Global Health and WaterAid, 2014) [1]. This informed why WASH in health care facilities has begun to attract the attention of governments, donors and the international public health community in recent time. In spite of the aforementioned advancements, reports by the 2014 UN-Water Global

Analysis and Assessment of Sanitation and Drinking-water (GLAAS) revealed that only one quarter of countries have policies on WASH in health care facilities that are implemented with funding and regular review (WHO, 2014) [24].

Despite being one of the crucial rudiments in the sustainability of human health status, the provision of WASH in health care facilities remains a critical challenge in the health care services of Oron, a coastal settlement in Akwa Ibom State, Nigeria. A major challenge to effective health care service delivery in the coastal settlement is how to make WASH services adequate and sustainable. It has been observed that the phenomenal increase in population in the coastal settlement and the spontaneous increase in the local and foreign traders in the settlement have thus far led to acute shortage of sustainable healthcare facilities with attendants' health challenges. Given that the JMP Post-2015 Working Group proposes that by 2030 all health centres provide all users with basic drinking water supply, adequate sanitation facilities, and hand washing and menstrual hygiene facilities (JMPWHO/UNICEF); and also given the WHO suggestions that it is important to first understand the extent of the problem and afterwards prioritize action where needs are greatest (WHO/UNICEF, 2015) [24], this study is designed to achieve this objective. Specifically, the study assesses the availability of WASH services at government-owned health facilities in the coastal settlement. Understanding the available WASH services in the health facilities will clearly unravel how the health facilities fare in the provision of these services and also exposed the extent of Government will and commitment in meeting the health needs of the teeming population of the coastal environment. This would help to highlight the inadequacy of policy prescription emanating from deductive reasoning in terms of WASH provision and the outcome of these as it affects the health status of the rural population, asides contributing to decision-making processes for the implementation of WASH standards at health facilities in the study area in particular and Nigeria in general.

Literature review/Conceptual clarification

Literature on water, sanitation and hygiene services (WASH) in healthcare facilities abound. These include Edgar, *et al.* (2018) [6]; Cronk and Bartram, (2018) [5]; WHO, (2015) [24]; WHO/UNICEF, (2014a) [19]; WHO/UNICEF, (2012) [20]; WHO, (2014) [24]; Mensah, Montgomery and Baller, (2017) [10]; WaterAid, (2016); Action for Global Health and WaterAid, (2014); UNICEF, (2016); UN- Water, GLAAS Report, (2014) [19]; Ngure, Reid, Humphrey, (2014); World Bank, (2008) [26]; Hutton and Chase, (2016); and Allegranzi, *et al.* (2011) [4] among others. These studies are very germane in understanding different methods that may be used in assessing WASH services in healthcare facilities. Central to the methodologies employed by these studies is the used of reconnaissance and pilot survey on several WASH variables among which include:

i) Water Supply- The presence of an improved water source or water supply within the facility (in building or compound) used for drinking, personal hygiene, medical activities, cleaning, laundry, and cooking. The functionality (water was available from this source at the time of the survey), mean distance to sources from inpatient ward, and mean queuing time were also assessed, and alternative options for water storage and the availability of water point

maintenance plans were also assessed. The assessment of all these indicators was made through observation.

ii) Sanitation- a system to handle human excreta from the time it is generated until it is safely disposed of, in addition to toilets or latrines, health facilities need a place to dispose of collected excreta, vomit, and blood and a cleaning area. In healthcare facility, sanitation indicator is examined by observing the presence or otherwise of latrines or toilets within the facility, distance from outpatient departments and inpatient wards, toilet to patient ratio, cleanliness, availability of cleaning materials, availability of separate toilets for males, females, and disabled, capability to close and lock, availability of lighting at night, and extent of filling for pit latrines through observation. The mechanism of emptying the toilets was established through an interview with the facility managers.

iii) Hygiene- Every health care facility needs a place to bathe, as well as convenient hand-washing stations to reduce infection, the spread of disease, and antimicrobial resistance. The availability of hand washing facilities either with soap or alcohol-based rubs at the toilets and within the facility buildings was assessed through observation.

The 2014 UN-Water Global Analysis and Assessment of Sanitation and Drinking-water (GLAAS) report coordinated by WHO, showed that in the 88 countries which responded to the question on national policies on WASH in health care facilities, only a quarter had a plan for sanitation in health care facilities that is implemented with funding and regular review (WHO, 2014) [24]. The proportion of countries with plans for drinking-water and hygiene are even less. Similarly, targets for basic coverage of WASH in health care facilities are lacking. Over half (52%) of the countries (n=94) responding to this question in GLAAS do not have targets for hygiene in facilities and over a third of countries do not have targets for sanitation (35%) or water (44%). Together, these figures indicate that policy development and planning is inadequate for WASH in health care facilities. Interestingly, the proportion of countries with national policies varied for drinking-water, sanitation and hygiene, indicating fragmentation of elements that should be planned for and delivered as a package.

Globally, provision of WASH services in health care facilities is low, and the current levels of service are far less than the required 100% coverage. WHO (2015) [24] study from the 54 countries shows that 38% of health care facilities do not provide users access to an improved water source, 19% do not provide improved sanitation, and 35% do not have soap for hand washing. Provision of water was lowest in the African Region, with 42% of all health care facilities lacking an improved source on-site or nearby. In comparison, provision of sanitation is lowest in the Americas, with 43% of health care facilities lacking such services. Further analyses were conducted on a subset of available datasets to explore disparities in provision of WASH in health care facilities within countries. Large variations were observed at sub-national level, by settings and by type of health care facility within the same country, with smaller facilities in rural areas having disproportionately fewer WASH services compared to larger facilities (e.g. hospitals) in urban areas.

For example, in Sierra Leone, access to water was higher in hospitals (87%) than in primary health care facilities (61%). Similar findings were observed in Kenya where 58% of hospitals had access to water compared to 35% in primary

health care clinics. This indicates a trend that larger facilities are more likely to have WASH services commensurate with their needs compared to smaller facilities. It is often the smaller, lesser serviced health care facilities which offer care to the most impoverished and vulnerable populations (WHO, 2008) [26].

Similar observations were made at sub-national level. In Kenya, for example, national level coverage of water in health care facilities was 46%, but analysis by province revealed important differences ranging from coverage of 75% (Central province) to 22% (Nyanza Province). In Ethiopia, while 99% of health care facilities in the capital city of Addis Ababa provided access to water, only 23% of health care facilities in the Gambela region did (Ethiopian Ministry of Water and Energy, 2012) [7].

Even within facilities disparities exist. A study in Tanzania using SPA data found that 44% of facilities conducting deliveries had basic WASH services. However, only 24% of those facilities had WASH services in the delivery room (Benova *et al.*, 2014) [16]. Therefore, greater efforts are needed in characterizing and correcting disparities to ensure that individuals, regardless of gender, economic status or geographic origin obtain quality care.

The 2014 UN Water Global Analysis and Assessment of Sanitation and Drinking water (GLAAS) report co-ordinated by WHO, showed that in the 88 countries which responded to the questions on the National policies on WASH in health care facilities, only a quarter had a plan for sanitation in health care facilities that is implemented with funding and regular review (WHO, 2014) [24]. The proportion of countries with plans for drinking- water and hygiene are even less. Similarly, targets for basic coverage of WASH in health care facilities are lacking. Over half (52%) of the countries do not have targets for hygiene in facilities and over a third of countries do not have targets for sanitation (35%) or water (44%). Together, this figure indicates that policy development and planning is inadequate for WASH in health care facilities. Interestingly, the proportion of countries with National policies varied for drinking water-sanitation and hygiene indicating fragmentation of elements that should be planned for and delivered as package.

The study area.

The study was carried out in Oron Local Government Area of Akwa Ibom State. The Local Government Area is located at appropriately between latitudes 4°46'-4°52' North and Longitudes 8°12'-8°18' East with a landmass of about 309.27km². Oron LGA is a coastal settlement that is located at the right bank estuary of the Cross River close to the Atlantic Ocean. It is both a river port with a ferry or packet station, linking Calabar and other rivers and coastal ports in the region and the Cameroun and Equatorial Guinea outside Nigeria. It also forms a terminus for roads linking important towns in the mainland – Uyo, Eket and Ikot Abasi. Oron LGA is bounded by Okobo LGA in the North West by Uruoeffong/Oruko Mbo and Udung Uko LGA in the South and South-West respectively. To the East and the South-East, it is bounded by the Cross River, close to the Atlantic Ocean. The LGA is situated in the coastal areas of Akwa Ibom State with gentle rolling coastal plain sands typified by sedimentary basin formation of largely unconsolidated deposits. Rainfall is heavy and last about 10 months in the year. The LGA has two different seasons, namely; wet and dry seasons. The wet seasons last for about 10 – 11 months.

The wet seasons start about February – March and last till mid – November. The raining seasons are also characterized by the little dry spell, which occurs about two weeks in August. The rate of development in the LGA is indeed very tremendous. Own LGA is made up of four clans with 17 gazetted villages. The economy of the LGA is predominantly dominated by farming and fishing. Although the inhabitants are also engaged in petty trading and production, farming and fishing still remain the most important and primary occupation of the people as other activities are carried out on part time basis.

For purposes of this report, health care facilities include hospitals, health centres and clinics, which are generally places where people receive health care from a trained professional. They include public, private and not-for-profit facilities (WHO, 2008) [26]. There is a large range in the size of health care facilities in terms of the services offered and provision of water and sanitation both in facilities and within specific treatment areas (e.g. delivery rooms).

With respect to health care services in Akwa Ibom State, where the study area is situated, the state runs a three (3-tier) level of health care delivery. These are the primary, secondary and tertiary. Of these three, the Primary Health Care (PHC) is the most spatially spread since it involves the majority grass-root population (Inyang, 2010) [8]. Primary health care services are provided at Health Centres, Primary Health Centres, Comprehensive Health Centres, Health Posts and Clinics; Secondary Health Care Services are provided in General and Cottage Hospitals while the Teaching Hospital provides tertiary healthcare services. Within this ranked arrangement, higher-order centres are designed to receive referrals from the lower-order centres. On specific health indicators for the state as at 1999, Inyang (2010) [8] reported that the crude death rate was 12 per 1000 population and infant mortality rate was 67 per 1000 live births. Mortality rate for less than 5 years was 30 per 1000 population; maternal mortality rate was 800 per 100,000 births and the level of maternal malnutrition was 7%. Life expectancy at birth was 54 years and HIV prevalence rate stood at 8% while access to safe water was 23%. As at December 2014, Akwa Ibom State had four hundred and Three Primary Health facilities, which are spread across the thirty-one Local Government Areas with only nine located in the coastal settlement of Oron. In the case of the secondary health facilities, Akwa Ibom State had forty secondary health facilities which include general hospitals and cottage hospitals. Two tertiary health facilities are also located in the State. These are the University of Uyo Teaching Hospital and the 21st Millennium Specialist Hospital. The State also boasts of a number of private secondary health facilities which are one hundred and fourteen in number (AKMOH, 2014) [3].

Instruments, variables, and analysis

A reconnaissance survey of all the healthcare facilities available in the coastal settlement was carried out in order to undertake the physical inventory of the facilities therein, while non-functional public healthcare centres were excluded. The study covered the nine (8) public healthcare facilities in the coastal settlement (7 Public health centres and a General Hospital). A survey using a questionnaire and a monitoring sheet addressed to the managers of each healthcare facility were carried out. To assess the availability of WASH services in each facility, a

standardized observation checklist dealing with availability, technology, and condition was filled out during the reconnaissance visit to ascertain the types of water supply and sanitation used by the health care facilities. Similar approach was employed by Edgar, et.al (2018) [6]. The managers of the health care facilities were interviewed in order to assess the reliability of the water supply and other factors affecting the state and use of the WASH services, such as duration the WASH facilities had been in place, while some samples of water were collected in the health facilities to ascertain the elemental and microbiological properties of the water samples and compare same with established standards. Simple descriptive statistics were used to analyse data.

The interpretation of the results thus obtained is made by comparison with international standards for WASH in healthcare facilities. Record reviews were undertaken to collect supplementary information on health facility patient load. The availability of WASH services was assessed based on an adaption of indicators used in a report by the WHO on WASH in health care facilities. The services were defined as follows:

(i) Water: The presence of an improved water source or water supply within the facility (in building or compound) used for drinking, personal hygiene, medical activities, cleaning, laundry, and cooking. The functionality (water was available from this source at the time of the survey), mean distance to sources from inpatient ward, and mean queuing time were also assessed, and alternative options for water storage and the availability of water point maintenance plans were also assessed. The assessment of all these indicators was made through observation.

(ii) Sanitation: The presence of latrines or toilets within the facility, distance from outpatient departments and inpatient wards, toilet to patient ratio, cleanliness, availability of cleaning materials, availability of separate toilets for males, females, and disabled, capability to close and lock, availability of lighting at night, and extent of filling for pit latrines through observation. The mechanism of emptying the toilets was established through an interview with the facility managers.

(iii) Hygiene: The availability of hand washing facilities with soap or alcohol-based rubs at the toilets and within the facility buildings was assessed through observation.

Water and sanitation service availability was categorized as improved and unimproved, and findings were reported on selected indicators for monitoring WASH in health care facilities. These included whether the main point of water was an improved source, water point was located on premises, there were improved toilets, toilets were located on premises, and hand hygiene stations were present and located within 5 meters of toilet. The study also evaluated the association between the presence of WASH risk assessment and maintenance plans and WASH service availability, capability to close toilets and the cleanliness of toilets, availability of toilet lighting and cleanliness of toilets, among others.

Results and discussion

Types of water source

The present study covered the only 8 public healthcare institutions in the coastal settlement, of which 7 are primary health centres and a general hospital. The majority of the health care facilities (predominantly 5 PHCs) do not have

water supply sources as they are located at primary schools. The water supply for these PHCs is obtained from the neighbourhood boreholes or compounds. However, a small proportion of the health centres had improved water sources as the main water points (The General Hospital and one

PHC). While the mean number of years since the main water points was constructed, acquired, or connected for the PHC (Market Square) with water supply was 6, that of the General Hospital was 18.

Table 1: Level of facility by mean number of staff, outpatients and inpatients per day

Facility type	Mean number of staff	Mean Number of outpatient/day	Mean number of inpatient/day
General Hospital, Iquita	184	201	133
Primary Health Centre Esin Ufot	12	26	-
Health Post Eyetong located at Primary School Eyetong	6	22	-
Primary Health Centre Idua Afaha Eduok	8	18	-
Primary Health Centre Idua Assang located at St Andrew Primary School, Idua Assang	6	20	-
Primary Health Centre Uya Oro located at Primary School Uya Oro	6	15	-
Primary Health Centre Eyoabasi located at Primary School Eyoabasi	5	17	-
Primary Health Centre Market Square	20	52	-
Source: Field Work (2022)			

Table 2: Level of facility by type of water point and presence of option for water storage

Facility type	Availability of water points	Functionality of water point	Alternative Option for water storage
General Hospital, Iquita	Available	Functional	Not available
Primary Health Centre Esin Ufot	Available	Functional	Option available
Health Post Eyetong located at Primary School Eyetong	Not available	Not available	Option available
Primary Health Centre Idua Afaha Eduok	Not available	Not available	Option available
Primary Health Centre Idua Assang located at St Andrew Primary School, Idua Assang	Not available	Not available	Option available
Primary Health Centre Uya Oro located at Primary School Uya Oro	Not available	Not available	Option available
Primary Health Centre Eyoabasi located at Primary School Eyoabasi	Not available	Not available	Option available
Primary Health Centre Market Square	Available	Functional	Option available

Source: Fieldwork (2022)

Access to water points

Two main modes of water supply have been identified in the healthcare facilities with respect to water supply in the study area. A number of them are connected to the public drinking water supply system provided by the Akwa Ibom State Rural Water Company (AKWRUWASAN). While some of the health care facilities do have boreholes, others simultaneously combine the two types of water supply system. Of the 4 health care facilities (3 PHCs and a General Hospital) that have water points, all of them had the main water source located on their premises (in the buildings that housed the health facility). All the water points in most of the health care facilities were functional

except in those without water facilities. Overall, though most of the health care facilities (the 5 PHCs) do not have water supply source, they do have alternative options for water storage at the water point when water is not available. The mean distance from the inpatient wards to main water points at the health facilities varied from 2-5 meters for the PHCs. The mean distance was longest (about 20 meters) at the General hospital while the mean time taken to fill a 20-liter water container varied from 5 to 8 minutes with a mean queuing time of 15-20 minutes at the water points.

Quality of the water supply in the healthcare facilities

Table 3: Microbiology Properties of the different Sources of water Samples in the Health facility

S/N	Location	Bacteria Isolated	Bacteria Load Bac/Gram	WHO/EC Standard
1	General Hospital Iquita	Bacillus Spp	0.45x10 ³	Nil
		Proteus Spp	0.25 x 10 ³	Nil
		Escherichia spp	0.10 x 10 ²	Nil
		Coliforms	0.5 x 10 ⁵	Nil
2	PHC Esin Ufot	Staphylococcus spp	0.2 x 10 ⁴	Nil
		Bacillus spp	0.1 x 10 ³	Nil
		Coliforms	0.4 x 10 ³	Nil
3	PHC Idua Afaha Eduok	Bacillus spp	0.45x10 ³	Nil
		Proteus spp	0.25 x 10 ³	Nil
		Escherichia coli	0.10 x 10 ²	Nil
		Coliforms	0.5 x 10 ⁵	Nil
4	PHC Idua Assang	Pseudomonas spp	0.10 x 10 ³	Nil
		Serratia spp	0.20 x 10 ⁴	Nil
		Bacillus spp	0.42 x 10 ²	Nil
5	PHC Uya Oro	Proteus spp	0.25 x 10 ²	Nil

		Escherichia spp	0.10 x 10 ⁴	Nil
		Coliforms	0.15 x 10 ⁵	Nil
6	PHC Eyo-Abasi	Aeromonas spp	0.1 x 10 ³	Nil
		Micrococcus spp	0.15 x 10 ⁴	Nil
		Coliforms spp	0.20 x 10 ²	Nil
		BacillusSpp	0.10 x 10 ⁴	Nil
		Proteus spp	0.24 x 10 ³	Nil
7	PHC Murtala	Escherichia spp	0.25 x 10 ²	Nil
		Coliforms	0.10 x 10 ⁴	Nil
		Aeromonas spp	0.15 x 10 ⁵	Nil
		Bacillus spp	0.45x10 ³	Nil
8	PHC Eyetong	Proteus spp	0.25 x 10 ⁴	Nil
		Escherichia coli	0.10 x 10 ²	Nil
		Coliforms	0.5 x 10 ⁵	Nil

Source: Laboratory Analysis of Water Samples from the Health Facilities (2022)

Table 1.4.3 shows the presence of opportunistic bacteria in all the water samples in the health facilities. The presence of opportunistic bacteria such as Escherichia Coli (E.coli) and total coliform count in most of the water samples confirms the water sources in the health facilities as polluted and grossly unhygienic.

Maintenance of water sources

Majority of the health care facilities with water supply points reported not having funds for maintaining the water services in the health facilities. All the facilities with no funds for maintaining water services were mostly the primary health care facilities. All the Primary Health care facilities in the study area were reported not having a WASH risk assessment and maintenance plan for their water services with the exception of the General hospital.

Sanitation

Every health care facility needs a system to handle human excreta, from the time it is generated until it is disposed of safely. All waste generated in a health facility is potentially infectious and needs to be made inaccessible or non-infectious. In addition to toilets or latrines, health facilities need a place to dispose of collected excreta, vomit,

blood and a cleaning area. Also, when a sufficient quantity of water is provided to health facilities, the resulting wastewater can be a challenge; even if wastewater systems exist, they may not be sized to handle the additional wastewater.

Improved toilets were not available in majority (5) of the health care facilities visited. Specifically, most (5) of the primary health centres do not have toilet facilities (Tables 3 and 4). The patients utilizing these health facilities are left with the option of either defecating in the unhygienic toilet facilities provided in the respective primary schools where the PHCs are situated, or nearby bush/ neighbourhood. The mean numbers of years since the major toilet facilities (for the 3 PHCs and General hospital with toilets) was constructed varied from 8 to 15 years for the different health facility. The General hospital toilet facilities were the newest with a mean of over 8years, as it is intermittently renovated by the government of Akwa Ibom State to reflect modern reality. The number of toilets available at the health care facilities visited varied from 1 to 46. The Primary Health Centres (PHCs) had the poorest toilet to patient ratio (1 toilet for 63 patients) while the General Hospital had 1 toilet to 25 patients respectively.

Table 3: Level of facility by mean number of available toilets in relation to outpatient and inpatient ratio

Facility type	Type of faecal disposal facility	Mean Number of toilets	Mean daily OPD and Inpatient ratio
General hospital Iquita	Flush toilet	76	105
Primary Health Centre Esin Ufot	Flush toilet	1	-
Health Post Eyetong located at Primary School Eyetong	None	None	-
Primary Health Centre Idua Afaha Eduok	None	None	-
Primary Health Post, Idua Assang located at St Andrew Primary School, Idua Assang	None	None	-
Primary Health Post Uya Oro located at Primary School Uya Oro	None	None	-
Primary Health Post Eyoabasi located at Primary School Eyoabasi	None	None	-
Primary Health Centre Market Square	Flush toilet	3	-

Source: Fieldwork (2022)

Table 4: Level of facility by condition of the toilets and availability of Hygiene facilities

Sanitation-Hygiene Condition	General Hospital	PHC Esin Ufot	PHC Eyetong	PHC Afaha Eduok	PHC Idua Assang	PHC EyoAbasi	PHC Market Square	PHC Uya Oron
Toilet floor clean	Very clean	Clean	Not clean	Not clean	Not clean	Not clean	Clean	Clean
Intolerable odour	Not present	Present	Present	Present	Present	Not present	Present	Present
Availability of cleaning materials	Present	Present	Not present	Not present	Not present	Not present	Present	Present
Ability to close and lock toilets	Able	Able	Not able	Not able	Not able	Not able	Able	Not able
Presence of light in the toilets at night	Present	Not present	Not present	Not present	Not present	Not present	Present	Not present
Presence of hand washing facilities at	Present	Not	Not	Not present	Not present	Not present	Present	Not present

toilets		present	present					
Presence of both water and soap at hand washing facilities	Not present	Not present	Not present	Not present	Not present	Not present	Not present	Not present
Presence of hand washing poster	Presence	Not present	Not present	Not present	Not present	Not present	Not present	Not present
Presence of hand washing facilities at other points of health facility	Not at all points	Not present	Not present	Not present	Not present	Not present	Not present	Not present
Caregivers and patients taught proper way of hand washing	Yes	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all

Source: Fieldwork (2022)

Physical access to toilets

Most of the health care facilities with toilets had the toilets within the health facility buildings. The mean distance from the outpatient departments to the toilet facilities varied from 1 to 10 meters, while the mean distance from the inpatient wards in the case of the General Hospital to the toilet facilities varied from 1 to 4 meters. All the health care facilities with toilets had separate toilets for males and females but without separate toilets constructed to accommodate people with disabilities.

Sanitary conditions of toilets

All the health care facilities visited had the floor of the toilets clean (absence of litter, urine, or faecal matter). The biggest proportion of unclean toilets was found at the primary health centres, domiciled within the school premises. The majority of the health facilities do not have cleaning materials in the toilets. The frequency with which the toilets are cleaned at most of the health care facilities was once a day; this was done through the services of hired cleaners. All the toilet facilities in the health care understudy could be closed and locked use, this ensures convenience and privacy. Most of the health facilities with toilets did not have lighting around the toilets at night except the General Hospital that provides secondary services. There was absolutely no provision for mechanism to empty the toilets when full or alternative options provided under such conditions.

Hygiene.

Every health care facility needs a place to bathe, as well as convenient hand-washing stations to reduce infection, the spread of disease, and antimicrobial resistance. Equally important are programs to change behaviour and motivate hand washing by health workers at critical times, as well as by patients and their visitors. Most of the health facilities do not have hand washing facilities at the toilets. The lack of hand washing facilities was most prominent at the primary health centre toilets. Hand washing facilities were available at other points in most of the health care facilities. However, both water and soap were present at water points in the General hospital while the rest of the points had only water at the time of the survey.

Promotion of hygiene

It was revealed that only the General hospital had a hygiene promotion plan where healthcare professionals are trained in the use of methods to encourage a change in behaviour, while all the other healthcare facilities have at their disposal sufficient awareness materials on good hygiene practices. However, only the General hospital has a preventive unit for promoting hygiene practices to patients. In addition, it was further observed that in most of the healthcare facilities, no conscious attempts were made to enable patients identify

toilets by pictograms. This contradicts the provision by WASH on how to encourage correct, consistent and continued use of toilets or hygiene facilities in health establishment.

Waste management

The study identified three main types of waste disposal employed by the healthcare facilities in the coastal settlement. These are collection, combustion in the incinerator, and open burning. None of the health establishments uses the landfill method for disposal of their waste. Among the 8 healthcare institutions surveyed, 5 (mainly PHCs) do not have a waste management system and uses simple collection. It was observed that majority of the healthcare facilities (all the 7 PHCs) practice open-burning and incinerators as final method disposing their medical wastes. While the General Hospital uses a combination of two methods of medical wastes management- a combination of Burying and combustion in the incinerator.

Drainage and sewage systems

Four of the healthcare facilities (General Hospital and 3 PHCs) use septic tank as the main drainage system and wastewater evacuation excepting the 5 PHCs that are situated at primary schools without water supply points and hygienic toilet facilities with no drainage and sewage system. It was observed that one of the PHCs located at Market Square uses waste pit as drainage and sewage system. The combination of two types (septic tank and waste pit) is practiced by some of the healthcare facilities.

Vector control

The main methods of vector control use in the coastal settlement are fumigation, mosquito net, drainage, spraying and drying, drying, and dewatering. It was, however, revealed that all the healthcare facilities do not use mosquito net as means of vector-borne prevention in spite of its availability at their disposal, which they claimed was due to the completion of the long lasting house-to-house campaign on the use of mosquitoes net carried out by USAID supported by the Akwa Ibom State government.

Cholera treatment unit

The pilot survey revealed that all the healthcare facilities involved in this study do not have cholera treatment unit with support staff assigned to the cholera treatment unit except the General Hospital. This, they claimed was due to the complete eradication of cholera in the coastal settlement. It was concluded that the WASH services provided in the coastal settlement do not comply with the global standards set by the WHO and, could be said to be incompatible to the health needs of vulnerable populations.

Concluding remarks

The study reveals that virtually all the health facilities in the coastal settlement have not meet the WHO standards for the water and sanitation component. With respect to hygiene, it was observed that only the General Hospital that provides secondary health services have reliable water points with soap available in all treatment rooms. The poor state of WASH services in the healthcare facilities in the study area has obvious attendants' implications on the health status of the coastal households as it further revealed the extent of negligence of the health sector in the state in spite of the huge allocation given to the state from the federal government. Against the background of inadequate provision of WASH services in the healthcare facilities, the consequences of increased rate of healthcare associated infections which could affect the hundreds of patients utilizing the healthcare services are seriously feared.

In view of the current WASH status in the coastal settlement and the much go-getting SDGs monitoring indicators for WASH services, it will call for resolute efforts of all stakeholders to bridge the deficit gaps of WASH in the coastal settlement.

References

1. Action for Global Health and WaterAid. Making health a right for all: Universal health coverage and water, sanitation and hygiene, 2014. (<http://www.wateraid.org/uk/what-we-do/our-approach/research-and-publications/view-publication?id=63af2f8f-1a91-4b7a-b88de31175215f57>, accessed 9 February 2021).
2. Adams J. *et al.* Essential Environmental Health Standards in Health Care.; Available from, 2008. http://www.who.int/water_sanitation_health/hygiene/settings/ehs_health_care.pdf.
3. Akwa Ibom State Ministry of Health (AKMOH). List of Health Facilities as at, 2014.
4. Allegranzi B, Nejad SB, Combescure C, Graafmans W, Attar H, Donaldson L, *et al.* Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. *Lancet*, 2011;377:228-241.
5. Cronk R, Bartram J. Environmental conditions in health care facilities in low- and middle-income countries: coverage and inequalities," *International Journal of Hygiene and Environmental Health*, 2018, 221(409–422).
6. Edgar MM, Micheal M, Andrew Wesuta A, Bagenda F, Apecu R, Ntaro M. Water, Sanitation, and Hygiene Service Availability at Rural Health Care Facilities in Southwestern Uganda. *Journal of Environmental and Public Health*, 2018, 1(7).
7. Ethiopian Ministry of Water and Energy. National WASH Inventory Progress and M & E MIS Report, 2012.
8. Inyang IB. Healthcare Services in AkwaIbom State. A Geographical Perspective. Usoro, E. and Akpan, P (eds). Enugu: Immaculate Publishers, 2010, 272-280.
9. JMPWHO/UNICEF, Wash Targets and Indicators Post: Outcomes of an Expert Consultation, WHO/UNICEF, Geneva, Switzerland, 2015.
10. Mensah NA, Montgometry *et al.* Improving water, sanitation and hygiene in health-care facilities, Liberia; *Bull World Health Organization*, 2017;95:526–530.
11. Oza S, Lawn JE, Hogan DR, Mathers C, Cousens SN. Neonatal cause-of-death estimates for the early and late neonatal periods for 194 countries: 2000-2013. *Bulletin of the World Health Organization*, 2015;93:19-28.
12. Raka L, Mulliqi Osmani G. Infection Control in Developing World, *Infection Control - Updates*, Dr. Christopher Sudhakar (Ed.), ISBN: 978-953-51-0055-3, In Tech, Available from, 2012. <http://www.intechopen.com/books/infection-controlupdates/infection-control-in-developing-world>
13. Russo ET, Sheth A, Menom M, Wannemuehler K, Weinger M, Kudzala AC *et al.* Water treatment and handwashing behaviors among non-pregnant friends and relatives of participants in an antenatal hygiene promotion program in Malawi. *American Journal of Tropical Medicine and Hygiene*, 2012;86:860-865.
14. UN. General Comment 15. UN Committee on Economic, Social and Cultural Rights, 2002.
15. UN. General Assembly Resolution. The human right to water and sanitation, 2010.
16. Velleman Y, Mason E, Graham W, Benova L, Chopra M, Campbell OMR *et al.* From joint thinking to joint action: A call to action on improving water, sanitation, and hygiene for maternal and newborn Health. *PLoS Medicine*, 2014;11(12):e1001771. http://www.plosmedicine.org/publications/2012/water_supplies/en/index.html, accessed February 9 2015).
17. WHO. Director General Speech. Opening, Budapest World Water Summit. Budapest, Hungary, 2013. (http://www.who.int/dg/speeches/2013/water_sanitation_opening/en/, accessed 11 February 2015)
18. WHO. Preventing Diarrhoea through Better Water, Sanitation and Hygiene: Exposures and Impacts in low- and Middle Income Countries, WHO, Geneva, Switzerland, 2014.
19. WHO. UN-Water global analysis and assessment of sanitation and drinking-water (GLAAS) 2014 report. Investing in water and sanitation: increasing access, reducing in inequalities. Geneva: World Health Organization, 2014a.
20. WHO/UNICEF. Report of the second consultation on Post-2015 monitoring of drinking-water, sanitation and hygiene. The Hague, 2012, 3-5. (http://www.wssinfo.org/fileadmin/user_upload/resources/WHO_UNICEF_JMP_Hague_Consultation_Dec2013.pdf, accessed February 9 2015).
21. WHO/UNICEF. End preventable deaths: Global action plan for prevention and control of pneumonia and diarrhoea (GAPPD). Geneva: World Health Organization, 2013. (http://apps.who.int/iris/bitstream/10665/79200/1/9789241505239_eng.pdf, accessed February 9 2015).
22. WHO/UNICEF. WASH Post-2015: proposed targets and indicators for drinking-water, sanitation and hygiene. Geneva: World Health Organization, 2014a. (http://www.wssinfo.org/fileadmin/user_upload/resources/post-2015-WASH-targets-factsheet-12pp.pdf, maccessed February 9 2015).
23. WHO/UNICEF. Progress on sanitation and drinking-water, 2014 update. Geneva: World Health Organization, 2014b.

24. WHO/UNICEF. Meeting the fundamental need for water, sanitation and hygiene services in health care facilities. Global meeting held in Madrid, 2014-2015. http://www.who.int/water_sanitation_health.
25. WHO, WHO/UNICEF Report. Water, Sanitation and Hygiene in Health Care Facilities: Status in Low- and Middle-Income Countries and Way Forward Question and Answer, WHO, Geneva, Switzerland, 2015. http://who.int/water_sanitation_health/publications/qa-wash-hcf.pdf.
26. WHO. Essential environmental health standards in health care. Geneva: World Health Organization, 2008. (http://whqlibdoc.who.int/publications/2008/9789241547239_eng.pdf, accessed 9 February 2020).
27. WHO. Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies. Geneva: World Health Organization, 2010. (<http://www.who.int/healthinfo/systems/monitoring/en/index.html>, accessed 9 February 2015).
28. WHO. Water safety planning for small community water supplies: step-by-step risk management guidance for drinking-water in small communities. Geneva: World Health Organization, 2012. (http://www.who.int/water_sanitation_health/