

**SCHOOL OF PUBLIC HEALTH  
COLLEGE OF HEALTH SCIENCES  
UNIVERSITY OF GHANA**



**FACTORS INFLUENCING COMPLIANCE WITH THE WATER SANITATION  
AND HYGIENE (WASH) PROGRAMME: HAND HYGIENE PRACTICES IN  
SECOND CYCLE SCHOOLS IN THE LEDZOKUKU MUNICIPALITY OF THE  
GREATER ACCRA REGION OF GHANA**

**BY**

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LEGON IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE  
AWARD OF MASTER OF PUBLIC HEALTH DEGREE**

**JULY, 2019**

**DECLARATION**

This is to declare that this project work is the result of my own research. Published literature of other researchers which have been cited have been duly acknowledged by means of referencing.

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A handwritten signature in black ink, appearing to read 'Alfred Yawson', written over a horizontal line.

**DATE: 18<sup>th</sup> October, 2019**

**DEDICATION**

I dedicate this work to the Almighty God, to my dearest Mr Emmanuel Kwei- Sam, my Parents, and Brothers.

### **ACKNOWLEDGEMENT**

I appreciate God Almighty for his grace and favor upon my life and for seeing me through this master's program successfully. I am very grateful to my academic supervisor Professor Alfred Edwin Yawson for his meticulous tutelage and guidance throughout my project work. I say, God richly bless you. I am grateful to Dr Adomah- Afari of Department of Health Policy and Planning for his immerse support. Furthermore, I am grateful to the Ledzokuku Municipal Education Directorate for granting me the permission to undertake my study in the second cycle schools within the municipality. Lastly I say a big thank you to the Heads, Staff and Students of Teshie Presbyterian Senior High School, Teshie Technical Institute and Oreilly Senior High School for their immerse support throughout my project work.

## ABSTRACT

**Background:** Hand hygiene or hand washing is a well-known major infection control measure and has been mentioned by WHO as the most important hygiene measure in preventing the spread of infection. Schools like hospitals, have close, crowded environments that increase the risk of microbial cross- contaminations and transmissions. It has been observed that, there are high rates of infectious, gastrointestinal, neurocognitive and psychological illnesses in schools where water and sanitation facilities are inadequate in both developing and developed countries.

**Objectives:** This study aims to look at the relationship between institutional factors (resources available in schools) and hand hygiene practices, and also factors influencing compliance with the water sanitation and hygiene (WASH) program in second cycle institutions in the Ledzokuku Municipal Area.

**Methods:** This research work used a descriptive, cross-sectional research design and a quantitative methods to assess the factors influencing the WASH program and hand hygiene practices. Questionnaires and checklist were administered to these students and data was collected. The study used statistical tests such as Chi-square test and logistic regression to assess the relationship between resources available and hand washing.

**Results:** The research work showed that, background characteristics of the students such as sex and form/ grade and students' knowledge were significantly associated with hand hygiene practices. Resources available for hand washing are inadequate in the schools making the practice difficult.

**Conclusion:** The prevalence of hand washing among second cycle schools in Ledzokuku Municipal Area was 91%. However, resources available for hand washing are inadequate making the practice of hand washing difficult in the schools.

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## LIST OF ABBREVIATIONS

WASH	Water sanitation and hygiene
LEKMA	Ledzokuku krowor municipal assembly
HCW	Health care workers
WHO	World Health Organisation
UNICEF	United Nations Children Education Fund
MOE	Ministry of Education
SHEP	School Health Program
GES	Ghana Education Service
PTA	Parents Teachers Association
HHP	Hand Hygiene Practices
HH	Hand Hygiene

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the study

The World Health Organisation (WHO, 2009b), explains that infected hands of health care workers' (HCWs) played a pivotal role in the spread of germs related to hospital setting. It could be argued therefore, that even if healthcare workers' contaminated hands could lead to infection, then it was obvious that when children in schools did not wash their hands or failed to observe hand washing and hygiene practices, it could lead to tragic repercussions (see Siegel, Rhinehart, Jackson, & Chiarello, 2007).

As a result, the WHO issued the first national hand hygiene guidelines in the 1980s (Mortimer, Lipsitz, Wolinsky, Gonzaga, & Rammelkamp, 1962; Simmons, Hooton, & Mallison, 1981; Favero, 1986; Ganer, 1986; Bjerke, 2004; WHO, 2009b). This was in recognition of the fact that, hand hygiene or hand washing was an essential means of inhibiting the outbreak of communicable diseases and improving the health of the public (Curtis & Cairncross, n.d.)

It was documented that diarrheal related deaths amongst adolescents were amongst the top ten for age groups 10-19 year olds globally (Karon et al., 2017). These deaths and diseases could be reduced by paying more attention to the health needs of students and at the same time encouraging better school attendance and better-quality learning (Caruso et al., 2014). Statistics showed that all over the world, water, sanitation and hygiene intervention program were enhanced and carried out, primarily targeted to avoid and curtail the spread of communicable diseases at household level (Ramesh, Blanchet, Ensink, & Roberts, 2015)

Accordingly, WHO (2009b), provided guidelines on washing hands in health care settings, which was supposed to provide staff of the health facilities and health managers with a thorough review of evidence on hand hygiene in health settings and specific recommendations to help reduce the spread of infections to the staff themselves and their clients as well as better their practice in hand washing. Additionally, the guidelines were supposed to be carried out in situations where health care delivery was to either patients or specific groups in a population (WHO, 2009b).

Evidence available indicated that, settings such as schools were places that were most critical in reducing the burden of water, sanitation and hygiene related diseases ((Karon et al., 2017). It had been observed that, the high rates of infectious, gastrointestinal, neurocognitive and psychological illnesses were recorded in schools where water and sanitation facilities were not enough in both developing and developed countries (Jasper *et al.*, 2012).

Thus, it was necessary to recognize the admonition that basic amenities such as portable water, good sanitation practices are important for the growth and survival of children. (UNICEF, 2018).

UNICEF (2018), reports that there are almost 2.4 billion people who do not patronize improved sanitation, and 663 million who do not have access to improved water sources. The argument is that, the lives of lots of children are at risk without these basic life needs. UNICEF (2018), continued that, over 800 children globally lost their lives from diseases caused by poor sanitation and dirty water which could be prevented and such diseases could be rated as one of the main causes of under-five mortality. It is for this reason that, UNICEF developed the water, sanitation and hygiene (WASH) program, which is implemented in

over 100 countries worldwide with the view to improving water and sanitation services, as well as basic hygiene practices (UNICEF, 2018).

Other studies also indicated that since schools were settings where students learn and interact, they provided a platform for teaching best practices and developing healthy water, sanitation and hygiene behaviours (Burgers, 2000). Burgers (2000), observed that improving water, sanitation and hygiene behaviours could influence other behaviours in other settings and throughout one's life. With regards to their parents' educational background and how this could assist the students to comply with hand hygiene, a study reported that estimates of parental knowledge was 39.7% and 67.5% for girls and boys respectively.

Steiner-Asiedu *et al.*, (2011), in a study in Ghana reported that parents who were involved in the study reported the presence of hand washing facilities at home but structured observations during home visits proved otherwise suggesting the need to extend the hand washing campaigns to private schools. In this regard, it was important to apply the WHO Hand Hygiene Improvement Strategy (WHO, 2009b) in schools as well as the UNICEF's WASH program (UNICEF, 2018).

Adams *et al.* (2009), premised that children's ability to learn may be affected by inadequate water, sanitation and hygiene conditions in several ways, which included helminth infections (which causes harm to an increased number of pupils), long-term exposure to chemical contaminants in water (e.g. lead and arsenic), diarrhoeal diseases and malaria infections, all of which caused absenteeism among children in schools. That is, teaching and learning could become difficult if the school's environmental conditions were poor. (Adams *et al.*, 2009).

(Karon et al., 2017) argue however, that there was insufficient research on such programs in some settings, including schools, especially second cycle institutions. In spite of this, it appears that few studies have examined how these guidelines could be applied in second cycle schools. For instance, limited evidence existed on how students in second cycle schools comply with the UNICEF'S WASH program, especially examining the association between socio-demographic characteristics of students and hand hygiene practices; assessing students' knowledge of WASH (hand hygiene practices) programme; and assessing the relationship between institutional factors (resources available in schools) and hand hygiene practices among students in second cycle schools in the Ledzokuku Municipality. In addition, this research work was aimed to look at factors which influence non- compliance with the water sanitation and hygiene (WASH) programme in second cycle schools in the Ledzokuku Municipality, in the Greater Accra Region.

## **1.2 Problem Statement**

The problem under discussion was that students in second cycle schools including second cycle schools in the Ledzokuku Municipal Area did not often wash their hands with soap under running water regularly and even if they did, they did not properly do it.

Adams *et al.* (2009), opined that schools without improved sanitation, and intense levels of person-to-person contact, are high-risk environments for children and staff, and exposes them to environmental health hazards. The global evidence was that, diseases that are attributed to water, sanitation and hygiene were a cause of concern (Gerald et al., 2012). The evidence showed that diseases caused by inadequate water, sanitation and hygiene were a huge burden in unindustrialized countries (Adams *et al.*, 2009). The statistics indicated that an estimated 88% of

gastrointestinal cases were caused by inadequate sanitation and hygiene and unsafe water supply. (WHO, 2004c; Adams *et al.*, 2009).

Adams *et al.* (2009), observed that many schools were cited in communities that had increased risk of diseases caused by unsafe water and hygiene, and where conditions that affected the nutrition and general health of children were common. These analysts reported that schools, particularly those in rural areas, often completely lacked drinking-water and hand washing facilities; alternatively, where such facilities did exist, they were often inadequate in both quality and quantity.

Despite the above suggestion, it seemed that limited evidence existed on the factors that could influence compliance with the water, sanitation and hygiene (WASH) programme, particularly looking at hand hygiene practices in second cycle schools in the Ledzokuku Municipality, in the Greater Accra Region. It was believed that if research was done, it could help to encourage students to practice hand hygiene as this would help prevent infection and improve learning. This notwithstanding, there appeared to be challenges associated with the socio-demographic characteristics of the students, knowledge of WASH among the students, and institutional factors (resources available) regarding the WASH programme.

Although effective hand hygiene practices among students could lead to avoidance of infections, literature available showed that the prevalence rate was relatively low (Dajaan *et al.*, 2018) Dajaan (2018), found that about 37.7% of pupils in government basic schools in the Kintampo Municipality, Ghana, avoided getting sick by washing their hands, only 23.3% showed effective hand washing skills, a little over 15% hand washed using safe portable water whilst 23.3% cleaned their hands using tissue after they had washed them.

This researcher found that 43% indicated how necessary it was to wash their hands after visiting toilet and 42.3% indicated inadequate water supply as the barrier to hand washing. Studies have evidenced that inadequate resources such as water, soap, and insufficient hygiene amenities are two key motives behind children not washing their hands (O'loughlin, Fentie, Flannery, & Emerson, 2006; Oswald et al., 2008; Vivas *et al.*, 2010). In a developing country context, a study reported that in countryside Ethiopia, only 8% had contact with sufficient hygiene amenities (WHO, 2009b; Vivas *et al.*, 2010). In the rural Amhara region of the country, only 21% of toilets had hand hygiene amenities, none of which had detergent, and less than 4% of homes had access to acceptable hygiene amenities (O'loughlin *et al.*, 2006; Sidibe, & Curtis, 2007; Vivas *et al.*, 2010).

### **1.3. Justification of the study**

The literature is replete with evidence that sanitation and hygiene issues remained a challenge in developing countries and contributed to the health status of primary school going children as increased number of gastrointestinal infections had been attributed to primary schools (Assefa, & Kumie, 2014).

A similar position had been propounded in other studies, which indicated that unhealthy habits played key roles in the increased number of communicable diseases within unindustrialized countries (Vivas *et al.*, 2010).

(Morgan et al., 2017) observed that hygiene, sanitation, and water supply continued to have health implications in the industrialized world, therefore, the active participation of health professionals in hygiene, sanitation, and water supply was crucial to accelerating progress for health. Supporting the above argument, other studies had shown that knowledge,

awareness, training on hygiene and sanitation, being a member of hygiene and sanitation club, experience of visiting schools with similar facilities, and parent's health status were factors influenced by hygiene behaviour (Assefa, & Kumie, 2014).

Studies observed that it was necessary to examine the socio-demographic characteristics of students so as to be able to assess their level of compliance with the WASH programme (Vivas *et al.*, 2010).

This challenge notwithstanding, recent studies had minimally examined the influence of students' socio-demographic characteristics on their desire to comply with hand hygiene practices in the Ledzokuku Municipality. Therefore, this study will fill the gap by examining these variables among students of second cycle public institutions in the municipality.

A study in Ethiopia found that, about 48% of the students were considered as not having enough information on good hygiene whereas those with enough information on good hygiene were more likely to be the ones in clean clothes on the day of assessment. However, linkage between students' knowledge and hygiene practices was not evident. It is against this backdrop that this research work, is set out to find out the influence of students' knowledge of hand hygiene on their decision to comply with the programme. This would contribute in filling the gaps in the literature in the field as this is currently lacking.

Despite this suggestion, it looks like few studies exist in relation to how institutional factors or the school environment could encourage students to comply with hand hygiene practices, especially in the Ledzokuku Municipality (Lopez-Quintero *et al.*, 2009; Vivas *et*

*al.*, 2010). Hence, this study seeks to examine this factor in-depth and make suggestions to revamp institutional policies as well as help to fill the gaps in the literature.

#### **1.4. Objectives of the study**

##### **1.4.1. General Objectives**

To examine factors influencing compliance with the water sanitation and hygiene (WASH) programme through assessment of hand hygiene practices in second cycle schools in the Ledzokuku Municipality, Greater Accra Region.

##### **1.4.2. Specific Objectives**

1. To determine the prevalence of students' who practice hand hygiene in second cycle schools in Ledzokuku Municipality.
2. To examine association between socio-demographic characteristics of students and hand hygiene practices in second cycle schools in Ledzokuku Municipality.
3. To assess students' knowledge of WASH (hand hygiene practices) programme in second cycle schools in Ledzokuku Municipality.
4. To assess the relationship between institutional factors (resources available in schools) and hand hygiene practices among students in second cycle schools in Ledzokuku Municipality.

##### **1.4.3. Research Questions**

The specific objectives will be achieved by answering the following questions:

1. What is the prevalence of hand hygiene practices among students' in second cycle schools in Ledzokuku Municipality?

2. What are the associations between socio-demographic characteristics of students and hand hygiene practices in second cycle schools in Ledzokuku Krowor Municipality?
3. What is the level of students' knowledge of WASH (hand hygiene practices) programme in second cycle schools in Ledzokuku Municipality?
4. What is the relationship between institutional factors (resources available in schools) and hand hygiene practices among students in second cycle schools in Ledzokuku Municipality?

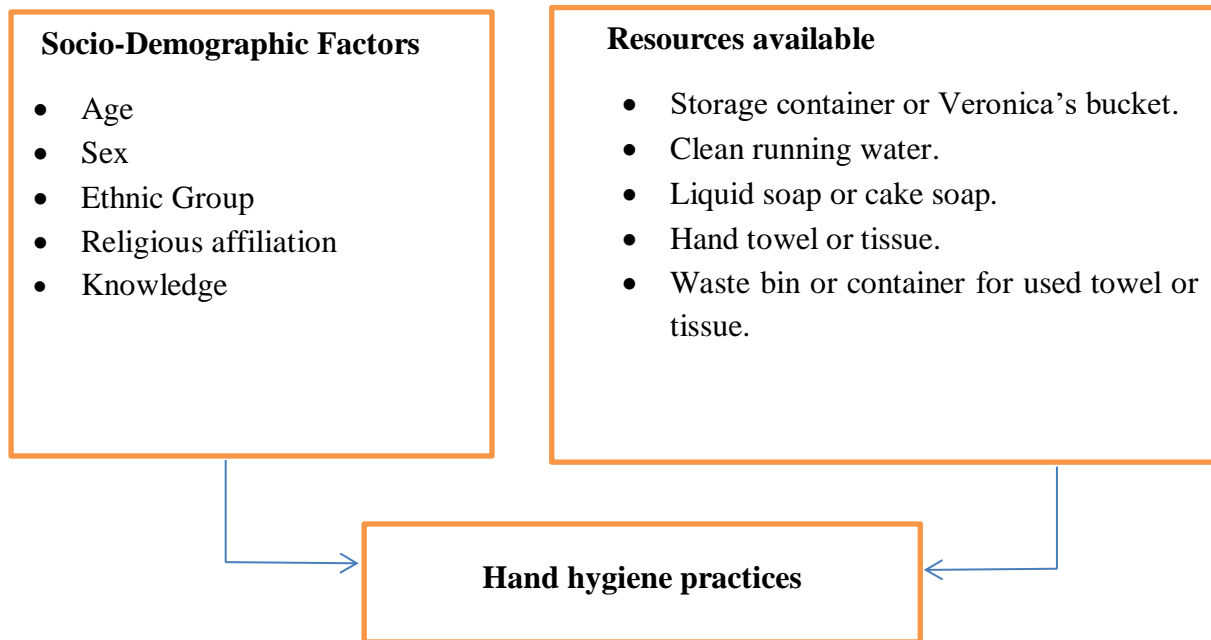
#### **1.4.4 Limitations of the Study**

The scope of this study could have been widened to cover all second cycle schools in the Ledzokuku Krowor Municipal Area but the study was limited to second cycle schools in the Ledzokuku municipal area of the Greater Accra region of Ghana. A CCTV camera could also have been installed at vantage points in the various schools to capture footages and monitor hand washing practices among the students before, during and after the study for a much more better understanding, but this could not be achieved due to time constraints and the limited budget for this study.

#### **1.5 Conceptual Framework**

The graphical representation of socio-demographic factors, knowledge, and prevalence and factors influencing compliance with the WASH Program among students in second cycle schools can be seen in Figure 1. The conceptual framework comprises of Independent variables (socio-demographic, resources available) and Dependent variable (Hand hygiene practices). These independent variables originate from the review of

related studies where hand hygiene practices are affected by socio-demographic factors, and resources available.



**Figure 1: Conceptual Framework of socio-demographic factors, resources available and the factors that influence compliance with the WASH program among students in second cycle schools**

The socio-demographic factors of students are age, sex, marital status, residential status, ethnic group, and religious affiliation. Studies however, showed that, girls washed hands more frequently than boys as well as Muslim students washed hands more than non-Muslim students.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1. Introduction**

Regular handwashing is the most effective way of preventing the spread of viral respiratory tract infection, diarrheal, neurocognitive and mental illnesses but proper hand hygiene practices are hard to attain in schools(Gerald et al., 2012)

The Global Hand Washing Day is a campaign organized yearly on 15<sup>th</sup> October, to change the concept of hand washing with detergent into an unconscious deed in homes, schools and communities globally. It aims at school pupils because they are models for behavior change. Students in schools are usually eager and open to new concepts. Late infancy and early teenage years (aged 6-15) are crucial periods for harnessing talents and helpful lifestyles. Inspiring millions of school pupils to acquire good hand hygiene skills will help them exhibit those skills in adulthood.

Globally, WASH intervention programs were upheld and employed, mainly directed to inhibit the outbreak of communicable diseases at household level. (Ramesh et al., 2015)

Increased incidence of infectious, diarrheal cases, neurocognitive and mental diseases have been recorded in schools where water and hygiene amenities are insufficient in both developing and developed countries. Jasper et al (2012)

Jasper et al (2012) opined that, inadequate amenities can affect school going rates, increase open defecation and increase the rate of exposure of children and teachers to WASH related diseases.

Inclusive wash courses in schools increase enrolment and gender equality Garn et al (2013). Educational institutions are places where children acquire knowledge and mingle with other children, hence, it is a venue for coaching them on appropriate wash behaviours. Evidence available suggests that, improved wash behaviours in schools reflects in the attitude of children in other environments and throughout their lifetime.

According to Yaun et al (2008), hand washing is one of the most effective means of preventing infections related to the hospital setting. However, strict adherence to the standard procedure for washing hands is low. Past academic works on means of improving hand washing has concentrated on the USA and Europe, whereas literature from countries that are developing are just few. It is however, important that, this study is conducted to identify ways of improving hand hygiene practices in Ghana.

## **2.2. Hand Hygiene / Hand Washing Practices**

A well-known primary infection control measure is hand washing. According to WHO Infection Control Guidance (2009), hand washing with water and soap is considered as an effective means of preventing the spread of diseases. Educational institutions, like health facilities, have increased number of people which makes cross infection and the spread of diseases possible. (Snow, White, Alder, & Stanford, 2006). A study conducted by Aiello et al., (2008) noted that, about 50% of diseases acquired in the home environment is as a result of germs that children come into contact with in schools. A hand washing with soap intervention in schools was shown to significantly reduce pupil absenteeism by 21% - 54%

(Bowen et al., 2007). Evidence available from other sources of literature suggests that, washing hands with soap is efficient and less expensive and helps in preventing gastrointestinal and respiratory tract infections. It is unfortunate that, people do not practice the washing of their hands correctly in their everyday lives. It is viewed that infectious diseases such as cholera can be prevented if effective hand hygiene is practiced (Morgan, Bowling, Bartram, & Lyn Kayser, 2017). Morgan et al., (2017), argue that insanitary conditions can be linked with increased health problems and can be prevented if proper measures are put in place to curb the menace. Thus, the suggestion is that effective hand washing practices amongst second cycle students could improve their health as well as increase class attendance and improve learning (Dreibelbis et al., 2013)

### **2.3. WASH Programme**

According to Alexander et al (2014) children staying at home and not going to school has adverse effect on the outcome of their education and also suggests that, portable water available in schools for drinking also improves the health status of the students and prevents them from absenting themselves from school. According to World Bank (2015), the spread of micro-organisms could be reduced through the proper handling of stool, waste, adherence to proper hand hygiene practices and availability of sustainable portable water. Studies have shown that, to effectively improve health and education, water, sanitation and hygiene issues in educational settings must be considered (Adams, Bartram, Sims, & Chartier, 2009). (Dajaan et al., 2018) concludes that, to effectively improve hand hygiene knowledge and its practice, there should be effective teaching of hand washing in the schools. Subsequently, a study concludes that school WASH improvements could

improve school attendance for girls, and thus, mechanisms for gendered impacts should be explored (Dreibelbis et al., 2013).

Basic school education in Kenya has seen tremendous improvement, thus, showing the significance of hand washing which has been shown to prevent children from absenting themselves from schools. Evidence available from one research work carried out in rural Kenya suggests that, hand hygiene practices in schools prevented worm infestation among boys and girls. A cross-sectional study conducted in the same country revealed that, water sanitation and hygiene activities prevented girls from absenting themselves from school. Similar work in the same field revealed that, clean wash rooms in schools reduced the chances of children not going to school, and that, an extensive school WASH program may influence the rate of school going and gender equality in basic schools. Availability of water and good sanitary environments in schools were found to be vital parts of the school system for pre-pubescent and girls in their menarche in Tanzania, Kenya, and South Asia. Various qualitative research works have shown the effect that improper sanitary conditions have on the comfort of girls in schools and the absence of menstrual hygiene management (MHM) resources may reduce activity level of girls in schools due to the fear of leakage. Water, sanitation and hygiene (WASH) interventions prevent illnesses and deaths which are aggravated by lack of hand washing and eating contaminated food.

#### **2.4. Factors Influencing Compliance with WASH Programme**

This section presents literature on the factors that influence compliance with the hand hygiene of WASH programme. There are four sub-sections therein.

##### **2.4.1. Prevalence of hand hygiene practices among students' in second cycle schools**

The rate at which people wash their hands with soap in developing countries is still low, ranging from 0 to 20%. National Basic Health Research in Indonesia in 2007 reported that only 23.2% of the total population had proper hand washing habits, i.e. done with soap before eating and after visiting the toilet. Lopez et al. in their study carried out in Colombia which was to find out factors that influenced good hygiene practices suggested that, only 33.6% of basic school children “always” or “very often” washed their hands with water and soap before having their meals and after defecating.

It is obvious that when students’ knowledge of hand hygiene is enhanced, it would subsequently, lead to acceptable behaviours in complying with the WASH programme (Vivas *et al.*, 2010). In this respect, a study conducted in Ethiopia reported that, children who washed their hands before eating were 99% but only 36.2% reported using soap; and although 76.7% of students reported that hand washing after visiting the toilet was important, only 14.8% reported actually practiced it (Vivas *et al.*, 2010).

Dajaan (2018), found that 50.67% of public primary schools in the Kintampo Municipality who participated in the study were girls, 39.3% were within the ages of 12-14 years, 60.7% were Christians, 35% were Moslems while 4.33% were traditionalists. On the educational background of students’ parents, it was revealed that 43% of mothers of these children had no basic education whilst 9% of their fathers had tertiary education; and relating to the employment status of students’ parents, it was seen that most parents of these children belonged to the unskilled worker category

Vivas et al. suggested that hand washing with soap was uncommon, but can be programmed such that it becomes part of a child’s upbringing.

Some studies examined both the public and private schools in Ghana with respect to hand hygiene practices and found that children in private schools were 63% less likely to wash their hands after visiting the lavatory than their public school counterparts. Furthermore, those in private schools were 51% less likely to wash their hands before meals and 77% less likely after meals than those in the public schools. (Steiner-Asiedu *et al.*, 2011).

A study conducted in Ethiopia reported that 99% of pupils washed their hands before eating but just 36.2% used soap and though 76.7% claimed washing of hands after using the toilet was essential, only 14.8% actually practice it. (Vivas *et al.*, 2010).

#### **2.4.2. Socio-demographic characteristics of students and hand hygiene practices in second cycle schools**

It could be contended that students' socio-demographic characteristics could serve as barriers to their compliance with hand hygiene practices (Dajaan et al., 2018). Dajaan (2018), examined the relationship between public primary school respondents' socio-demographic characteristics and knowledge of hand washing; and revealed an association between respondents' gender, mother tongue and knowledge of hand washing. The key socio-demographic variables examined in earlier studies include sex, age, religion, educational background of students' parents and employment status of students' parents (Dajaan, 2018).

There could be other socio-demographic factors that emanate from the parents of the school children, which could have an influence on students' compliance with hand hygiene practices in schools (Assefa & Kumie, 2014). Assefa and Kumie (2014), found that being a member of hygiene club, parent's health package status, training in hygiene and sanitation

and experience of visiting model school had impact on hygiene behaviour among students in Ethiopia.

Phongsavan et al 2006 opined that, girls clearly have a better approach to hygiene related issues than boys, with an outright variation in prevalence of about 10%. Related differences have been seen in the European HBSC and other studies. These differences can be related to the health education talks given to women and girls who are also referred to as the primary care givers in the family but the most marginalized in society. Nonetheless, the findings of this study suggest that health promotion activities should target both sexes.

#### **2.4.3. Students' knowledge of WASH (hand hygiene practices) programme**

A study argues that effective hand washing education has the potential of improving school children's knowledge of hand washing thereby impacting on their hand washing practice either in school or at home ((Dajaan et al., 2018). Dajaan (2018), examined the knowledge of public basic school children in the Kintampo Municipality of Ghana, and realized 53.3% had never been taught how to wash their hands.

Dajaan (2018), reported that about 39.9% of pupils in public primary schools in the Kintampo Municipality always practiced hand washing with soap after using the lavatory. A study examined hand-washing behaviours among school children in Bogotá, Colombia, so as to help recognize and find remedy to factors that hinder proper hygiene practices; and observed that students with proper hand-washing behaviour were less likely to report previous-month gastrointestinal symptoms or previous-year school absenteeism (Lopez-Quintero *et al.*, 2009).

Assefa & Kumie 2014, found that 61.7% of school children in Mereb-Leke District, Tigray National Regional State of Ethiopia had proper hygiene behaviour and practice which were significantly associated with their hygiene behaviour status. Steiner-Asiedu *et al.*, 2011), realized that almost (90.2%) of those students who used the school lavatory washed their hands with soap.

Literature shows that in addition to having amenities for washing hands, students' knowledge and attitudes towards the act affects their practice (Vivas *et al.*, 2010). A research work carried out in Senegal, realized some of these factors as why students did not wash their hands: stubbornness, laziness, the rush to go to breaks, the time it takes away from playing, and the dirt and smell of the toilets (WHO, 2009a; Vivas *et al.*, 2010).

Studies have argued that students enhanced knowledge of WASH programme is a factor that would enhance compliance for instance, a study in Ethiopia found that approximately 52% of students were classified as having adequate knowledge of proper hygiene, students with enough knowledge on proper hygiene were more likely to have clean clothing and to have a reduced risk of parasitic infection although statistical significance was not achieved for the latter (Vivas *et al.*, 2010). It is important to argue that when students' knowledge of hand hygiene or the WASH programme is improved through regular education or school health talk, it would whip up their enthusiasm in complying with the WASH programme.

(Ergin *et al.*, 2011) revealed in a study conducted that, the highest number of participants in the study correctly stated that one should dry his hands after washing. However most of them did not know that the temperature of the water was an important factor for hand hygiene. Another study conducted by (Qasmi, Mahmood Shah, Wakil, & Pirzada, 2018) aimed to investigate current trends in hand hygiene awareness and practices among

Pakistani medical students in public, semi-private, and private universities revealed that, the respondents had moderate knowledge regarding hand hygiene (61.7%), as assessed using the modified WHO HH questionnaire. Furthermore, it was observed that public university students demonstrated increased knowledge in hand hygiene, compared to students in semi-private and private universities.

#### **2.4.4. Institutional factors (resources available in schools) and hand hygiene practices among students in second cycle schools**

For effective compliance with the WASH programme, it behoves educational authorities to provide the needed environment for students in schools (see Vivas *et al.*, 2010). Lopez-Quintero *et al.* (2009), reported of other incidental activities that could be used to remedy the institutional challenges associated with the provision of hand hygiene facilities in schools.

It is important the institutional framework in schools, especially secondary school is made right to enhance the practice of hand hygiene by students. Vivas *et al.* (2010) in a study conducted in Ethiopia, recommended the need for hygiene talks in schools so as to make available objective evidence that may serve as a guide for the implementation of health programs which would substantially attenuate the transmissible disease burden borne by school children in rural settings.

Accordingly, Steiner-Asiedu and associates (2011), recommended that it would be useful for the Ghana Education Service to collaborate with partner agencies such as Ghana Health Service, National Community on Water and Sanitation Programme, health workers, and the Parents Teacher Associations (PTAs) to promote stronger links that would create an

avenue for educating and monitoring the school children for effective and efficient hand washing practices (Steiner-Asiedu *et al.*, 2011).

Dajaan (2018), examined knowledge and practice of washing hands among public primary schools in the Kintampo Municipality of Ghana, and noticed that amenities for washing hands were insufficient since about 60% of the schools had hand washing points and only 30% of the schools had clean running water. Lopez-Quintero *et al.* (2009), studied hand-washing behaviours and intentions among school children in Bogotá, Colombia, and found that scarcity of adequate facilities in most schools prevented children from adopting proper hygienic behaviour and thwarts health promotion efforts as only about 7% of students confirmed having soap and running water at school.

A study conducted in Ghana reported that, the inability of school children to practice good hand hygiene in both school and home was due to the unavailability of resources such as soap, towel, running water (Steiner-Asiedu *et al.*, 2011). Current findings highlight inadequate resources are accessible by students to practice hand hygiene especially for menstruating girls in developing countries, however reviews show inadequate research to clarify the effect of improved menstrual hygiene management on schools (Alexander *et al.*, 2014).

## **2.5. Gaps in the literature**

It can be said that, barriers that hinder effective implementation of hand hygiene include inadequate time, insufficient soap or paper towels, and inconveniently located sinks among others. In order to effectively implement hand hygiene in second cycle schools, some of these factors must be looked at.



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

The methodology used in this study is outlined in this section. The research study site, as well as the sampling techniques employed in this study are also presented. This section ends with the ethical considerations after the instrumentation; data collection procedures and analysis were presented.

#### **3.1 Study Area**

Teshie is the administrative capital of the Ledzokuku Constituency. It is bounded to the South by the gulf of Guinea, to the East by La, to the West by Nungua. It has a population of 176,597 people and is the eighth most populous metropolitan area in Ghana. ([www.lekma.gov.gh](http://www.lekma.gov.gh)).

#### **3.2 Study Population**

The population is largely made up of fishermen and fishmongers. There are public sector workers who commute between Teshie and their places of work.

The population consists of mainly christians and muslims with a few traditionalists. Few commercial and residential buildings are well arranged and Teshie is faced with poor drainage system, poor sanitation and waste management which leads to flooding in rainy seasons. ([www.lekma.gov.gh](http://www.lekma.gov.gh))

### **3.2.1 Traditional and Political Structure**

The Municipal Chief Executive is the political head of the area. She together with the assembly members ensures that, government policies are implemented as intended through the various decentralised agencies.

### **3.2.2 Transport and Communication**

The main road through Teshie is tarred serving both commercial and private vehicles and it is one of the main routes from Tema to the country's capital, Accra. Teshie boasts of a new television station-Pre -Vas TV, a post office and mobile telecommunication sub-stations. Teshie enjoys pipe borne water and hydroelectric power.

### **3.2.3 Education**

There are 230 Primary Schools, 179 Junior High Schools, 3 Senior High Schools, 3 Technical and Vocational Training Schools, both public and privately owned. These schools are supervised by the municipal education directorate which also reports to the regional directorate.

### **3.2.4 Health Administration and Services**

Teshie can boast of a district hospital which is a 100 bed capacity hospital, a polyclinic and a health centre. There are reproductive and child health centres available to provide clinical and preventive care in the community. There are also specialist hospitals such as Family Health, Manna Mission, and Lister Hospitals which provide obstetric and gynaecological

care. There are also several pharmacy and chemical shops, laboratories and X ray centres which provide services to the community. (lekma.gov.gh)

### **3.3 Study Design**

This study adopted a descriptive, cross-sectional research design with quantitative research approach. The descriptive study was used to acquire information about hand hygiene practices among students in the second cycle schools. Quantitative research approach was used by the researcher to create meaning through objective measurement of the conditions and offered a numerical representation of the findings. The quantitative approach was used to collect and convert data into a numerical form that enabled the researcher to apply statistical methods to analyze the data collected.

The quantitative method generated statistics through the use of a close and open-ended questionnaire. The questionnaire was used to collect information on socio demographic factors, knowledge level, and practice of hand washing.

A checklist was designed to assess the resources available and the factors that influence the WASH programme.

### 3.3.1 Operationalization of Variables used in the Study

The dependent and independent variables for this study have been summarized in Table

**Table 1. Operationalization of Variables used in this Study**

<b>Variable Type</b>	<b>Operationalization</b>	<b>Scale of Measurement</b>
<b>Dependent Variable</b>		
Hand hygiene practices	Yes, No	Binary
<b>Independent Variable</b>		
<b>Socio-Demographic factors</b>		
Age	Years	Continuous
Sex	Male, Female	Binary
Religious Affiliation	Christianity, Islamic, Traditional	Nominal
Ethnic Group	Akan, Fanti, Ewe, Ga/Adangbe, Hausa	Nominal

Source: Researcher's field survey, 2019

### 3.3.2 Sampling Method and Determination

#### 3.3.2.1 Sample size Determination

From secondary data, the estimated total number of students attending Senior High Schools in Ledzokuku Municipal Area was 4,754. In this study, assuming a 95% confidence interval was used, the precision (d) will be within 5% and reliability (Z) which is the standard normal variant for population distribution is 1.96.

p= anticipated prevalence of hand hygiene practices. The Sample Size (n) was calculated as;

$$n = \frac{Nz^2pq}{Nd^2 + z^2pq}$$

where  $p = 0.50$

$$q = 1 - 0.50 = 0.50$$

$$z = 1.96, d = 0.05$$

$$n = \frac{(4754)(1.96)^2(0.50)(0.50)}{(4754)(0.05)^2 + (1.96)^2(0.50)(0.50)}$$

$$n = 355.4378 \approx 355 \text{ students}$$

Accounting for 10% non-response rate, the total number of participants was calculated as follows:  $355 + (0.10 \times 355) = 390.5 \approx 391$ . Therefore, the required minimum sample size of 391 students will be recruited from the three Senior High Schools for the study.

Table 3.4.1 shows the number of respondents allocated to each Senior High School. The number of respondents was based on proportion to size and within each school; respondents were selected through systematic sampling.

### 3.3.3 Selection of Participants

Students were recruited as participants for this study from Senior high schools in the Ledzokuku Municipal Area. In order to recruit a representative sample, participants were selected by multistage sampling technique in the order of school and class. At the first stage, simple random sampling by way of balloting was used to select students in the three Senior High Schools in the Ledzokuku Municipal Area for the purpose of the study. The numbers to be selected were based on total student population in a particular school. In this survey, an equal proportion of students in the three Senior High Schools in the Ledzokuku Municipal Area were selected. For proportionate sampling, the researcher divided the entire population into subpopulations (strata) and then applied random sampling methods to each stratum (Schoereder et al., 2004).

**Table 2. Sample size for the various schools**

Senior High School	Population	Sample
Teshie Presby Senior High School	2304	190
Teshie Technical Institute	1077	88
Oreilly Senior High School	1373	113
Total	4754	391

Source: Researcher's field survey, 2019

### **3.3.4 Inclusion and Exclusive Criteria**

#### **3.3.4.1 Inclusion Criteria**

To qualify as a participant in this study, the student must be attending Senior High School in the Ledzokuku Municipal Area.

#### **3.3.4.2 Exclusion Criteria**

Students who met the inclusion criteria but did not sign the assent form were excluded from the study.

### **3.3.5 Source of Data and Data Collection**

The study used primary data collected from students attending Senior High schools in the Ledzokuku Municipal Area through the administration of questionnaires. Questionnaires for the study were administered to some selected students from Nungua Senior High School in the Municipality for pre-testing. The pre-testing was to determine students understanding of the study and to assess the reliability of the questionnaires planned to be administered to the students sampled.

The questionnaire was used to solicit for information on demographic background, level of knowledge on hand washing and resources available for practicing hand washing.

## **3.4 Variables**

### **3.4.1 Outcome variable**

Hand hygiene practices

### **3.4.2 Independent variables**

Demographic characteristics (age, sex, form/grade, ethnic group, residential status, religious affiliation), knowledge, resources available

### **3.5 Pre-testing of Instruments**

A sample of 20 students in Nungua were selected for the pre testing of the questionnaires. The purpose of conducting the pre-testing is to assess the reliability of the questionnaires intended to be administered to the students sampled.

#### **3.5.1 Questionnaire**

The study employed a structured closed-ended questionnaire for data collection. The first part of the structured questionnaire was on socio-demographic characteristics of the participants. These comprised of sex, the age of adolescent, form/grade, religion, residential status and ethnicity and these were used to ascertain the relationship their socio- demographic characteristics and hand hygiene. The second part of the questionnaire comprised of how students heard of hand hygiene, how often students practice hand washing, how much time is needed to wash hands effectively and these were to ascertain their knowledge and practice of handwashing. The last part was on the resources available for handwashing in their schools such as clean water, soap, tissue or towel, veronica s bucket and these were to ascertain whether the resources available affected their practice of hand washing.

### **3.6 Data Entry**

Data collected for the study were coded into different categories. Codes were generated by using stata 15 software. Yes = 1 and No = 2, in binary questions.

### **3.7 Data Analysis**

The primary data collected was entered into a Microsoft Excel 2010 spreadsheet and imported into STATA version 15 for data analysis. Percentages, frequency tables, pie chart, and cross-tabulations were the statistical tools used in describing the data while logistic regression and chi-square test were used. The chi square was used to find the relationship between socio-demographics of the adolescent students and hand hygiene practices. The significant variables (less than 5% significance) from the chi-square test were used in the logistic regression model for analysis.

### **3.8 Quality Control Measure**

Questionnaires were administered for both pre-testing and the actual research study.

### **3.9 Ethical Considerations**

#### **3.9.1 Ethical Clearance**

Ethical clearance for the study was obtained from the Ghana Health Service Ethics Review Committee with protocol number 044/03/19.

#### **3.9.2 Permission**

Permission was obtained from the Municipal District Education Service, the various Second Cycle Schools in the Municipality and the School of Public Health, Legon before the research was conducted.

#### **3.9.3 Informed Consent**

Written consent was obtained from each participant and this was obtained through a signature. They were made aware that participation was voluntary and that, there was not going to be any penalty for refusing to participate.

#### **3.9.4 Confidentiality**

Throughout the study, all information provided remained confidential and only used for its intended purpose. Soft copies of information were password protected and hard copies kept under lock and key. Only the PI and those involved in the research had access to them.

#### **3.9.5 Anonymity**

Participants were assured of anonymity if they gave consent. Data was coded and analyzed in such a manner that anonymity of all respondents was assured.

#### **3.9.6 Voluntary Withdrawal**

All research participants were duly informed of their right to decline participation in the study and also had the right to withdraw from the study anytime they so wished.

## CHAPTER FOUR

### RESULTS

#### 4.0 Introduction

This chapter presents the findings of the study. This study used primary data collected by administering of questionnaire to investigate hand washing with soap practice among students in three second cycle schools in the Ledzokuku Municipal area from 3<sup>rd</sup> June to 11<sup>th</sup> June, 2019. Descriptive Statistics such as pie chart, bar charts, cross tabulation and frequency tables were used to graphically explain the data while the data collected was analyzed using statistical tools such as chi-square test and multiple logistic regression.

#### 4.1 Background characteristics of study participants

A total of 391 students were used for the study after satisfying the inclusion criteria. Table 4.1 shows the socio- demographic characteristics of the students. From table 4.1 the mean age of the students was 17.1 years (SD=3.19). The total number of females were 51.7% (n) and males were 48.3% (n). The number of students in form 1 were 71.6% and form 2 were 28.4%. 96.7% of the students were Christians while 3% were Muslims. 32.5%, 5.4%, 50.4%, 11.8% were Akans, Hausa, Gas, Ewes respectively. The proportion of students who lived with both parents was 47.6%, with their mother only 24.6%, father only 7.8%, guardian 13.6% and other family relatives 6.7%.

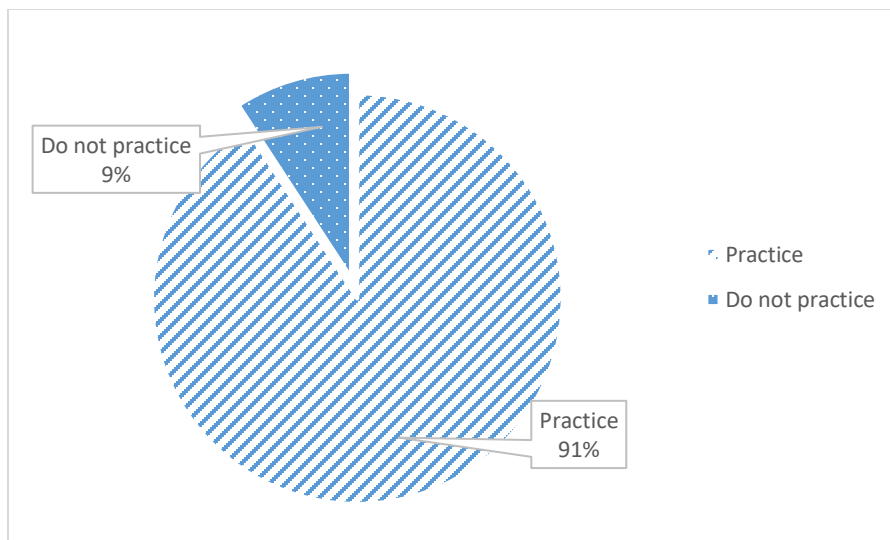
**Table 3. Demographic characteristics of study participants**

<b>Variables</b>	<b>Frequency (n=391)</b>	<b>Percentage</b>
<b>Age (mean ± SD)</b>	17.12 ± 1.23	
<18 years	247	63.17
≥ 18 years	144	36.83
<b>Sex</b>		
Male	189	48.34
Female	202	51.66
<b>Grade/Form</b>		
Form 1	280	71.61
Form 2	111	28.39
<b>Religion</b>		
Christians	378	96.68
Muslims	13	3.32
<b>Ethnicity</b>		
Akan	127	32.48
Hausa	21	5.37
Ga/Adangme	197	50.38
Ewe	46	11.76
<b>Residential status</b>		
Live with both parents	186	47.57
live with mother only	96	24.55
live with father only	30	7.67
live with guardian	53	13.55
live with other family relatives	26	6.65

Source: Researcher's field survey, 2019

#### **4.2 Prevalence of hand hygiene practices among students**

The assessment of hand hygiene practices among the students was shown below. A total of 91% of the students practice hand washing while 9% do not practice hand washing.



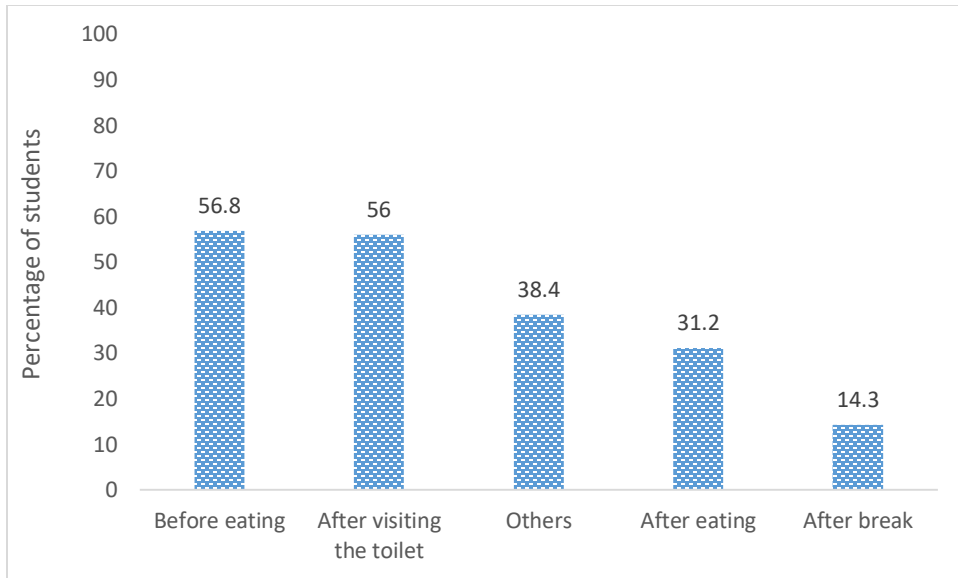
**Figure 2. Practice of hand hygiene among students**

#### **4.3 Distribution of pupils' assessment practices of hand washing**

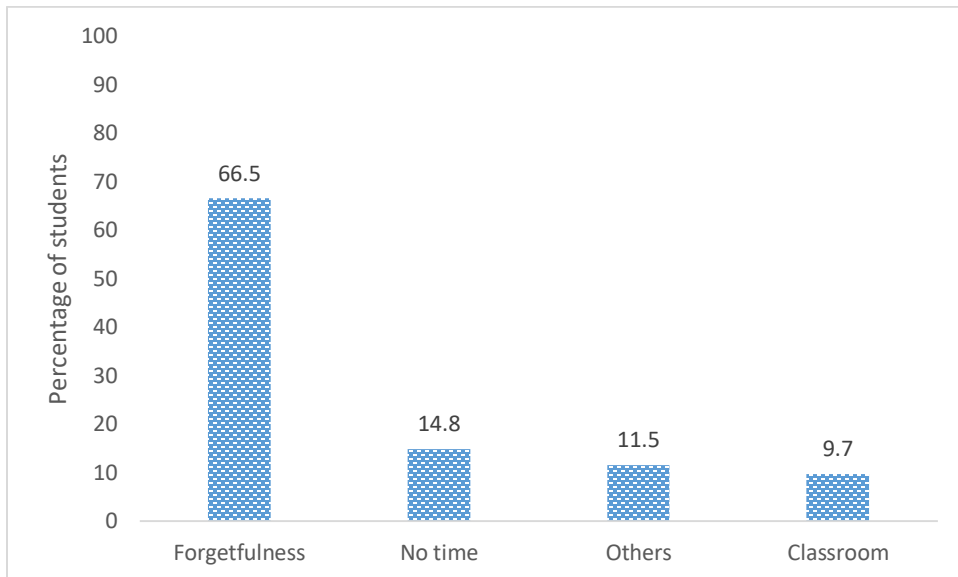
Figure 3 shows the periods in which students practiced hand washing. 56.8% washed their hands before eating, 56% after visiting the toilet, 38.4% at other times, 31.2% after eating and 14.3% after break.

Figure 4 indicates why students did not practice hand washing. 66.5% attributed it to forgetfulness, 14.8% had no time to wash their hands, 11.5% gave other reasons and 9.7% attributed it to classroom being far from sink.

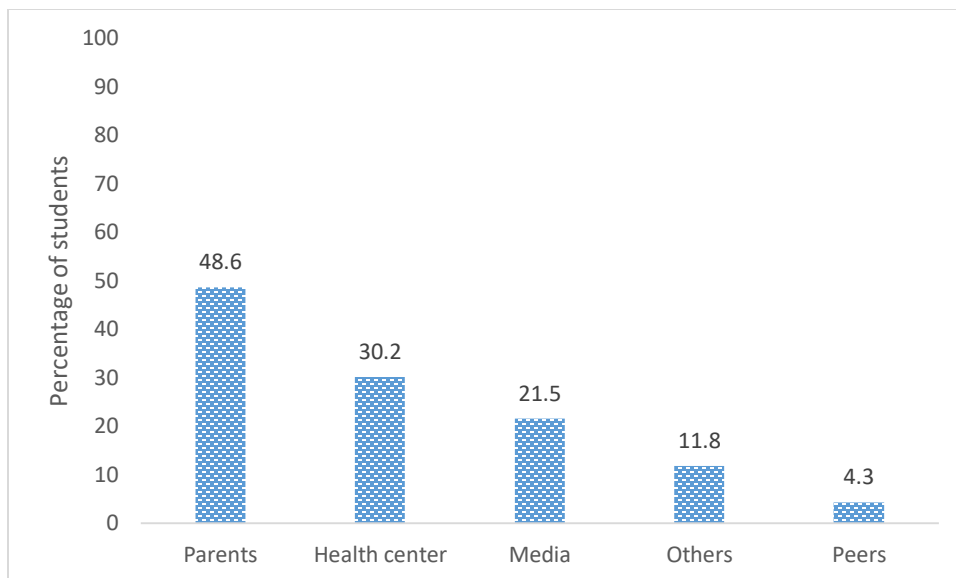
Figure 5 shows sources of information to students on hand hygiene. 48.6% got the information from their parents, 30.2% got it from the health center, 21.5% received the information from the media, 11.3% received it from other sources and 4.3% received it from their peers.



**Figure 3. Periods during which hand hygiene is practiced among students**



**Figure 4. Reasons for not practicing hand hygiene**



**Figure 5. Source of information on hand hygiene practices**

Table 4 shows the association between socio-demographic characteristics and hand washing practices among students in the three second cycle schools. Chi squared test of association was used to measure the relationship between the predictor variables and the outcome variable (hand washing practices) at 95% confidence ( $\alpha=0.05$ ). Predictor variables included age, sex, form/grade, ethnicity, religion, and residential status, level of knowledge and resources available. Among the predictor variables analyzed, sex and form/grade were found to be significantly associated with hand washing practices ( $\chi^2=9.06$ , p-value= 0.003) and ( $\chi^2 = 15.72$ , p-value= <0.001) respectively.

Again, availability of resources was found to be significantly associated with the outcome variable ( $\chi^2 = 13.59$ , p-value= <0.001). Lastly, pupils' level of knowledge was associated with hand washing practices significantly ( $\chi^2 = 61.61$ , p-value=< 0.001). All other variables were not significantly associated.

**Table 4. Association between demographic characteristics of students and practice of hand hygiene**

Variables	Total	Practice hand hygiene		Chi-Square	P-value
		Yes (%)	No (%)		
<b>Age (mean ± SD)</b>				1.84	0.175
<18 years	247	228 (92.31)	19 (7.69)		
≥ 18 years	144	127 (88.19)	17 (11.81)		
<b>Sex</b>				9.06	0.003**
Male	189	163(86.24)	26(13.76)		
Female	202	192(95.05)	10(4.95)		
<b>Grade/Form</b>				15.72	<0.001***
Form 1	280	244(87.14)	36(12.86)		
Form 2	111	111 (100.00)	0 (0.00)		
<b>Religion</b>				0.61	0.433
Christians	378	344(91.01)	34(8.99)		
Muslims	13	11(84.62)	2(15.38)		
<b>Ethnicity</b>				6.24	0.101
Akan	127	120(94.49)	7(5.51)		
Hausa	21	19(90.48)	2(9.52)		
Ga/Adangme	197	172(87.31)	25(12.69)		
Ewe	46	44(95.65)	2(4.35)		
<b>Residential status</b>				7.37	0.117
Live with both parents	186	168(90.32)	18(9.68)		
live with mother only	96	82(85.42)	14(14.58)		
live with father only	30	29(96.67)	1(3.33)		
live with guardian	53	51(96.23)	2(3.77)		
live with other family relative	26	25(96.15)	1(3.85)		
<b>Handwashing</b>				61.61	<0.001***
Yes	376	350(93.09)	26(6.91)		
No	15	5(33.33)	10(66.67)		
<b>Practice social hand washing</b>				9.75	0.008**
Yes	187	176(94.12)	11(5.88)		
No	93	77(82.80)	16(17.20)		
Somehow	111	102(91.89)	9(8.11)		
<b>Remove ornaments before hand wash</b>				0.92	0.632
Yes	276	250(90.58)	26(9.42)		
No	64	57(89.06)	7(10.94)		
No idea	51	48(94.12)	3(5.88)		
<b>Hand wash for 15 seconds</b>				6.84	0.033*
Yes	239	222(92.89)	17(7.11)		
No	69	57(82.61)	12(17.39)		
No idea	83	76(91.57)	7(8.43)		

n: frequency. %: row percentage. \*: p-value <0.05. \*\*: p-value <0.01. \*\*\*: p-value <0.001.

Table 5 shows the relationship between availability of resources in the schools and hand hygiene practices. At 95% confidence level, the Chi-squared analysis shows that the following variables were significantly associated with hand hygiene practices: access to running water ( $\chi^2 = 5.62$ ; p-value=0.018); availability of Veronica's bucket ( $\chi^2 = 7.44$ ; p-value=0.024); availability of soap to wash hands ( $\chi^2 = 9.38$ ; p-value=0.002); availability of hand towel for cleaning ( $\chi^2 < 0.001$ ); and availability of towel for wiping hands ( $\chi^2 = 3.91$ ; p-value=0.048)

**Table 5. Association between resource availability in the schools and hand hygiene practices**

Variables	Total	Practice hand hygiene		Chi-Square	P-value
		Yes (%)	No (%)		
<b>Access to running water</b>				5.62	0.018*
Yes	235	220(93.62)	15(6.38)		
No	156	135(86.54)	21(13.46)		
<b>Veronica's bucket</b>				7.44	0.024*
Yes	111	107(96.40)	4(3.60)		
No	270	238(88.15)	32(11.85)		
Others	10	10 (100.00)	0 (0.00)		
<b>Soap to wash hands</b>				9.38	0.002**
Yes	263	247(93.92)	16(6.08)		
No	128	108(84.38)	20(15.63)		
<b>Hand towel for cleaning</b>				13.59	<0.001***
Yes	222	212(95.50)	10(4.50)		
No	169	143(84.62)	26(15.38)		
<b>Safe storage container</b>				1.66	0.198
Yes	170	158(92.94)	12(7.06)		
No	221	197(89.14)	24(10.86)		
<b>Container covered</b>				2.33	0.127
Yes	155	145(93.55)	10(6.45)		
No	236	210(88.98)	26(11.02)		
<b>Container with spigot</b>				2.55	0.110
Yes	122	115(94.26)	7(5.74)		
No	269	240(89.22)	29(10.78)		
<b>Bowl for used water</b>				1.88	0.170
Yes	150	140(93.33)	10(6.67)		
No	241	215(89.21)	26(10.79)		

n: frequency. %: row percentage. \*: p-value <0.05. \*\*: p-value <0.01. \*\*\*: p-value <0.001.

Source: Researcher's field survey, 2019

**Table 6. Association between resource availability in the schools and hand hygiene practices (cont'd)**

Variables	Total	Practice hand hygiene		Chi-Square	P-value
		Yes (%)	No (%)		
<b>Soap for hand washing</b>				0.78	0.376
Yes	212	195(91.98)	17(8.02)		
No	179	160(89.39)	19(10.61)		
<b>Cake or liquid soap</b>				2.39	0.122
Yes	200	186(93.00)	14(7.00)		
No	191	169(88.48)	22(11.52)		
<b>Towel for wiping hands</b>				3.91	0.048*
Yes	158	149(94.30)	9(5.70)		
No	233	206(88.41)	27(11.59)		
<b>Waste bin for used towel</b>				1.93	0.164
Yes	162	151(93.21)	11(6.79)		
No	229	204(89.08)	25(10.92)		

n: frequency. %: row percentage. \*: p-value <0.05. \*\*: p-value <0.01. \*\*\*: p-value <0.001.

Source: Researcher's field survey, 2019

#### 4.4 Strength of Association

Logistic regression model was run between independent variables and the outcome variable (hand washing practices). The Crude as well as the Adjusted Odds Ratios were found and are shown in Table 6. The following significant odds in relation to one's likelihood to practice handwashing was observed after adjusting for other variables in the multiple regression analysis: students in form 2 were 5.6 times more likely to practice hand washing than those in form 1 (aOR 5.64; 95% CI: 2.09-16.9). Also, students who reported to have never heard of handwashing were 90% less likely to practice handwashing (aOR 0.10; 95% CI: 0.03-0.34). Although differences in odds exist in relation to sex, practical knowledge of handwashing, and access to resources among others; these were not statistically significant at the 95% confidence level after adjusting for other variables even though some (e.g. sex, and resource availability) were significant at the univariate level.

**Table 7. Factors influencing hand hygiene practices among students**

variables	Unadjusted binary logistic		Adjusted binary logistic	
	UOR (95% CI)	P-value	OR (95% CI)	P-value
<b>Sex</b>				
Male	1.00 (reference)		1.00 (reference)	
Female	2.97 (1.41-6.26)	0.004**	1.66 (0.69-3.98)	0.256
<b>Grade/form</b>				
Form 1	1.00 (reference)		1.00 (reference)	
Form 2	3.29 (2.02-15.29)	0.014*	5.64 (2.09-16.9)	0.014*
<b>Heard of hand washing</b>				
Yes	1.00 (reference)		1.00 (reference)	
No	0.04 (0.01-0.12)	<0.001***	0.10 (0.03-0.34)	<0.001***
<b>Know how to practice social hand washing</b>				
Yes	1.00 (reference)		1.00 (reference)	
No	0.31 (0.14-0.68)	0.004**	0.64 (0.25-1.63)	0.344
Somehow	0.70 (0.29-1.72)	0.439	1.34 (0.45-3.98)	0.6
<b>Wash hand for at least 15 second</b>				
Yes	1.00 (reference)		1.00 (reference)	
No	0.36 (0.17-0.79)	0.011*	0.65 (0.26-1.63)	0.354
No idea	0.8 (0.33-1.96)	0.629	0.98 (0.35-2.77)	0.974
<b>Access to running water</b>				
No	1.00 (reference)		1.00 (reference)	
Yes	2.26 (1.14-4.49)	0.02*	1.64 (0.71-3.81)	0.245
<b>Access to veronica bucket</b>				
Yes	1.00 (reference)		1.00 (reference)	
No	0.31 (0.11-0.84)	0.022*	0.46 (0.14-1.5)	0.198
others	0.88 (0.04-17.48)	0.933	0.89 (0.04-21.98)	0.942
<b>Access to washing soap</b>				
Yes	1.00 (reference)		1.00 (reference)	
No	0.35 (0.18-0.7)	0.003**	0.54 (0.2-1.47)	0.225
<b>Access to hand towel or tissue</b>				
Yes	1.00 (reference)		1.00 (reference)	
No	0.27 (0.13-0.56)	0.001**	0.51 (0.17-1.56)	0.239

UOR: unadjusted odds ratio. AOR: adjusted odds ratio. CI: confidence interval. \*: p-value<0.05. \*\*: p-value <0.01. \*\*\*: p-value<0.001.

## CHAPTER FIVE

### DISCUSSION

#### 5.1 Background characteristics of Students

The findings of this study relate to findings of previous studies in several respects. Dajaan et al (2018) reported in a study that, students' socio-demographic characteristics could serve as a barrier to their compliance with hand hygiene. Dajaan (2018), examined the relationship between public primary school respondents' socio-demographic characteristics and knowledge of hand washing; and revealed an association between respondents' gender, mother tongue and knowledge of hand washing.

As reported in the bivariate analysis of this study, out of the background characteristics of the students investigated, hand washing with soap practice was significantly affected by sex, form/grade, knowledge and the availability of resources for handwashing. Female students were more likely to comply with good hand washing practices with soap under running water especially before meals and after using the lavatory during school hours than the male students. Females were more likely to comply with good hand washing practices compared to males. This confirms the findings of the study of Dajaan et al (2018) cited above.

Students who had knowledge about hand hygiene practice were more likely to practice it than those who did not have the knowledge. Furthermore, students who had resources readily available were more likely to exercise good hand washing practices compared to those who did not have or have inadequate resources.

## **5.2 Prevalence of Hand Washing Practice among students**

As reported in the univariate and multiple logistic analyses, female students were more likely to comply with hand hygiene practices than the male students. Females, according to the results of the study practiced good hand hygiene practices than the males. The results of the research work point to the fact established by other studies on frequency of hand washing in schools which shows that females washed hands more frequently especially after using the toilet than their male counterparts. It also confirms the findings of Phongsavan et al (2006) who reported that girls had better health habits than boys. This can be concluded that, females were more compliant in hygiene related issues than males. A study conducted in Ethiopia by Vivas et al (2010) reported that, children who washed their hands before eating were 99% but only 36.2% reported using soap; and although 76.7% of students reported that hand washing after visiting the toilet was important, only 14.8% reported actually practiced it. Considering the relationship between hand washing practices and resource availability, it is safe to extrapolate that students did not use soap to wash their hands due to unavailability of soap and also, those who reported washing hands after visiting the toilet as being important did not practice it due to forgetfulness, or inadequate resources such as soap, towel and water supply for the act.

## **5.3 Level of knowledge of students in hand hygiene practices**

From the study, more than half of the students had adequate knowledge and information on hand hygiene practices. The students need to know the key indicators such as removal of ornaments before hand washing is done. A study conducted by Dajaan et al (2018) argued that, effective hand washing education has the potential of improving school children's knowledge of hand washing thereby impacting on their hand washing practice

either in school or at home. Dajaan (2018), examined the knowledge of public basic school children in the Kintampo Municipality of Ghana, and realized 53.3% had never been taught how to wash their hands. There is the need for more education to be carried out to get all students in all second cycle schools to know more about hand hygiene and to practice it effectively. Literature shows that in addition to having amenities for washing hands, students' knowledge and attitudes towards the act affects their practice (Vivas *et al.*, 2010). It can be said that, when students know about hand washing, then they can effectively practice it. A research work carried out in Senegal, realized some of these factors as why students did not wash their hands: stubbornness, laziness, the rush to go on break, the time it takes away from playing, and the dirt and smell of the toilets (WHO, 2009a; Vivas *et al.*, 2010).

Studies have argued that students' enhanced knowledge of WASH programme is a factor that would enhance compliance: students at this stage, are able to keep information and also pass it on to their peers, and parents at home. They need adequate information so that they can act as change agents who would spread what they have learnt to their family and community at large (Rabie & Curtis, 2006). Students need accurate information on good hand hygiene practices because once they get used to it, it becomes part of them throughout their lifetime.

#### **5.4 Relationship between resources available in the schools and their practice of hand hygiene**

Almost one-third of the students in the three second cycle schools in the Ledzokuku Municipal Area had resources available for hand washing. One of the best ways of

incorporating good hand washing practice or behavior into senior high school students is the consistent supply of hand washing supplies such as soap, towels or tissue, hand washing points, regular water supply etc. According to the results of the study, the unavailability of the resources such as adequate water supply, soap, towel or tissue made it difficult for students to practice hand hygiene.

According to Dajaan (2018), in a similar study conducted, he found that hand washing facilities in the schools were found to be inadequate since about 60% of the schools had hand washing points and only 30% of the schools had clean running water.

Results from the study carried out by Dajaan (2018) revealed that, facility deficiency in most public schools which the three second cycle schools in Ledzokuku forms part of, as proven by the results and findings of the study makes it difficult for students to effectively practice hand washing.

This study also confirms the results of Adams et al (2009) study which reported that schools, particularly those in rural areas, often completely lacked drinking water and hand washing facilities; alternatively, where such facilities did exist, they were often inadequate in both quality and quantity. The three schools in the Ledzokuku municipal area lacked sufficient facilities for hand washing and this makes it impossible for the students to effectively comply with the WASH program.

## CHAPTER SIX

### CONCLUSIONS AND RECOMMENDATIONS

#### 6.0 Introduction

This chapter presents the conclusions drawn from the results, recommendations, and some suggestions for further study.

#### 6.1 Conclusions

The following conclusions were made from the key findings found; the first objective of the study was to determine the prevalence of students in second cycle schools in Ledzokuku municipal area who practice hand washing. The study concludes that, most of the students about 91% practice hand washing.

The second objective was to determine the socio- demographic characteristics of the students and how it affects hand washing. The study concludes that, the sex of the individual affects his or her hand hygiene practices. Females are more likely to practice hand hygiene than males. It can also be concluded that, form two students are more likely to practice hand washing than form one students. The third objective was to assess students' knowledge on hand hygiene practices. This study concludes that, students had inadequate knowledge about the WASH program hence, their inability to comply.

The fourth objective was to determine the resources available in the schools and how it influences hand washing. It can be said that, when resources for hand washing are available, students are more likely to practice hand hygiene than when the resources are not available. The study concludes that, the resources available for hand washing in the schools are inadequate making it difficult for students to wash their hands effectively.

## **6.2 Recommendations**

### **6.2.1 Ledzokuku Municipal Assembly**

The assembly should provide enough facilities for storing water in the public second cycle schools, this will make hand washing easy and practicable.

### **6.2.2 Ledzokuku Municipal Education Directorate**

- Structured hand hygiene education and promotion sessions should be instituted in the schools by the municipal director of education and school authorities. The teachers should encourage their students to always wash their hands with soap under running water before and after eating, after break and after visiting the washroom.
- The municipal director of education should encourage all heads of second cycle schools to take interest in hand washing campaign and write messages such as “HAND WASHING PROMOTES HEALTH” and paste them at vantage points in the schools in the municipality.
- There should be a partnership between the health directorate and the education directorate for periodic health talks about hand hygiene to be given to the students.

## **6.3 Suggestion for Further Studies**

Extending the current research to other second cycle schools in the Greater Accra Region to assess the prevalence of hand hygiene practice would be beneficial.

## REFERENCES

- John Adams, Jamie Bartram, Yves Chartier, Jackie Sims. (2009). WHO. Water, Sanitation and hygiene standards for schools in low cost settings.
- Alexander, K. T., Oduor, C., Nyothach, E., Laserson, K. F., Amek, N., Eleveld, A., ... Phillips-Howard, P. A. (2014). Water, sanitation and hygiene conditions in kenyan rural schools: Are schools meeting the needs of menstruating girls? *Water (Switzerland)*, 6(5), 1453–1466. <https://doi.org/10.3390/w6051453>
- Assefa, M., & Kumie, A. (2014). Assessment of factors influencing hygiene behaviour among school children in Mereb-Leke District , Northern Ethiopia : a cross-sectional study, 1–9.
- Bowen, A., Ma, H., Ou, J., Billhimer, W., Long, T., Mintz, E., ... Luby, S. (2007). A CLUSTER-Randomized Controlled Trial Evaluating the effect of a Handwashing-promotion Program in Chinese Primary Schools, 76(6), 1166–1173.
- Caruso, B. A., Freeman, M. C., Garn, J. V., Dreibelbis, R., Saboori, S., Muga, R., & Rheingans, R. (2014). Assessing the impact of a school-based latrine cleaning and handwashing program on pupil absence in Nyanza Province, Kenya: a cluster-randomized trial. *Tropical Medicine & International Health : TM & IH*, 19(10), 1185–1197. <https://doi.org/10.1111/tmi.12360>
- Curtis, V., & Cairncross, S. (n.d.). Reviews Effect of washing hands with soap on diarrhoea risk in the community : a systematic review, 44(0), 275–281.
- Dajaan, D. S., Addo, H. O., Ojo, L., Amegah, K. E., Loveland, F., Bechala, B. D., & Benjamin, B. B. (2018). Hand washing knowledge and practices among public primary schools in the Kintampo Municipality of Ghana, 5(6), 2205–2216.
- Dreibelbis, R., Greene, L. E., Freeman, M. C., Saboori, S., Chase, R. P., & Rheingans, R. (2013). International Journal of Educational Development Water , sanitation , and primary school attendance : A multi-level assessment of determinants of household-reported absence in Kenya. *International Journal of Educational Development*, 33(5), 457–465. <https://doi.org/10.1016/j.ijedudev.2012.07.002>
- Ergin, A., Bostanci, M., & Bozkurt, A. I. (2011). E of Students ' social hand Washing Knowledge , Practices , and Skills. *Knowledge on Hand Washing*, (December). <https://doi.org/10.21101/cejph.a3664>
- Gerald, L. B., Gerald, J. K., Zhang, B., McClure, L. A., Bailey, W. C., & Harrington, K. F. (2012). Can a school-based hand hygiene program reduce asthma exacerbations among elementary school children? *Journal of Allergy and Clinical Immunology*, 130(6), 1317–1324. <https://doi.org/10.1016/j.jaci.2012.08.031>
- Karon, A. J., Cronin, A. A., Cronk, R., & Hendrawan, R. (2017). Improving water, sanitation, and hygiene in schools in Indonesia: A cross-sectional assessment on sustaining infrastructural and behavioral interventions. *International Journal of Hygiene and Environmental Health*, 220(3), 539–550. <https://doi.org/10.1016/j.ijheh.2017.02.001>

- Morgan, C., Bowling, M., Bartram, J., & Lyn Kayser, G. (2017). Water, sanitation, and hygiene in schools: Status and implications of low coverage in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia. *International Journal of Hygiene and Environmental ealth*, 220(6), 950–959. <https://doi.org/10.1016/j.ijheh.2017.03.015>
- Qasmi, S. A., Mahmood Shah, S. M., Wakil, H. Y. I., & Pirzada, S. (2018). Guiding hand hygiene interventions among future healthcare workers: implications of knowledge, attitudes, and social influences. *American Journal of Infection Control*, 46(9), 1026–1031. <https://doi.org/10.1016/j.ajic.2018.02.019>
- Ramesh, A., Blanchet, K., Ensink, J. H. J., & Roberts, B. (2015). Evidence on the Effectiveness of Water , Sanitation , and Hygiene ( WASH ) Interventions on Health Outcomes in Humanitarian Crises : A Systematic Review, 1–21. <https://doi.org/10.1371/journal.pone.0124688>
- Schoereder, H., Galbiati, C., Ribas, C. R., Sobrinho, T. G., Sperber, C. F., Desouza, O., & Lopes-andrade, C. (2004). Should we use proportional sampling for species – area studies ? *Journal of Biogeography*, 31(8), 1219–1226. <https://doi.org/10.1111/j.1365-2699.2004.01113.x>
- Snow, M., White, G. L., Alder, S. C., & Stanford, J. B. (2006). Mentor’s hand hygiene practices influence student’s hand hygiene rates. *American Journal of Infection Control*, 34(1), 18–24. <https://doi.org/10.1016/j.ajic.2005.05.009>
- Siegel, J. D., Rhinehart, E., Jackson, M., & Chiarello, L. (2007). 2007 guideline for isolation precautions: preventing transmission of infectious agents in health care settings. *American Journal of Infection Control*, 35(10), S65-S164.
- Simmons, B. P., Hooton, T. M., & Mallison, G. F. (1981). Guidelines for hospital environmental control. *Infection Control & Hospital Epidemiology*, 2(2), 131-148.
- Steiner-Asiedu, M., Van-Ess, S. E., Papoe, M., Setorglo, J., Asiedu, D. K., & Anderson, A. K. (2011). Hand washing practices among school children in Ghana. *Current Research Journal of Social Sciences*, 3(4), 293-300.
- UNICEF (2018). Water, Sanitation and Hygiene. Retrieved 12 December, 2018, from: <https://www.unicef.org/wash/>
- Vivas, A., Gelaye, B., Aboset, N., Kumie, A., Berhane, Y., & Williams, M. A. (2010). Knowledge, attitudes, and practices (KAP) of hygiene among school children in Angolela, Ethiopia. *Journal of Preventive Medicine and Hygiene*, 51(2), 73.
- WHO (2009a). World Health Statistics 2009. Retrieved 5 August, 2009, from: [www.who.int/entity/whosis/whostat/2009](http://www.who.int/entity/whosis/whostat/2009).
- WHO (2009b). WHO Guidelines on Hand Hygiene in Health Care: First Global Patient Safety Challenge Clean Care is Safer Care. Geneva, Switzerland: World Health Organisation. Retrieved 12 December, 2018, from: [http://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906\\_eng.pdf;jsessionid=34060482BA3D3E748EB81E6962773394?sequence=1](http://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906_eng.pdf;jsessionid=34060482BA3D3E748EB81E6962773394?sequence=1).

## **APPENDIXES**

### **APPENDIX A: PARTICIPANT'S INFORMATION SHEET**

**Study Title: Factors influencing compliance with the water sanitation and hygiene (WASH) programme: hand hygiene practices in second cycle schools in the Ledzokuku Municipality.**

#### **Introduction**

I am Linda Pewu, a Master of Public Health (MPH) student at the School of Public Health of the University of Ghana, Legon and the principal investigator for this study. I can be reached on 0242585494 or pessynam@yahoo.com

#### **Background and purpose of research**

Hand hygiene is a well-known primary infection control measure. Hand washing with soap and water has been cited by WHO as the most important hygiene measure in preventing the spread of infection. Schools, like hospitals, have close, crowded environments that increase the risk of microbial cross contamination and transmission and infectious agents that children contract in schools can result in infections in up to 50% of household members, hence I would like to invite you to participate in this study because you have an experience as a student.

#### **Nature of research**

This study is about factors influencing compliance with the WASH program and the research seeks to find answers to how hand hygiene is carried out, and the factors that affect compliance with the WASH programme, and whether resources are available for use or not. A total of 391 students from three second cycle schools in the Ledzokuku Municipality

will be used for the study. The study will take place in Teshie Presby Senior High School, Oreilly Senior High School and Teshie Technical Institute.

### **Participant's involvement**

This is an explorative study to assess hand hygiene practices and the factors influencing compliance with the WASH programme. Questionnaire will be given out to assess the hand hygiene practices and a WHO checklist will be used to assess the factors influencing compliance with the WASH programme. It will take about 20 minutes. The questionnaires will be brought at a time that is convenient for you, and is agreed upon by you and I.

### **Potential Risk**

Your participation in this study will take part of your time in the classroom and you do not have to give reasons for not answering questions that may bother you psychologically.

### **Benefits**

Your participation will contribute towards the improvement of hand hygiene practices among second cycle schools in Ghana.

### **Cost**

Participation in this study will not cost you any money.

### **Compensation**

You will also not receive any money/incentives for participating in this research.

### **Voluntary participation or withdraw**

You are free to choose if you want to take part in this study. You can also withdraw your consent at any time without further explanation, and without any adverse consequences.

**Outcome and feedback**

Hardcopies of the findings from the research will be shared with the University of Ghana Public Health School, University of Ghana Graduate School, Municipal Education office, and the heads of the three schools who participated in the study.

**Funding information**

The research is sponsored by the principal investigator.

**Sharing of participants information/ data**

The data that will be generated from the study will solely be for the principal investigator.

This project has been reviewed by, and received ethical clearance through, the Ghana Health Service Ethics Review Committee.

Your involvement in this study is greatly appreciated. If you are happy to take part in the study, please read and sign the attached consent form.

If you have a concern about any aspect of this research, please speak to me on tel. no 0242585494. I will do my best to answer your questions. If you remain unhappy or wish to make a formal complaint, please contact Madam Hannah Frimpong an administrator at the Ghana Health Service Ethics Review Committee on Tel 0503041223.

**ASSENT FORM (ADOLESCENTS 13-19YEARS)**

**STUDY TITLE: Factors influencing compliance with the water sanitation and hygiene (wash) programme: hand hygiene practices in second cycle schools in the Ledzokuku Municipality.**

**PARTICIPANT’S STATEMENT**

I acknowledge that, I have read the purpose and contents of the participants’ information sheet read and satisfactorily explained to me in English Language. I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name/ initials of Participant..... ID. Code.....

Participant’s signature.....

Date.....

**INVESTIGATOR’S STATEMENT**

I certify that, the participant has been given ample time to read and learn about the study.

All questions and clarifications raised by the participants have been addressed.

Researcher’s name.....

Signature.....

Date.....

**CONSENT FORM FOR HEADMASTER**

**STUDY TITLE: Factors influencing compliance with the water sanitation and hygiene (wash) programme: hand hygiene practices in second cycle schools in the Ledzokuku Municipality.**

**PARTICIPANT’S STATEMENT**

I acknowledge that, I have read or have had the purpose and contents of the participant’s information sheet and satisfactorily explained to me in English Language. I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Name of Headmaster.....

Signature of Headmaster.....

Date.....

**INVESTIGATOR’S STATEMENT**

I certify that, the participant has been given ample time to read and learn about the study.

All questions and clarifications raised by the participants have been addressed.

Researcher’s name.....

Signature.....

Date.....

**Appendix B-QUESTIONNAIRE**

**TOPIC: Factors influencing compliance with the water sanitation and hygiene (wash) programme: hand hygiene practices in second cycle schools in the Ledzokuku Municipality**

**Instructions: Please answer every question as honestly as possible. Do not leave any question unanswered.**

	Variables	Responses
<b>SECTION A</b>		<b>Socio-Demographic Characteristics</b>
1	Age	.....years
2	Sex	1. Male.....
		2. Female .....
3	Grade/Form	1. Form 1.....
		2. Form 2.....
		3. Form 3.....
4	Religion	1. Christianity.....
		2. Islamic.....
		3. Traditional Religion.....
		4. Others .....
5	Ethnic Group	1. Akan .....
		2. Fanti.....
		3. Ga/Adangbe.....
		4. Ewe.....
6	Residential Status	1. Live with Both Parents.....
		2. Live with Mother only.....

		3. Live with Father only.....
		4. Live with Guardian.....
		5. Live with other Family relatives.....
<b>SECTION B</b>		<b>HAND WASHING</b>
7	Are you aware of hand washing?	1. Yes.....
		2. No.....
8	If Yes to <b>Question 9</b> , Where did you hear of hand washing?	1. Parents.....
		2. Peers.....
		3. Media.....
		4. Health Center.....
		5. Others.....
9	Do you practice hand hygiene in school?	1. Yes .....
		2. No .....
10	If Yes to <b>Question 11</b> , how often do you practice it?	1. Before eating.....
		2. After eating.....
		3. After visiting the toilet.....
		4. After break.....
11	Do you have access to running water in school or at home?	1. Yes.....
		2. No.....
12	Do you have Veronica's bucket in school or at home?	1. Yes.....

13	Do you have soap to wash hands in school?	2. No.....
		1. Yes.....
		2. No.....
14	Do you have hand towel or tissue for cleaning hands after washing in school?	1. Yes.....
		2. No.....
15	What is the reason for not washing hands?	1. Forgetfulness.....
		2. No time.....
		3. Classroom far from sink.....
16	Do you know how to practice social hand washing in school?	1. Yes..... 2. No..... 3. Somehow.....
17	Do you need to remove ornaments such as watches, rings before washing hands?	1. Yes ..... 2. No .....
18	Do you need to wash hands for at least 15 seconds?	1. Yes ..... 2. No .....

**APPENDIX C - CHECKLIST**

Some of which will include:	Yes (1)	No (2)
19. Is there a safe storage container?	<input type="checkbox"/>	<input type="checkbox"/>
20. Is the container covered?	<input type="checkbox"/>	<input type="checkbox"/>
21. Is the container with a narrow opening or spigot?	<input type="checkbox"/>	<input type="checkbox"/>
22. Is there a receptacle or bowl for collecting the used water?	<input type="checkbox"/>	<input type="checkbox"/>
23. Is there a soap for hand washing?	<input type="checkbox"/>	<input type="checkbox"/>
24. Is the soap a cake or liquid soap?	<input type="checkbox"/>	<input type="checkbox"/>
25. Is there a hand towel or tissue paper for wiping hands after washing?	<input type="checkbox"/>	<input type="checkbox"/>
26. Is there a waste bin for collecting the used towel or tissue paper	<input type="checkbox"/>	<input type="checkbox"/>