ORIGINAL ARTICLE

STATUS OF WASH IN RURAL HEALTH FACILITIES OF DISTRICT BAGH, AZAD KASHMIR: A CROSS-SECTIONAL OBSERVATIONAL STUDY

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Background: Water, sanitation, and hygiene (WASH) practices play vital role for ensuring quality of health care with the prevention of infections. Low- and middle-income health care settings have very limited WASH services and practices. Pakistan is still fighting with the burden of communicable diseases that can be prevented by health education on WASH services and their practices which is the elementary requirement for achieving national developing targets. **Methods:** This was the cross-sectional study conducted at 10 rural health centres (RHCs) of district Bagh by using purposive sampling technique. The duration of the study was 3 months from March to May, 2020. The tool used for the assessment of WASH services and practices was WASH FIT (Water Sanitation for Health Facility Improvement Tool) by WHO which had three categories for assessment in five different domains. **Results:** The findings showed that none of the facility was meeting the national standards of water quality. 50% of the facilities had separate male and female toilets while none of them have managed the menstrual hygiene needs. Only 10% of toilets facilitates the people with limited and reduce mobility. Only 10% of the facilities had well trained personal for health care waste management. None of the facility had or provided suitable protective measures for the waste management personals. Hand hygiene compliance activities were in 40% of the facilities. **Conclusion:** The improvement of WASH in health care centres plays a fundamental role in the prevention of infections, but none of them had WASH assessment tools to monitor the status of WASH.

Keywords: Water; Health care facilities; Sanitation; Hygiene; WASH

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INTRODUCTION

Water, sanitation and hygiene (WASH) in health care centres are the elementary requirement for achieving national developing targets. The Sustainable Development Goal 3 (SDG 3) ensures healthy living with promotion of wellbeing while Sustainable Development Goal 6 (SDG 6) targets the water and sanitation sustainability.[1] Countries that redirect their health systems towards primary health care are at superior place for SDGs achievement than those with less investment in health or hospital centered systems. Escalation of universal health coverage can contribute towards the achievement of sustainable development goals.[2] Despite of the improvement in last decade there are still gaps and breaches in the delivery of primary health care especially in the countries with low income.[3]

Main stigma in Pakistan is still communicable diseases that can be prevented by low cost, accessible care and health education.[4]Clean and accessible drinkable water, sanitation is one of the most important mile stone to be achieved. Worldwide three in ten people lack access to safe drinking water while three billion people lack access and availability to basic sanitation.[5]Water, sanitation and hygiene in health care facilities is the emerging work now a days with more focus in primary health care, patient centered care and targets on the multispectral approach.[6] Almost 20–40% of the patients being admitted in hospitals are suffering from the WASH related diseases.[7] In the health care centres due to the unavailability of WASH measures the safety of patients and healthcare workers is compromised leading to intense water borne diseases and resistant antimicrobial diseases. Health care workers are at the increased risk of serious occupational exposures that are infectious.[8]

Improved WASH has an essential role in HCFs. The basic water services in health care facility are provision of water from an improved and better source in the site. Health care facilities should have functionally improved sanitation with at minimum one toilet devoted for staff, one gender-separated toilet with proper menstrual hygiene needs for female patients and for patients with reduce mobility or elderly one toilet must be reachable for them. Serviceable hand wash points (with soap/ sanitizer) ought to be available at within area of 5 meters of toilet.[9] The 2016 Global Burden of Disease Study (GBD) ruled out that numbers of global deaths due to

unsafe WASH has declined to 25% while there is drop off by more than 35% lost disability-adjusted life years (DALYs).[10]Almost half of the populations of developing and under developing countries are facing water and sanitation related diseases due to inadequate water supply and sanitation.[11,12] Standards for clean water, sanitation and hygiene measures in HCFs are essential part of global guidelines. There are certain tools being used actively in different countries for maintaining the WASH standards to achieve the targets of universal health care.[13] Pakistan is one of the top 10 countries with poor water, sanitation and hygiene services primarily at primary healthcare centers.[14] Only 20% of population of Pakistan is able to drink safe water while 80% of remaining is still in its need.[15] The sanitation measures are accessible to 42% of population.[16]

There are certain methods for assessment and interventions of WASH recommended by World Health Organization (WHO) and UNICEF including Water Sanitation for Health Facility Improvement Tool (WASH FIT), WASH Bottle neck Analysis Tool (WASH BAT), WASH Condition Assessment Tool (WASH Con). Water and Sanitation for Health Facility Improvement Tool (WASH FIT) is the step for improving, monitoring, assessing and sustaining WASH services of health care facilities. The four major regions covered by WASH FIT include Water, Sanitation measures, Hygiene and General management. The main aim and target of WASHFIT is in primary health care facilities including health care centers and district hospitals of low- and middle-income countries. It was developed in 2015 and is being implemented in over 20 countries including South Sudan, Bangladesh and Ethiopia.[17] No such intervention and evaluation tool is being used in primary healthcare settings in Pakistan for improving healthcare standards, infection prevention and health outcomes. Therefore, we conducted this study with the objective to assess and identify the gaps of clean water provision, sanitation and hygiene measures available in RHCs of district Bagh, Azad Kashmir.

MATERIAL AND METHODS

The study employed a cross sectional design which was carried out at the RHCs of district Bagh, AJK in the 3 months period from March to May 2020. Purposive sampling technique was used for the data collection from ten rural health centers of district Bagh, AJK. The study population of our research was healthcare providers (doctors, nurses, dispensers, lady health visitors, lady health workers, sanitary inspectors, hospital waste collector) based in RHCs.

The WASH FIT (Water and Sanitation for Health Facility Improvement Tool) assessment tool has 64 indicators with four main domains to assess and measure water, sanitation, hygiene and general management. The domain of water has 14 indicators, sanitation has 10 indicators, health care waste has 12 indicators, hand hygiene has 5 indicators, the facility environment has 13 indicators and management domain has 11 indicators. We assessed all essential and advanced indicators in our study. Each domain measures particular indicators to accomplish the minimum standards for maintaining clean and safe environment at RHCs. Every indicator has 3 targets; (+++) means indicator is meeting the minimum standards of the domain, (++) shows it is only partially meeting and (+) indicates does not meeting the minimum standards.[1] As per the inclusion criteria all healthcare workers present in the rural health centers and those rural health centers having facility for indoor patients were included in the study.

First of all, the WASH FIT team was constituted in collaboration with the District Health Office. The team consisted of five members including the principal investigator. The members were the principal investigator (PI), one technician for water sampling, one lady health visitor, one dispenser, and one sanitary inspector. Three training sessions were conducted weekly basis for them covering the areas of water provision and quality, sanitation, hygiene and waste management, introduction to WASH FIT, hand hygiene, personal protection, water, sanitation and hygiene standards in healthcare facilities. Base line assessment was completed at all rural health centers by the WASH FIT team. The assessment included existing situation in water, sanitation, hygiene and management by using predesigned tool of WASH FIT designed by the WHO. The WASH FIT team identified the gaps and barriers using the WASH FIT assessment tool targeting each RHC which did not meet the criteria.

All the data collected was analysed by using SPSS version 24. Descriptive statistics including mean, median, mode and standard deviation were calculated. The bar charts presented the percentages of every domain of WASHFIT.

RESULTS

The total population of AJK is 4.045 million while district Bagh has 371,991population. Total 10 RHCs of district Bagh were included in the study. The main domains of WASH FIT tool were four which included clean water provision, sanitation practices, managing health care waste, hand hygiene, facility environment, and management services. Every facility was observed using WASH FIT tool Performa and indicators were scored according to meeting standards, partially meeting standards or not meeting standards. Table 1 shows the average mean percentage of all domains in 10 RHCs. The

percentage of water which meets the targets in all facilities was 28% while 29% does not meet the target with a mean of 0.9000. The domain of sanitation shows that 38% of the facilities meet the target while 40% does not meet the target. Regarding health care waste 21% were meeting the targets while 44 were not meeting the targets with mean 0.7666. Hand hygiene showed up 68% meeting the targets while 20% were not meeting the targets. The domain of facility environment showed that 29% of the facilities were meeting the criteria while 43% were not meeting the criteria. The management only showed 1% of the facilities meeting the criteria while 64% were not meeting the targets with the mean of 0.3727.

Among all domains water has the highest percentage of all indicators. We included 14 indicators of the tool to access the water domain. Among 10 RHCs, 80% received piped water supply with reliable drinking water station for staff, patients and carers. Drinking water was safely stored in clean covered tank in 10% of the facilities. In 10% of the facilities water storage was enough for meeting their needs for two days. In 80% of the facilities there was neither treated water nor meeting the national standards of water quality while only 20% partially met the target (Figure-1A). None of the facilities had energy neither for heating of the water nor for pumping water. Seventy percent (70%) RHCs did not have access to functional shower in bathing area while only 30% of the facilities partially met the criteria (Figure-1B)

The domain of sanitation was 10 indicators. The overall percentage of all indicators which were not meeting criteria in health care facilities was 40%. There were only 30% of facilities which were partially meeting the criteria of having improved latrines for patients while 70% were not meeting the criteria (Figure-2A). Only 50% of the facilities had gender separate toilets. RHCs did not provide even one toilet for managing needs of menstrual hygiene (Figure-2B) .Eighty percent (80%) of the facilities had adequate lighting in toilets even at the night. Ninety percent of RHCs did not have any facility for the toilet meeting the needs people with older age or reduced mobility (Figure-2C). In the majority of the RHC facilities (70%) functioning hand hygiene stations within 5 m of latrines were not present (Figure-D). Seventy percent (70%) of the facilities had no record of duly cleaned and signed toilet record (Figure-2E).

There were 12 indicators of health care waste in facilities. The overall percentage of all indicators in HCFs which meeting the target was 21% while 44% did not meet the targets of WASH FIT. The indicator about the availability of trained person for the management of health care waste in the HCF was asked from the subject index (Health care waste holder) and their response was quantified with the mean and SD (0.4000 and 0.69921). Out of which only in one of facilities (10%) there was a person appointed and adequately trained, 20% were appointed but not trained and 70% were not appointed (Figure-3A). The functional waste collection containers at all waste generation points showed the mean and SD (0.3000 and 0.48305). Out of which 30% of facilities were partially meeting the criteria containing separate bins present but lids were missing or more than three quarters full and 70% were not meeting the criteria nor have any bins or separate sharps disposal boxes (Figure-3B). The indicator assessing the segregation of waste showed the mean and SD (0.2000 and 0.63246). Out of which in 10% of facilities waste was correctly segregated and 90% did no sorting (Figure-3C). The indicator about hazardous and non-hazardous waste stored separately before being treated/disposed of or moved off site' had the mean and SD (0.4000 and 0.84327) in 10 HCFs. Out of which 20% had separate storage areas available and while 80% had no separate storage areas available. The protocol or standard operating procedure (SOP) for safe management of health care waste clearly visible showed the mean and SD (0.3000 and 0.48305). Out of which 30% had written protocol but not implemented and 70% did not have any protocol (Figure-3D). The indicator for appropriate protective equipment for all staff in charge of waste treatment showed the mean and SD (0.4000 and 0.51640) in all 10 HCFs. Out of which 40% had incomplete, damaged equipment available and 60% had none of the protective equipment's available (Figure-3E).

We used five indicators for hand hygiene including functioning hand stations with soaps availability, hand hygiene promotion material, hand hygiene compliance activities, all were assessed at the 10 HCFs showing 68% of facilities meeting the criteria while 20% were not meeting the criteria. Availability of functioning hand washing spots were quantified with the mean and SD (1.8000 and 0.42164) in all health care facilities. Out of which 80% had functional hand station available and in 20% hand stations were present but with no water or soap. Hand hygiene promotion materials visible at key places showed the mean and SD (1.8000 and 0.42164). Out of which 80% were meeting criteria as the hand hygiene material was clearly visible at key places and in 20% of facilities it was visible at some places but not in all. The indicator regarding hand hygiene compliance activities showed the mean and SD (0.8000 and 1.03280) in all health care facilities.

Out of which 40% had regular compliance while 60% showed no compliance activities (Figure-4).

The indicator regarding appropriate and well-maintained materials for cleaning' in all HCFs showed the mean and SD (0.9000 and 0.56765). Out of which in 10% they were available and well maintained, in 70%available but in poor condition and in 20% they were not available. The indicator regarding the availability of at least two pairs of household cleaning gloves, pair of apron and boots in a good state for cleaning and waste disposal staff showed the mean and SD (0.2000 and 0.42164). Out of which 20% of facilities were partially meeting criteria which had material available but in poor condition while in 80% the cleaning protective material was not available (Figure-5A). The indicator about demonstrating the correct procedures for cleaning and disinfection by support staff in all HCFs showed the mean and SD (0.3000 and 0.48305). Out of which in 30% of facilities procedure was known but not applied and 70% in the facilities procedure was not known nor applied (Figure-5B).

There were 11 indicators in this domain. All of the 10 RHCs were assessed and showed only 1% of the facilities meeting the target while 64% were not meeting the criteria and 35% were partially meeting the criteria. A question about availability of Wash fit or other available quality tool was quantified with the mean and SD (0.000 and 0.000). All facilities did not have any WASH plan implemented or monitored (Figure-6A). The WASH maintenance staff availability showed the mean and SD (0.7000 and 0.48305). Seventy percent (70%) of RHCs were partially meeting the criteria in which some staff were available but not adequately trained or skilled and in 30% none of the staff available. The indicator of Health care staff training on WASH each year had the mean and SD (0.3000 and 0.48305). Only 30% of the facility provided staff training while 70% of RHCs staff had no training (Figure-6B).

Table-1: Percentages of WASH in the RHCs' based on WASHFIT

Indicators (n)		Percentage (%)
Water[14]	Meet Targets	28
	Partially meet targets	43
	Does not meet target	29
Sanitation[10]	Meet Targets	38
	Partially meet targets	22
	Does not meet targets	40
Health care waste management[12]	Meet Targets	21
	Partially meet targets	35
	Does not meet targets	44
Hand hygiene[5]	Meets Target	68
	Partially meets target	12
	Does not meet target	20
Facility environment[13]	Meets Target	29
	Partially meets target	38
	Does not meet target	43
Management[11]	Meets Target	1
	Partially meets target	35
	Does not meet target	64

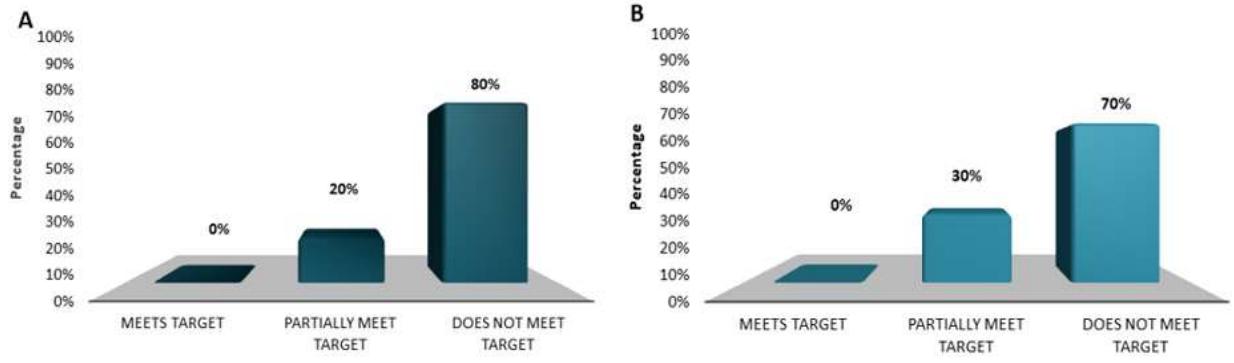

Figure-1: Water supply facility at RHCs of Bagh

(A) No facility had regulation or testing facilities and meeting national standards of drinking water. (B) RHCs having at least one functional shower in bathing area.

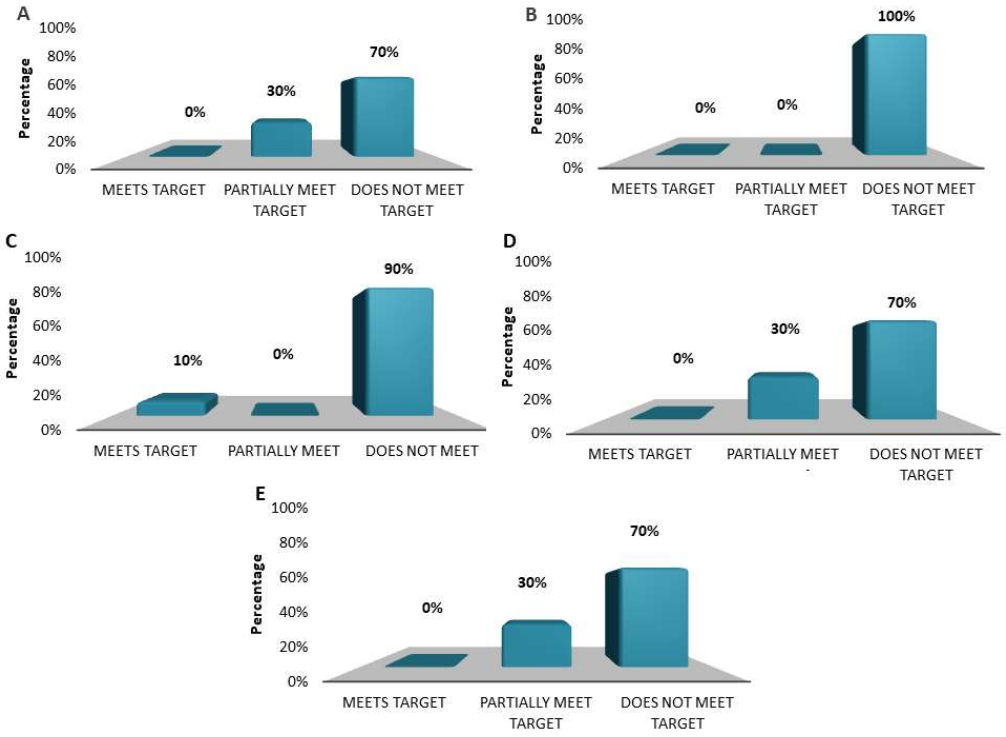

Figure-2: Gaps in sanitation facility at RHCs of Bagh

(A) Available of toilets or improved latrines for patients (B) At least one toilets or improved latrines providing the means to manage menstrual hygiene needs (C) At least one toilet meeting the need of people with reduced mobility (D) Functioning hand hygiene stations within 5 m of latrines (E) Record of cleaning toilets visible and signed by the cleaners each day.

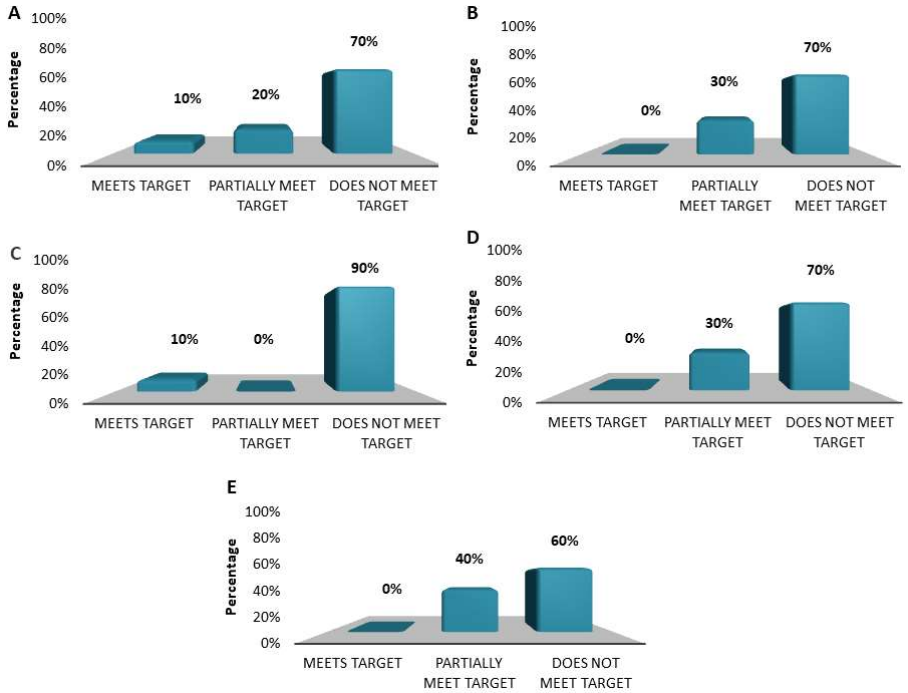

Figure-3: Gaps in the healthcare waste of RHCs Bagh

(A) A trained person is responsible for the management of health care waste in the health care facility (B) Functional waste collection containers in close proximity to all waste generation points (C) Waste correctly segregated at all waste generation points (D) Standard operating procedure (SOP) for safe management of health care waste clearly visible (E) Appropriate protective equipment for all staff in charge of waste treatment

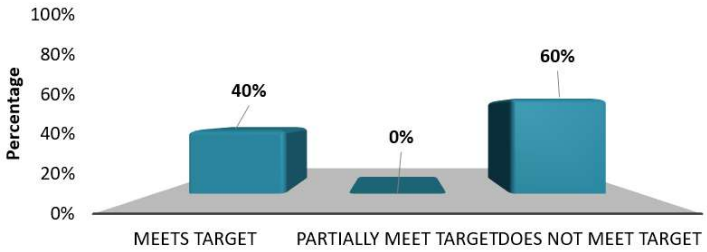

Figure-4: Hand hygiene practices

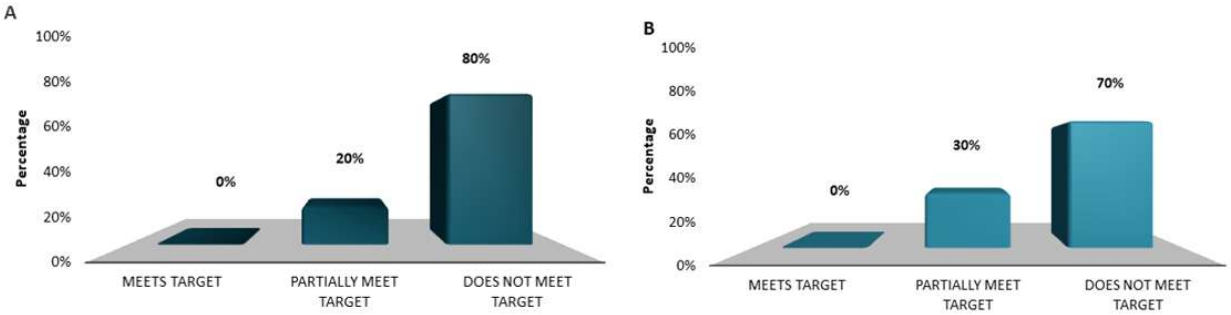

Figure-5: Gaps in facility environment

(A) Availability of minimum two pairs of cleaning gloves and pair of apron and boots for each cleaning and waste disposal staff. (B) Staff demonstrating the correct procedures for cleaning and disinfection.

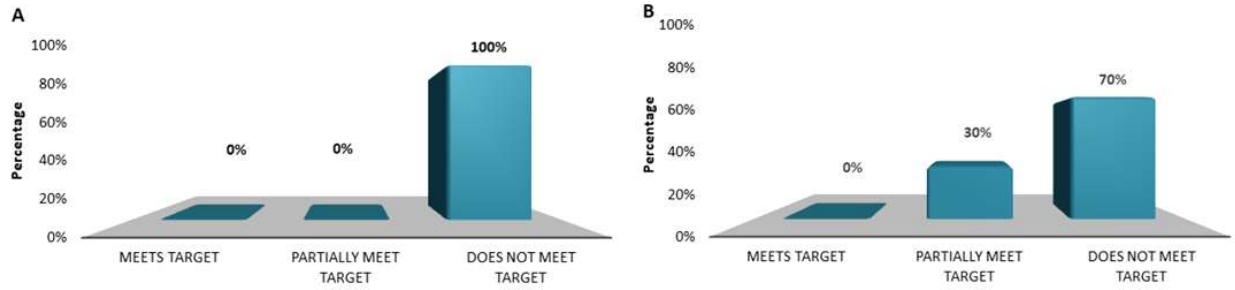

Figure-6: Gaps in management of RHCs

(A) Implementation of Wash fit or any quality tool in the facility. (B) WASH training of Health care staff.

DISCUSSION

The findings of our study demonstrate high percentages of the gaps in health care facilities of district Bagh. WASH needs a continuous monitoring tool to assess the situation in HCF of low-income status for controlling the infections and ensuring quality care. In this study we used the WASH FIT tool of WHO for assessing the WASH in HCFs of Bagh. Our results showed huge gaps in all domains. 28% of the facilities were meeting the criteria of water according to WASH FIT. 40% of sanitation while 44% of health care waste was not meeting the criteria. About 68% of hand hygiene practices while 43% of the facility environment was meeting the criteria.

Petra Kohler and et al. in 2017 assessed the WASH and gender in health care facilities in a multicentre study conducted in two districts of India and Uganda. Six dimensions were evaluated for different aspects of WASH: hygiene and health, menstrual hygiene measures, security and privacy, accessibility along with the comfort. Three assessment methods were selected for assessment of WASH including GALS methods (gender action learning system method), interviews and on spot checks. The most common in patients and attendant complaints were insecurity in using toilets,

unavailability of soap and unclean hospital environment. The female gender was facing problems for menstrual hygiene as buckets were unavailable for disposal of sanitary napkins, no place of changing, washing or drying of sanitary products. Female participants stated that the health education, communication, information around menstruation hygiene was important. In both countries, females do not feel comfortable during their hospital stay due to menstrual hygiene issues. WASH along with gender gaps in health care facilities is still a neglected topic.[18] [11]

A country wise cross-sectional study was conducted in health care facilities by Leanne Unicomb and associates. They determined the levels of WASH among doctors, staff and patients of 875 healthcare facilities. The data was conducted randomly by using standardized questionnaires. Facilities for patients were poor with only fifty nine percent (59%) drinking water facilities and fifty four percent (44%) toilet facilities available while there was improved water source for doctors (79%). Forty-three percentages (43%) had no disposable method for health care waste. Sixty eight percent (68%) of health care facilities had working hand hygiene stations while only twenty four percent (24%) had at least one toilet designated for females.[18]

Yousef Saleh Khader conducted the study in 2017 at Jordan for assessing WASH in health care facilities. All hospitals (100%) had a drinkable safe water source with 84.2% facilities providing functional sources of water for both patients and health care workers. Fifty eight percent (58%) of hospital had disposable drinking vessel while in 10.5% of the facilities, the people shared drinking vessel. Thirty seven percent (37%) of toilets in hospitals were clean and tidy while 36.9% hospitals do not have clean toilets for staff. No toilet was present for disabled patients. Seventy nine percent (79%) of health care facilities had sufficient showers. Hazardous and non-hazardous health care waste segregation at site was practiced in all health facilities.[19]

Sarah Bennet and associates addressed WASH in western Kenya by fixing hand washing points, drinking water spots and training health care staff on hygiene and safe drinking water at 49 rural health care facilities. Baseline assessment was done using a predefined questionnaire made from the core indicators of WASH in Joint Monitoring Program. After 15 months of mounting drinking water spots, hand washing stations, supply of disinfectant powder and proper training of health care workers post evaluation was done. Results showed higher percentages of health care facilities having soap availability (42% vs 77%) and safe drinking water (6% vs 55%). Significantly higher percentages of health care workers reported receiving health education by colleagues on hand washing, water treatment and water storage (80%vs25%). Ninety three percent of health care workers had knowledge on safe water and hand washing at follow up.[20]

Alexandra Huttinger and associates conducted a study in 2017 at Rawanda, Africa on quality of infrastructure of WASH in 17 rural healthcare facilities. On spot observation and interviews were conducted for assessing drinking water, health care facilities, sanitation conditions and facilities, presence of water and soap, record maintenance and WASH related maintenance. The results showed 15 out of 16 drinking water met *E .coli* standards by WHO guidelines, 6 of 16 drinking water samples for total coliform were meeting WHO guidelines. Sixty percent of drinking water spots were functional as compared to 40% previously. Soap availability at hand washing locations was 71%. Hygienic conditions in latrines in use before were 51% and 91% of latrines were in better hygienic condition after intervention.[21] Low-income countries like Pakistan has to redirect its health care system towards primary health care in order to achieve the better, healthier and safer life.

CONCLUSION

Water, sanitation, hygiene and waste management are very important but under considerate issues for the hospitals. The prevention and control of infectious diseases must be made essential for the improved health care facilities. The HCFs should use the assessment tool of WASH for the improvement of water, sanitary environment, medical waste and health education. Using of such tools should be given greater attention especially at low-income health facilities for decreasing burden of infectious diseases. Countries like Pakistan where the halt of disease burden is still infectious disease must ensure the usage of WASH tools. No such tool is being used anywhere in HCFs of Pakistan. For the improvement in smaller and low-income health care facilities WASH FIT is the available and accessible tool of choice.

AUTHORS' CONTRIBUTION

BS and MY designed the study and contributed in data collection, analysis, visualization, interpretation and paper writing. AH and ASRA assisted in analysis, results interpretation and editing the paper. FZ contributed in data analysis, visualization, interpretation, paper writing and editing.

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