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# Challenges to Hygiene Improvement in Developing Countries

*Save Kumwenda*

## Abstract

Hygiene is defined as conditions or practices conducive to maintaining health and preventing disease. Hygiene has been shown to reduce diarrheal diseases and assist to improve social outcomes in the community. Improving hygiene faces several problems especially in countries with low income per capita of population. Currently, many developing countries already struggle to cope with consistent water shortages and rapid urbanization causing more pressure to limited resources which in turn result in poor hygienic practices in the communities. The common types of hygiene include personal hygiene, water hygiene, food hygiene, and hygiene during waste handling. Different nongovernmental and governmental organizations face different challenges in achieving high levels of hygiene in communities. Some of these challenges include poverty, lack of political commitment, lack of full community participation, inadequate gender inclusion, inadequate data, lack of coordination among actors, and behavioral issues. To reduce these challenges, several measures have been proposed including community empowerment, pushing for equitable access to hygiene needs, advocating for political commitment, promoting gender equity, and enhancing youth involvement.

**Keywords:** hygiene, hand washing, soap, developing countries, communities and challenges

## 1. Introduction

This chapter defines hygiene in the context of developing countries. It then outlines the various major types of hygiene before tackling the challenges in the implementation of projects aimed at hygiene improvement. The chapter then suggests possible solutions to these problems.

### 1.1 What are developing countries?

There are different definitions of developing countries; however, the broad definition is that; this is a term often used to refer to countries with medium to low human development index (HDI) or sometimes the gross domestic product (GDP) is used. These countries are mainly found in Africa, Asia, and some in South America that generally lack a high degree of industrialization, infrastructure and other capital investment, sophisticated technology, widespread literacy, and

advanced living standards among their population as a whole [1, 2]. In short, these are countries with low income per capita of population that are trying to improve their conditions through industrialization [3]. In addition, the United Nations (UN) describes a developing country as a country with a relatively low standard of living, undeveloped industrial base, and moderate to low HDI, with a high employment share of 60–70% in agriculture [4]. Developing countries also have low life expectancies [5, 6]. However, regardless of the low income in developing countries, there is high population growth in these countries. It is this high population growth in developing countries that is seriously outstripping the capacity of most countries to provide adequate services for their citizens [5].

Currently, many developing countries already struggle to cope with consistent water shortages and they lack adequate water infrastructure. High population growth and rapid urbanization cause more pressure to these limited water resources which in turn results in poor access to improved water source and limits hygienic practices in the communities, as these hygienic practices highly depend on the availability of safe water [6]. Hygiene causes a global health challenge especially in the developing world even though thus far, hygiene has been barely prioritized on the international development agenda despite the fact that a hygienic behavior such as hand washing with soap could save lives of people annually [6, 7].

## **1.2 What is hygiene?**

According to Oxford English Dictionary, 2018, the word “*hygiene*” is defined as “*conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness*” [8].

The World Health Organization (WHO) and other studies have similar definitions as the Oxford English Dictionary, and they define hygiene as the concept of cleaning and any practice aimed at maintaining health and preventing the spread of diseases [9, 10]. Other literatures define it as the science of preventive medicine and preservation of health through cleanliness [11]. However, it should be noted that the term cleanliness is not the same as hygiene. Hygiene is far more than just cleanliness because cleanliness mostly involves the removal of dirt, wastes or unwanted things from the surface of objects using detergents and other necessary equipment. On the other hand, hygiene practices focus on the prevention of disease through the use of cleaning as one of the several inputs [12, 13]. Hygiene can be achieved through cleanliness and not vice versa. All disease control interventions to a greater extent rely on hygiene for them to achieve their goal.

## **1.3 Types of hygiene**

Hygiene is applied in different areas with the aim of prevention of disease transmission and promoting health. The common types of hygiene include:

- Personal hygiene includes taking care on one’s body and clothes. Personal hygiene encompasses oral hygiene, hand hygiene, hair hygiene, mouth hygiene, and menstrual hygiene including any form of hygiene relating to a personal body.
- Water hygiene involves the collection, transportation, storage, and use of water without contaminating it.
- Food hygiene is the practical process of ensuring that food is fit to eat. It is what the food handler does to prevent contamination.

- Waste handling hygiene relates to how solid, liquid, and gas wastes are handled from generation, collection, storage, transportation, and disposal to prevention contamination of the environment.

Hygiene can be practiced at personal, domestic, and community levels [14].

#### **1.4 Importance of hygiene to health in developing countries**

The greatest benefit of practicing hygiene is the reduction in disease transmission and improved health. The maximum benefits of hygiene are achieved, if improvements in hygiene are concurrently made with improvements in the food industry, water supply, and sanitation coupled with other interventions such as improved nutrition [14]. Good hygiene practices are among the essentials of the survival and development of children. Without hygiene, the lives of millions of people especially children and the vulnerable populations would be at risk of suffering from water, sanitation, and hygiene-related diseases which are one of the leading causes of death among children, despite being preventable [15]. In 2015, diarrhea was the leading cause of death among all ages. The most affected were children under the age of five where it claimed the lives of more than 499,000 children each day [16]. Most of the diarrhea is attributed to poor water, sanitation, and hygiene practices. Children in developing countries are the worst affected as they experience about 4–5 episodes of diarrhea each year [17–19]. Diarrhea is caused by fecal-oral transmission, whereby one ingests feces directly through contaminated hands or indirectly through contaminated food and water [20]. The organisms that cause diarrhea include bacteria, viruses, protozoa, and helminths [19]. This might be through contaminated hands when ingesting food or contaminated water. Hands (mainly fingers) can directly or indirectly be contaminated with feces of one self or of another. Contamination of the hands during activities such as defecation and changing/washing of a child's bottom facilitates the transmission of infections. Hand washing with soap is one of the most important hygiene behavior in disease transmission reduction and promotion of good health. In 2012, it was found that 35.3% of all the total deaths from diarrhea were due to poor hand hygiene [19].

Systematic reviews done from 1997 to 2010 have shown that hand washing with soap reduced diarrhea by either 32 or 48%. Furthermore, hand washing with soap including water supply and sanitation has been shown to reduce undernutrition by 50% [19]. In Kenya, water, sanitation, and hygiene intervention showed a reduction of 58% in absenteeism for girls [21]. Apart from health benefits and school absenteeism, hygiene has other social benefits including boosting confidence and status [19]. It should, however, be noted that the impact of hygiene cannot be easily evident in short term projects, and it required time for it to show significant impact especially on health [22].

#### **1.5 Hand washing**

Hand washing with soap at critical moments, such as after visiting a toilet, before cooking, and after helping a child defecate, can prevent infectious diseases by interrupting the transmission of infectious agents. Evidence suggests that hand washing with soap reduces the risk of diarrhea by 47% [23, 24], acute lower respiratory infections by up to 34% [25], and soil-transmitted helminths by 55% [26]. Hand washing with soap has been recognized as one of the most cost-effective health interventions to reduce the burden of disease [27]. Yet, only 19% of the global population is estimated to wash their hands with soap after using sanitation

facility or handling children's excreta [28]. Hand washing facilities close to toilet are important if people are to wash hands after using the toilet facility (**Figure 1**).

Good hygiene is of vital importance in Malawi due to the lack of basic sanitation in the country. Hygiene, for example, washing hands with soap after using a toilet may reduce the transmission of fecal-related diseases. Although, evidence of actual hand washing practice is scanty, but some studies done in rural areas of the country suggest that the actual practice of hand washing with soap (HWWS) at key times is between 3 and 18% but more likely on the low end of this scale, as responses tend to exaggerate actual and regular practice. Observations in Malawi and other countries show that HWWS promotion is undertaken as an ad hoc activity both at national and local level. Current efforts to promote good hygiene and HWWS, in particular, have not been sufficient to bring about mass behavior change on the scale that is needed. Efforts producing piecemeal village-by-village and pilot approaches have had some impact but nothing on a large or national scale has been attempted [29]. Our hands frequently get dirty during our normal activities, with microorganisms likely to attach to our hands along with the dirt. Hand hygiene, however, especially hand washing with soap plays a critical role in prevention of such transmissions, through hygienic hand washing. Soap helps remove dirt and microorganism from the hands. Global waters [30] in 2017 put coverage of hand washing facilities at 27% in Sub-Saharan Africa and below 50% in Africa. The critical times for hand washing with soap include:

- a. Before cooking food
- b. Before eating food
- c. After visiting a toilet
- d. After cleaning or touching dirt
- e. After changing baby nappies



**Figure 1.**  
*Tippy tap close to toilet for hand washing in rural areas of Malawi.*

Hand washing should not only involve getting the hands wet or a quick rinse under a tap or in a bowl, but it should rather be a hygienic hand washing, where there is removal of microorganisms from contaminated hand surfaces using soap or detergent. Hand washing with nonantibacterial soap and clean water was found to be more effective than just using water [31]. For most of the people in the rural communities of the developing countries, they cannot afford to get soap for hand washing. Nonetheless, alternatives such as wood ash and mud have been found to be better than using only water [32]. However, it should be noted that communities which can afford soap should be encouraged not to use ash and mud because of their varying abilities to remove germs from hands and other risks than may come due their use. It should be further noted that hand washing should involve the use of running water that carries away the microorganisms unlike dipping in a bowl. Washing in the same bowl may be a way of transmitting pathogens that are found in hands [33]. Clean sand with water or local seeds such as indod (Lemma's plant) can also be used as an alternative just as wood-ash, which rubs off both the dirt and the smells [34]. The correct hand washing procedure according to WHO [35], includes the following 10 modified steps:

Step one	First wetting the hands with clean water and apply enough soap to cover the hand surfaces
Step two	Rub hands palm to palm
Step three	Rub right palm over left dorsum with interlocked fingers and vice versa
Step four	Rub palm to palm with fingers interlocked
Step five	Rub backs of fingers to opposing palms with fingers interlocked
Step six	Make rotational rubbing of left thumb clasped in right palm and vice versa
Step seven	Perform rotational rubbing, backwards and forwards with clutched fingers of right hand in left palm and vice versa
Step eight	Rinse hands well with clean running water or pour from jug
Step nine	Dry hands thoroughly with a single use towel or dry in the air to avoid recontamination
Step ten	Use towel or back of hand depending on design to turn off tap

Rubbing of hands should take approximately 20–30 s to make sure germs are dislodged [35].

Hand washing with soap is also an important infection prevention tool in health facilities [36]. Daily works will involve many situations when people need to wash their hands, and sometimes people forget to wash their hands. However, it is of great importance to identify critical situations/times for hand washing. These are times, activities or incidents that indicate the possibility that pathogenic microorganisms are present on hand fingers and nail surfaces. Most people remember to wash hands after defecation than after doing other things that may equally have the risk of disease transmission [37].

To encourage hand washing, there is need to locate the hand washing facilities in suitable places such as close to the latrine and/in the kitchen where they will be needed. These hand washing facilities should be provided with soap (or its alternative) and running water. In the absence of a tap, cans and plastic bottles can be used. These alternatives are mostly used in the rural areas where communities do not have adequate access to piped water [38].

## 1.6 Menstrual hygiene

Another aspect of personal hygiene that greatly affects women and adolescent girls is menstrual hygiene. This is special care that is needed during the time of the

month when women and girls experience their menstruation. This special care is needed to take care of the sanitary products that are used by the women. In the developing countries, not many women can afford to buy enough sanitary products such as disposable pads, tampons or menstrual cups. The women tend to use locally available clothes which they reuse, while others have been introduced to reusable pads [39, 40]. Nonetheless, regardless of the product used, women are supposed to change their sanitary products frequently, and for those that use reusable products, there is need for soap, clean water, and proper drying area for the reusable towels. Not only does poor menstrual hygiene causes bad odor, but it can further cause fungal infections, urinary tract infections (UTI), and reproductive tract infections (RTI) [41]. Women are further vulnerable to infertility when their menstrual hygiene practices are unhygienic, for example, not changing their sanitary towels frequently, lack of adequate cleaning of reusable products, and the use of unclean water for cleaning both their bodies and their sanitary towels. Good menstrual hygiene practice further involves proper disposal of sanitary materials, but this is a problem in most developing countries [42].

### **1.7 Domestic and community hygiene**

While hygiene measures are taken at personal, domestic, and industrial levels, some can be done at a community level. Community members have a role to play in keeping their communities clean [14]. The members play a role to ensure a clean surrounding of their households, protecting the water sources, proper disposal of wastes (solid wastes and excreta), proper drainage for waste water, control of animal rearing, and hygiene of public places such as markets, schools, health facilities, and prayer areas (e.g., churches and mosques) [6, 12, 13].

Clean compounds in communities should be encouraged, as a single unhygienic house can affect the surrounding neighbors and increase the spread of disease. Presence of shrubs, lack of drainage, and poor waste management in households can act as breeding grounds for vectors, resulting in vector-borne diseases such as malaria, affecting a larger part of the community [14, 43]. Households should be properly ventilated to allow fresh air in the house as this would also reduce transmissions of infections such as flu [44].

Most markets in developing countries lack proper water resources, sanitation facilities, proper solid waste management, and drainage. However, in most of these markets, raw food such as fruits and vegetables are usually sprinkled with water, which is at most times unclean [13]. Such unhygienic practices poses a risk to the consumers, that is why it is encouraged that a market should have a proper water source, not only for cleaning the goods but also for the sellers, since they use the same water for drinking and cooking.

The Government of Malawi in a bid to improve sanitation and hygiene coverage adopted the open defecation free (ODF) and hand washing with soap (HWWS) strategies in 2011. The strategies were up to 2015. By 2015, the strategies had improved the percentage of the country's population practicing open defecation from 29 to 4% and access to improved sanitation increased from 29 to 41%. Hand washing with soap was also improved from less than 10 to 34% [45]. The government adopted Community Led Total Sanitation (CLTS) as a technique that was used to make sure communities are using toilets and also making sure all households own and use a hand washing facility after visiting a toilet. The approach has managed to increase toilet coverage and usage especially in rural areas by 96% as stated above. CLTS encourages the use of local resources to build sanitation and hygiene facilities, and its sustainability relies on the availability of these local resources. Since CLTS was being implemented as a project, there is a need to

incorporate the approach in village and district plans for it to be sustainable. The weakness with the approach was that it did not emphasize much on hygiene behavior but rather on ownership of hygiene promoting facilities [46].

## 2. Challenges faced when implementing hygiene in developing nations

### 2.1 Poverty

Poverty is high in developing countries, most households spend less than a dollar a day, and these are classified as extremely poor [47]. This makes them prioritize income so that they buy food, clothes, and other immediate needs placing sanitation and hygiene low in the priority list. Most families struggle to find food, and to them getting food is enough than considering hygiene. Most families start prioritizing hygiene after they move up the development ladder especially when basics like food are no longer a problem [48]. Due to poverty, communities find it difficult to use the only available soap at a household for hand washing [32]. Similarly, hand washing facilities used after visiting a toilet are usually temporary and are made from local materials which are not durable (**Figure 2**).

### 2.2 Lack of political commitments

Most of the hygiene initiatives are implemented by nongovernmental organizations (NGOs) and rarely by the government. Despite advocating for water sanitation and hygiene (WASH), there is not enough initiatives introduced by the government through relevant ministries (i.e., Ministry of Health and Ministry of Agriculture, Irrigation and Water Development in Malawi), to enhance hygiene



**Figure 2.**  
*Hand washing facility at a toilet in rural Malawi.*

practices [49]. Hygiene is the major component of provision of safe water and improved sanitation yet it is forgotten during planning of settlements [50]. In general, most countries do not provide enough resources to preventive health, which limits preventive health effectiveness, such as good hygiene practices [51]. For example, in Malawi, the government adopted a Hand Washing with Soap Campaign 2011 to 2012, but after it expired, no new efforts have been made. In addition, the government did not put aside finances to fund hand washing activities. This means hygiene activities will still continue to be implemented by NGOs whenever they have funding. The inconsistencies which the campaign wanted to eliminate will continue to exist [52]. For hygiene to improve, we need governments to plan for implementation and commit resources.

### **2.3 Lack of community participation during planning phase**

As much as there might be a solution, if the people who are receiving the solution do not realize the need for a solution, then the solution becomes ineffective. That is why it is of utmost importance to involve the community during the whole hygiene project. This offers proper understanding of the whole project, and the people further understand the need for the project initiative hence making the projects sustainable. When the people are involved, they get a feeling of ownership of the hygiene project and also understand the benefit of the solution [51]. Additionally, hygiene technologies that are introduced may contradict with some cultural beliefs and this affects adoption and implementation of the hygiene projects in most developing nations. Most hygiene technologies are not user friendly which makes acceptability a challenge [53]. For example, most hand washing facilities have design problems. Some hand washing facilities require users to perform several steps before washing hands and this discourages users from practicing the behavior. The tippy taps are the preferred ones, but they also face problems of durability and use of unpleasant containers and sometimes unsafe water which discourages users just by looking at it [38, 54].

### **2.4 Lack of gender inclusion**

In most cultures, women have the primary responsibility for water, sanitation, and hygiene at the household level [55]. However, most women are left out when it comes to the planning or designing of hygiene projects making the implementation of the project a challenge especially to the women that do not have enough information on the designs [56]. In addition, women sometimes need special consideration when it comes to hygiene infrastructure, for example, a menstrual hygiene management compartment in schools and homes to accommodate women's menstrual hygiene needs [57]. But most times, there is a lack of gender inclusion in the planning and designing [53]. There is less participation in hygiene issues including water supply by men. In African countries, it is the man who is supposed to construct hand washing facilities especially the tippy tap at the toilet and other sanitation facilities including a toilet, but in most of the gatherings related to sanitation and hygiene, it's mostly women who participate. Nongovernmental organizations have taken a leading role to encourage women get involved in construction of hygiene facilities including tippy taps [58]. The low participation of men in hygiene intervention limits the translation of messages passed mainly through women into practices due to the lack of physical enabling environment which is supposed to be provided and supported by men as head of households. In addition, men seem to be less inconvenienced by the lack of hygiene at a household [59].

## **2.5 Lack of information on hygiene infrastructure and practices**

There is a lack of recent, reliable information on the condition of existing hygiene infrastructure and practices, including whether or not the infrastructure are actually functioning or benefits of some hygiene practices. This makes needs and demands, particularly in remote rural areas frequently unknown, making the task of setting implementation priorities more difficult [53]. However, the rural areas may sometimes have the information but due to the high levels of illiteracy in the developing countries, the community members may not be able to understand the hygiene messages. Making implementation of hygiene is rather difficult. It has also been identified that some people access hygiene information in parts, and they are not fully aware of the hygiene benefits, hence making implementation a challenge.

## **2.6 Lack of coordination by hygiene actors**

As regard to Malawi, a country in southern Africa, there is a lack of coordination by different sectors involved in hygiene. Different NGOs are after their targets and are not interested in other similar NGOs in the area. In addition, there is institutional fragmentation in developing nations as they lack clarity over whom or which institution(s) is responsible for hygiene. For instance, water, sanitation, and hygiene services are located to ministries of water, thus disregarding Ministry of Health who also have expertise in implementing them [53].

## **2.7 Lack of clean and adequate water**

Hundreds of millions of people do not have access to clean water in developing nations [15, 60]. The Malawi Demographics and Health Survey, 2016 indicates that on average, 87% of households obtain their water from safe sources. Despite the high reported figure (87%), the situation reveals that most people are not accessible to these improved sources due to their concentration on one geographical location or because the water points often breakdown or sometimes the water from the source is salty especially from boreholes [61]. This makes developing nations to face challenges when it comes to hygiene implementation as most of the hygiene practices require the use of clean water. When water is inadequate and unclean, it results into contamination of hands and foods, thereby spreading infections. Furthermore, insufficient water supply limits good hygiene practices such as bathing and hand washing. Children in developing countries, sometimes clean only some parts of their bodies and not the whole body due to inadequate water and this affects their health [62].

## **2.8 Culture and behavioral issues**

Culture shapes the behavior and beliefs of most people as it is the way of people's life. Culture makes people in developing nations to resist to new hygiene facilities and ideas. Additionally, men and women have different perspectives on hygiene due to cultural differences. Different ethnic groups have varying beliefs and customs on hygiene. Lastly, attitudes also vary among people on hygiene in rural and urban areas [7, 50]. Thus, implementation of hygiene faces more challenges due to differences in attitudes, beliefs, and lifestyles of the participants on hygiene projects. One of the hygienic practices that was common is the washing hands by dipping in the same bowl of water by a group of people or family members who eat from the same plate. This practice was common in rural areas of some African

countries, but is now slowly being replaced with a better practice where each member is poured water when hand washing. The behavior has changed due to serious communicable diseases that were transmitted through washing hands in the same container, for example, cholera [33].

### **3. How hygiene can be improved to promote health**

#### **3.1 Community empowerment**

Households need to be taught on how to make priorities and aim to accomplish them in order of their importance. According to the vicious circle of underdevelopment by Schutte De Wet in 2015, if the very basic needs of a community are met, new and higher ones emerge until the community starts living a better life [63]. Households who are in constant poverty are those who do not use the few resources they find to address their immediate priorities instead they jump and buy things that they do not need in order to conform to society expectation and fulfill their desires. Later, they sell them at cheap price only to come back and buy the priority need. This practice makes them unable to move out of the poverty circle. Once a household is in poverty, it is difficult for them to realize the importance of hygiene and to buy soap or spend resources on hygiene infrastructure. A project in Malawi on healthy settings approach showed that using De Wet tools, it was possible to make community move out of poverty through proper planning using prioritization tools. The project also found out that in communities where people lack basic needs like food and shelter, the issues of sanitation and hygiene are not a priority [48]. In addition, governments need to come up with deliberate pro-poor policies that are aimed at uplifting lives of people in slums and rural areas. Some of the strategies that governments need to employ include targeted subsidies and loans for agriculture and businesses, respectively. In Tanzania, Kagera Region, a project showed that agriculture and trade were the routes for people to move out of poverty [64]. Nepal is one country that has managed to move out of poverty. Absolute poverty decrease by an average rate of 2.2% points between 1995 and 2011 and continued to decline to date. Despite the gains, Nepal needs to come up with policies that will equalize opportunities and level the playing field to enable all people participating in the economy [65].

#### **3.2 Push for equitable access**

Different people have different hygiene needs and requirements. As much as millions of people lack access to improved water, sanitation, and hygiene, the situation is worse for people who are physically and socially disabled. They find challenges in using most of the hygiene infrastructure. According to a study conducted in rural and urban Malawi to assess the barriers to accessing water, sanitation and hygiene for disabled people, it was found out that individuals did not report of the same set of barriers. In addition to being physically disabled, factors like being a female, being from a rural setting, and being of limited worth intensify the challenges faced by an individual [66]. It is for this reason that it is essential to understand the needs of different disabled people to ensure equitable access to hygiene, since there is no solution that can solve the challenges of all disabled people. This can be achieved by offering an accommodating hygiene infrastructure and technology for the physically challenged and also at an affordable price to ensure equal access [60].

### **3.3 Provision of menstrual hygiene kits**

Despite being a natural process, menstrual hygiene has been considered a taboo in most parts of the world and is rarely talked about, which leads to misinformation. This results in poor menstrual hygiene management among girls and women which further leads to stigma and ill health, absenteeism in schools and increased school drop-out rates. In order for women and girls hygienically manage their menstruation, there is need for a private place to change sanitary cloths and pads, clean water and soap for hand washing, body washing, and washing of reusable clothes [39]. However, most women and girls in developing countries, lack access to clean water for hygiene management. Even worse, they lack proper sanitary cloths to use during menstruation, and they end-up using rags which may result into vaginal infections [67]. For this reason, it is important to introduce menstrual hygiene technologies such as reusable pads so that they may have a safe menstruation, reducing absenteeism in schools and offering them dignity. Furthermore, underwear should be provided to them to make sure that the sanitary pads are used as other girls and women do not have underwear at all [40, 51].

### **3.4 Making political commitments**

Political commitments especially at high level involving senior government officials are essential toward achieving hygiene improvements. India, Indonesia, and Ethiopia are some of the countries where political commitment by the Prime Minister, Senior Civil Servants, and Ministers, respectively, led to greater achievements in sanitation [68]. Similarly, high level political commitment is required to improve hygiene in developing countries. Most of the times, hygiene is mentioned during promotion of sanitation, but it should be noted that during implementation, it is often forgotten and hence need to be advocated to separately. National governments should have commitments on hygiene by commissioning a thorough review of policy, making explicit budget allocation on hygiene programs to district and local governments, funding hygiene promotion, training and capacity building. National governments and NGOs must be in forefront in provision of safe and clean water to be used for hygiene by the users [53]. Political commitment have been found to humper scale up of policies including food and nutrition-related policies and hence need to be given priority in hygiene improvement [69]. To improve hygiene, high level political commitment is crucial.

### **3.5 Creating strong legislation and regulations**

Governments should develop national hygiene strategy and create necessary legislation/regulation to advance the strategy. Additionally, roles and responsibilities of different national institutions to implement the law must be defined properly. Stakeholders must be involved at all the stages of the process to ensure the acceptance of the legislation/regulation by the public. In addition, there must be creation of the mechanisms for monitoring and enforcing implementation of legislation/regulation. This will help those implementing hygiene programs to request specific hygiene regulations to make their programs successful. Lastly, officials that check for compliance of hygiene requirements should be committed to reduce corruption as this will help to ensure quality production and healthy environments which will prevent the transmission of diseases and infections [70].

### **3.6 Promote gender and equity**

Governments and NGOs should frame their policies in the way that include the idea of gender and equity on hygiene promotion. Additionally, they should invest in training or retraining frontline staff to work with men, women, and children [57]. The hygiene framework should be gender sensitive, by enabling women in the development of hygiene policy. They should also ensure that gender provisions address practical and strategic needs for both men and women by taking into consideration of differences in culture and traditions of communities.

### **3.7 Promoting community participation**

Community participation is very important as it promotes acceptability and sustainability of hygiene projects [71]. Thus, community members must be involved from initiation phase of the hygiene project to the end phase of the project [72]. This promotes the ownership of projects and communities that are more likely to make use of innovations where they have contributed. Top down approach to projects limits community participation and ownership because the community takes the interventions as external and usually they do not have local input. For example, in Tanzania, a pilot project that used bottom up approach using community structures recorded successful results in terms of reduction of prevalence of schistosomiasis and diarrhea. The project also increased awareness in water, sanitation, and hygiene for disease control [73].

### **3.8 Involving the youth**

Hygiene promotion campaigns are most effective when young population and students involved as beneficiaries and as agents of behavioral change within their families and their communities. Hygiene education that is included in school curricula should be taught conclusively in all schools. Early schools should be the target for hygiene behavior change interventions. Once a child learns about good hygiene at an early age, that child will grow with the behavior and will be able to influence his/her family members and in the long term, the whole community might easily change [71].

## **4. Conclusion**

Hygiene is a broad subject with so many various aspects and is a key aspect in prevention of diseases and promotion of good health. Hygiene has been identified to reduce diarrheal diseases and infections among others, and proper hygiene practices increase dignity, self-esteem, and prestige in the social life. Hygiene can be practiced at personal, domestic, industrial, institutional, and community level, with various sectors playing various roles in enhancement of hygiene as it improves human health. However, for effective hygiene, there is need to incorporate hygiene with sanitation and adequate and clean water supply, since these go hand in hand.

Even though hygiene practices may seem basic, there are a large number of people that lack proper information on hygiene. Such lack of information on hygiene leads to poor hygiene practices that result in disease outbreaks within a society. It is thus important to ensure a proper information flow that helps to communicate to different classes of people in the easiest ways. Effective hygiene communication in schools, markets, industries, and health facilities helps to reach out to a group of people at once and in a specific area. However, for the

implementation of hygiene projects in developing countries, there is a need for promotion of community participation with high youth involvement, strive for equitable access, political commitments, creation of strong legislation, adequate financial resources, and promote gender and equity and make sure that there is the right information flow with the people and that awareness has been raised before the implementation of the projects.

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### **Conflict of interest**

I would like to declare that I do not have conflict of interest.

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