



# Assessment of Water, Sanitation, and Hygiene Status in Healthcare Facilities in an Urban District in Ghana

Solomon Anum Doku<sup>1</sup>, Richmond Bediako Nsiah<sup>1, \*</sup>, Saida Abdul Rahman Zakaria<sup>1</sup>, Regina Amoa TuTu<sup>3</sup>, Jerome Kaba Aperiba<sup>1</sup>, George Hector Amonoo<sup>2</sup>, Dominic Nyarko<sup>1</sup>, Paul Kofi Awuah<sup>1</sup>, Gifty Sefaah Owusu<sup>1</sup>, Lynna Naa Adede Obeng<sup>3</sup>, Gilbert Dagoe<sup>1</sup>, Agyapong Kwame Addai<sup>1</sup>, Sandra Frimpomaa<sup>1</sup>, Abigail Boahemaa Boateng<sup>4</sup>, Saviour Katamani<sup>5</sup>, Charles Sarkodie<sup>1</sup>, Mark Bonnir<sup>6</sup>

<sup>1</sup>Public Health Department, Ghana Health Service, Kumasi, Ghana

<sup>2</sup>Public Health Department, Ghana Health Service, Cape Coast, Ghana

<sup>3</sup>Clinical Department, Ghana Health Service, Kumasi, Ghana

<sup>4</sup>Public Health Department, Ghana Health Service, Sunyani, Ghana

<sup>5</sup>Public Health Department, Ghana Health Service, Koforidua, Ghana

<sup>6</sup>Community Health Nursing Training College, Wa, Ghana

## Email address:

sanumdoku@gmail.com (Solomon Anum Doku), richsurveysite2018@gmail.com (Richmond Bediako Nsiah),

junorhsada@gmail.com (Saida Abdul Rahman Zakaria), regallotey72@gmail.com (Regina Amoa TuTu),

jerosterk@gmail.com (Jerome Kaba Aperiba), georgeamonoo.ga@gmail.com (George Hector Amonoo),

nanabagio@gmail.com (Dominic Nyarko), awuahpaul01@gmail.co.com (Paul Kofi Awuah),

gifyowusu1986@gmail.com (Gifty Sefaah Owusu), lynnanaadadeobeng@gmail.com (Lynna Naa Adede Obeng),

dagoe Gilbert395@gmail.com (Gilbert Dagoe), addai4all@yahoo.com (Agyapong Kwame Addai),

frimpomaa.sandra70@gmail.com (Sandra Frimpomaa), bigail120@yahoo.com (Abigail Boahemaa Boateng),

savior.katamani@regent.edu.gh (Saviour Katamani), csark3@gmail.com (Charles Sarkodie), bonnirmark@gmail.com (Mark Bonnir)

\*Corresponding author

## To cite this article:

Solomon Anum Doku, Richmond Bediako Nsiah, Saida Abdul Rahman Zakaria, Regina Amoa TuTu, Jerome Kaba Aperiba, George Hector Amonoo, Dominic Nyarko, Paul Kofi Awuah, Gifty Sefaah Owusu, Lynna Naa Adede Obeng, Gilbert Dagoe, Agyapong Kwame Addai, Sandra Frimpomaa, Abigail Boahemaa Boateng, Saviour Katamani, Charles Sarkodie, Mark Bonnir. Assessment of Water, Sanitation, and Hygiene Status in Healthcare Facilities in an Urban District in Ghana. *Journal of Health and Environmental Research*. Vol. 8, No. 4, 2022, pp. 212-220. doi: 10.11648/j.jher.20220804.11

Received: September 30, 2022; Accepted: October 14, 2022; Published: October 28, 2022

**Abstract:** Water, Sanitation and Hygiene (WASH) implementation are paramount in reducing healthcare-associated infections through Infection Prevention and Control (IPC) practices in healthcare facilities. This study assessed the Water, Sanitation, and Hygiene status in selected urban healthcare facilities. This assessment employed onsite observations and structured interviews using pre-defined Water and Sanitation for Health Facility improvement tool (WASH FIT) indicators. Hand hygiene had the highest assessed indicators meeting the required standards (70%) followed by the Water domain with 64%. Facility environment, cleanliness and disinfection had about 62% of its indicators meeting standards. Only 20.8% of indicators assessed on healthcare waste met standards with about 38% failing to meet standards. Sanitation had 30% of its indicators meeting standards. The management domain had the least indicators meeting standards (4.5%) with over 50% of indicators not meeting the standards. There is an urgent need for the supply of sanitation and healthcare waste logistics to healthcare facilities assessed and a paradigm shift in the area of management focusing on orientations of other healthcare professionals on WASH. Furthermore, the delegation of WASH implementation activities to healthcare professionals is key to ensuring effective implementation. Water quality assessment should be prioritized in future studies.

**Keywords:** Water, Sanitation, Hygiene, Infection Prevention and Control, Public Health, WASH

## 1. Introduction

Globally, an estimated 842,000 diarrhoea diseases and deaths were attributed to inadequate Water, Sanitation and Hygiene (WASH) with about 43% of these menaces occurring among children under 5 years. Healthcare-associated infections (HCAIs) are a major challenge in low-income and middle-income countries (LMIC). Notably, most healthcare-associated infections (HAIs) are transmitted through the hands of healthcare workers through direct contact or environmental contamination. Therefore, hand washing remains the single most important preventive strategy [1] in reducing HAIs through Infection Prevention and Control (IPC) practices [2]. It is estimated that about 1.8 billion individuals are deficient in basic water services at their healthcare facilities with over 1 million having limited access. Furthermore, about 712 million healthcare providers have no water service at all at their facilities. A Global progress report on WASH in healthcare facilities by the World Health Organization estimated that about 37% of healthcare facilities in the Least Developed Countries (LDC) had improved sanitation facilities that are usable, with at least one toilet dedicated for staff, at least one sex-separated toilet with menstrual hygiene facilities, and at least one toilet accessible for people with limited mobility [3]. The lack of WASH infrastructure in health facilities increases the risk of healthcare-associated infections and lowers patient satisfaction with services leading to delays in care-seeking, hindering the provision of quality essential health services and the attainment of sustainable development goals. Despite the importance of WASH, an estimated 51% of health facilities across sub-Saharan Africa have basic water and sanitation services. Achieving universal access to WASH in healthcare facilities (HCFs) is key to achieving universal access to quality care. Effective WASH is also necessary to prevent and control the spread of coronavirus disease [4]. However, ensuring quality healthcare delivery in health facilities requires appropriate infrastructure and staff capacities to provide safe, effective, equitable and people-centred services. The availability and sustainability of Water, Sanitation and Hygiene (WASH) services support the resilience of healthcare systems and ensure the attainment of the Sustainable Development Goal (SDGs) 3 which is aimed at ensuring healthy lives, promoting well-being and SDG 6 which is aimed at safeguarding accessibility and sustainability of water and sanitation management. Furthermore, improving infection prevention and control (IPC) measures required the provision of safe water, functioning handwashing facilities, latrines and cleaning practices which are mainly significant for achieving quality health care [5]. The World Health Assembly in its quest to improve comprehensive efforts on WASH in Health Care Facilities passed a resolution in 2019 [6] which led to a

nationwide resolution with concrete commitments and actions to achieve the set objectives the resolution of which Ghana affirmed to revise and implement national WASH strategy, train national cohort on WASH IPC [7].

In Ashanti Region, the Ghana Health Service with support from the United Nations Children's Fund (UNICEF) is implementing Water, Sanitation and Hygiene (WASH) interventions in three selected municipalities namely Asokore Mampong, Kwadaso and Kumasi Metro [8]. This implementation followed a week-long training for the selected cadre to equip them with the requisite knowledge and practical know-how of the WASH-FIT. Though the WASH implementation has been in existence in Ghana for a while, there have been few published studies on it in healthcare facilities [9] with limited information, especially in Ashanti Region. Furthermore, this is a maiden WASH implementation activity in the Asokore Mampong Municipality, hence a process evaluation to assess the performance of outlined activities against set targets is very eminent. This study, therefore, assessed the water, sanitation, and hygiene in health care facilities in the Asokore Mampong in the Ashanti Region of Ghana to ascertain its status in the WASH implementation.

## 2. Methods

### 2.1. Study Setting

This study was carried out in Asokore Mampong Municipality, one of the three municipalities implementing Water, Sanitation and Hygiene (WASH) intervention in health care facilities. Asokore Mampong Municipal has a projected population of 83,440 and has six (6) health-demarcated sub-municipals and about forty-one (41) government own health posts comprising six (6) health centres and Thirty-five (35) CHPS zones. Four of these facilities are currently trained to implement WASH in their respective facilities.

### 2.2. Study Design

This was a descriptive cross-sectional assessment conducted from 2nd to 4th December 2021.

### 2.3. Sampling Method

The WASH intervention is currently being earmarked to be implemented in four healthcare facilities in the Municipality. Among these four HCFs, only two had fully initiated the intervention and were purposively included in this study.

### 2.4. Data Collection Tool and Procedure

This study used a paper-based Water and Sanitation for Health Facility Improvement Tool (WASH FIT) to assess the water, sanitation and hygiene status of HCFs studied. WASH FIT is a risk-based approach for improving and sustaining water, sanitation and hygiene and healthcare waste

management infrastructure and services in primary healthcare facilities in low- and middle-income countries. The WASH FIT is sectioned into four broad domains namely: water (with 11 indicators); sanitation which is subdivided into sanitation and health care waste management (with 22 indicators); and hygiene which is subdivided into hand hygiene and environmental cleanliness and disinfection (with 18 indicators); and management (with 11 indicators). Each of the four domains has pre-defined indicators categorized under essential and advanced [5]. In this study, a total of 62 indicators made up of 28 essential and 34 advanced indicators were assessed. Indicators meeting standards in the various domains were scored three (3) points, indicators partially meeting standards were scored two (2) points and indicators not meeting standards by the defined criteria were scored one (1) point. The WASH FIT team which comprised trained healthcare professionals with clinical and public specialty were deployed to the two HCFs for the data collection on the pre-defined indicators under the various domains which lasted for about three days. The WASH FIT team observed, reviewed relevant documents, and conducted a series of interviews with health staff at the various facilities to elicit information to score facilities on the WASH FIT.

### 2.5. Data Processing and Analysis

The data collected with the paper-based WASH FIT were carefully assessed for missing and misplaced data to ensure quality. The data were then carefully entered into a Microsoft Excel 2016 template with pre-defined columns for indicators assessed, and scores obtained for each indicator in every domain. The data were collected from larger and smaller facilities and the data entry was done with an emphasis on these attributes. Descriptive statistics such as frequencies and percentages were computed using Microsoft Excel 2016. The total frequencies for all indicators scored three (3), two (2) and

one (1) were counted and recorded under indicators meeting standard (Good), partially meeting standards (Average) and not meeting standards (Poor) respectively for the main and sub-domains for both health care facilities separately. These total frequencies were later divided by the total indicators assessed under each of the sub-domains to compute the percentages and displayed in tables as the summary of the assessment. For example, four (4) indicators which fully met standards under a domain with a total assessed indicator of ten (10) were scored three (3) points each and were calculated as follows;  $(4/10) \times 100 = 40\%$ . Hence, 40% was written on the summary of assessment under indicators fully meeting standards. Furthermore, final average percentages for the indicators meeting standards, partially meeting standards and not meeting standards were computed for both larger and smaller healthcare facilities by striking the average of the two percentages obtained under each domain and were presented on a 100% stacked column chart.

## 3. Results

### 3.1. Water Domain

This study assessed a total of eleven (11) essential and advanced indicators for the Water Domain (Table 1). Both facilities assessed, met the WHO standard score for improved regular and sufficient pipe water services throughout the year. The larger facility assessed, however, did not meet the WHO standard for a functional and accessible bathing area which must be available for at most 25 clients compared with the smaller health care facility assessed. The Water domain assessed had 81.8% and 45.5% indicators meeting the WHO standards in the smaller and larger healthcare facilities assessed respectively. Additionally, the larger facility had a little above 18% of its indicators failing to meet the standard for the assessed essential and advanced indicators.

**Table 1.** Assessment score for Water domain (Asokore Mampong, Ghana. 2021).

WATER	Score	
	Larger HF	Smaller HF
Essential Indicators		
Improved water supply piped into facility and available	3	3
Water services available at all times and sufficient	3	3
Potable and accessible water for staff, patients and caregivers at all times	2	3
Advance Indicators		
Sanitary inspection risk score	3	2
Taps connected to available and functioning water supply	2	3
Water services available throughout the year	3	3
Water storage sufficient to meet needs for two days	3	2
Energy available for heating water	2	3
Energy available for pumping water	2	3
At least one functioning and accessible shower/bathing area available per 25 patients in the in-patient setting	1	3
Showers adequately lit, including at night	1	3
Summary of assessment		
Total number of indicators assessed	n=11 (%)	
Percentage indicators meeting standards (Good)	5 (45.5)	9 (81.8)
Percentage indicators partially meeting standards (Average)	4 (36.4)	2 (18.2)
Percentage of indicators not meeting standards (Poor)	2 (18.2)	0 (0.0)

Key: 3 = indicators meeting standards, 2 = indicators partially meeting standards, 1 = indicators not meeting standards, HF = Health Facility, n= number of indicators assessed

### 3.2. Sanitation and Health Care Waste Domain

A total of twenty-two (22) essential and advanced indicators were assessed for the Sanitation and Health Care Waste domains. The Sanitation subdomain had a total of ten (10) essential and advanced indicators assessed. In the larger

facility, about 80% of its essential and advanced indicators were assessed did not meet the required standard whilst the smaller facility had about 80% of its total indicators assessed under this domain completely or partially meeting the WHO standards (Table 2).

**Table 2.** Assessment score for Sanitation domain (Asokore Mampong, Ghana. 2021).

SANITATION	Score	
	Larger HF	Smaller HF
Essential Indicators		
Number of available and usable toilets or improve latrines for patients	1	3
Toilets or improved latrines clearly separated for staff and patients	1	3
Toilets or improved latrines clearly separated for male and female	1	2
At least one toilet or improved latrine provides means to manage menstrual hygiene needs	1	2
At least one toilet meets needs of people with reduced mobility	2	1
Functioning hand hygiene station within 5 m of latrines	2	3
Advance Indicators		
Record of cleaning toilets visible and signed by cleaners and supervisors each day	2	2
Wastewater safely managed through use of on-site treatment	3	1
Greywater drainage system in place to divert water away from the facility	2	2
Latrines adequately lit both day and night	3	3
Summary of assessment		
Total number of indicators assessed	n=10 (%)	
Percentage indicators meeting standards	2 (20.0)	4 (40.0)
Percentage indicators partially meeting standards	4 (40.0)	4 (40.0)
Percentage of indicators not meeting standards	4 (40.0)	2 (20.0)

Key: 3 = indicators meeting standards, 2 = indicators partially meeting standards, 1 = indicators not meeting standards, HF = Health Facility, n= number of indicators assessed

The second part of the Sanitation domain (Health Care Waste) had a total of twelve (12) essential and advanced indicators with about 18% and 25% of indicators meeting the WHO standard in the larger and smaller facilities assessed respectively. Approximately half of the essential

and advanced indicators assessed in the larger healthcare facility partially met the required standard whilst the majority (41.7%) of the same indicators assessed in the smaller healthcare facility failed to meet the required standard (Table 3).

**Table 3.** Assessment score for Health Care Waste domain (Asokore Mampong, Ghana. 2021).

HEALTH CARE WASTE	Score	
	Larger HF	Smaller HF
Essential Indicators		
Person responsible for managing health waste is trained	3	2
Functional waste collection containers (colour-coded) pedal operated in close proximity to all waste generation point	2	3
Waste correctly segregated at all waste generation point	1	2
Functional burial pit/fenced waste dump or assembly pick up available for disposal of non-infectious/general waste	2	2
Functioning incinerator or alternative treatment technology for the treatment of infections/sharp waste	2	3
Sufficient energy available for incineration or alternative treatment technologies	2	3
Advance Indicators		
Hazardous and non-hazardous waste stored separately before treated/disposal of or moved off site	1	1
All infectious waste stored in protected area before treatment, for no longer than 24 hours	1	1
Anatomical/pathological waste put in a dedicated pathological waste/placenta pit, burnt/buried within the facility	2	1
Dedicated ash pits available for disposal of incineration ash	1	1
Protocol or standard operating procedure for safe managing of health care waste clearly visible	2	1
Appropriate protective equipment for all staff in charge of waste treatment and disposal	3	2
Summary of assessment		
Total number of indicators assessed	n=12 (%)	
Percentage indicators meeting standards	2 (16.7)	3 (25.0)
Percentage indicators partially meeting standards	6 (50.0)	4 (33.3)
Percentage of indicators not meeting standards	4 (33.3)	5 (41.7)

Key: 3 = indicators meeting standards, 2 = indicators partially meeting standards, 1 = indicators not meeting standards, HF = Health Facility, n= number of indicators assessed

### 3.3. Hygiene and Facility Environment, Cleanliness and Disinfection Domain

The Hygiene domain had a total of eighteen (18) essential and advanced indicators assessed for the two subdomains (Hygiene and Facility Environment, Cleanliness and Disinfection). The

majority of the five (5) essential and advanced indicators assessed for the Hygiene subdomain met the required standard in both larger (60%) and smaller (80%) healthcare facilities. No indicator assessed for the two healthcare facilities failed to meet the required standard (Table 4).

**Table 4.** Assessment score for Hand Hygiene domain (Asokore Mampong, Ghana. 2021).

HAND HYGIENE	Score	
	Larger HF	Smaller HF
Essential Indicators		
Functioning hand hygiene station available at all points of care	3	3
Hand hygiene promotion materials clearly visible and understandable at key places	3	3
Advance Indicators		
Functioning hand hygiene stations available in service areas	2	3
Functioning hand hygiene stations available in the waste disposal area	3	3
Hand hygiene compliance activities undertaken regularly	2	2
Summary of assessment		
Total number of indicators assessed	n=5 (%)	
Percentage indicators meeting standards	3 (60.0)	4 (80.0)
Percentage indicators partially meeting standards	2 (40.0)	1 (20.0)
Percentage of indicators not meeting standards	0 (0.0)	0 (0.0)

Key: 3 = indicators meeting standards, 2 = indicators partially meeting standards, 1 = indicators not meeting standards, HF = Health Facility, n= number of indicators assessed

Among the thirteen (13) indicators assessed under the Facility Environment, Cleanliness and Disinfection subdomain of Hand Hygiene, the majority (84.6%) met the required standard with about 8% failing to make the mark for

the required standard in the smaller health care facility assessed. However, the larger facility had almost half of its indicators assessed partially meeting the required standard (Table 5).

**Table 5.** Assessment score for Facility Environment, Cleanliness and Disinfection domain (Asokore Mampong, Ghana. 2021).

FACILITY ENVIRONMENT, CLEANLINESS AND DISINFECTION	Score	
	Larger HF	Smaller HF
Essential Indicators		
Exterior of facility well fenced, kept generally clean	3	3
General lighting sufficiently powered and adequate for safe health care provision	2	3
Floor and horizontal surfaces appear clean	2	3
Appropriate and well maintained materials for cleaning	3	3
At least two pairs of household cleaning gloves and one pair of overalls/apron and boots in a good state	2	3
At least one member of staff can demonstrate correct procedures for cleaning and disinfection	3	3
Beds have insecticide treated nets to protect patients from mosquito-borne diseases	2	3
Advance Indicators		
Existence of a mechanism to track supply of WASH-IPC-related materials	2	2
Evidence of cleaning and signing by cleaners each day	3	3
Laundry facilities available to wash linen from patient beds	2	3
Sufficient natural ventilation in facility	2	3
Protected kitchen stores and prepared food	1	1
Beds for patients separated 2.5 m from centre of one bed to the next	3	3
Summary of assessment		
Total number of indicators assessed	n=13 (%)	
Percentage indicators meeting standards	5 (38.5)	11 (84.6)
Percentage indicators partially meeting standards	7 (53.8)	1 (7.7)
Percentage of indicators not meeting standards	1 (7.7)	1 (7.7)

Key: 3 = indicators meeting standards, 2 = indicators partially meeting standards, 1 = indicators not meeting standards, HF = Health Facility, n= number of indicators assessed

### 3.4. Management Domain

A total of eleven (11) essential and advanced indicators were assessed under the Management domain. The majority of the indicators under this domain failed to meet the

required standard in both larger (54.5%) and smaller (63.6%) healthcare facilities assessed. Both facilities failed to meet the required standard when it comes to a clear written and legible job description for the WASH-IPC focal person, a protocol for operation and maintenance, including procurement of WASH supplies visibility, WASH FIT

quality improvement and management plan and visibility of up-to-date facility management structure (Table 6)

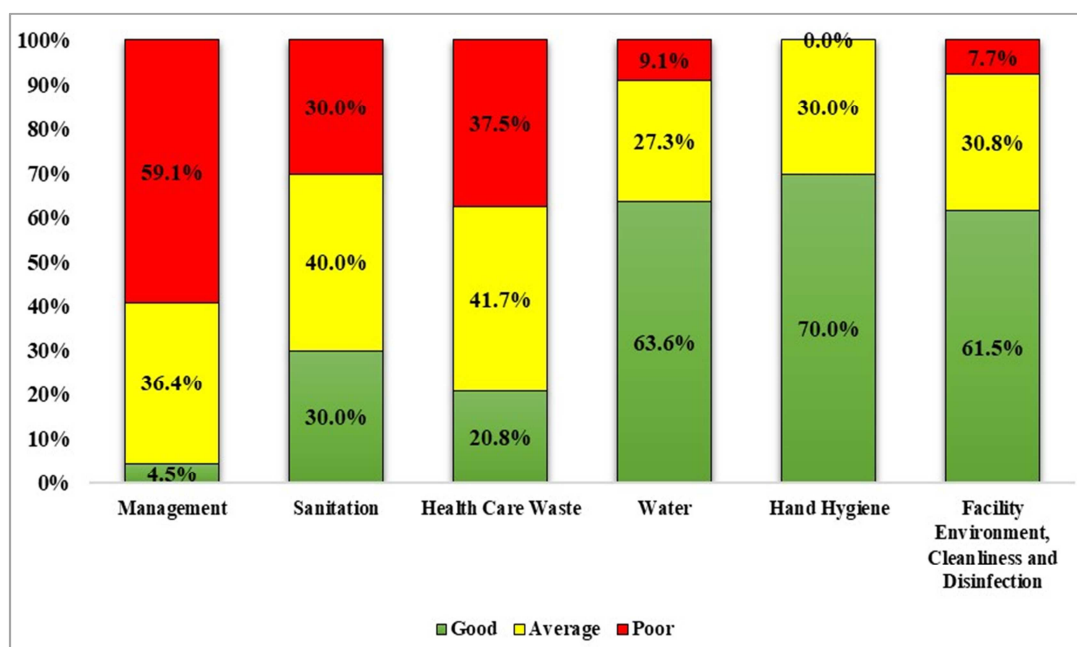
**Table 6.** Assessment score for Management domain (Asokore Mampong, Ghana. 2021).

MANAGEMENT	Score	
	Larger HF	Smaller HF
Essential Indicators		
WASH FIT or other quality improvement/management plan for facilities in place and regularly monitored	1	1
Annual planned budget available and includes funding for WASH infrastructure	2	1
Up-to-date diagram of facility management structure clearly visible and legible	1	1
Adequate cleaners and WASH maintenance staff available	1	3
Advance Indicators		
Protocol for operation and maintenance, including procurement of WASH supplies visible, legible and implemented	1	1
At least monthly ward-based audits undertaken to assess the availability of alcohol hand rub (60%-90%), soap, single use towel and other hand hygiene resources	2	1
New health care personnel receive WASH-IPC training as part of their orientation programme	1	2
Health care staff trained on WASH-IPC	2	2
WASH-IPC focal person available and adequately resourced	2	2
Job description clearly written for WASH-IPC focal person	1	1
High performing staff recognized and rewarded and non-performers dealt with	2	1
Summary of assessment		
Total number of indicators assessed	n (%)	
Percentage indicators meeting standards	0 (0.0)	1 (9.1)
Percentage indicators partially meeting standards	5 (45.5)	3 (27.3)
Percentage of indicators not meeting standards	6 (54.5)	7 (63.6)

Key: 3 = indicators meeting standards, 2 = indicators partially meeting standards, 1 = indicators not meeting standards, HF = Health Facility, n= number of indicators assessed

The Water domain and the Hand Hygiene and Facility Environment, Cleanliness and Disinfection subdomains had the majority of its essential and advanced indicators meeting the required standard of the WASH FIT assessment with an average percentage score of 63.6%, 70% and 61.5% respectively in the two health care facilities assessed. Most

indicators assessed on Sanitation and Health Care Waste partially met the required standard with an average percentage of 40% and about 42% respectively. Over 50% of indicators assessed for the Management domain failed to meet the required standard in both healthcare facilities (Figure 1).



**Figure 1.** Average score for water, sanitation and hygiene domains (Asokore Mampong, Ghana. 2021).

## 4. Discussion

The current study assessed the Water, Sanitation, and

Hygiene status for Infection Prevention and Control in two (2) urban healthcare facilities in Ghana using the World Health Organization WASH FIT [5]. In this study, most indicators assessed for the Water domain met the required standard as

enshrined in the WHO WASH FIT. This was evidenced as the two facilities assessed had an improved water supply and were sufficiently available at all times. Potable water was also accessible for staff, patients and their caregivers at all times. This finding indicates enormous resources ventured into measures to ensure water availability at the health care facilities assessed at all times. Though lower, this finding corroborates with studies conducted to access water, sanitation and hygiene services in health facilities in sub-Saharan Africa [4] and Serbia [10] which documented more than 80% improved water sources. Our findings further conform to another study conducted to assess the status of water, sanitation and hygiene services in East Asia and the Pacific [11] and COVID-19 Treatment Centres in the Greater Accra region of Ghana [12]. On the contrary, this finding does not conform to similar studies conducted in Zimbabwe [13] and Rwanda [14] which documented a poor score on the availability of sufficient water for all users in the health facilities assessed. In this present study, a functioning and accessible shower/bathing area for clients which is recommended at a shower area per 25 clients with adequate lighting systems, especially during the night was poorly rated in the larger healthcare facility. This could be attributed to the fact that the larger facility which was built more than three decades ago was estimated to cater for only a few clients at the time of its commencement. Additionally, the larger healthcare facility which is situated at the heart of the city currently lacks the expansion plan for redesigning to suit some of these recommendations due to the lack of space.

On Sanitation, our findings demonstrate a struggling pace as most indicators assessed either partially met or did not meet the required standard. With only a few (30%) indicators meeting the required standard, our finding is consistent with a similar study [13] but not in support of a study conducted in Ghana which stated that apart from latrines adequately distributed, all other indicators assessed did not universally meet the standard across all across the facilities assessed [12]. This poor performance demonstrated by facilities assessed in this present study was due to the unseparated usable toilets or improved latrines for male and female patients and even staff in some units especially in the larger healthcare facility assessed. Furthermore, both healthcare facilities assessed in this study partially met the required standard for indicators which assessed whether at least one toilet or improved latrine provided a means to manage menstrual hygiene needs. These poor scores largely linger around the fact that the already build structure in both facilities assessed, has little or no expansion space in the already confined structure. Though space for development is limited, prioritization of resources to ensure the expansion of sanitation infrastructure in and around the assessed healthcare facilities must be paramount [12]. The current finding further revealed that most of the indicators assessed for the Health Care Waste did not meet or partially met the required standard. Indicators such as; correct segregation at all waste generation points, availability of functional burial pit/fenced waste dump, hazardous and non-hazardous waste stored separately before treatment and

disposal, infectious waste stored in a protected area before treatment for no longer than 24 hours, and availability of dedicated ash pits for disposal of incineration did not meet the required standard. Subsequently, protocol or standard operating procedure for safe management of healthcare waste and functional burial pit fenced waste dump assessed under the healthcare subdomain partially met the required standard. This finding contradicts a documented result in another study which stated that all facilities assessed had usable improved latrines separated for staff and patients [12]. Our current finding however is consistent with a similar study conducted in Zimbabwe [13]. This poor outcome could be blamed on the fact that WASH focal persons in the two facilities assessed had no written plan of work which encompasses the acquisition and installation of most healthcare infrastructure to ensure the smooth implementation of WASH activities. Surprisingly, all facilities assessed had an adequate supply of refuse bins and containers to ensure adequate management of healthcare waste but the output was slightly in shambles.

Hand hygiene is enormously imperative in the quest to improve infection prevention and control activities in every healthcare facility. Cleaning hands with soap and water or an alcohol-based hand rub is a sure way to enhance IPC [15]. In this study, the Hand Hygiene domain had the most indicators meeting the required standard (70%), with none of its essential and advanced indicators assessed failing to meet the required standard in the health care facilities assessed. Contrary to a similar study [13], indicators such as; the availability of functioning hand hygiene stations available at all points of care, hand hygiene promotion materials clearly visible and understandable at key places and functioning hand hygiene stations available in waste disposal areas met the required standard in all health care facilities assessed in this current study. This good performance in the hand hygiene domain revealed in this present study conforms to a similar study conducted in Ghana [12] and Serbia [10]. This good performance is of no surprise as all the healthcare facilities had received an adequate supply of hand washing station equipment from the district level as part of their logistics to implement the WASH program in their respective jurisdictions. This buttress the fact that an adequate supply of most logistics needed to implement WASH would go a long way to ensure the realization of reducing health conditions associated with poor hand hygiene.

The facility Environment, Cleanliness and Disinfection domain had the third highest indicators meeting the required standard after Water and Hand Hygiene. Apart from the indicator assessing the availability of kitchen and protection of prepared foods, all other indicators assessed under this domain such as; clean and well-fenced facility exterior, clean floor and horizontal surfaces, a member of staff demonstrating correct procedures for cleaning and disinfection, visibility and daily signed cleaning record by cleaners, and beds for patients separated by 2.5 meters from the centre of one bed to the next partially or adequately met the standard requirement. This current performance under the facility environment, cleanliness and disinfection domain

conforms to a similar study [13]. This good performance could be due to the availability of at least two healthcare workers designated solely to clean the healthcare facilities at regular intervals on daily basis, with an adequate and frequent supply of cleaning and disinfection materials [12]. These cleaning and disinfection are usually done on a scheduled basis with a well-documented schedule which spells out the persons responsible for cleaning and at what time.

The current study reveals a great vacuum when it comes to the management domain of WASH implementation in both facilities assessed. Contrary to the finding in another study [12], the present study identified the management domain as the weakest among all the other domains assessed with only about 5% of its indicators meeting the required standard in both facilities assessed. This current finding is not in conformity with a similar study in Rwanda [13]. In this study, none of the facilities assessed had a WASH or other quality improvement or management plan visibly available and regularly monitored. Furthermore, none of the two healthcare facilities assessed had a written annual planned budget with evidence of enshrined funding for WASH infrastructure. A well-aligned structural organogram spelling out a well-defined authority of management members is paramount in any institution. But contrary to this obsession, all healthcare facilities assessed lacked a visible and legible up-to-date diagram of facility management structure. Protocol for operation and maintenance, including procurement of WASH logistics, was largely missing with no evidence of adherence in all facilities assessed. The healthcare facilities assessed had an assigned person to oversee all WASH-IPC activities but had no written job description available hence coordination of activities about WASH-IPC was not monitored and evaluated by these healthcare facilities as expected. Preceding this assessment was training for selected healthcare professionals from these healthcare facilities at the Regional level. The aftermath expectation was an orientation of all other healthcare professionals who were not trained by the Regional and National Level team. Astonishingly, almost all other healthcare professionals who were not originally trained had not received the expected WASH-IPC orientation at the time these assessments were conducted in the two facilities. The management of WASH-IPC was not keenly coordinated as expected in the facilities assessed leading to a woefully score in the said domain. Spelling out the duties of the WASH-IPC focal person with a well-documented job description and the assignment of the various domain to trained healthcare professionals coupled with expected output for regular evaluation is very paramount. This will ensure a successful implementation of the WASH-IPC in the various healthcare facilities assessed.

## 5. Conclusions

This study highlighted an adequate implementation of the Water, Hand Hygiene and Facility Environment, Cleanliness

and Disinfection domains of the WHO/UNICEF Water and Sanitation for Health Facility improvement tool (WASH FIT). In contrast to this, Sanitation and Healthcare Waste in the Healthcare Facilities assessed need adequate resources channeled to its activities for improvement. Finally, the management domain was the weakest among all the WASH implementation domains. The healthcare facility management team must have a strong consecration towards the implementation of the WASH program by undertaking a series of orientations, monitoring and self-evaluation sessions to monitor the improvement of the WASH implementation. The effective method to assess a healthcare facility with WASH-FIT is an onsite visit and checklist administration. However, the healthcare facilities assessed had not assigned domains to their healthcare professionals with adequate orientation on their job descriptions and hence made information sourcing very difficult. This was perceived to be a limitation. Notwithstanding, the WASH-FIT brought to light the status of Water, Sanitation and Hygiene in the facilities assessed. The Municipal Health Management Team in collaboration with the Facility Management Team should outline plans to institute quarterly assessments of WASH activities in the various healthcare facilities to improve infection prevention and control activities. It is imperative to further investigate the quality of water being used and also ascertain the general knowledge of healthcare professionals on WASH at these facilities in future studies.

## Acknowledgements

The Authors are grateful to the District Health Management Team of the study area, all healthcare professionals interviewed, the Regional Health Directorate (Ashanti) and the managers of the healthcare facilities used for this assessment.

## References

- [1] Bouzid M, Cumming O, Hunter PR. What is the impact of water sanitation and hygiene in healthcare facilities on care seeking behaviour and patient satisfaction? A systematic review of the evidence from low-income and middle income countries. *BMJ Glob Heal*. 2018; 3 (3): 1–14.
- [2] Sunkwa-Mills G, Rawal L, Enweronu-Laryea C, Aberese-Ako M, Senah K, Tersbøl BP. Perspectives and practices of healthcare providers and caregivers on healthcare-associated infections in the neonatal intensive care units of two hospitals in Ghana. *Health Policy Plan*. 2020; 35: I38–50.
- [3] World Health Organization. Global progress report on wash in health care facilities [Internet]. Geneva, Switzerland; 2020. Available from: <https://www.who.int/publications/i/item/9789240017542>
- [4] Kanyangarara M, Allen S, Jiwani SS, Fuente D. Access to water, sanitation and hygiene services in health facilities in sub-Saharan Africa 2013-2018: Results of health facility surveys and implications for COVID-19 transmission. *BMC health services research*. 2021; 21 (1): 601.



- [5] World Health Organization. Water and sanitation for health facility improvement tool (WASH FIT) [Internet]. World Health Organization. 2018 [cited 2022 Apr 3]. p. 1. Available from: <https://reliefweb.int/report/world/water-and-sanitation-health-facility-improvement-tool-wash-fit-practical-guide>
- [6] World Health Organization. Water, sanitation and hygiene in health care facilities [Internet]. World Health Organization. 2019 [cited 2022 Mar 12]. p. 1–5. Available from: [https://apps.who.int/gb/ebwha/pdf\\_files/EB144/B144\\_R5-en.pdf](https://apps.who.int/gb/ebwha/pdf_files/EB144/B144_R5-en.pdf)
- [7] UNICEF. WASH in health care facilities from Resolution to Revolution Meeting Report [Internet]. Geneva, Switzerland; 2019. Available from: [http://apps.who.int/gb/ebwha/pdf\\_files/WHA72/A72\\_R7-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_R7-en.pdf)
- [8] Ghana News Agency. GHS to implement WASH interventions in three municipalities in Ashanti [Internet]. Ghana News Agency. Kumasi: Ghana News Agency; 2021 [cited 2022 Apr 24]. p. 1–2. Available from: <https://www.gna.org.gh/1.21208809>
- [9] Odagiri M, Cahyorini, Azhar K, Cronin AA, Gressando Y, Hidayat I, et al. Water, sanitation, and hygiene services in public health-care facilities in Indonesia: Adoption of world health organization/united nations children's fund service ladders to national data sets for a sustainable development goal baseline assessment. *American Journal of Tropical Medicine and Hygiene*. 2018; 99 (2): 546–51.
- [10] Bijelović S, Grossi V, Shinee E, Schmoll O, Jovanović D, Paunović K, et al. Water, sanitation, and hygiene services in health care facilities in the Autonomous Province of Vojvodina, Serbia. *Journal of Water and Health*. 2021; 00 (0): 1–11.
- [11] Mannava P, Murray JCS, Kim R, Sobel HL. Status of water, sanitation and hygiene services for childbirth and newborn care in seven countries in east Asia and the Pacific. *J Glob Health*. 2019; 9 (2).
- [12] Ashinyo ME, Amegah KE, Dubik SD, Ntow-Kummi G, Adjei MK, Amponsah J, et al. Evaluation of water, sanitation and hygiene status of covid-19 healthcare facilities in Ghana using the wash fit approach. *Journal of Water Sanitation and Hygiene for Development*. 2021; 11 (3): 398–404.
- [13] Hirai M, Nyamandi V, Siachema C, Shirihuru N, Dhoba L, Baggen A, et al. Using the water and sanitation for health facility improvement tool (WASH FIT) in Zimbabwe: A cross-sectional study of water, sanitation and hygiene services in 50 COVID-19 isolation facilities. *International Journal of Environmental Research and Public Health*. 2021; 18 (11): 1–11.
- [14] Huttinger A, Dreibelbis R, Kayigamba F, Ngabo F, Mfura L, Merryweather B, et al. Water, sanitation and hygiene infrastructure and quality in rural healthcare facilities in Rwanda. *BMC health services research*. 2017; 17 (1): 1–11.
- [15] UNICEF. Water, sanitation, hygiene and waste management for the COVID-19 virus. *World Heal Organ* [Internet]. 2020; (March): 1–9. Available from: <https://apps.who.int/iris/handle/10665/331305>