



Assessment of Health Facilities in Blue Nile State, 2019

¹Abdalgadir.O.M; ¹⁻¹ M.G.Ahmed; ¹⁻² A.M.Ateem; ¹⁻³ Sawsan Omer Fadul FadelElsid, ² Abdalmagid, M.A.

¹ PhD, Public health consultant (Medical Entomologist).

¹⁻¹ BSc Pharmacy, MSc Public Health, MSc Business Administration (MBA)

¹⁻² BSc Public Health, MSc of Epidemiology

¹⁻³ MBBS, MSc, University of Gezeira.

² Senior Public Health Specialists, Khartoum State Ministry of Health

Corresponding author: Osammeldine Muzamil Abdalgadir

Communicate person: mabdemajed@gmail.com

ABSTRACT

Background: 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.

Objectives: This study aimed to contribute to the reduction of morbidity and mortality by scaling up the availability and quality of WASH interventions in HFs.

Materials and methods: Descriptive cross sectional study health facility-based was conducted in Blue Nile State. Seven functional hospitals were selected out of 16 hospitals in Blue Nile State randomly. HCFs were assessed using a validated WASH Conditions (checklist).

Results: The availability of water point in the surveyed health facilities was 18 (36%). The storage water capacity at surveyed health facilities was 41.7% with functional water points of 25%. The proportion of excreta disposal facility at surveyed health facilities was 72.2%. The proportion of hand washing facility available at toilet facilities at surveyed health facilities was found 57.3% with functional hand washing facility 67.3%. The hand washing facility at all surveyed health facilities was poor. The majority of places of where health facility disposes of its waste and rubbish at surveyed health facilities was transported off the facility compound 71.4% and burned on.

Conclusion: Our findings demonstrate limitations in provision of WASH services in HCFs, and indicate the need for deliberate and strategic investments in healthcare WASH services, especially in terms of

hand washing facility and sanitation facility and waste management. We therefore suggest improvements in WASH conditions in HCFs to improve healthcare seeking among patients.

Keywords: *Health facilities, Blue Nile state, Sudan.*

Introduction:

The availability of WASH services, especially in maternity and primary-care settings where they are often absent (1, 2), supports core universal health care aspects of quality, equity, and dignity for all people. Basic WASH services in health care facilities are fundamental to providing quality care and for ensuring that primary health commitments, as detailed in the Astana Declaration, are achieved (3,4). More than one million deaths each year are associated with unclean births, while infections account for 26% of neonatal deaths and 11% of maternal mortality (5, 2). Most of these deaths are concentrated in low- and middle-income countries where the rates of health care-associated infections (HCAI) are twice that of high-income countries (6). An estimated 15% of patients can also improve health outcomes at the community level in low- and middle-income countries develop one or more infections during a hospital stay (8). Many of these patients are women who come to health facilities to deliver. If a woman lives in a country with a high rate of neonatal mortality, her infant faces a risk of sepsis related neonatal mortality 34 times greater than in countries with a low rate of neonatal mortality (7).

Although not all health care-associated infections (HCAI) can be traced to inadequate WASH services, evidence shows that lack of access to WASH in health care facilities may significantly compromise safe childbirth and access to primary health care (4). A recent review of nationally-representative health care facility data from four East African Countries found that fewer than 30% of delivery rooms had access to water (8). Previous estimates from United Republic of Tanzania (3), India, and Bangladesh (4) noted similar gaps. In short, far too many pregnant mothers are required to bring their own water to wash themselves and their baby following birth. The present study aimed to contribute to the reduction of morbidity and mortality by scaling up the availability and quality of WASH interventions in HFs.

MATERIALS AND METHODS:

Study design:

Descriptive cross sectional study health facility-based.

Study area:

Blue Nile State lied in southern part of the country bordering from southeast Ethiopia, southwest of South Sudan and north is Sinner state. With an area of 38,000 km square and 1,250.00 populations. Blue Nile River is crossing the state from south to north fed by numbers of streams and tributes. This gives unique feature for agricultural and live stocks herding activities. Rainy season starts early in June and ends in late October. Elroseres High Dam famous hydro-electric project, that supplies country with electricity and irrigation water sources, particularly Aljazeera agriculture scheme and it is rich of mechanized agriculture in Al Tadamon locality. BNS is served by number of (160) health facilities (HFs). The population at Blue Nile State depends on different water sources. Water from network, which covers approximately (25%) of the population; The other sources are out network e.g., Hand pumps, water yards, dug wells (open/closed), river, seasonal streams, open sources (shallow wells, hafeers) usually water in BNS is common risk factor that could contribute to occurrence of out breaks (9).

Study population:

Health facilities in Blue Nile State.

Inclusion criteria:

All functional health facilities were included in the survey.

Exclusion criteria:

Not functional health facilities in Blue Nile State.

Sample size and sampling technique:

Seven functional hospitals were selected out of 16 hospitals in Blue Nile State randomly.

Data collection:

HCFs were assessed using a validated WASH Conditions (checklist)

Results:

Table 1 shows that the availability of water point in the surveyed health facilities was 18 (36%) out of 50 water points with high availability of water tanks in Damazin hospital 6 (60%) and low availability in Wad abok rural Hospital 2 (33.3%) and Alganoubi Pediatrics Hospital 1 (33.3%).

Table 2 indicates that the storage water capacity at surveyed health facilities was 41.7% with functional water points of 25% and 16.7% for not-functional water points.

Table 3 shows that the functionality of water taps in the water points and toilets was 76.4% and non-functionality was 23.6%. The high functionality of water points and toilets was found in friendship hospital 82% and low functionality in Alganoubi Pediatrics Hospital 60%.

Table 4 shows that the proportion of water motors (pumps) at surveyed health facilities (in the water points and toilets) was 47.4% with 28.9% functional and 18.4% were not functional.

Table 5 indicates that the proportion of excreta disposal facility at surveyed health facilities was 72.2%. The majority of excreta disposal facility type was septic tank 92.3% and other 7.7%.

Table 6 shows that the most distance to toilet from outpatient and the In-patient wards at surveyed health facilities was less than 500 m (65.7%), 500m (18.6%) and more than 500 m (14.3%).

Table 7 indicates that the proportion of Separate toilets for males, females, children under five and people with disabilities at surveyed health facilities was 73.3% classified as 34.3% for females, 36.4% for males, 22.1% for children under five and 7.1% for people with disabilities.

Table 8 illustrates that level of cleanness of toilet seat shows that 52.9% was demonstrates proper use (clean: absence of dirt, urine or faecal matter) and 43.6% was demonstrates Improper use (Dirty) while 5% only was not applicable.

Table 9 indicates that the cleanliness of floor at surveyed health facilities shows that 62.1% was proper use (absence of litter, urine or faecal matter), 36.4% was improper use and 1.4% was not applicable.

As shown in table 10 the cleanliness of wall at surveyed health facilities was proper use (absence of litter, urine or faecal matter) 52.9%, 43.6% was improper use and 1.45 was not applicable.

Table 11 shows that the smell of toilet at surveyed health facilities was proper use (clean smell: no foul odor) in 52.9% and 43.6% was improper use (intolerable odor) and 1.4% was not applicable.

Table 12 shows that the level of cleansing materials at surveyed health facilities was appropriate (water connection or Ebreeg is available inside the toilet) 52.9%, inappropriate (leaves, newspapers, corn cobs) and 1.4% not applicable.

Table 13 shows that the proportion of hand washing facility available at toilet facilities at surveyed health facilities was found 57.3% with functional hand washing facility 67.3% and 32.7% not functional.

Table 14 indicates that the level of faecal material in toilets (pit latrines) at surveyed health facilities was full in 27.9% health facility, half full 56.4% and almost empty 14.3% and 1.4% not applicable.

Table 15 shows that the toilets accessibility at any time at surveyed health facilities was 85.7%.

Table 16 indicates that all the type of hand washing facilities at surveyed health facilities was wash basins with running water (100%).

Table 17 illustrates that conditions of the hand washing facility at surveyed health facilities was poor: Water is available but no soap and no evidence of patients/staff reminded to regularly wash hands in all surveyed health facilities (100%).

Table 18 shows no presence of posters, stickers or signs in or at toilets that encourage good hygiene practice at surveyed health facilities (100%).

The majority of places of where health facility disposes of its waste and rubbish at surveyed health facilities was transported off the facility compound 71.4% and burned on, or next to the facility compound in the open was 28.6%, table 19.

Table 20 shows that all the waste at the health facility was not separated (100%).

Table 21 shows that all type of waste containers does the health facility provide to the patients/caregivers at surveyed health facilities was garbage container in health facility only (100%).

Table 1: Status of water point at surveyed health facilities, Blue Nile State, 2019

HF	Target water points	Available water tanks	%
Damazin Hospital	10	6	60.0
Elroserse Hospital	8	1	12.5
Friendship Hospital	6	0	0.0

Pediatrics Hospital	6	4	66.7
Obstetric Hospital	11	4	36.4
Wad abok rural Hospital	6	2	33.3
Alganoubi Pediatrics Hospital	3	1	33.3
Total	50	18	36.0

Table 2: Storage water capacity at surveyed health facilities, Blue Nile State, 2019

HF	Target	Functional water points	%	Not functional water points	%	Total	% from target
Damazin Hospital	10	1	10.0	1	16.7	2	20.0
Elrosarse Hospital	7	1	14.3	0	0.0	1	14.3
Friendship Hospital	8	2	25.0	2	33.3	4	50.0
Pediatrics Hospital	4	2	50.0	1	16.7	3	75.0
Obstetric Hospital	2	1	50.0	0	0.0	1	50.0
Wad abok rural Hospital	2	1	50.0	0	0.0	1	50.0
Alganoubi Pediatrics Hospital	3	1	33.3	2	33.3	3	100.0
Total	36	9	25.0	6	16.7	15	41.7

Table 3: Water taps at surveyed health facilities (in the water points and toilets), Blue Nile State, 2019

HF	Total	Functional water Taps	%	Not functional water taps	%
Damazin Hospital	24	19	79.2	5	20.8
Elrosarse Hospital	28	20	71.4	8	28.6
Friendship Hospital	50	41	82.0	9	18.0
Pediatrics Hospital	19	13	68.4	6	31.6
Obstetric Hospital	12	9	75.0	3	25.0
Wad abok rural Hospital	2	2	100.0	0	0.0
Alganoubi Pediatrics Hospital	5	3	60.0	2	40.0
Total	140	107	76.4	33	23.6

Table 4: water motors (pumps) at surveyed health facilities (in the water points and toilets), Blue Nile State, 2019

HF	Target	Functional water motors (pump)	%	Not Functional water motors (pumps)	%	Total	% from target
Damazin Hospital	12	2	16.7	2	16.7	4	33.3
Elrosarse Hospital	8	1	12.5	1	12.5	2	25.0
Friendship Hospital	6	1	16.7	2	33.3	3	50.0
Pediatrics Hospital	4	4	100.0	0	0.0	4	100.0
Obstetric Hospital	4	2	50.0	1	25.0	3	75.0
Wad abok rural Hospital	0	0	0.0	0	0.0	0	0.0
Alganoubi Pediatrics Hospital	4	1	25.0	1	25.0	2	50.0
Total	38	11	28.9	7	18.4	18	47.4

Table 5: The main types of excreta disposal facility at surveyed health facilities, Blue Nile State, 2019

HF	Target	Piped sewer system	Septic tank	Pit latrine	Ventilated improved pit latrine (VIP)	Other	Total	% from target
Damazin Hospital	10	0	7	0	0	0	7	70.0
Elrosarse Hospital	6	0	4	0	0	0	4	66.7
Friendship Hospital	6	0	6	0	0	0	6	100.0
Pediatrics Hospital	4	0	3	0	0	0	3	75.0
Obstetric Hospital	4	0	3	0	0	0	3	75.0
Wad abok rural Hospital	4	0	0	0	0	2	2	50.0
Alganoubi Pediatrics Hospital	2	0	1	0	0	0	1	50.0
Total	36	0	24	0	0	2	26	72.2
% from total		0.0	92.3	0.0	0.0	7.7	100.0	

Table 6: Distance to toilet from Outpatient and the In-patient wards at surveyed health facilities, Blue Nile State, 2019

HF	Less than 500 m	500 m	More than 500 m	Total
Damazin Hospital	14	6	8	28
Elroserse Hospital	12	7	5	24
Friendship Hospital	50	0	0	50
Pediatrics Hospital	7	8	4	19
Obstetric Hospital	6	4	2	12
Wad abok rural Hospital	0	0	0	2
Alganoubi Pediatrics Hospital	3	1	1	5
Total	92	26	20	140
% from total	65.7	18.6	14.3	100

Table 7: Separate toilets for males, females, children under five and people with disabilities at surveyed health facilities, Blue Nile State, 2019

HF	Target	Females	Males	children under five	people with disabilities	Total	% from target
Damazin Hospital	50	9	15	4	0	28	56.0
Elroserse Hospital	35	9	10	5	0	24	68.6
Friendship Hospital	50	17	18	5	10	50	100.0
Pediatrics Hospital	22	2	3	14	0	19	86.4
Obstetric Hospital	16	9	3	0	0	12	75.0
Wad abok rural Hospital	10	1	1	0	0	2	20.0
Alganoubi Pediatrics Hospital	8	1	1	3	0	5	62.5
Total	191	48	51	31	10	140	73.3
% from total		34.3	36.4	22.1	7.1	100.0	

Table 8: Cleanliness of toilet seat at surveyed health facilities, Blue Nile State, 2019

HF	Demonstrates proper use (clean: absence of dirt, urine or faecal matter)	Demonstrates Improper use(Dirty)	Not Applicable	Total
Damazin Hospital	15	13	0	28
Elroserse Hospital	13	11	0	24
Friendship Hospital	30	17	0	50
Pediatrics Hospital	10	9	0	19
Obstetric Hospital	4	8	0	12
Wad abok rural Hospital	0	0	2	2

Alganoubi Pediatrics Hospital	2	3	5	5
Total	74	61	7	140
% from total	52.9	43.6	5.0	100.0

Table 9: Cleanliness of floor at surveyed health facilities, Blue Nile State, 2019

HF	Proper use (absence of litter, urine or faecal matter)	Improper use	Not Applicable	Total
Damazin Hospital	19	9	0	28
Elrosarse Hospital	15	9	0	24
Friendship Hospital	36	14	0	50
Pediatrics Hospital	11	8	0	19
Obstetric Hospital	4	8	0	12
Wad abok rural Hospital	0	0	2	2
Alganoubi Pediatrics Hospital	2	3	0	5
Total	87	51	2	140
% from total	62.1	36.4	1.4	100.0

Table 10: Cleanliness of wall at surveyed health facilities, Blue Nile State, 2019

HF	Proper use (absence of litter, urine or faecal matter)	Improper use	Not Applicable	Total
Damazin Hospital	15	13	0	28
Elrosarse Hospital	13	11	0	24
Friendship Hospital	30	17	0	50
Pediatrics Hospital	10	9	0	19
Obstetric Hospital	4	8	0	12
Wad abok rural Hospital	0	0	2	2
Alganoubi Pediatrics Hospital	2	3	0	5
Total	74	61	2	140
% from total	52.9	43.6	1.4	100.0

Table 11: Smell of toilet at surveyed health facilities, Blue Nile State, 2019

HF	Proper use (clean smell:	Improper use	Not Applicable	Total
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	no foul odor)	(intolerable odor)		
Damazin Hospital	15	13	0	28
Elroserse Hospital	13	11	0	24
Friendship Hospital	30	17	0	50
Pediatrics Hospital	10	9	0	19
Obstetric Hospital	4	8	0	12
Wad abok rural Hospital	0	0	2	2
Alganoubi Pediatrics Hospital	2	3	0	5
Total	74	61	2	140
% from total	52.9	43.6	1.4	100.0

Table 12: Cleansing materials at surveyed health facilities, Blue Nile State, 2019

HF	Appropriate (water connection or Ebreg is available inside the toilet)	Inappropriate (leaves, newspapers, corn cobs)	Not Applicable	Total
Damazin Hospital	15	13	0	28
Elroserse Hospital	13	11	0	24
Friendship Hospital	30	17	0	50
Pediatrics Hospital	10	9	0	19
Obstetric Hospital	4	8	0	12
Wad abok rural Hospital	0	0	2	2
Alganoubi Pediatrics Hospital	2	3	0	5
Total	74	61	2	140
% from total	52.9	43.6	1.4	100.0

Table 13: Hand washing facilities available at toilet facilities at surveyed health facilities, Blue Nile State, 2019

HF	Target	Functioning	Not functioning	Total	% from total
Damazin Hospital	25	9	5	14	56.0
Elroserse Hospital	18	6	0	6	33.3
Friendship Hospital	25	13	12	25	100.0
Pediatrics Hospital	11	4	0	4	36.4
Obstetric Hospital	8	4	0	4	50.0
Wad abok rural Hospital	5	0	0	0	0.0
Alganoubi Pediatrics Hospital	4	1	1	2	50.0

Total	96	37	18	55	57.3
% from total		67.3	32.7	100.0	

Table 14: Level of faecal material in toilets (pit latrines) at surveyed health facilities, Blue Nile State, 2019

HF	Full	Half full	Almost empty	Not applicable	Total
Damazin Hospital	11	13	4	0	28
Elroserse Hospital	7	11	6	0	24
Friendship Hospital	9	38	3	0	50
Pediatrics Hospital	7	8	4	0	19
Obstetric Hospital	3	7	2	0	12
Wad abok rural Hospital	0	0	0	2	2
Alganoubi Pediatrics Hospital	2	2	1	0	5
Total	39	79	20	2	140
% from total	27.9	56.4	14.3	1.4	100.0

Table 15: Toilets accessibility at any time at surveyed health facilities, Blue Nile State, 2019

HF	Yes	No	Not applicable	Total
Damazin Hospital	1	0	0	1
Elroserse Hospital	1	0	0	1
Friendship Hospital	1	0	0	1
Pediatrics Hospital	1	0	0	1
Obstetric Hospital	1	0	0	1
Wad abok rural Hospital	0	0	1	1
Alganoubi Pediatrics Hospital	1	0	0	1
Total	6	0	1	7
% from total	85.7	0.0	14.3	100.0

Table 16: Type of hand washing facilities at surveyed health facilities, Blue Nile State, 2019

HF	Wash basins with running water	Wash basins with bucket/small jerry can/bottle accessed water	Small jerry can with water	Bottle with water	Other	Total
Damazin Hospital	9	0	0	0	0	9
Elroserse Hospital	6	0	0	0	0	6
Friendship Hospital	13	0	0	0	0	13

Pediatrics Hospital	4	0	0	0	0	4
Obstetric Hospital	4	0	0	0	0	4
Wad abok rural Hospital	0	0	0	0	0	0
Alganoubi Pediatrics Hospital	1	0	0	0	0	1
Total	37	0	0	0	0	37
% from total	100.0	0.0	0.0	0.0	0.0	100.0

Table 17: Conditions of the hand washing facility at surveyed health facilities, Blue Nile State, 2019

HF	Good: Soap is available and patients/staff are reminded to wash hands	Poor: Water is available but no soap. No evidence of patients/staff reminded to regularly wash hands	Very Poor: No water or soap for hand washing and no reminders for patients/staff to wash hands	Total
Damazin Hospital	0	9	0	9
Elroserse Hospital	0	6	0	6
Friendship Hospital	0	13	0	13
Pediatrics Hospital	0	4	0	4
Obstetric Hospital	0	4	0	4
Wad abok rural Hospital	0	0	0	0
Alganoubi Pediatrics Hospital	0	1	0	1
Total	0	37	0	37
% from total	0.0	100.0	0.0	100.0

Table 18: Presence of posters, stickers or signs in or at toilets that encourage good hygiene practice at surveyed health facilities, Blue Nile State, 2019

HF	Yes	No	Not applicable	Total
Damazin Hospital	0	28	0	28
Elroserse Hospital	0	24	0	24
Friendship Hospital	0	25	0	25
Pediatrics Hospital	0	19	0	19
Obstetric Hospital	0	12	0	12
Wad abok rural Hospital	0	2	0	2
Alganoubi Pediatrics Hospital	0	5	0	5

Total	0	115	0	115
% from total	0.0	100.0	0.0	100.0

Table 19: Places of where health facility disposes of its waste and rubbish at surveyed health facilities, Blue Nile State, 2019

HF	Burned on, or next to the facility compound by incinerator	Burned on, or next to the facility compound in the open	Buried on, or next to the facility compound	Garbage dump site on or next to the facility compound	Transported off the facility compound	Other	Total
Damazin Hospital	0	0	0	0	1	0	1
Elroserse Hospital	0	0	0	0	1	0	1
Friendship Hospital	0	0	0	0	1	0	1
Pediatrics Hospital	0	0	0	0	1	0	1
Obstetric Hospital	0	0	0	0	1	0	1
Wad abok rural Hospital	0	1	0	0	0	0	1
Alganoubi Pediatrics Hospital	0	1	0	0	0	0	1
Total	0	2	0	0	5	0	7
% from total	0.0	28.6	0.0	0.0	71.4	0.0	100.0

Table 20: Status of waste at the health facility separated or not at surveyed health facilities, Blue Nile State, 2019

HF	Yes	No	Total
Damazin Hospital	0	1	1
Elroserse Hospital	0	1	1
Friendship Hospital	0	1	1
Pediatrics Hospital	0	1	1
Obstetric Hospital	0	1	1
Wad abok rural Hospital	0	1	1
Alganoubi Pediatrics Hospital	0	1	1
Total	0	7	7
% from total	0.0	100.0	100.0

Table 21: type of waste containers does the health facility provide to the patients/caregivers at surveyed health facilities, Blue Nile State, 2019

HF	Standard colour coded containers	Garbage container in health facility only	Garbage container on compound only	Garbage containers in facility and on compound	No garbage containers provided	Total
Damazin Hospital	0	1	0	0	0	1
Elroserse Hospital	0	1	0	0	0	1
Friendship Hospital	0	1	0	0	0	1
Pediatrics Hospital	0	1	0	0	0	1
Obstetric Hospital	0	1	0	0	0	1
Wad abok rural Hospital	0	1	0	0	0	1
Alganoubi Pediatrics Hospital	0	1	0	0	0	1
Total	0	7	0	0	0	7
% from total	0.0	100.0	0.0	0.0	0.0	100.0

Discussion:

This study aimed to contribute to the reduction of morbidity and mortality by scaling up the availability and quality of WASH interventions in HFs in Blue Nile State.

The study revealed that the availability of water point in the surveyed health facilities was 18 (36%) out of 50 water points with high availability of water tanks in Damazin hospital 6 (60%) and low availability in Wad abok rural Hospital 2 (33.3%) and Alganoubi Pediatrics Hospital 1 (33.3%). In addition the storage water capacity at surveyed health facilities was 41.7% with functional water points of 25% and 16.7% for not-functional water points. The existing literature on WASH in HCFs in low resource settings indicates limited access to improved water sources, this study found out that only more than one third of the HCFs in the Blue Nile State had access to an improved water source, however, access rates remain below the WHO target of 100% coverage by 2030 (10). Moreover the study showed that the functionality of water taps in the water points and toilets was 76.4% and non-functionality was 23.6%. The high functionality of water points and toilets was found in friendship hospital 82% and low functionality in Alganoubi Pediatrics Hospital 60%. While the proportion of water motors (pumps) at surveyed health facilities (in the water points and toilets) was 47.4% with 28.9% functional and 18.4% were not functional. Comparable findings to our study not agree to our study findings which is below than the situation found by the Health Impact Evaluation Consortium Survey in 2008 that only 67% of HCFs in Cambodia had an improved running water source within 500m (11), and better

than the average situation found by a recent WHO study in 54 developing countries where 38% of the assessed HCFs did not have an improved water source (12).

In this study the proportion of excreta disposal facility at surveyed health facilities was 72.2%. The majority of excreta disposal facility type was septic tank 92.3% and other 7.7%.

The most distance to toilet from outpatient and the In-patient wards at surveyed health facilities was less than 500 m (65.7%), 500m (18.6%) and more than 500 m (14.3%). The proportion of Separate toilets for males, females, children under five and people with disabilities at surveyed health facilities was 73.3% classified as 34.3% for females, 36.4% for males , 22.1% for children under five and 7.1% for people with disabilities. Furthermore the study illustrated that level of cleanness of toilet seat shows that 52.9% was demonstrates proper use (clean: absence of dirt, urine or faecal matter) and 43.6% was demonstrates improper use (Dirty) while 5% only was not applicable. The cleanliness of floor at surveyed health facilities shows that 62.1% was proper use (absence of litter, urine or faecal matter), 36.4% was improper use and 1.4% was not applicable. The cleanliness of wall at surveyed health facilities was proper use (absence of litter, urine or faecal matter) 52.9%, 43.6% was improper use and 1.45 was not applicable. Since the smell of toilet at surveyed health facilities was proper use (clean smell: no foul odor) in 52.9% and 43.6% was improper use (intolerable odor) and 1.4% was not applicable. Also the level of cleansing materials at surveyed health facilities was appropriate (water connection or Ebreeg is available inside the toilet) 52.9%, inappropriate (leaves, newspapers, corn cobs) and 1.4% not applicable. The fact that most HCFs had adequate sanitation facilities enables provision of quality healthcare (13). Our findings corroborate those of a study in Jordan where all HCFs had sufficient toilets (14). Despite availability of sanitation facilities in most of the HCFs in our study, about 71.7% of these facilities were not gender sensitive. The low gender sensitivity in toilet design may affect proper usability of these facilities due to issues of privacy and comfort. Huttinger *et al.* (15) in their study also highlighted lack of gender sensitive sanitation facilities in HCFs. Unhygienic conditions of visible flies, unpleasant smells and visibly unclean toilets were common. The unpleasant smells that characterize sanitation facilities in the GKMA could be related to inadequate funding for WASH services, and consequently poor cleaning routines (13). Adequate lighting in sanitation facilities should be ensured since lighting increases feelings of security and safety for users and encourages their optimal use (16, 17). However, compared with the available national and Joint Monitoring programme (JMP) standards, the sanitation in the assessed HCFs remained poor and required further improvement. The Building Brief for Health

Centre 2007 (23) recommended that each HC should have three improved toilets, including one separate for women/ girls and one meeting the needs for people with reduced mobility.

The study indicated that the proportion of hand washing facility available at toilet facilities at surveyed health facilities was found 57.3% with functional hand washing facility 67.3% and 32.7% not functional. All the type of hand washing facilities at surveyed health facilities was wash basins with running water (100%). The conditions of the hand washing facility at surveyed health facilities was poor: Water is available but no soap and no evidence of patients/staff reminded to regularly wash hands in all surveyed health facilities (100%). No presence of posters, stickers or signs in or at toilets that encourage good hygiene practice at surveyed health facilities (100%). This low proportion of functional hand hygiene facilities indicates potential for elevated risk of for transmission of HAIs at points of care across HCFs. Our findings differ from a study conducted by Mulogo, Matte (18) that revealed that only 24% of the HCFs in south-western Uganda had water and soap present at the hand washing stations. The disparity in these findings could be related to the fact that our study was conducted in an urban area with considerably more WASH investments as compared to Mulogo's study which was conducted in predominantly rural HCFs. Lack of functional hand hygiene facilities in HCFs is likely to compromise infection prevention and control efforts for highly infectious diseases such as Ebola and COVID-19. Furthermore, less than half of the HCFs had a functional hand hygiene facility with water and soap within 5 m of the toilet block, similar to a study by Guo, Bowling (19) which showed that only a small proportion of HCFs in Uganda have water and soap available for hand washing near the toilets. The low proportion of hygiene facilities with water and soap may be attributed to limited funds to put up and sustain functioning hand hygiene facilities that meet the basic requirements at the HCF. This indicates a need for more financial investments but also improve attitudes among both health care in charges and administrators.

On the other hand the study showed that the majority of places of where health facility disposes of its waste and rubbish at surveyed health facilities was transported off the facility compound 71.4% and burned on, or next to the facility compound in the open was 28.6%, hence all the waste at the health facility was not separated (100%). All type of waste containers does the health facility provide to the patients/caregivers at surveyed health facilities was garbage container in health facility only (100%).

It was noted in this study that all HCFs not segregated waste safely into separate bins, in accordance to what has been reported in previous studies about the absence of proper waste segregation practices at the point of generation in HCFs (20,21,22).

Conclusions:

In summary, more than one third of the HCFs had access to improved water sources and sanitation facilities but few had functional hand hygiene facilities. However, access rates remain below the WHO target of 100% coverage by 2030.

Our findings demonstrate limitations in provision of WASH services in HCFs, and indicate the need for deliberate and strategic investments in healthcare WASH services, especially in terms of hand washing facility and sanitation facility and waste management. The present study also reveals that environmental cleanliness and treatment of infectious waste can be achieved in the absence of infrastructure improvements, if there is better oversight and personnel to do it. Improvements in WASH conditions will not only minimize the risk of transmission of hospital acquired infections but also may cut on associated costs. We therefore suggest improvements in WASH conditions in HCFs to improve healthcare seeking among patients.

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