

Water and Hygiene Quality in the Borgop-Cameroon Refugee Camp and its Potential Adverse Impacts on Environment and Public Health

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Abstract

The world is currently experiencing one of the greatest refugee crises since the World War II. Africa is particularly concerned. The present investigation, *conducted in summer 2016*, aims at assessing the living conditions of refugees within the prisms of the water sanitation and hygiene promotion (WASH) standard in the Borgop-Cameroon refugees camp. For this, structured questionnaires are issued to 164 refugees and 6 United Nations High Commission for Refugees (UNHCR) officials posted in the field. Both sets were complemented with key interviews, field observations and secondary data. It is found that some WASH standards such as the average amount of water needed per person, existence of protected water source, the proximity with water sources, the number of people per latrine, the distance between latrine and the closest water source and the existence of garbage pits round the camp are met conformingly to the sphere standards. However, there are many concerns regarding the queuing time at the tap, the presence of non-coverable water recipients, the non-accessibility of every household to a toilet, the presence

of human faeces in the environment and the use of non-intimate or secure toilets. Such investigation can be very useful for the safety of millions of refugees in the world.

Keywords: WASH; Refugee; Cameroon; Borgop; Sphere standard

1. Introduction

The world is facing the most serious refugee crisis since the end of the World War II [1]. The fallouts from decolonization, Cold-war and post-Cold-War conflicts have taken their toll on human populations, forcing millions to flee their home countries [2, 3]. The result of these conflicts has been the emergence of grievous humanitarian crisis. In 2014, the number of refugees, asylum-seekers and internally displaced people worldwide, for the first time in the post-World War II era, exceeded 50 million people. There are about 59.5 million people displaced worldwide [4].

The increase has been driven mainly by the war in many parts of the world some of which have lasted more than ten years. By the end of 2014, conflicts in Syria for example, had forced 2.5 million people to flee their country and displaced another 6.5 million internally. In Africa major new displacements occurred in the Central African Republic, South Sudan, Nigeria and Eritrea. The primary causes for these displacements are ethnic and political crises [5].

As a United Nations member and a signatory of most conventions associated with the Protection of refugees, notably the 1951 UN Convention relating to the Statues of Refugees, the 1969 OAU Convention and the 1967 UN Protocol, also known as the New-York Protocol [6, 7], Cameroon has over the years been receiving people displaced by cross-border movements caused by droughts, conflicts, political strife and civil wars in the neighbouring countries, particularly from Central Africa, Chad, Nigeria, Niger and Gabon. This is accentuated by its geographical position, peaceful nature as well as environmental and geo-political developments. The massive influx of refugees into Cameroon has been shown to be from different directions (approximately 30) with the main entrances being Garoua-Boulai, Kentzou and Gbiti, Ngaoui, Gbatoua-Godole and Yamba [8].

UNHCR [4] estimates that approximately 200,000 of Central African refugees had fled to Cameroon as of mid-May 2014, with a great proportion settled in the Borgop camp. Unfortunately, the local service and Cameroon government were clearly not prepared to meet the needs of this large number of extra populations. However, to honour its humanitarian responsibility, the government has still maintained an open-door-policy for refugees [9-11].

Although there exists sphere standard set as guideline by the consortium of humanitarian agencies, Non-Governmental Organizations and the Red Cross Movement developed the Sphere [12-15] in the area of water supply, sanitation and hygiene promotion; food security and nutrition; shelter, settlement and non-food items; and health action, there is no scientific investigation conducted to assess the effective implementation of these standards in the refugee's camps in Cameroon. The present article aims mainly at assessing the implementation of these

standards in the area of Water, Sanitation and Hygiene (WASH) within refugees' camp of Borgop, located in the Adamawa region of Cameroon, *summer 2016*. The main objective is then organized as follow:

- (1) testing if the minimum standards of water supply are attained;
- (2) evaluating the level and quality of sanitation response in the camp;
- (3) analysing the extent to which the minimum standards of hygiene promotion is met.

2. Data, Materials and Methods

2.1. Study area

Borgop is a village in the municipality of Djohong, located in the Adamawa-Cameroon region (Coordinates: 6°55'39.60"N-14°48'55.80"E), near the national borders with the Central African Republic. It is extended on an area of 36 hectares and divided into 23 blocks comprised of 4 zones and 1 center of transit. This camp stands 75 km far from Ngaoui, 160 km from Alhamdou and 82 km from Yamba. Those localities are the main entrance points (Figure 1).

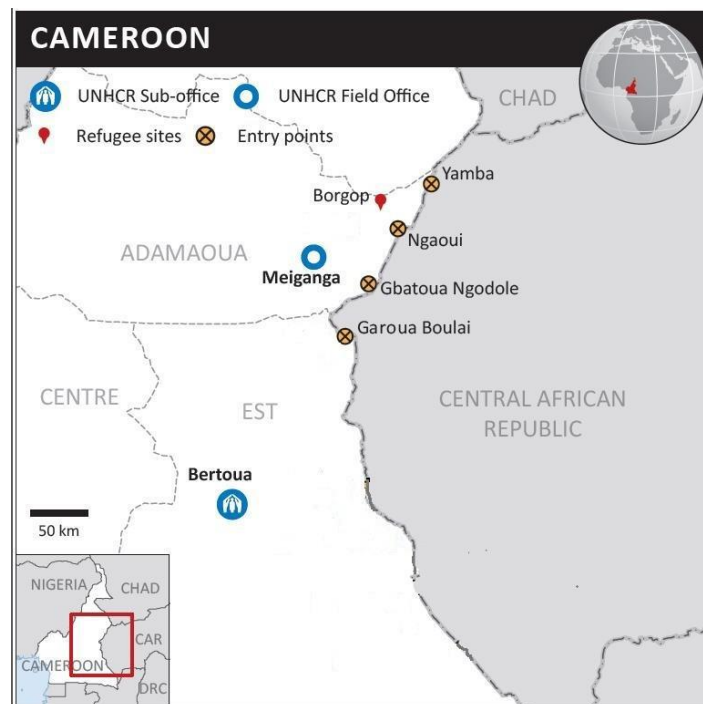


Figure 1: Location of the study area.

The Borgop refugees camp is a temporary settlement built to receive refugees and people in refugee-like situations. This camp actually accommodates displaced persons who have fled their home country and are seeking asylum in Cameroon. The refugee camp was built and run by the Cameroon government, the UNO, and international organizations or NGOs. The refugee camp was developed in an impromptu manner with the aim of meeting the basic human needs of the population for a short time. Main characteristics of the camp are listed in Table 1.

Parameter	Value
Date of creation of the camp	10 march 2014
Number of refugees	10936
Number of households present in the site	4027
Number of functional water sources	19
Number of functional latrines	854
Main ethnic group in the camp: 3	Bororo (69.48%), Peul (9.92%) and Fulbe (13.41%)
Minority ethnic group: 2	Gbaya (3.77%) and Hausa(1.40%)
Religions	Muslim (96.74%), Christians (3.13%), others (0.13%)
Sex	52.71% of females and 47.29% of men
Age groups	59.93% of the population are under 18 and 3.6% are aging

Table 1: Main characteristics of the Borgop refugees camp.

Main infrastructures observed in the village are 1 maintaining station, 1 hospital, 1 primary school, 4 temporary spaces for learning and children protection and 837 showers.

2.2 Study population

The study population crossed over every age group and gender especially those in charge of supplying water in various households in the refugee camp. The fact of taking into consideration every gender and age group will give a better representation of the WASH situation of the site. The sample size of the study was 170 including 164 refugee households, and 06 WASH officials.

2.3. Sampling strategy

The study employed a stratified random sampling to identify and select the study population. Stratified sampling is used when the study population is divided into different zones or sections. It enables to have a representation of every section. This sampling technique, with limited level of bias, proved to be very useful in Borgop refugees camp as its population is divided within 4 zones.

2.4. Data collection

Both primary and secondary data are used in this study. The primary data was collected through a structured questionnaire, key informant interviews, non-participant observation. The questionnaire containing close ended questions were divided into four sections. The first section contains questions relevant to the socio-demographic characteristics of the respondents; the second one covers questions hygiene promotion; the third section encloses questions about water supply, its accessibility, its quality and its treatment and the final section is made of questions

related to sanitation, vector control excreta disposal and solid waste management. A total of 170 on 171 questionnaires administered were returned, for a response rate of 99.9%. The information from the questionnaire were complemented using interviews of the health personnel.

2.5. Analytical approach

Both descriptive and inferential statistics were employed to analyze the data obtained from the questionnaire. The descriptive statistics used included percentage distribution, means, median and mode. Inferential statistics included chi square and paired sample t-test. Charts, tables and figures were used to enhance explanation.

3. Results

3.1. Summary presentation of respondents and field investigation

100% of the respondents were from the Central African Republic. 84.1% of them arrived in 2014, 9.2% in 2015 and 6.7% in 2016. These figures prove to be coherent, given that the Borgop site was created in March 2014 to respond to massive arrival of refugees coming from CAR earlier 2014. This year matches with the beginning of hostilities in that neighboring country.

Majority of the respondents only spoke and understood their native language Fulfulde. This is self-explanatory given the high rate of illiteracy of the respondents. Indeed, 82% of respondent were uneducated, 17% had been to elementary school, and 1% to secondary school. Their former occupations included jobless (33.5%), housewives (35%), farmers (7.5%), rearers (3.2%), carpenters (0.6%), students (4.3%) and community relay officers (9.2%).

3.2. Global WASH situation in the camp

Through questionnaires, interviews and field observations, local WASH situation was investigated in terms of sphere standards. Results are summarized in Table 2.

	Parameter	Situation in Borgop	Sphere Standard
Water	Average # of liters of potable water available per person per day	16.9 liters/person/day	15 liters/person/day
	Number of persons per water collection point	576 persons/water collection point	250- 500 persons/water collection point
Sanitation	Distance between farthest targeted beneficiary household and the nearest water collection point	400 m	> 500 m
	Number of persons per toilet/latrine with functioning hand washing facility	13 persons/latrine	> 20pers/latrine
	Number people per garbage bin	14 households/garbage bin	> 10 households per garbage bin
	Number people per refuse pit	887 persons /refuse pit	> 500 persons/refuse pit
	Number of refugees per hygiene promotor	310	>500

Table 2: Sphere standard implementation in the camp.

3.3. Water supply

100% of Borgop's refugees use groundwater collected from either a borehole or a well. There are 21 boreholes and wells including 2 non-functioning ones within the camp. Distances covered on waterway are represented Figure 2. The chart shows that an important number of refugees cover more than 500 m (standard value). This is reflected in the duration. 57 respondents spent more than 30 minutes and up to two hours at the water points. This long duration is due partly to the long queue they met at the tap (Figure 3).

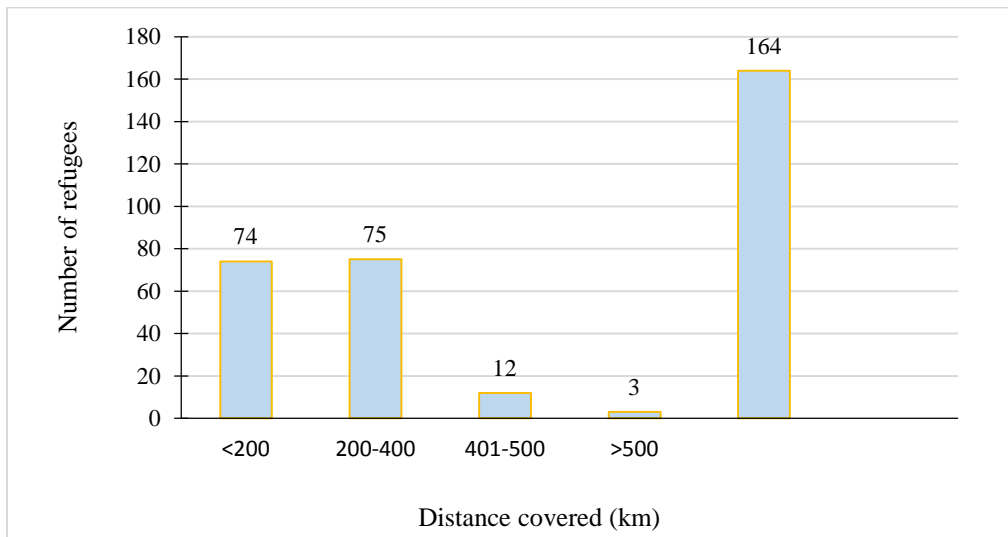


Figure 2: Number of refugees as a function distance covered to carry water.



Figure 3: Photograph of the queue at the water source.

The great number of people per water source (557) can explain this time waste. This delay is already due to the slow flow of water and to a poor organization of population. Most of the refugees wait till a particular time of the day before going to fetch water. Thus, there is always a queue at the tap.

3.4. Quantity of water carried per person

The quantity of water carried per day ranges from 10 to 40 liters with a mean value of 16.9 liters and a standard deviation of 13.5. From those figures, it appears that there are many refugees who carry less than 15 liters of water per day. Hence, more effort needs to be put forth.

3.5. Recipients used for carrying and stocking water

85.4% of respondents were provided with recipients for water carriage and storage upon their arrival in the site while the other 24 reported not to have been provided recipients. Those 24 refugees fall in one of the following situations: they were either new arrival on the site or they had not yet been registered as of that time. Anyway, refugees without suitable recipients were present in the camp.

All of them agreed to wash the recipients they use to carry water. However, the frequency and the method of washing differed from one respondents to another. Hence, 24% reported that they wash their recipients not more than once daily. However, five main methods of washing recipients have been registered and presented in Figure 4.

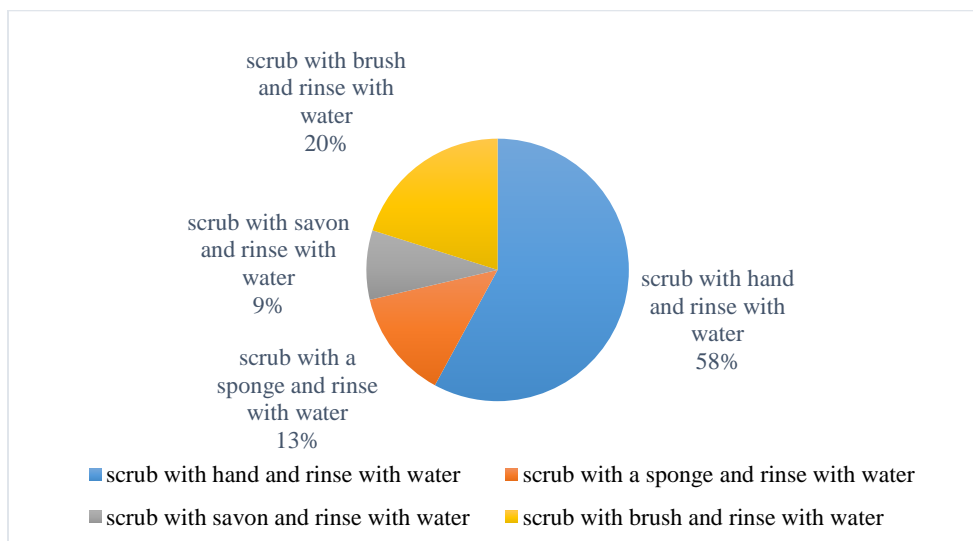


Figure 4: Statistical distribution of methods used in washing water recipients.

This diagram reveals that all respondents wash their recipients daily and before any usage. Though some of the methods are not exactly satisfactory. Those recipients are made of plastic (90%) and stainless steel (10%). It's not advised to use silver recipients for the chlorination of water.

3.6. Proximity between latrines and water source

99.4% of the respondents said there were no toilets around the water source they used. Only 0.6% of the respondents said there was a toilet around the water they used. The results from the questionnaires administered to the WASH personnel contradicts the results from the refugees as they stated that there are no toilets 30m to any water source. Given the minimal percentage that said that there are toilets close to the water source, the present survey concluded that the distance latrine-water source is respected.

3.7. Water quality

The water sources are frequently checked and treated with chemicals like chlorine. Even though the water sources are protected, there is still a risk of contamination during the carrying and storing of water [16]. To this light, WASH Soft regularly distribute water purification tablets like Aqua tabs and Oasis to ensure the quality of water used. Also the community is always advised to treat their water locally at home. Different methods of water treatment are summarized in Figure 5.

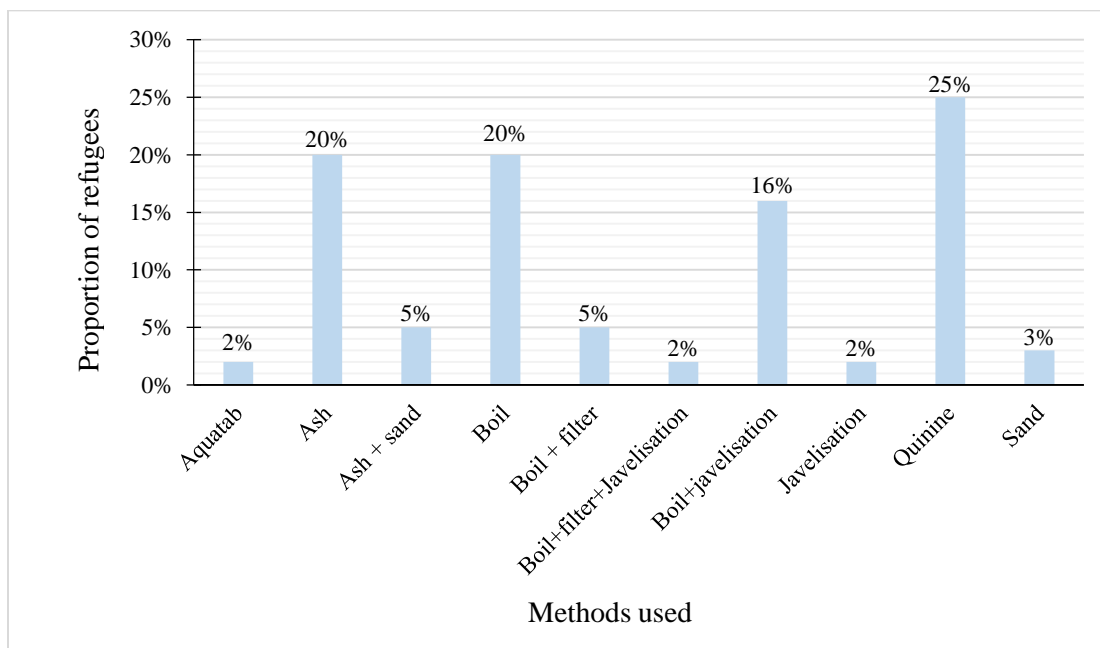


Figure 5: Distribution of water purification methods.

However, an examination of their hospital booklets reveals that 7% of respondents have suffered from some water related diseases over the last 3 months. According to the medical personnel on the field, 7% is very minimal and cannot be attributed to contaminated water sources but rather poor personal sanitation. Given the low incidence of water borne diseases and the effort put in place to treat water, the quality of water provided is not bad. It is tasteless and colorless, with no smell.

3.8. Sanitation

There are 824 latrines on the Borgop site. 94.5% of the respondents had access to and actually used latrines as required by the Sphere Standards but the remaining 5.5% had no toilets. However, this is no way the fault of the Wash officers because they had just finished rehabilitating the latrines but unfortunately, some of the latrines were vandalized. Irrespective of this, they are looking into the situation and scheming ways to provide toilets for the household who don't have. Those latrines and toilets are located at least 30 m away from water sources.

However, 100% of the respondents affirmed that their immediate environment was free from human especially children faeces. This is totally justifiable because every refugee with little children were provided with poos one month before this survey. Still in relation to human faeces the respondents were asked how they got rid of their children's faeces after they had used the poo. Their responses reveal that 49% of respondents use poos for their toddlers, 21% throw their toddlers faeces in the bush, and 30% do not have toddlers.

The sphere standard does not only recommend the provision of tools for excreta containment but also excreta disposal special attention should be given to the disposal of children's faeces, as they are commonly more dangerous than those of adults (excreta-related infection among children is frequently higher and children may not have developed antibodies to infections). Unfortunately, almost 30% of the respondents throw their children's faeces in the bush. This situation increases the risk of excreta-related diseases [17].

3.9. Security and intimacy in the toilets

To better communicate and acquire the information needed, the following indicators were used to determine the response to these question: the presence or absence of internal locks, the presence of doors, the proximity of the toilet, and the state of the tarpaulin amongst others. Averagely there are 13 persons per latrine, but 41% of respondents affirmed that there is no enough security and intimacy in the toilets.

3.10. Spreading of vector related diseases

102 respondents on 164 have been affected with a vector related disease over the last 3 months with the main infection being malaria. However, all the respondents said they and their households had been provided with mosquito nets. It is recommended to educate beneficiaries be educated on the proper use of these nets and to delegate an inspection team from time to time to check and sensitize the community on the matter. The medical team on the camp stated a consistent incidence in the rate of malaria victims.

3.11. Other hygiene promotion standards

94.7% of the respondents agreed to having flies and rodents in their home on a very regular basis. Majority of them reported not to have been provided with baggage cans but pits have been dug all over the camp to ensure the proper disposal of dirt. Many questions were asked to refugees and their answers are reported in this Subsection. 89% of the respondents washed their hand after defecation. Cleaning their children's bottom, before eating and preparing food whereas 11% of the respondents don't wash their hands. 38% of respondents do not microwave their meal when

they are hungry. Worse, the hygienic appearance of each respondent reveals that 59% of them look dirty. Further relevant investigation shows that 66% of respondents clean their latrines once a day with detergent, 55% with water only, 24% twice a day with detergent and 10% twice a day with water only.

Results reveal the existence of many shortcomings within WASH conditions in the Borgop refugees camp, with serious potential consequences on environment and public health. Refugees expressed their feelings and opinions. They think that an increase of the access to water in the camp should take into account some factors such as the number of boreholes, the number of recipients, the number of opening hours of the water sources and the boreholes yield. Their related views are illustrated in Figure 6.

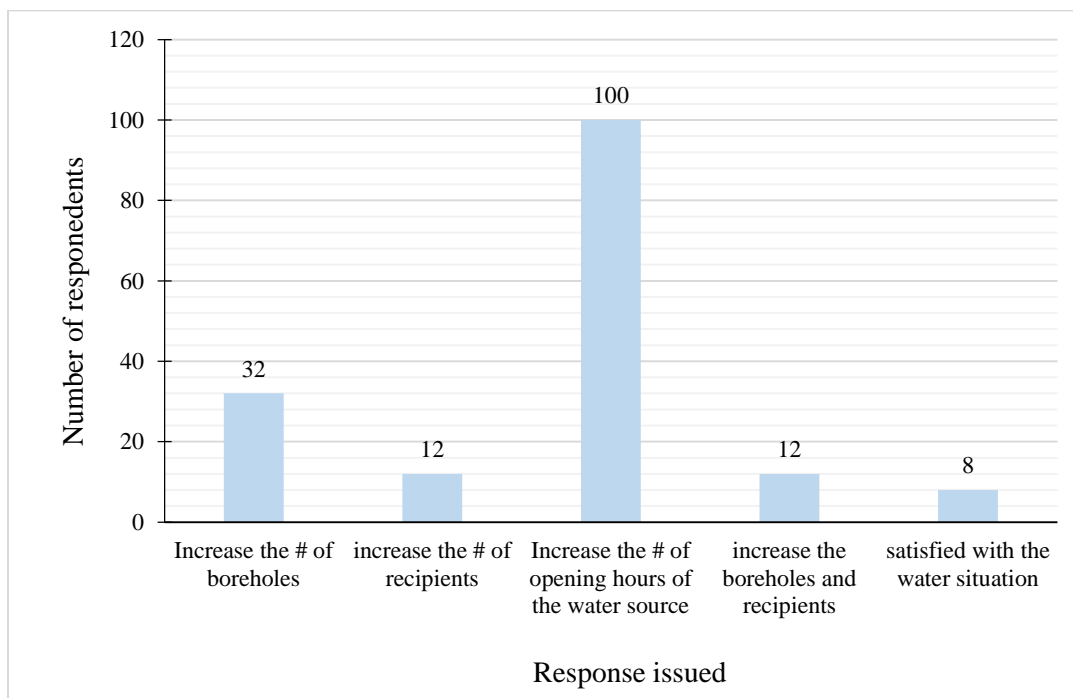


Figure 6: Amelioration of access to water in the camp.

According to spheres standards, every water container should have a lid. From the results 63% of the respondents had containers with lids while the remaining 37% had no lids. However, this isn't the fault of the relief officers because every container was given with a lid. The lids got stolen and broken over time. The present paper covers three main interests. Firstly, the findings will help inform policy-makers in crafting legislature for ensuring the right to life and dignity, the right to receive humanitarian assistance and the right to security and protection for those affected by conflicts. Secondly, it will also inform the humanitarian organizations working on the field on the effectiveness of their efforts in implementing the Sphere Standards and in maintaining human dignity especially with regards to the WASH need of refugee. This assessment will help them refine their activities and consequently increase their commitment towards better WASH delivery. It can also be used to inform the actions of other countries and organizations involved in humanitarian responses in other countries of the world. Lastly, it will serve as secondary data for other research in the area or related topic.

4. Conclusion and Recommendations

The present article sought to assess the extent of the implementation and respect of the Sphere standards in relation to WASH in the Borgop's refugee camp. It is found that some parameters such as the average amount of water needed per person, existence of protected water source, the proximity with water sources, the number of people per latrine, the distance between latrine and the closest water source and the existence of garbage pits round the camp are met conformingly to the Sphere standards.

This may explain the fact that there has been no outbreak of a water related disease over the last six months. In fact, the WASH team in the camp has made great efforts through the help of UNHCR to ensure a satisfactory sanitary condition the camp. However, there are many concerns regarding the queuing time at the tap, the presence of non-coverable water recipients, the non-accessibility of every household to a toilet, the presence of human faeces in the environment and the use of non-intimate or secure toilets. Those parameters are not met. Some recommendations are then formulated: more sensitization on hygiene promotion and importance from the WASH personnel; creation of further boreholes to adequately meet the needs of population; rehabilitation of lacking lock and tarpaulin on toilet doors; provision of new refugees with recipients to stock and transport water; increasing of the opening hours for the water sources; etc.

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