

**UNIVERSITY OF EDUCATION, WINNEBA**

**SELECTION, USE AND CARE OF UNDERGARMENTS AMONG  
STUDENTS IN KWANYAKO SENIOR HIGH SCHOOL**

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**A Thesis in the Department of Home Economics Education,  
Faculty of Science Education,  
Submitted to the School of Graduate Studies  
in partial fulfilment of the requirements  
for the award of the degree of Master of Philosophy  
(Home Economics Education)**

**NOVEMBER, 2019**

## DECLARATIONS

### Candidate's Declaration

I, Susan Banasam, hereby declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and that it has not been submitted, either in part or whole, for another degree elsewhere.

**Signature:** .....

**Date:**.....

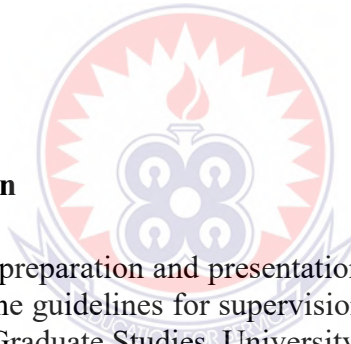
### Supervisor's Declaration

I hereby declare that the preparation and presentation of this thesis was supervised by me, in accordance with the guidelines for supervision of dissertation laid down by the School of Research and Graduate Studies, University of Education, Winneba.

**Name of Supervisor:** Professor Phyllis Forster

**Signature:** .....

**Date:** .....



## **DEDICATION**

To my husband Armstrong Esaah and my two lovely children, Winfred Nana Yaa Esaah and Reginald Fiifi Esaah for their endurance and co-operation.



## ACKNOWLEDGEMENTS

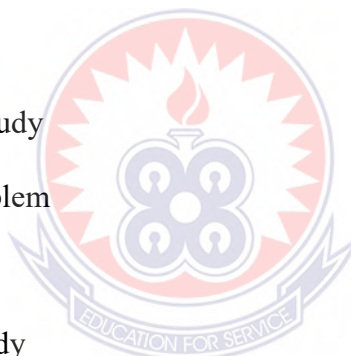
The successful completion of this study is the result of corrections, suggestions and guidance of my supervisor, Professor Phyllis Forster, I am indeed indebted to her. My gratitude also goes to all the lecturers of the Department of Home Economics Education, University of Education, Winneba for their comments, constructive criticisms and guidance that put this work in shape.

I express my gratitude to students in Kwanyako Senior High School for their time spent to provide me the needed information. Had it not been their responses, I could not have been able to achieve the objectives of this study. To all family members, colleagues and friends, I say a big thank you for their prayers and moral support.



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## ABSTRACT

The study was conducted at Kwanyako Senior High School. The descriptive survey design was employed to investigate how students in the school's boarding house select, use and care for their undergarments. Multistage sampling technique was used to select 176 respondents, comprising 115 females and 61 males for the study. Research objectives for the study were: to identify the types of undergarments used by students, examine factors they considered in their selection, evaluate the care methods adopted by students to maintain their undergarments and to explore undergarment related challenges they experienced. Questionnaire was used to collect data which were analysed electronically with the SPSS version 21 to generate percentages, means and standard deviations and independent t-test. The study revealed that female students often wore undergarments such as chemises, brassieres, boy shorts, briefs, underskirts, *thongs*, *G-strings*, brassieres and chemise while the male students used boxer shorts, undershirts, singlets, boxer briefs and briefs. Both female and male students considered association, intention for use, outer wear, convenience and affordability. Care methods used were mending, washing, airing, bleaching, drying, ironing and storing in trunks. It was also found that both sexes used appropriate care methods for their undergarments; however, both had health problems. Independent t-test was used to determine the significant difference in the factors for selecting undergarments among male and female students, and the care methods adopted to maintain their undergarments. It was tested at a significant level of  $p < 0.05$  at a confidence interval of 95%. The test results showed that both null hypotheses were not rejected. Thus, similar factors and care methods were considered by both male and female students in their selection and care. It is recommended that the authorities of the school educate students on the health implications of using *thongs* and *G-strings*, tight casing of undergarment at waist line, and the use of undergarments made with synthetic fabrics in order to prevent infections. Students should be advised to desist from stealing undergarments, school authorities should provide enough drying lines on campus to prevent infections.

## CHAPTER ONE

### INTRODUCTION

#### 1.0 Overview

This chapter provides information in relation to the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, delimitations of the study, limitations of the study and operational definitions of terms. Organization of the study are also put forward.

#### 1.1 Background to the Study

Clothing is defined as anything worn or carried on the body to modify personal appearance (Forster, 2014; Gavor, Among & Tetteh- Coffie, 2015). Any time people wear clothing it makes statements about who they are, groups they belong to and how they feel about themselves. Forster further stated that clothing is a silent language which sends information about its user before he or she has the chance to speak. Horn (1975), explained that clothing, as part of the body image, acts as a “second skin” in establishing the physical boundaries of the individual. Clothing is therefore tangible impression of personal values and recognised as one of the symbols of communication that leads to social acceptance.

According to Adamtey (2008), the meaning of clothing lies within its functions and the main functions of clothing are for protection, modesty or decency, and adornment. Other functions include, identification, mood expression, sexual attraction and impression creation. Clothing provides the body with physical as well as psychological protection (Forster, 2014). Protection from extreme or harsh weather conditions, infections and injuries are forms of physical protection, whilst psychological protection involves the belief that, some types of clothing such as

talisman provides spiritual protection from evil spirits. Modesty is about decency in the use of clothing and the shame of not wearing clothing that does not deviate from what is normally worn for a particular purpose.

According to Forster (2014), clothing may be classified as, clothes, accessories and cosmetics. Clothes include outer garments such as skirt suits, coats, jackets, dresses, trouser, T-shirts, shorts, blouses etc.; inner garments such as top wear or tube, waistcoat, shirts, shorts, trousers; undergarments like panties, briefs, brassieres, corsets, girdles, underskirts, bellybands, singlet and boxer shorts.

Undergarments are garments worn next to the skin, that is, under the fashion dress (Forster, 2014). It is most frequently used in American English as shorthand for garments that cover the genitalia, e.g., chemise, petticoat, undershirt, boxer shorts, panties and others. Undergarments otherwise referred to as underwear are generally worn by females and males and are of two types, those that are worn to cover the torso and those that are worn to cover the waist to the legs. Undergarments commonly worn by females include brassieres and panties while males often wear briefs, boxer shorts, singlet etc.

Since prehistoric times, people in all societies have worn some kind of clothing for various reasons. Horn (1975), theory of clothing usage, that is modesty, immodesty, protection and adornment, is used to explain the selection, use and care of undergarments. With regards to the modesty and immodesty theory, undergarments may be worn to prevent certain embarrassing situations. For instance, the wind may blow an outer garment, one may forget to fasten an opening on the outer wear and a seam may split in an outer garment to expose some private parts of the body. In these instances, the undergarment will be there to prevent shame or embarrassment.

Underwear may also be worn to stimulate sexual interest or for erotic purposes. A sexy lingerie or panty (“edible wear”) all day is intended for the purpose of erotic play (Davies, 2013).

With regards to the protection theory, the use of undergarment constitutes an additional layer of clothing helping to keep the wearer warm. Undergarment also serves as barrier to the body from contamination of the outer garment. In addition they absorb body fluids such as sweat to keep the body dry and free from infections and also serve to keep outer garments from being soiled by body secretions. They lessen the friction of outerwear against the skin, provide shape to the body, concealment to somebody faults and support for some parts of the body.

In relation to the adornment theory, undergarments may be worn to beautify the body, especially for erotic reasons. Attractive undergarments may be worn by couples to improve their desire for each other. Some special types of undergarments may also be worn to improve the adorning effect of outer garments. For instance G-string panty may be worn under a pair of trousers to prevent panty lines from showing while hip-padded underpants may be worn under a skirt for a broader hip effect in an outer garment.

Undergarments are available in a variety of fabrics, including nylon, cotton, modal, silk, spandex, and lycra and purchasing the right fabric comes down to one’s specific taste. An undergarment should possess the property of breathability, stretch, must not warp easily, and provide ample ventilation to ensure a comfortable fit, warmth, support, and hygiene. As Forster (2014), indicated, nylon emits electrical charges and not recommended for undergarment in the tropics, cotton and modal may be the most common choice for use in the tropics since they have been found to be absorbent and

provide comfort. Again, cotton and modal complement with elastic allowing it to stretch and to provide breathability and comfort for long durations. Notwithstanding this advantage, such fabrics form mildew when not properly stored especially in damp or wet environment. Modal is made from a semi-synthetic cellulose fibre, manufactured by spinning cellulose from beech trees. This fabric absorbs 50% more moisture than cotton (Shortsleeve, 2017).

In a tropical region such as Ghana, the climate is warm, hence people sweat a lot. Undergarments used in such areas should be made to absorb sweat well and be cool to wear to ensure comfortability (Foster, 2014). Woollens and thermals are suitable for colder climates, while cotton and other cellulose based fabrics are preferable for warm climates. In the case of physical activity, spandex is the best choice for undergarment (Shortsleeve, 2017).

Although nylon undergarments are common, quite cheap on the market very strong and easy to launder, they have low moisture absorbency rate and are warm to wear. Nylon also emits electrostatic charges which do not promote comfortability when worn in warm climate, hence, it is not recommended for use as undergarment in the tropics (Forster, 2014). Such undergarments are likely to cause skin irritation and rashes.

According to Kelly- Plate and Eubanks (1994), caring for undergarments is very important. While some undergarments are disposable, re-usable ones are what mostly available and purchased by consumers for repeated use. Since they are worn next to the skin, several sets are needed by the individual to allow for frequent hanging and washing in order to ensure a high standard of personal hygiene and prevent infections, body odour and embarrassment. Proper cleaning and storage of undergarments



prolong the life span of the product. Good decisions as to what undergarments to select, how to use them and how to take good care of them therefore becomes very necessary for consumers of such products. Thus the need to study how students in Kwanyako Senior High School as consumers of undergarments select, use and care for their undergarments.

## **1.2 Statement of the Problem**

Undergarments are worn next to the skin and under outer garments to keep them from being soiled or damaged by body secretions, to lessen the friction of outerwear against the skin and provide concealment for private parts of the body. Therefore, a careful selection is required for them to fit the purpose for which they are acquired for use. Wrongful selection of sizes, types and colours of undergarments will not provide the needed services. For instance, dark coloured undergarments like panties and briefs may not show dirt but harbour dirt and bacteria which can cause infections while undergarments made with fabrics with low moisture absorbency cannot absorb sweat and cause discomfort. Like all students, Kwanyako Senior High School students select and use undergarments for varying purposes from different sources. Some may be bought in their new state while others may be handed down to them by family members or may be obtained from second-hand vendors. In fact the use of second-hand undergarments has been banned by law in Ghana (LI 1586) as a result of the infections they can cause to patrons. A cursory observation has revealed that some students dry their undergarments in their dormitories, hence, their undergarments may not be well dried and therefore harbour bacteria and also develop mildew to cause health hazard. The researcher, being a house mistress of Kwanyako Senior High School, frequently has to sign exeat forms for students infected with groin and under-breast rashes, and also urinary tract infections to go for treatment at the hospital.

These conditions are believed to be associated with wrong choices, use and care of undergarments. Good choices, right usage and care of undergarments will yield high level of serviceability, ensure safety and user satisfaction. Hence the researcher's decision to research into the selection, use and care of undergarments and if necessary, suggest strategies to help students solve their undergarment related challenges.

### **1.3 Purpose of the Study**

The purpose of the study was to investigate how students in Kwanyako Senior High School select, use and care for their undergarments.

### **1.4 Objectives of the Study**

The objectives of the study were to:

1. identify the types of undergarments used by students of Kwanyako Senior High School.
2. examine factors that students considered in the selection of undergarments.
3. evaluate the care methods adopted by the students to maintain their undergarments in school.
4. explore undergarment related challenges the students were experiencing.

### **1.5 Research Questions**

The study was guided by the following research questions:

1. What types of undergarments were used by students of Kwanyako Senior High School?
2. What were the factors considered by the students in the selection of their undergarments?

3. What care methods did students adopt to maintain their undergarments in school?
4. What undergarment related challenges did students experience?

### **1.6 Hypotheses**

1.  $H_0$ . There is no significant difference in the factors for the selection of undergarments among male and female students in Kwanyako Senior High School.
2.  $H_0$ . There is no significant difference in the care methods used for undergarments among male and female students in Kwanyako Senior High School.

### **1.7 Significance of the Study**

The following are the significance of the study:

- i. The study will enlighten Home Economics teachers in the school on how students select, use and care for their undergarments and again enable them educate students on how to select, use and care for their undergarments effectively.
- ii. The findings of the study will be beneficial to Home Economics teachers in the school who teach Clothing selection and care.
- iii. The recommendations made in this study will guide students in the school to adopt effective care and management practices for their undergarments.
- iv. The findings of this study will create awareness of the challenges associated with undergarment usage for its readers.
- v. The findings will also enlighten school authorities in the school to help take measures to improve on laundry facilities in the school.

- vi. The area of the study is less researched into, hence, the findings will contribute significant literature for scholarly work.

### **1.8 Delimitation of the Study**

Creswell (2009) defined delimitation as “how the study will be narrowed in scope” (p. 106). This study is delimited to only S.H.S 1 to 3 boarding students of Kwanyako Senior High School. Hence, the findings of this study will be generalized to the students in this school only. It is, however, believed that the views expressed by the students will not substantially and significantly differ from the larger population of Senior High School students in Ghana because of homogeneity of the population.

### **1.9 Limitations of the Study**

In the conduct of the study some of the initial sampled students failed to return the filled questionnaire due to their unwillingness to respond. The researcher had to recruit additional students to make up the required sample size.

### **1.10 Operational Definition of Terms**

**Undergarment:** A garment worn next to the skin and under another garment. Undergarment is synonymous to underwear in this study.

**Underskirt:** A type of undergarment loose at the hip worn under a skirt or a dress.

**Undershirt:** A collarless „T“shirt worn underneath a dress or shirt.

**Chemise:** A type of women’s undergarment designed to hang down from the shoulders and fit loosely at the waist and hip.

**Brief:** Women’s or men’s undergarment cut with a high waist to provide full coverage of the hips and buttocks.

**Thong:** An undergarment worn between a person’s legs to cover up the sexual organs and held by thin fabric around the waist.

**G-string:** An undergarment with a piece of fabric that covers the genitals, with a half to one-inch strip of fabric at the back that sits between the buttocks and attached to the waist band around the hips.

**Knickers/Boy shorts:** A modelled like the men's brief in rectangular shape with a thong- style base as well as full coverage on the sides and front butt and hips and extend a little below the hip, unlike regular panties

**Clothing selection:** The decisions one makes about his or her clothing choice.

**Clothing care:** Correct treatment such as washing, drying in the right environment and ironing with the right temperature.

### **1.11 Organization of the Study**

In this presentation, chapter one is devoted to the introduction; which contains background to the study, statement of the problem, purpose and objectives of the study, research questions and hypotheses. It also covers significance of the study, delimitations and limitations of the study, definition of terms, as well as organization of the various chapters of the work. Chapter two presents the literature review while chapter three, the methodology, looks at the population, sample and sampling procedures as well as research instruments. It also covers validity and reliability of instruments, data collection procedures, data analyses, and ethical considerations. Chapter four focus on the results and discussion, and Chapter five presents the summary of findings, conclusions, recommendations, and suggestions for further research.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### 2.0 Overview

This chapter reviews literature related to the topic under the following headings:

- i. Theoretical framework.
- ii. Conceptual framework.
- iii. Types and classification of undergarments.
- iv. Factors that influence the selection of undergarments.
- v. Care methods for undergarments.
- vi. Undergarments related challenges.
- vii. Summary of literature review

#### 2.1 Theoretical Framework

Clothing is used by man for various reasons that are not too clear in general terms because people differ in their settlements, their bodily make-up, their social orientation and environmental conditions that prevail where they stay. Within the same society, there are individuals with different tastes, affiliations, activities and sometimes backgrounds. All these conditions make people think, act and demand different things.

Jones (1990), outlined six common reasons for wearing clothes: protection, modesty, occupational identity, attraction, social status and traditional identity. Four major theories have been used to explain the reasons behind individuals' clothing choices and decision. These theories include modesty, immodesty, protection and adornment theories (Marshal, Jackson, Stanley, Kefgen, & Touchie, 2000). Thus, these theories have attempted to explain the motivating factors underlying clothing choices and

decisions. These four theories of clothing formed the theoretical framework for the study. The theories were adopted for the current study because they provide information on the selection and usage of clothing, which includes undergarments. These theories recognize the importance of clothing as a symbol that communicates information in human interactions and situations, and which also aid in the establishment of identification of others. The theoretical framework for this study explains people's behaviour in taking decisions and making choices in the selection, use and care of clothing which also includes undergarments.

### **2.1.1 Modesty Theory**

Modesty is what people feel is the right way for clothing to cover the body (Gavor, *et al.*, 2015). Horn and Gruel (1981), explained modesty as covering the body according to what is proper which is determined by culture, environment, age, location and situational factors. Modesty theory stresses that clothes are worn solely according to what people feel is the proper way of dressing. It stresses that clothes are worn solely to conceal or cover nakedness. Ozougwu and Anyakaoha (2005), stated that it opposes the wearing of too few clothes but aims at the prevention of diseases, satisfaction, disgust, shame, and disapproval. It is also an inhibitory impulse against either social or sexual forms of display (Lever, 1964 cited in Marshal, Jackson, Stanley, Keffgen & Tochie-Specht, 2000). Thus, the modesty theory focuses on standard regarding the area of the anatomy to be concealed and the opportunity of dressing in general.

Clothing style that may be accepted in one culture may be rejected in another culture. Hence, Modesty theory has been criticized for three major reasons (Marshal *et al.*, 2000), as discussed below. For instance, while the Indian Woman would try as much as possible to cover her breast and legs leaving her abdomen open. The Suya Indians

of Brazil would wear lip disks or ear plugs without bordering to cover other parts of the body. Secondly, there is evidence that modesty is not an instinct but a culturally induced habit that varies depending on the time and place. Finally, the concept of modesty changes with age. In the context of this study, the modesty theory suggests that undergarments conceal human nakedness which confirms the primary use of undergarment. Undergarments provide double assurance that the private parts of the body are concealed for decency. Undergarments are worn to save embarrassing and mortifying incidents such as unconsciously leaving a fly open and accidentally splitting seams of outer garments in public. Hence, it preserves the wearer's modesty.

### **2.1.2 Immodesty Theory**

The immodesty theory on the other hand, states that clothing is not to cover nakedness but to attract attention. The immodesty theory or sexual attraction contends that individuals may have first worn clothing in order to attract attention to, rather than to conceal, any part for decency. The argument here is that wearing of garment is far erotic purpose than going without them (Gavor, *et al.*, 2015). This implies that, clothing is not used to cover parts of the body but rather to attract attention to the body. Therefore, the immodesty theory contends that clothing is not the result of modesty but rather the cause of immodesty. The midst argue that once people get used to seeing naked bodies of opposite sex the importance attached to sex differences disappears. The theorists believe that the body was first covered as sexual lure and clothes were used to call attention to the parts of the body covered. For instance, some types of underwear may be worn to stimulate sexual interest or for sexual titillation such as, edible underwear and crotch less panties. A woman may for instance, allow the brassiere straps to be visible from under her collar or wear a see-through blouse over it. Low- rise trousers may expose the upper rear portion of her underwear



while some men wear T-shirts underneath partly or fully unbuttoned shirts, allowing trousers to sag below the waist revealing the waistband or greater portion of the underwear. In the views of Gavor, *et al.*, (2015), the wearing of clothes is more erotic than going without them.

### **2.1.3 Protection Theory**

The protection theory suggests that clothes protect humans from the elements, animals or even supernatural forces. Marshal, *et al.* (2000), emphasized that clothes are worn for two major reasons: Physical protection and psychological protection. Physical protection involves making body covering and items to facilitate individual's survival in an environment. Clothes are worn to protect the skin from hot weather and keep it warm in cold weather. (Forster, 2014). For instance, undergarments keep outer garments from being soiled or damaged by bodily secretions such as perspiration, keep the body dry and free from infections and lessen the friction of outerwear against the skin. Underwear may constitute an additional layer of clothing helping to keep the wearer warm by acting as an insulator beneath the outer garment against chills and skin irritations. They may also be worn to support the genital organs and keep them in place. Briefs, boxer shorts and brassieres serve similar purposes.

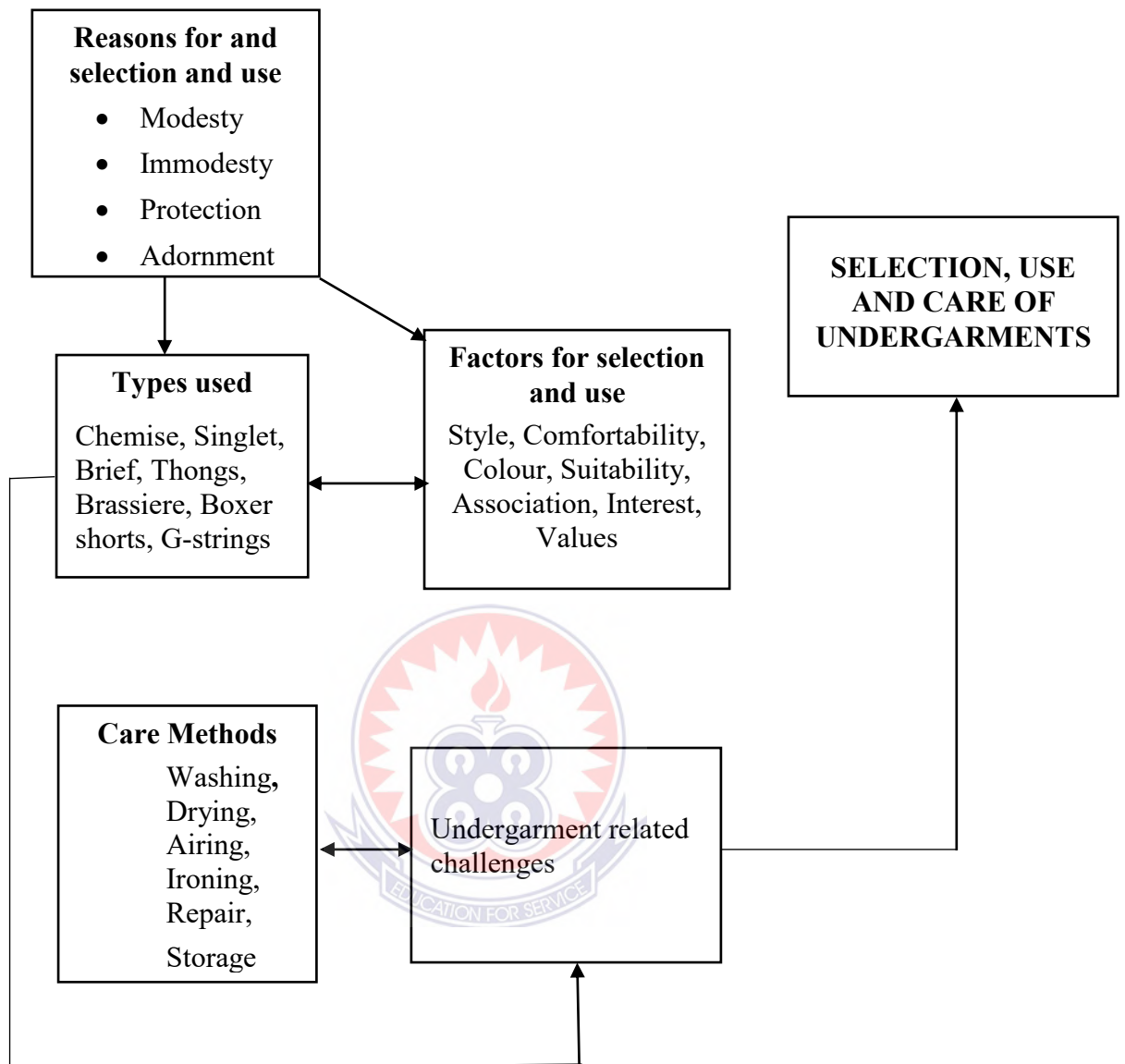
### **2.1.4 Adornment Theory**

Adornment theory states that clothes are worn for the purpose of beautifying one's body according to the standard of their culture (Faiola & Pullen, 1982). It stresses that clothing is used to decorate or adorn the body according to the standard or culture (Weber, 1990). Thus, clothing is chosen to enhance the look of the body. Undergarments may be worn to provide shape to the body and outer garments, enable outer garment drape better, fit well, and provide fitness at the bust, buttocks and

genitals (Forster, 2014). Human beings are naturally prone to change and desire different looks from time to time therefore, they choose clothes to enhance their body (Gavor, *et al.*, (2015). As a social effect, individuals are identified by the clothes they wear through social participation by way of affiliation to groups and organisations (Gavor, *et al.*, (2015). A woman may for instance, allow the brassiere straps to be visible with a spaghetti blouse or see-through blouse worn over it. Exposure of the upper rear portion of an underwear in a low- rise trousers while some men wear T-shirts underneath partly or fully unbuttoned shirts, allowing trousers to sag below the waist revealing the waistband or greater portion of the underwear. These practices may be done to lend beauty to their bodies.



## 2.2 Conceptual framework



*Figure 1: Conceptual Framework*

Source: Researcher's Construct.

Undergarments selection, care and their related challenges were key themes discussed in the conceptual framework. Consumers may acquire undergarments from varying

sources such as open markets, boutiques, stores or as gifts. Whatever type of undergarment consumers receive have fundamental reason for their usage and these the researcher identified to include: modesty, immodesty protection and adornment. With regards to the modesty and immodesty theory, undergarments may be worn to prevent certain embarrassing situations. For instance, the wind may blow an outer garment, one may forget to fasten an opening on the outer wear and a seam may split in an outer garment to expose some private parts of the body. In these instances, the undergarment will be there to prevent shame or embarrassment. Underwear may also be worn to stimulate sexual interest or for erotic purposes. A sexy lingerie or panty (“edible wear”) all day is intended for the purpose of erotic play (Davies, 2013).

With regards to the protection theory, the use of undergarment constitutes an additional layer of clothing helping to keep the wearer warm. Undergarment also serves as barrier to the body from contamination of the outer garment. In addition they absorb body fluids such as sweat to keep the body dry and free from infections and also serve to keep outer garments from being soiled by body secretions. They lessen the friction of outerwear against the skin.

In relation to the adornment theory, undergarments may be worn to beautify the body, especially for erotic reasons, provide shape and concealment to somebody faults and support for some parts of the body. Attractive undergarments may be worn by couples to improve their desire for each other. Some special types of undergarments may also be worn to improve the adorning effect of outer garments. For instance G-string panty may be worn under a pair of trousers to prevent panty lines from showing while hip-padded underpants may be worn under a skirt for a broader hip effect in an outer garment. These reasons will lead to the selection of the types of undergarment. The

types include: brassieres, undershirts, chemise, briefs, thongs, boy shorts, *G-strings*, singlet, undershirts, boxer briefs, boxer shorts which have specific usage.

A number of factors influence consumers' decision on the types of undergarments to select. These may include physical, psychological and socio-economic factors. These factors interplay with the reasons for undergarment usage to determine and eventually influence students' selection, use and care of undergarments. The type and quantity of undergarment may also influence undergarment care practices.

Fibres, colours as well as materials used in the production of undergarments require different care, hence, it behoves on consumers to take proper care to keep them fresh, prevent accidents and extend their life span. Undergarment care methods include washing, drying, airing, ironing, repair and storage mending. The selection, use, and care of undergarments by students is influenced by their knowledge in care methods and storage. Appropriate undergarment care methods contribute to good personality, appearance, health, positive self-esteem, identity, confidence and long life span of clothes. Proper and/or improper undergarment care methods have negative implications for the user. Improper care of undergarment is a potential recipe for bad appearance, bad body odour, itchy body, low self-esteem, pressure on health facilities, missing classes and spending to treat chronic infections. Comfort in what is worn promotes good posture while proper care measures for undergarments prevent infections. Wrongful selection of undergarment may also lead to some possible health effects on students. For instance, wearing dirty, torn, worn out and tight underwear can lead to dizziness, itchy skin, and poor blood circulation which may not support learning.

For some challenges, undergarments prevent chafing of the skin because they serve as a barrier between the groin and the potentially irritating material. Thus, while undergarments are primarily worn for fashion, hygiene, status, and other culturally significant purposes, these garments could also be used and transformed to suit alternative functions. The selection, use and care may therefore be faced with some specific challenges.

### **2.3 Types and Classification of Undergarments**

Anyakoaha and Eluwa (2007), averred that clothing includes clothes, accessories, hairdo, make ups, shoes and others. According to Forster (2014), clothing may be classified according to their uses as, clothes, accessories and cosmetics. Clothes include outer garments such as skirt suits, coats, jackets, dresses, trouser, T-shirts, shorts, and blouses; inner garments such as top wear or tube, waistcoat, shirts, shorts; undergarments like thongs, G-strings, chemise, briefs, brassieres, corsets, girdles, underskirts, bellybands, singlet, boxer shorts.

According to Datta and Agrawal (2018), undergarments are sometimes referred to as underwear, underclothes, undies, smalls, or „underthings“. They noted that underwear is believed to have been in existence since ancient times because the loincloth was considered an underwear by then. During the 19<sup>th</sup> century, undergarments were bulky and unattractive until a prominent fashion designer, lady Duff-Gordan decided to change the style and designed women’s undergarments that were smaller, less restrictive, and more attractive. Half through the 20<sup>th</sup> century, women began to select smaller and more form fitting underwear for three major purposes: changing into a perfect shape, for preserving modesty and for hygienic reasons. Underwear is gender-differentiated with boxer briefs, boxer shorts, briefs, and undershirt for men; panties and bras for women (Datta & Agrawal, 2018).

Forster (2014), and Datta (2018), described undergarment as garments worn next to the skin and under the fashion dress or outer garment. Ghunney (2013), also indicated that undergarment are worn under outer garments to absorb sweat and other body secretions and prevent soiling of outer clothing. This implies that these clothes are intimate clothes that are fundamental and play significant functions in the life of users, therefore, several sets of them are needed because frequent washing is essential to ensure a high standard of personal hygiene (Forster, 2014).

Undergarments may be worn to prevent certain embarrassing situations, stimulate sexual interest or for erotic purposes, keep the wearer warm, absorb fluids to keep the body dry and free from infections and also serve to keep outer garments from being soiled by body secretions. They may also be worn to provide shape to the body, concealment to somebody faults and support for some parts of the body.

Undergarments come in different shapes, colours, materials, brands and styles and worn by both male and female. They are made with both natural and artificial fibres and available in a variety of fabrics, including nylon, cotton, modal, silk, polyester, spandex, and lycra, and purchasing the right fabric comes down to one's specific taste (Warren, 2017). Since they need to be washed frequently, the fabrics used to make them should be strong and easy to launder (Forster, 2014). In a tropical region such as Ghana, the climate is warm hence people sweat a lot therefore undergarments used in such areas should be able to absorb sweat well and cool to wear to ensure comfortability. Although nylon undergarments are common, quite cheap on the market, very strong and easy to launder, they have low moisture absorbency rate and are warm to wear. Forster (2014), indicated that nylon emits electrostatic charges which do not promote comfortability when worn in warm climate hence, it is not recommended for use as undergarment in the tropics. Shortsleeve, (2017), stressed

that woollens and thermals are suitable for colder climates, while cotton and other cellulose based fabrics are preferable for warm climates. They added that spandex is the best choice for undergarment in case of any physical activity.

Regarding the selection and use of undergarments, it is very important to consider the various shopping outlets consumers buy from. To make products available to consumers, there are various sales outlets that stock their stores with merchandise. These stores are categorised according to the number of products sold at the shop, the quality of products or the target buyer. Gavor *et al.*, (2015), spelt out retail shops such as the departmental stores, hawkers, speciality stores like the boutiques, as well as the second-hand shops as sales outlets that stock their stores with clothing merchandise.

In relation to second-hand undergarments, according to Mbanje (2013), the sale of second-hand panties and brassieres has become a brisk business at most flea markets, particularly at the Charge Office and Mupedzanhamo in Mbare. Similarly, the Ghana Standards Authority has also over the years observed that, importers of used clothing import used undergarments which have been prohibited by the Ministry of Trade and Industry as stipulated in the LI 1586, 1994 (Africana KAD, 2010). In addition, in a newspaper publication on 18<sup>th</sup> of August 2017, the sale of used undergarments was still on the rise in the Ghana. According to the paper, despite the ban on the importation of used undergarments over six years, trade in the items were still thriving on the Ghanaian market. The paper also stated that, the second-hand undergarments are mostly patronised by the youth with the reason that, they are cheap, of higher quality than the new ones and their husbands endorse them. This is not far from the truth that the sale of second-hand undergarments is booming in the various shopping outlets. The choice of undergarment differ from person to person in relation to its quantity, quality or the values of the consumer. The number of undergarments owned



by an individual also depends on the cost, frequency of its usage, quality as well as the colour. This implies that a consumer needs to own more of the frequently used undergarments than the less used ones in order to ensure a standard of hygiene. As spelt out by (Forster, 2014), intimate clothes are fundamental and play significant functions in the life of users, therefore, several sets of them are needed for frequent washing to ensure a high standard of personal hygiene.

As indicated earlier in the study, undergarments include panties; briefs, thongs, and G-strings, brassieres, chemise, corsets, girdles, bellybands, singlet, boxer shorts, and boxer briefs. These undergarments could be further categorised into two types as those that are worn to cover the upper body, e.g. brassieres, chemise, T- shirts, and singlets, while panties e.g. briefs, G-strings, thongs, bikini, , men"s briefs, boxer shorts, boxer briefs, undershirt and underskirt are classified under lower body undergarments.

Forster (2014), and Ghunney (2013), however categorised undergarments based on the mode of usage, that is, specific parts on the body over which undergarments are worn, thus intended to be functional rather than sexy. Based on the above classification, literature is further reviewed under panties, brassieres, chemise, underskirt, singlet, briefs, boxer brief, boxer shorts and undershirt.

### **2.3.1 Panties**

These are undergarments usually worn by women and cover the lower part of the body that comes in different shapes, fabrics and colours which offer varying degrees of coverage (Burse, 2017). Undergarment products range from true performance with moisture management, temperature control and antimicrobial attributes to

characteristics designed for true comfort like heat-transferred tags and seamless silhouettes (Askin, 2004).

The choice of underwear largely depends on the circumstances for wearing them. Therefore, the decision to use a particular type of panty might differ from person to person but the ultimate is to ensure that they leave no uncomfortable health complications. Generally, it is very important to wear panties because of its protective nature against infections especially during the time of the month. According to Ryan (2017), the right panties depends on both its primary function of usage, style and the material used therefore, undergarments should offer its user the optimum support, fit and comfort. This is an affirmation that inappropriate panty design or style and colour may cause discomfort and loss of preference to consumers.

According to Kelly- Plate and Eubanks (1994), some panties are disposable, re-usable, and seamless and others with seams but they all have different designs, sizes and length. Re-usable panties are usually worn by women and cover the lower part of the body that comes in different shapes, fabrics and colours which offer varying degrees of coverage (Burse, 2017). These are used over and over again until they become worn out. Such panties are briefs, boy shorts, thongs, G-strings, seamless panties, bikini (Sujatha & Sarada 2016). Re-usable panties are mostly made with notions like lace, ribbons, threads and elastics to make them presentable and appealing to consumers for repeated use. Usually they are made with fibres like cotton, polyester, wool, nylon, silk, lace, rayon, spandex (Data, 2018).

Commenting on disposable panties, (Shycart, 2013), described them as lightweight briefs for women, which are used just for one time and then tossed away. Hence the

name, use and throw panties. These panties are mostly used when going on a journey, during maternity periods and also used as menstrual panties

### 2.3.1.1 Women's Brief

This is a type of panty commonly known as „granny panty“ that provides a full coverage at the butts and a little above the belly button. It makes the wearer feel secure and comfortable during the time of the month (Yan, 2016). It is a standard soft and comfortable panty that works best as an everyday essential for women (Ati, 2018). Fogarty (2018), added that these panties prevent wedgies, provide full seat for total comfort and coverage. Sharma (2018), revealed that undergarments come in different designs such as modern, hipster, classic, control and the Brazilian briefs that can be worn under high waisted jeans and any outfit. Figures 2A, 2B, 2C and 2D indicates the front and back views of women's briefs.



*Fig. 2: Women's Brief* Front

Back



*Fig. 3: Control Brief*



*Fig. 4: Brazilian Brief*

Source (quora.com, 2018)

### 2.3.1.2 Boy Shorts

Yan (2016), described boy shorts as modelled- like men’s brief that comes in rectangular shape with a thong- style base as well as full coverage on the sides and front butt and hips, and extend a little below the hip, unlike regular panties. Yan said the style got its name from a traditionally “male” attributed underwear style: the boxer short. In recent years, boy shorts simply means a particular “short” like silhouette. Some boy shorts underwear is made like a real “short” and may extend longer on the hip and have full back coverage.

Kimmy (2017), recounted the pros and cons of using boy shorts. He said these panties also have some advantages to offer the consumer that they provide full coverage of the butt, more side coverage on the hip area for comfort and modesty. On the other hand however, its wider side sometimes dig into the top of the thigh and cause a bulge or discomfort. The back coverage can sometimes move around – trying to “become a thong, provides bulkiness underneath tight pants and may cause panty lines to show through clothes when not made seamless. Figures 3A and 3B shows the front and back views of boy shorts underwear.



*Fig. 5: Boy shorts: Front*



*Boy shorts: Back*

Source ([quora.com](http://quora.com), 2018)

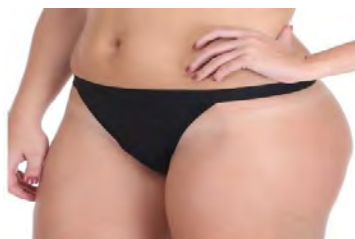
### 2.3.1.3 Thongs

Sudit (2015), and Ati (2018), described this type of panty as one that provides minimal butt coverage with a triangular patch at the front and back. The sides rest almost on the hip bone. Thongs come with a waistband like regular panties, but have a very narrow string that runs from the front to the rear. Ati (2018), added they are unconventional underwear however, they are one of the most sought-after undies for most women as one would not worry about any panty line. They can be worn with bodycon dresses and pencil skirts to avoid panty lines. On the other hand, frequent use of thongs could increase the risk of suffering urinary tract infection as they make it easier for bacteria to move from the anus to the vagina. Along similar lines, Wellness (2016), asserted that some women report an increase in urinary tract or yeast infections when they make use of thongs; this is because thongs are tight against genital and anal areas, so they may inflame sensitive skin there. They may also slide back and forth, especially during exercise, which could, at least in theory, transfer fecal bacteria from the anus to the urethra, possibly resulting in a urinary tract or vaginal infection.

Ryan (2017), added that some panties are not necessarily healthy for a consumer, especially in certain situations. One of the most notable culprit is the thong, which eliminates visible panty lines but can cause health problems. The risk of complications is high when they are used during exercising or on sweaty days.



*Fig. 6: Thongs A*



*Fig.7: Thongs B: Front*



*Thongs: Back*

Source (quora.com, 2018)

#### **2.3.1.4 G-String**

Ati (2018), again described G-string as a type of thong consisting of a narrow piece of fabric that covers or holds the genitals, passes between the buttocks, and usually attached to a string around the waist. It provides a minimum coverage. The front and back fabric is directly connected to the waist band. Burse (2017), added, G-string panty is usually worn under leggings, body-con dresses and skirts and under a pair of trousers to prevent panty lines from showing. Burse stated further that they also fit perfectly under delicate fabrics like chiffon and lycra making them ideal panties in such cases.

Due to the sexy and stylish look of G-strings, most ladies are attracted to own them to feel and look appealing. However, EL CREMA (2014), asserted that G- strings may appear very sexy and fitting, research has proven that wearing them could do more harm than good to consumers because they are exposed to some health hazards such as genital inflammation, intestinal infections, yeast infection, skin irritation, and unpleasant odour.

Furthermore, Pearson (2017), affirmed that underwear were created for a reason, which is to protect our outer clothing from being soiled by body secretions therefore having a string passing through the buttocks may make the user feel sensual, but it may also injure the skin around the genital area if it is made of coarse material. Those that are too tight may cause friction and irritation at the string part that is in constant contact with the skin. Others sometimes cause chafing by outer clothing due to the lack of protection at the private parts. This then suggest that consumers are less likely to spread bacterial infection, reduce skin irritation and unpleasant odour if they could



minimise the frequent use of G- strings and cultivate the habit to wear different types of clothes that do not require the wearing of G-string underwear.



*Fig. 8: G –String: Front*

**G –String: Back**

### **2.3.2 Brassiere**

A bra which in this study is synonymous to brassiere, is a form-fitting undergarment designed to cover, support and elevate a woman's breasts. It is one of the undergarments that is worn to cover the upper part of the body (Sujatha & Sarada, 2016). Chan, Yu and Newton (2015), also described a brassiere as a shaped undergarment worn by women to mould and provide support to the breast. They further said it usually consist of two cups held in place with straps over the shoulders and elastic at the centre back. Brassieres are available in many styles, from cups that come without any padding to those that add significantly to the size and shape of the cup. There are different types of brassieres made for all types of breast structure, figure and to suit individual's needs and occasion. Some are made to provide full coverage to the breast, to curb bigger bust and make them look smaller, and vice versa and give full support to sagging breast and made to be worn with specific outer garments. Ati (2018), added that some brassieres are made to be used for specific purposes and activities such as sports, maternity periods and to arouse sexual interests.

Ill-fitting brassieres contribute to consumers back, neck pain and shoulder grooves (Greenbaum, Heslop, Dunn & Moris, 2003). For this reason, for a bra to be comfortable and provide adequate support, it must fit properly and make an outfit look good on a wearer. Ill-fitting bras not only fail to provide adequate breast support, they also contribute to poor posture and secondary musculoskeletal impairments in the upper body which includes upper limb neural symptoms; deep bra furrows caused by excessive strap pressure; and neck and back pain (Greenbaum *et al.*, 2003; Ryan, 2000; Kaye, 1972) as cited in Chan, *et al.*, (2015).

A brassieres that does not fit well and offer little support can stretch and displace breast tissue. It is therefore necessary to wear the right size and type of bra not only to ensure comfort but to also protect the general health of the breasts. This then draws the conclusion that the use of brassiere by the consumer has some related problems.

Two measurements are very crucial to determining bra size: the chest circumference below the underarm and the fullest part of the breast. Cup size is calculated from the difference between the two measurements. The greater the difference the larger the cup size (Chan *et al.*, 2015).

Brassieres are made of different materials and fabrics, such as cotton, rayon, silk, and spandex, polyester, and lace, elastic material, closures such as metal hooks and eyes, cups, padding, and straps, labels, underwire, plastic bones. The materials are likely to cause uncomfortable feelings like chaffing on the skin and skin inflammation by underwire and headaches when brassieres are too tight on the wearer (Chan, *et al.*, 2015).





*Fig. 9: Full Support Bra*



*Fig. 10: T-Shirt Bra*



*Fig. 11: Padded Bra*



*Fig. 12: Push-up Bra*



*Fig. 13: Underwire Bra*



*Fig. 14: Low Back Bra*



*Fig. 15: Maternity/Nursing Bra*



*Fig. 16: Convertible Bra*



*Fig. 17: Adhesive Bra /Stick on*

Source (Amazon.com, 2016)

### **2.3.3 Chemise**

According to Roman (2013), and Peter (2014), chemise is undergarment which is generally sleeveless and loose fitting, short like a mini-dress and not fitted at the waist and it is available in a variety of styles, materials and colours for consumers to select from. Roman further said it is a provocative and very delicate women's garment that is often made of sheer fabric, like nylon, chiffon, silk, satin or lace. She added that lately, it is commonly worn as seductive sleepwear thus serving one of the functions of undergarments as satisfying wearers' erotic interests.

Similarly, Wallace (2019), discussed that the chemise, otherwise known as the full-slip, has no sleeves, is made in fabrics like cotton, linen, or silk, and was worn under clothing by ladies in the 15th century to keep a woman's shape underneath a dress. It could also be used as a nightgown. Chemise, provides protection from possibly rough clothing, allows clothes to lie flat, and might provide corseting, or breast support that makes it the best for a dress since it would not show a middle line separating it. Wallace concluded that underwear or bras might still be worn with full slips. A chemise typically does not have any buttons or other fasteners and is put on by either dropping it over the head or stepping into it and lifting it up. Its comfortability

is very much appreciated since it does not have zippers or buttons or any other kind of fasteners but is just a slip on over the head.

Roman (2013), indicated that in the 19th century Southern US, the chemise was colloquially known as a „shimmy“. Since bathing daily was not usual in the middle ages, the chemise was the undergarment which would absorb the body oils or dirt and it was much easier to wash and wear regularly than the heavy ornate outer garments. This therefore affirms Ghunney’s assertion (2013), that undergarments are worn under outer garments to help contain sweat and other body secretions to prevent coming in contact with outer clothing.



*Fig. 18: Chemise A*

Source ([www.pacificproDigital.com](http://www.pacificproDigital.com), 2013)



*Fig. 19: Chemise B*

Source (Lingerie Luxury, 2014)

#### **2.3.4 Underskirt**

The underskirt, sometimes called the petticoat or waist-slip, is a type of skirt-like undergarments that hangs from the waist, worn under a skirt or a dress for warmth or to give the skirt or dress the desired fashionable shape (Sholtz, 2016). He stressed that among its functions, the underskirt can make transparent garments more modest and eliminate rubbing and unsightly clinging. According to Haugland (2003), as an underdress or underskirt, a slip provides a middle layer that mediates between underwear and outer-wear. Good taste demands that a slip be long enough-ideally

exactly one inch shorter than the outer garment-but never show at the hem. These undergarments come in different designs and variety of colours. Wallace (2019) added that typically, the appropriate colours needed for slips are nude, white, and black. This is because nude slips are best worn under pastels and any dark colour except black and white. Black slips are also better worn under black clothing in order not to be transparent.



Source (lol.gift.com, 2016 (wantitall.co.za, 2016) (simplepleasure.co.uk, 2016)

*Fig. 20: Different Designs and Colours of Underslips*

### 2.3 .5 Men's Undergarment

According to Datta (2018), comfort, style and colour are some attributes that need to be considered when selecting men's underwear. The styles include briefs, boxer briefs, boxer shorts, singlet and undershirts. The size, climate, and fabric of an undergarment contributes greatly in terms of comfortability. With changing preference and technological advancements, the underwear industry for men has seen a lot of innovations in terms of fabric. There is a plethora of options in this category. Some of the fabrics mostly used are cotton; nylon, modal, rayon, polyester and silk. These are blended with spandex in the right proportion to ensure quality, comfort, and durability along with ample flexibility. Lycra, and elastane are specifically used to add stretchiness to the fabric of the undergarment (Datta, 2018).

### 2.3.5.1 Brief

Datta (2018), described a brief as the type of undergarment that provides full coverage to the entire rear and package but leaves the upper thighs and the side of the leg exposed. With further description, he said the underneath of the brief holds the genitals in a relatively fixed position and keeps them together away from the body. Schneider (2010), added that briefs, or jockey shorts, are easily identified by their elastic waistband and usually offer a Y-shaped fly in the front and have enough fabric to offer full coverage from the waist to the top of the thigh with complete coverage of the buttocks. Men's briefs are available in low, mid and high rise cut as variety of designs and colour. Thus, one can make their choice according to the style of their bottoms. Considering the good and bad side of using men's brief, Alves (2014), noted that they are ideal for skinny jeans, comfortable while seated, works under most pants and no bunching up of fabric, prevent what is known as "dangling", so ideal for sports and other activities, On the contrary, Datta emphasised that choosing the wrong size and incorrect fit of brief would not offer the wearer the needed comfort since tight briefs pose obvious discomfort by creating marks and cause jock itch as well as irritations on the skin. He also cautioned that they tend to lose their shape fast, therefore consumers need to replace them more often.



*Fig. 21: Men's Brief*  
Source (gentlemensgazette.com, 2018)



### 2.3.5.2 Boxer Brief

Datta (2018), in his article described boxer brief as a form-fitting undies that cover one-third portion of the thighs without bunching or riding up. They are cut like a tapered boxer with the snug and supportive fit of the briefs. Similar to a brief, boxer briefs maintain their comfortable fit all day long. Boxer briefs are a great choice as an alternative that provides both styles as well as comfort. This is because boxer briefs were invented to provide the positives of two of the most used underwear styles, that is, briefs and boxers. According to Datta (2018), the skivvy style provides both body-hugging fit and ultimate support. He said the anatomically correct design of boxer brief is till date the most recommended option for those who seek comfort, support as well as freedom down there. He added that along with the much-needed comfort and support, the versatile boxer briefs work under all types of clothes and can be worn on any occasion.



*Fig. 22: Boxer Brief*

Source ([gentlemensgazette.com](http://gentlemensgazette.com), 2018)

### 2.3.5.3 Boxer Shorts

The boxer shorts were initially introduced in 1925 and were known as „shorts for boxers“ (Cole, 2012 cited in Datta, 2018). It stated that this was the first time elastic waistbands were used in the undies. Inspired by the actual boxers, the skivvy extends

a few inches above the knees and offer loose covering almost one-third of the thighs and has a contoured pouch for comfort. Datta (2018), explained that boxer shorts used to have a fly opening in front. Some had metal snaps while others were with buttons. However, due to changing trends, the modern designs do not have fastening mechanism to close up the fly. The boxer shorts baggy or loose nature allows airflow that provide ample ventilation making it extremely comfortable. The abrasion-free pouch also reduces chafing and sweat secretion resulting in gradual reduction of skin problems such as rashes, itchiness, and irritation.



*Fig. 23: Boxer shorts*

Source ([gentlemensgazette.com](http://gentlemensgazette.com), 2018)

#### **2.3.5.4 Undershirt**

An undershirt, according to Centeno (2013), means „under your shirt' because they are not designed to be seen. They are also made with thinner fabric, usually cotton or microfiber, which tends to look uncomfortable, sheer and clingy as an outer layer. Centeno emphasised that its main purpose is to keep the user warm in cold weathers and serve as a sweat rag to absorb sweat and keep outer clothing dry. Plain white or light grey are their usual colours, Centeno added. Undershirts are made from special fabrics that can absorb moisture by providing an absorbency layer that can catch sweat before it seeps through onto outer garment and still keep it dry. Undershirt

gives users a layer of protection from skin irritation caused by stiff and itchy fabrics and allows them to enjoy all of their favourite fashions without having to worry about their comfort (Cruickshank, 2016). Roach (2018), also added that an undershirt is an article of round neckline, short sleeved or sleeveless underwear, worn underneath a dress shirt intended to protect it from body sweat and odours. Roach again noted that it may be worn to protect the body from stiff or otherwise uncomfortable fabric that is worn by a person.



*Fig. 24: Undershirt*

Source ([albert.krenz.com](http://albert.krenz.com), 2013)

#### **2.3.5.5 Singlet**

According to Schneider (2010), singlet otherwise known as tank top or A-shirt is a sleeveless undershirt generally buttonless, collarless and pocketless usually worn under shirt or dress shirt. They are usually made from 100% cotton or cotton blend with a fine ribbed look. Many men still wear them today for work as an undershirt and some wear them to the gym because they like the increased range of movement. On the other hand, Schneider (2010), noted that the outline of singlet is usually seen through the outer wear when worn. Functionally, this undershirt does not absorb sweat around the armpit because it has no sleeves. Undergarments that are usually



used by consumers have been discussed and their selection for use depends on the individual's needs, values and taste.



*Fig. 25: Singlet/Tank Top*



*Fig. 26: (Front) (Back)*

**Source (amazon.co.uk, 2013) Source (globalsource.com, 2013)**

## **2.4 Factors that Influence the Selection of Undergarments**

Consumers demand for products has several underlying factors that influence choices made. Ofori, Adu; Nyame-Tawiah and Adu-Akwaboa (2014), on the other hand indicated major factors influencing clothing selection to include colour, fashion, and type of fabric, affordability, and religion. Riungu (2009), broadly categorised the factors as physical (fabric, colour, style, fit or size) socio-economic (gender, age, cost, fashion, occasion) and psychological (interest, values, attitudes) factors.

### **2.4.1 Physical Factors**

#### **2.4.1.2 Fabric Type/ Fibre Type**

These relate to the observable characteristics of a product. There are many variations in underwear fabrics, and since underwear is worn all day next to the skin, it is important to find those made from comfortable fabrics. Fibre is the basic unit from which fabric used for clothing construction is made. Each fibre has its independent characteristics that contribute to the performance quality of the final fabric from

which undergarments are made. Fibres are classified as natural and man-made. Cotton, silk, linen and wool are natural fibres, while nylon, acrylic, rayon, viscose, polyester are man-made fibres (Gitobu, 1989).

Natural fibres tend to be very absorbent, crease easily and biodegradable. Natural fibres such as cotton, linen, wool and silk can therefore be chosen, for underwear since they absorb perspiration and thus make the wearer feel comfortable. Man-made fibres tend not to be very absorbent, build up static electricity, though they are strong, light in weight, crease resistant, resist moths and mildew. Forster (2014), indicated that synthetic fibres accept warm temperature, light in weight and dry quickly due to their low absorbency rate. They are not destroyed by detergents she added. Natural and man-made fibres, when blended, mixed or combined during yarn formation or fabric construction give the fabric desirable properties for undergarment production.

Datta (2018), affirmed that with changing preference and technological advancements, the underwear industry for men has seen a lot of innovation because fabrics such as cotton; nylon, modal, rayon, polyester, and silk are blended with spandex in the right proportion to ensure quality, comfort, and durability along with ample flexibility. Sujatha *et al.*, (2016), are also of the view that the preference for fabric depends on climate, season, and type of work, comfort, durability, fashion ability and trendiness. The climate has an impact on what makes one pair of underwear more comfortable than the other. In similar lines, Forster (2014), indicated that nylon emits electrostatic charges which do not promote comfortability when worn in warm climate hence, it is not recommended for use as undergarment in the tropics. However, she outlined the uses of synthetic fabrics which includes

undergarments. Fabric type is therefore a factor to making undergarment selection as it plays a significant role in determining comfort among other qualities of an item.

#### **2.4.1.2 Colour**

Sujatha *et al.*, (2016) are of the opinion that even though undergarment is ostensibly hidden from view, the colour can still be important to the wearer in terms of the meanings they might transmit. Similarly, Rosencranz (1972) and Frings (1991) cited in Ofori *et al.*, (2014) reported that colour is one of the most important factors and usually the first aspect of a garment or accessory to which consumers respond. It is therefore important to note how different colours can make underwear serve different functions. For instance, Wallace (2019), asserted that typically, the only colours needed for underskirts are nude, white, and black this is because nude slips are best worn under pastels and any dark colour except black. Nude slips are also best worn under white, and black better worn under black clothing in order not to be transparent. The colour of an undergarment to choose does not only depend on personal taste but also the outer garment to be worn. The colour of an undergarment should blend to some extent with that of the most generally worn outer garment. Dark coloured undergarments could harbour dirt than lighter ones. However, an undergarment should not be chosen because it does not show dirt (Neal, 2005).

Colours can influence or signal a woman's mood and emotions about her but also, her identity or her understanding of the prevailing moral order - the connotations of black underwear, for example, arguably related to overt sexuality or sensuality (Fields, 2007). Colour seems to be quite an important factor in how individuals choose their underwear. The colour and the detail of the underwear, mostly of the bra, makes it work in different ways. For example, underwear in the right colour, works physically

together with the outerwear. According to Moore (2017), consumers have developed interest in second-hand underwear because they look more colourful, attractive and available in all sizes. Colours like red or black in underwear have certainly been connected, at least in the West, with a more erotic appeal as (re)constructed especially in pornographic material and images of sexually active or sensual women in mass culture (Kent & Brown, 2006; Fields, 2007).

Schultz (2004), nevertheless stresses that it is still associated with sexual connotations and is eroticised when it is on display. According to her, brassieres of all sorts are sexualised, but the sports bra presents an interesting case because it is simultaneously lingerie, sports equipment, and a fashion statement. According to THE BOTTOM DRAWER (2014), there is a tradition that is mostly done in South American countries known as „New Year“s Eve tradition“. It is basically about wearing underwear and the idea is that the colour of underwear one wears to bring in the New Year, depicts how things will go in the coming year. THE BOTTOM DRAWER (2014), outlined a general idea about some colours; red underwear denotes erotic appeal and passion; yellow brings good fortune and prosperity; green brings better luck than the previous year; blue brings good health; pink is for luck in love; white is for peace; joy and happiness; black is when one wants bad luck in the new year. On the contrary, THE UNICORNOWL (2013), averred the different meaning of underwear colours. It stated that red symbolizes vitality, courage and self-confidence; orange is happiness, confidence and resourcefulness; yellow is wisdom, clarity and self-esteem; green is balance, love and self-control; blue is knowledge, health and decisiveness; while violet is beauty, creativity and inspiration. THE UNICORNOWL further stated that colour is absorbed by the eyes, skin and skull and our electro-magnetic field or aura, and each colour affects the individual emotionally, physically, and mentally.

Therefore all that a wearer has to do is to reflect on the type of day planned and choose the colour that will help meet the demands of the day, and then absorb that particular colour.

#### **2.4.1.3 Style**

Different styles of undergarments are generally worn by women and men. Sujatha *et al.*, (2016), asserted that experimentation in terms of styles is most often done when buying for special occasions; for daily wear, known styles and brands are preferred. In view of this exclusive brand stores can be explored when looking for depth in styles.

Datta (2018), added that underwear is essential for hygiene and some styles provide support in regulating the body's shape. The choice of underwear largely depends on the circumstances for wearing them. Social situations, weather conditions, and the apparel can affect the style of undergarment especially in the case of men. The decision to use a particular type of panty might differ from person to person but the ultimate is to ensure that they leave no uncomfortable health complications.

The style of an undergarment may influence one's choice. Particular styles are worn under specific outer garments to provide comfort, adequate support, reduce the risk of infections, unpleasant odour, prevent skin irritation and match with outer garments. Datta (2018), said the anatomically correct design of boxer brief is till date the most recommended option for those who seek comfort, support as well as freedom down there. The baggy or loose nature of boxer shorts allows airflow that provides ample ventilation making it extremely comfortable he added.

Ryan (2017), pointed out that some panties are not necessarily healthy for consumers, especially in certain situations. He said some make it easy for bacteria to travel from the anus to the vagina, and this can lead to conditions like a urinary tract infection.

Datta (2018), added that the abrasion-free pouch of boxer shorts also reduces chafing and sweat secretion resulting in gradual reduction of skin problems such as rashes, itchiness, and irritation. Ati (2018), also hinted that some brassieres are also made to be used for specific purposes and activities such as sports and maternity periods as well as to arouse sexual interest. Therefore, style is a primary factor that a consumer considers in the choice of an underwear.

#### **2.4.1.4 Comfortability**

Underwear is one of the most important articles of clothing for a man, and it is the clothing that comes directly in contact with one's skin. For this reason, it is important to find underwear that is comfortable. In the quest for comfort, underwear should fit properly, as a bad fit can be quite uncomfortable. Alves (2014), noted that choosing the wrong size and incorrect fit of brief would not offer the wearer the needed comfort since tight briefs pose obvious discomfort by creating marks and cause jock itch as well as irritations on the skin. Sujatha *et al.*, (2016), also said wearing the right sized brassier not only ensures comfort but is also important from a wellness perspective. Datta (2018), outlined small, medium, large and extra-large as standard measurements that conform to certain underwear waist sizes, all in the quest for comfort.

According to Greenbaum *et al.*, (2003), ill-fitting brassier contributes to consumers back, neck pain and shoulder grooves. For this reason, for a bra to be comfortable and provide adequate support, it must fit properly and make an outfit look good on a wearer. This then suggests that the choice and selection of an undergarment is largely dependent on the size or fit since comfort from the use of an underwear makes it easier to endure a long day at work, and makes it possible to relax better.

## **2.4.2 Socio-Economic Factors**

The socio-economic factors that influence undergarment selection include cost, fashion, suitability, convenience and association.

### **2.4.2.1 Cost**

The price of an undergarment influences a consumer to select a particular type, quantity or quality. To Kumar (2002), affordability is seen as a factor that influence undergarment selection. Kumar admitted that people go in for what they can afford. Giles (2007), also noted that perhaps in light of the culture of excess; the 1980's for instance was renowned for woman's newfound careers which generated income for them and that played a part in the purchases of undergarments. The consumer evaluates the total worth of all the fashion appeal aspects of a garment or accessory and their relationship to retail price and their own budget (Sujatha et al., 2016).

Income plays a significant role in a consumer's undergarment selection. The higher the income, the more the expenditure on personal clothing. (Tweten, 1980). According to Shah (2010), cited in Komasi (2017), a person with less money and savings will purchase inexpensive products. For instance, consumers patronise used second-hand undergarment with the reason that, they are cheap (Daily Graphic, 2013). This suggests that affordability is an important factor that influences a consumer to either patronise more, less or quality undergarments.

### **2.4.2.2 Fashion**

Gavor *et al.*, (2015), described fashion as the style that is most popular or accepted at a given time by a social group to serve their purpose. It is through the process of fashion that new styles are created, introduced to a consuming public and popularly accepted by that public, (Kaiser, 1990).



Consumers are influenced in the selection of undergarments when there are new or latex styles in vogue in order to belong to or associated with a social class and not old fashioned. The design or style of an undergarment is linked to its appropriateness in terms of fitting body size, shape and performance suitability. This is in line with the view of Mintel (2009), who stated that body size and “appropriateness” are connected issues that seem important for women in terms of the underwear and how this might affect how they feel about themselves. Jantzen *et al.*, (2006), suggested that wearing special underwear transforms women’s self-image, desire to be fashionable, attractive, impress others, be accepted by friends, peer groups or colleagues and fulfil an emotional need. New clothes often give a feeling of security and confidence. Social class status refers to the place of individual in his group based on a scale of prestige. For example, members of same social class will display their unity outlook and values in their clothing trend that may be easily identified by their style. According to Riungu (2009), an elderly person might purchase clothing that offers more physiological comfort, whereas teenager would pay greater attention to the latest fashion.

#### **2.4.2.3 Suitability**

Consumers are influenced to make suitable choices of undergarments depending on the different styles, fabric type, colour, size or fit to meet their needs. Particular underwear might be selected to perform a specific function for the body part. For instance, Centeno (2013), said the undershirt main purpose is to keep the user warm in cold weathers and serve as a sweat rag to absorb sweat and keep outer clothing dry. Women might also change their brassieres to suit daily and special occasions or choose a brasserie type such as padded, non-wired, sports brassier and daily brassier to suit the purpose for which it is patronised (Sujatha *et al.*, 2016).



Maguire (2008), Entwistle and Rocamora (2006), cited that underwear worn by female rugby players should be large pants and sports brassier, since it needs to fit both the context of the game and also to provide the comfort and the support their bodies need. Schultz (2004), argued that sports bra, like any other bra, is concerned with promoting a sexuality that most appeals to the masculine gaze. Sports brassier have traditionally compressed women's breast for comfort and protection in physical activity. In effect, suitability of an undergarment makes it very convenient in its usage since it helps perform specific functions for the body parts.

#### **2.4.2.4 Association**

Gavor *et al.*, (2015), described fashion as the style that is most popular or accepted at a given time by a social group to serve their purpose. In view of this, consumers are influenced in the selection of undergarments when there are new or latex styles in vogue in order to belong to or be associated with a particular group based on a scale of prestige. For example, members of same social class will display their unity outlook and values in their clothing trend that may be easily identified by their group (Riungu, 2009).

Consumers might wear undergarment to attract or be attracted to and show affection towards the opposite sex. This validates the assertion of Jensen and Ostergaard (1998), cited in Riungu (2009), that dressing contributes to express individuality as well as the need to conform to others. For example, an individual uses clothing to communicate a particular self-image to others as it is appropriate for a particular situation or role he or she undertakes in society or group.

### **2.4.3 Psychological Factors**

#### **2.4.3.1 Interest**

Psychological factors also influence the selection and use of undergarments. Psychological factors of clothing provide one of the most visual and easily manipulated means of presentation of an individual's personality or self-concept as asserted by Kaizer (1990). There are many psychological theories used by researchers in an attempt to explain clothing behaviour of adults. One of them is self-concept. Storm (1987), suggests that self-concept is the individual's mental system of organizing his or her perception and concept about self. Clothing is a significant force in the enhancement of the self and when used positively it contributes to one's feeling of self-acceptance and self-respect.

The self-concept involves a person's perception of his or her abilities, weakness, personal character, personal worth, appearance and attractiveness in relation to himself and other people. It is in this perspective of self that the individual uses clothing to portray a particular image to others. So, individuals will purchase undergarments of the symbiotic meanings they will have on themselves and in relation to others.

#### **2.4.3.2 Values**

In clothing, values also guide ones perception and purchasing trends of clothing in relation to one self-concept. In the case of psychological protection, people have associated luck with particular colours to clothing. They believe that, some colours give them good luck or lead them to victory and this make them consider some peculiar coloured undergarments than others. Clothes are also used to boost or enhance one's self esteem. Self-esteem involves feelings of self-worth which are based upon cognition and self-concept. According to Horn (1975), clothing provides a

positive means of satisfying the need for self enhancement. It can enhance the appearance, make the physical self, more desirable, increase acceptance by the group or prevent rejection. However, the impression one would wish to create through clothing may not always be perceived in the same manner as one would like to be. This is as a result of individuals perceiving clothing in terms of their own self concepts.

Psychological factors are more closely related to individual values and belief systems, and tend to provide an explanation or reasoning for an individual's perception of self as a social object. Psychological factors that are useful in determining appearance are typically those that are found in dress and appearance research. Psychological factors include self-consciousness and self-confidence. It is particularly important to note how different colours can make underwear serve different functions. Colours of underwear denote a different mood and feelings, for example the different classification of black underwear, thus being a key element of their identity projects. Colour seems to be quite an important factor in how individuals choose their underwear. The colour and the detail of the underwear, mostly of the bra, makes it work in different ways. For example, like underwear, in the right colour, works both physically together with the outerwear, and psychologically in how underwear becomes a second skin. Thus, underwear becomes a cultural capital in work environment, which then transforms into other forms of capital. Colours like red or black in underwear have certainly been connected, at least in the West, with a more erotic appeal as (re)constructed especially in pornographic material and images of sexually active or sensual women in mass culture (Kent & Brown, 2006; Fields, 2007).

To Entwistle (2001), fetishism is the most obvious illustration between adornment and sexuality. Although Kunzle (2004), suggested that these are specific types of underwear that is erotic lingerie that transmit a certain degree of sensuality and sexuality and not be something worn every day. There are several classifications of black underwear. Red is associated more with erotic appeal and sex. White and black are for work, while pink for example is for leisure time.

#### **2.4.3.3 Attitudes**

Colours can influence or signal a woman's mood and emotions about her but also, her identity or her understanding of the prevailing moral order - the connotations of black underwear, for example, arguably related to overt sexuality or sensuality (Fields, 2007). Schultz (2004), nevertheless stressed that it is still associated with sexual connotations and is eroticised when it is on display. According to her, brassieres of all sorts are sexualized, but the sports bra presents an interesting case because it is simultaneously lingerie, sports equipment, and a fashion statement.

Black lingerie, according to Fields (2007), is associated from back in the early-mid twentieth. Black leather corsets, for example, and other types of undergarments have also become fetish items alluding back to the mourning widow and vampirism (Fields, 2007; Kunzle, 2004; Slade, 2001). In their research, Jantzen *et al.*, (2006), found that black underwear is perceived to be associated with prostitution and death. Plain black and white work underwear is meant to be hidden. This shows once again how the hidden/visible element of underwear surfaces.

## 2.5 Care Methods for Undergarments

All fabrics and clothing need proper care in order to maintain their lustre texture, shape, appearance and strength (Gupta, Garg & Saini, 2005). They indicated that the life of fabrics and clothing care activities that require care during wearing, washing, drying, ironing and storage. Undergarment and other clothing or apparel care activities include: laundering, storage and mending the clothes when they are torn or when they develop faults (Anyakaoha & Eluwa, 2007). Care of undergarments also include activities such as airing, washing, bleaching, drying and ironing, dry cleaning, stain removal (Lauw, 1987). Household and linen care includes washing, removing stains, ironing and pressing, airing, brushing, storing, repairing and sometimes making alterations (Forster, 2014). It could be inferred from the above definitions that clothing care include activities such as washing, drying, airing, ironing, repair and storage and these activities are meant to improve the lifespan of clothing. Forster (2014), emphasised that clothes are cared for to keep them fresh, clean or neat and comfortable to use and to extend wear or make them last long.

Effective care for clothes demands that routine or everyday care processes are carried out on one's clothing (Anyakaoha & Eluwa, 2007). Forster (2014), indicated that a high standard of personal cleanliness will make a lot of difference to the freshness of clothes. According to Anyakaoha and Eluwa (2007), stale perspiration in particular will spoil clothes by making them smell badly and sometimes by removing the colour in some areas. Forster (2014), again added that neat clothes smell fresh and do not support the breeding of disease-causing bacteria to cause diseases. Since undergarments are worn next to the skin, effective care is needed to keep to a high standard of personal cleanliness and to prevent breeding of bacteria and also make them last long.

Laundering is an integral part of caring for clothes which involves the sorting, washing, drying and finishing of articles to make them look new again. According to Gavor *et al.*, (2015), laundry procedures include garment preparation, sorting, pre-treatment, washing, drying and ironing or pressing.

### **2.5.1 Sorting**

Sorting is a laundry activity that requires grouping clothes according to like and unlike terms depending on the colour, fibre type, use and the degree of staining. It is not hygienic to wash all clothes together because of the specific functions or how they are used (Forster, 2014). A study by Gerba advised consumers to wash underwear separate from other laundry articles to avoid spreading of germs (Laliberte, 2017). In this case, undergarments are not left out because they absorb bodily secretions when worn. They should therefore be washed separately from other clothes to avoid the spread of germs using the appropriate water temperature, detergent, and bleach. They should also be sorted according colour and the body part where it is used since some coloured and stained articles are likely to cause staining in light or white coloured articles (Forster, 2014). For instance, panties should be washed separately from other types of undergarments. In her view, many people do not sort their clothes during washing- hence increase the risk of colours running, or of washing more delicate fabrics at the wrong temperature (Forster, 2014). This then suggests that there is the need to check on care labels on clothes before carrying out laundry practices especially with undergarments.

Economic realities require that items must be cleaned and refurbished for reuse without substantially altering their functional aesthetic properties (Das, 2005). When clothes are soiled during normal use, they need to be well cared for, for reuse without changing their functional and aesthetic properties. Care labels are care notes on pieces

of fabrics, sewn onto the wrong side of an article to spell out specific clothing care requirements determined by the fibre, fabric finish, trimming, and use of the article (Forster, 2014). She explained further that care labelling outlines how a user should care for a particular clothing or textile product.

A care label may be attached to the back neckline, side seam or the waist seam. It must be easy to find, permanently attached, written in English and remain legible throughout the life of the garment (Ghosh, Das & Bhattacharyya, 2014). Information on care labels include the fibre type, fabric content, brand name, country of origin, the manufacturer's registered number (RN) and ironing temperature, dry cleaning drying and bleaching instructions (Forster, 2014). For effective care of undergarment, care label is one factor that influences good care. It is therefore necessary for consumers to take keen interest in reading information on care labels attached to them.

### **2.5.2 Washing Undergarments**

An important laundry practice used to treat clothes is washing. According to Arid, Brusdal, Gunnarsen, Terpstra and Van (2003), washing is the elimination of visible soil and stains from textiles. Consumers have developed some specialised methods for washing ranging from pounding clothes against rocks in running streams to the latest in electronic washing machines and dry cleaning (Komasi, 2017). Hot water washing, chemical cleaning and ironing are traditional methods of sterilising fabrics for hygiene purposes (Laitala, Boks & Klepp, 2012). Washing undergarments is either done by hand-washing or machine wash. Both need to be done with the appropriate water temperature, detergent and the amount of friction applied to undergarments. Temperature affect washing efficiency therefore washing at low temperatures seems to spread micro-organisms among the different laundry items in a washing sample rather than removing them. Knitted cotton fabrics were found to shrink more with



increase in temperature while silk gave maximum area shrinkage at 35°C (Quaynor, Takahashi & Nakajima, 2000). This suggests that undergarments produced from such fabrics must be washed with the appropriate water temperature during washing.

Kadolph (1998), stated that water temperature for wool should be kept warm, not hot and that temperatures be held constant throughout the entire washing and rinsing process. This is because extreme temperatures cause shrinkage to the fibres. They again held the view that acetate fabrics should be dry cleaned unless stated otherwise on the care label; this is due to its thermoplastic property. According to Forster (2014), dry cleaning is a process of cleaning with solvent and very little or no water. This method is used to clean articles that are not supposed to be washed such as woolen suits and other fabrics which shrink or whose colours bleed; and delicate fabrics such as silk and chiffon she added. Fluor hydrocarbons and white spirit are the most common solvents for dry cleaning. For this reason, dry cleaning is carried out at temperatures below those that may cause damage.

However, dry cleaning undergarment may seem to be an impossible washing method because according to experts, undergarments should be washed using the required water temperature, detergent and bleach to avoid the spread of infection.

Petrova (2014), recommended that consumers should check care labels on every piece of clothing before laundry but also noted that underwear could be washed in hot water bearing in mind cotton, nylon and polyester since these are likely to get damaged in heat. He stated that the minimum temperature needed to kill bacteria in clothes particularly, underwear, is 40 degrees Celsius. Moving on to the late nineteenth century, increasing knowledge about microbes and bacteria impacted the laundry



habits. The recommendation was now to boil underwear for at least 10 minutes (Shove, 2003).

Undergarments are delicate clothes worn in direct contact with the skin therefore, it is appropriate to opt for a gentle detergent when washing them. A number of researchers (Anyakaoha & Eluwa, 2007; Bajpai & Tyagi, 2007), pointed out the potential of using eco-friendly cleaning technologies as well as correct detergent dosing. Detergent is a product that contains a surfactant and other ingredients to clean fabrics in the wash (Bajpai & Tyagi, 2007). Anyakaoha and Eluwa (2007), described detergent as any substance that cleanses or aids the removal of dirt. Forster (2014), explained that detergent should be thoroughly mixed with warm water before washing. She also stated categorically that in Ghana, the use of bar soap is very common. Individuals can make soap jelly cut of bar soap and use to wash instead of rubbing the soap on the fabric surface which puts the fabric under excessive strain.

Lighter colours had less colour change during rubbing and washing than darker shades, and had therefore potentially longer aesthetic lifespans. Washing products do significantly modify the physical effects of the mechanical action applied during washing. Often today, clothes are not primarily washed due to soiling but rather to keep up a fresh appearance. There have been changes in what is considered dirty. The norm seems to be to wear the items for one day and then wash them (Shove, 2003). This implies that underwear made with lighter colours and strong fibres could be subjected to treatment with strong friction when stained. However, those that have absorbed sweat and as a result produce unpleasant odour as well as those made with darker shades and weak fibres, could be exempted from such treatment, rather, use less friction or mild detergent during washing to prevent quick fading and to last long. Consumers can also consider airing them if worn them for few times especially those

used on the upper part of the body. Notwithstanding this, laundering of clothes helps them to last longer (Anyakaoha & Eluwa, 2007).

Cotton can be washed easily as it does not require gentle treatment. Cotton and linen are strong and durable and can withstand friction and rubbing and agitation (Kadolph 1998). He indicated that the tenacity of cotton and linen are attributed to the good alignment of the crystalline polymer system which is about 65°C- 70°C or cotton 65-85°C for linen, and countless regular hydrogen bond formations. In addition, cotton and linen without special finishes can withstand hot temperatures due to high crystallinity as a result the fibres can be washed in hot water and can be boiled (Joseph, 1985).

Gohl and Vilensky (1993), asserted that the thermal properties of cotton and linen give the fibres the ability to conduct heat energy minimising any destructive heat accumulation therefore they can stand hot temperatures. 60°C medium temperatures applied on cotton, polyester and the blends where colours and finishes are applied, 40°C low temperatures used on cotton or polyester in deep colours, wool mixtures with cotton or viscose and silk fabrics in colours. White cotton or linen without special finishes requires 95°C high temperatures for a hot wash.

Joseph (1988), explained that silk is one of the strongest natural fibres, however, the tenacity drops to 80-85 percent of the dry strength when wet therefore silk requires careful handling. Shrink resistant wool acetate requires a gentle washing cycle. Kadolph (1998), asserted that when laundering silk items, do not rub, twist or wring as this may damage the fibres in its weak state when wet. The application of the knead and squeeze method is recommended for silk items Joseph and Marjory (1981). Hand wash, do not machine wash, normal wool, and silk. The same authority advised

that agitation should be kept to a minimum to avoid felting and matting. The felting and matting is caused by the serrated surface formed by overlapping epithelial scales which cause it to be dimensionally unstable (Giles, 2007).

### **2.5.3 Stain Removal and Bleaching of Undergarments**

Stain is a fixed dirt or discolouration in an article (Forster, 2014). She outlined some examples as ink, oil, grease, and milk, fruit juice, paints, soup, dye. Others included mildew, sweat, scorch and antiperspirant build-up. Stains spoil the appearance of our clothes therefore, in order to make stained clothes presentable and useful again, there is the need to remove them. She added that without quick action, stains may be impossible to remove because chemical reaction between the spilled substances and the fibres of clothes, bond the stain to the fabric. This confirms Anyakaoha and Eluwa's (2007), assertion that stains should be treated as soon as they occur. Foster (2014), explained that water and detergent alone or routine cleaning will normally not be able to clean stains which are well fixed on a surface. She also stated that sunlight, heat and time, quicken staining reactions to get the stain fixed. However, there are stain re-agents or removers used to remove stain, they also come in different kinds such as solvents, acids, alkali, sunlight, oxidizing bleaches, biological reagents or enzymes or digesters.

Joseph (1988), added that bleaching is a method of whitening garments or a finish on garments to make them white. Sunlight perform multifunction- it is a natural bleach which with time, bleaches and fades stains. Kadolph (1998), is of the view that nylon has an excellent resistance to alkali and chlorine bleaches; therefore nylon articles in natural state can be effectively bleached with chlorine bleaches as well as cotton.

Bleaching is not necessary on polyester as they retain their whiteness by normal laundering (Gohl & Vilensky, 1993). They go on to say dyes are damaged by bleaches therefore bleaching is rarely recommended for dyed textiles. Consumers should take note of information on care labels because not all garments can be treated with bleach. Wrong use of bleach will result in discoloration adversely affecting the appearance of the garment.

Perfumes provide fresh breath to the body. It is also worth considering how to apply appropriately so as not to cause harm to clothes. There are several ways to apply perfume and still achieve its aim. According to Forster (2014), if applying it with your finger, dab it behind your ear, inside your elbows and in the hollow at the base of your throat. If the perfume is in the form of a spray, it should be applied around the neck, ear and underarm before putting on your clothes, applying them directly to the clothes can damage them. This therefore suggests that since undergarments are clothes worn close to the skin, they are normally stained with bodily secretions like sweats, sexual fluids, blood and antiperspirants build-up. Removing such stains would depend on the type of fibre, colour, or the body part where it is used with the help of care label to be able to select the appropriate detergent or bleach to treat stains at the same time preventing fading, destruction of fibres to make undergarments presentable and useful.

#### **2.5.4 Steeping or Soaking**

Water and detergents are used to steep or soak clothes that are very dirty or stained before washing. According to Forster (2014), steeping clothes before they are washed helps to loosen dirt and make washing easier. Articles whose colours are fast may be steeped because loose colours will run and discolour. She stated that between 30

minutes and 1 hour steeping is enough for clothes unless special treatment is necessary. Anyakaoha and Eluwa (2007), are of similar view that articles can be soaked for 45 minutes in a solution of bleach before washing. They emphasised on not to soak articles that are not colour fast. Stained undergarments could be soaked ahead of time before washing for easy stain removal. Thorough rinsing must be done after washing to remove traces of chemicals in order not to damage the infected spot. Rinsing is washing off dirty lather from articles over and over again until rinsing water becomes clean to make them clean and soapless (Anyakaoha & Eluwa, 2007).

### **2.5.5 Drying Method**

Drying can be carried out either indoors or outdoors. Outdoor drying involves drying washed clothes in sunlight while indoor drying is carried out in rooms such as bathrooms, bedrooms, porches, railings of staircases (Anyakaoha & Eluwa, 2007). They asserted that clothes that are dried outdoors with the help of the sun, dries faster, germs and bacteria which may have escaped other laundry process are destroyed and whitened as well. Notwithstanding this, rays from the sun has a fading effect on coloured clothes that may need shade to be dried, and it might not be safe to dry clothes outdoors in some towns which indoor drying can perfectly cater for they said. According to them, indoor drying would require a longer time to dry which might expose clothes to bacteria or mildew attack due to the slow drying pace and may seem unhygienic and uncomfortable to have wet clothes hanging around indoors especially during raining season.

In most countries, drying is still done mainly by hanging clothes in the open air (line drying), but in western countries, drying is increasingly being done using tumble dryers. Whatever method to be used, care label is the best guide (Gavor *et al.*, 2015).

In tumble drying, fabric is further subjected to the mechanical action which causes changes in dimensional characteristics of the fabrics. Tumble drying is beneficial in reducing the level of wrinkling but it increases damage to the fabrics as evident from the increased lint loss as compared to line drying.

Textiles made with synthetic fibers tend to get charged with static electricity during tumble drying causing static cling (American Association of Textile Chemists and Colorists: AATCC Technical Manual, 2010). According to a report from the Swedish Energy Agency (2004), tumble dryers account for approximately 8% of the electricity use in Swedish households. To dry the clothes out of doors on lines has been the way of drying clothes for centuries. However, nowadays an increasing number of households dry their clothes artificially in drying cabinets or tumble dryers. Well dried clothes maintain their shapes (McDonald, 1961). For this reason, woolen clothes should be dried flat in an airy shady, warm and dry area to maintain their shape (Forster, 2014). Drying undergarments outdoors in the sun is the most appropriate since strong sunlight or sunshine destroys germs or bacteria. However, they may also be dried indoors during the rainy season when there is little or no sunshine but they have to be subjected to ironing or pressing due to insufficient drying.

### **2.5.6 Ironing**

This is done by dragging heated iron over clothes in one direction to smoothen wrinkles out. Different fibres have different levels of heat tolerance hence they require different temperature when ironing (Holland, 1987). Cotton and linen can withstand high temperatures; this is attributed to high crystallinity and long polymer structure (Gohl & Vilensky, 1993). The cotton fibres are relatively inelastic because of the crystalline polymer system and for this reason cotton textile wrinkle and crease badly (Joseph, 1988). A moderate temperature 160°C applied on wool, silk, polyester,

viscose. Maximum temperature of 120 °C used for ironing heat sensitive fabrics e.g. acrylics, acetate, nylons, polyester. Nylon is a resilient fibre which does not crease easily, requiring minimal ironing (Lauw, 1987). The plastic nature of nylon and polyester makes them sensitive to high temperature that is why high heat is avoided. One will argue that since undergarments are worn under outer garments, it might not be necessary to smoothen out creases or wrinkles. According to Alpin (2017), women's "clean undergarments are mostly attacked by yeast and fungal infections due to moisture trapped in the fabric which become breeding grounds for germs. Furthermore, washing underwear with the best detergent may clean them but might not kill germs moreover a particular lifestyle might not provide room for drying them in the sun. Therefore, the solution is to iron underwear to remove all moisture and kill any bacteria present. Alpin (2017), added that a study in the UK 12 years ago found that ironing underwear was sufficient to kill germs present in the fabric. Washing used second-hand undergarments with regular detergents may not be enough to get rid of some bacteria and the eggs of some parasitic organisms which are naturally conditioned to withstand harsh conditions for survival; for these, strong reagents are sometimes needed to get rid of them. Therefore they need to be ironed after washing to be double sure (Oluseye, 2015). Effective ironing of undergarments can also be done by studying the care labels on them to ascertain whether it can or cannot be done and at what temperature can it withstand if it can.

### **2.5.7 Airing**

There is always a little steam left between the fibres or threads after ironing clothes. If the steam is left in the clothes, it could result in creases or cause dampness which may encourage mildew attack. Ironed clothes should therefore be aired on lines or back of chairs for some time before storage (Anyakaoha & Eluwa, 2007). Undergarments



should be aired after each wear if not necessarily washed, to remove all moisture or dampness before the next wear or to prevent mildew during storage.

### **2.5.8 Mending/Repairing Undergarments**

According to Forster (2014), laundering activities involve rigorous handling which is likely to strain the articles being laundered and can cause more damage, where an existing damage has not been mended. She advised that mending before laundering makes the article stronger, enabling it to go through the harsh treatment without any further damage.

Consumers may alter garments' original appearance for several reasons, such as problems with fit, unwanted colour, lack of personal characteristics, or just to remove unwanted decorations. Studies on clothing sizes have shown that trouser length is one of the common clothing fit problems that can be altered by consumers (Laitala *et al.*, 2012a).

Damages appear in different forms on our clothing as we use them. To maintain our clothes in good condition there is the need to mend these damages as they occur. Forster (2014), explained mending as the process of repairing damages on articles, which include all types of repairs to damaged garment or articles. She is of the opinion that, threads weaken, seams split and elastic becomes loose in garments that may still be useful except for these minor signs of wear. Elbows and knees of shirts and trousers, gussets of panties may all wear earlier than normal. Poor fit may cause a seam to split or a zipper to break and spoil. She added that faulty manufacturing may result in a loose hem, lost button, or broken top stitching. An accidental fall or a snag on a sharp point at work can turn a brand-new garment into an item that needs



mending or repair before it can be worn again. She advised that mending is best done as soon as damages are noticed to keep articles in useable conditions.

According to Foster (2014), mending is done for various reasons such as to extend the life span of articles, for personal satisfaction, for decency and to prevent accidents. This suggests that there is a need for maintenance; hence the need to adopt mending as one of the laundry practices. Undergarments are delicate clothes which might not need any major repair or mending. However, inferring from the above assertion, damages on undergarments that may need repair include worn gussets of panties, split seams, broken top-stitches, loose bands and elastics, loose hem, missing hooks and eyes. These damages may compel some users to discard them with the opinion that it is unnecessary to repair or mend undergarments just because there are a number of them on the market at affordable prices. To others, it may seem shameful to be seen re-stitching a split seam, broken top-stitches or replacing a loose elastic or band on an undergarment therefore, they might resort to discarding them and get new ones from their closets or the market. In the case where one has developed some personal preference for a particular undergarment, as a result of the satisfaction derived from it when used, mending becomes the best option in order to continue its use.

### **2.5.9 Undergarment Storage**

Storage of clothes has an impact on the care and maintenance of clothes. Proper storage is done after thorough drying, ironing and airing of clothes. How and where clothes are stored is very important. Properly packing and storing of textile products help to keep them in good condition for the future, make them look better and last longer. By controlling exposure to light, dust, insects, humidity, temperature extremes, mildew, moulds, acids, rust and stress which are the major causes of damage to stored textiles, the natural aging process will be minimized (Anyakaoha &

Eluwa, 2007). Good storage and packing practices in clothing care, ensures freshness of clothing items, enables them to last long, hang or drape well, easily accessible as well as save time and energy (Forster, 2014). Gavor *et al.*, (2015), also indicated that the purpose of storage is to provide safe environment for clothes and accessories when they are not in use. They emphasised that clothing storage should provide protection from dust, insects, fungus and bacteria, dye transfer, moisture and raw wood. Forster (2014), and Gavor *et al.*, (2015), outlined wardrobe structures, open shelves, chest of drawers, trolleys, boxes, bags, trunks, suitcases, and hangers as some storage facilities for clothes. Hanging clothes in a wardrobe prevents them from getting creased or crumpled so that they can retain their original shape (Anyakaoha & Eluwa, 2007).

Gavor *et al.*, (2015), cautioned against placing garments next to raw wood because they would be exposed to the acids in the wood which lead to staining. For efficient storage of clothing, completely dried clothes should be stored in cool dry place; the use of plastic bags to store clothes should be avoided since moisture trapped in bags promotes the growth of mould and place like items together for easy accessibility. Undergarments should be „bone-dried“ if necessary ironed before storage in drawers with the addition of camphor or sweet-scented toilet soap (Gavor *et al.*, 2015). They could also be arranged in drawers or boxes according to frequency of usage, style or design, colour or use on the body.

## **2.6 Undergarment Related Challenges**

Fabrics are supposed to be used to produce clothes to protect consumers but if they are not well used they can affect individuals“ health. Some challenges experienced from the use of certain fabrics may include, itching, minor electric shocks, profuse sweating, skin rashes and blisters (Forster, 2014). She indicated that in the dry

weather, protein fabrics become electrostatic and make wearers feel uncomfortable because they tend to hash on the skin. She stated categorically that synthetic fabric such as nylon and polyester are not good for undergarment in the tropics where the weather is hot because they do not absorb sweat to keep the skin dry, the sweat on the body with the grime and air around makes it possible for bacteria to thrive and cause skin infection and urinary tract infection.

The style of an undergarment may pose a challenge to the user during or after its use. Ryan (2017), stated that some styles of panties are not necessarily healthy for consumers, especially in certain situations. He said some make it easy for bacteria to travel from the anus to the vagina in the case of women which can lead to conditions like a urinary tract infection. Wellness (2016), asserted that some women report an increase in urinary tract or yeast infections when they make use of thongs; this is because thongs are tight against genital and anal areas, so they may inflame sensitive skin there. They may also slide back and forth, especially during exercise, which could, at least in theory, transfer fecal bacteria from the anus to the urethra, possibly resulting in a urinary tract or vaginal infection. Alves (2014), noted that choosing the wrong size and incorrect fit of brief would not offer the wearer the needed comfort since tight briefs pose obvious discomfort by creating marks and cause jock itch as well as irritations and blisters on the skin.

According to Greenbaum *et al.*, (2003), ill-fitting bras contributes to consumers back, neck pain and shoulder grooves. They added that ill-fitting bras not only fail to provide adequate breast support, they also contribute to poor posture and secondary musculoskeletal impairments in the upper body including: upper limb neural symptoms; deep bra furrows caused by excessive strap pressure; neck and back pain.

The materials used to make bras are also likely to cause uncomfortable feelings like chaffing on the skin and skin inflammation and headaches by underwire when brassieres are too tight on the wearer (Chan *et al.*, 2015).

Mazumber (2015), added that if consumers wear tight fitting underwear for long time; it can hamper proper blood circulation and this can lead to numbness of the nerves and consequently result in tissue death if the tissues do not get enough oxygen through blood flow.

The care methods given to undergarments may affect them as a result pose problems to its users. Gohl and Vilensky (1993), indicated that consumers should take note of information on care labels because not all garments can be treated with bleach since the wrong use of bleach will result in discolourations which adversely affect the appearance of the garment. Thorough rinsing must be done over and over again until rinsing water becomes clean after washing to remove traces of chemicals in order not to damage the infected spot and make them clean and soapless (Anyakaoha & Eluwa, 2007). Clothes that are dried outdoors with the help of the sun, dries faster, germs and bacteria which may have escaped other laundry process are destroyed and whitened as well. According to them, indoor drying would require a longer time to dry which might expose clothes to bacteria or mildew attack due to the slow drying pace ( Anyakaoha & Eluwa, 2007). This might lead to discolouration of undergarments when they are subjected to such treatment. Damages such as weakening threads, splitting of seams, loose elastic, wearing out of panties, brassiere bone coming out, loose hem, and broken top stitchings results in inflicting pain and skin irritation to its users making them uncomfortable.

There are also some health problems associated with the use of used second-hand undergarments. Oluseye (2015), and Moore (2017), are of similar view that many human diseases, especially the sexually transmitted diseases, are transmitted through body fluids such as blood, sweat, urine, semen, vaginal discharge and the causative organisms implicated and a lot of these fluids have been isolated in clothes of people with these diseases. They further stated that Infections such as vaginal and skin candidiasis, scabies, ring worm, body lice, chicken pox, gonorrhoea, syphilis and hepatitis (types A, B, C, D and G) can be transmitted through clothes previously used by infected persons. There is a high risk of getting infected by the current user if undergarments are not properly washed, disinfected and ironed before use he added.

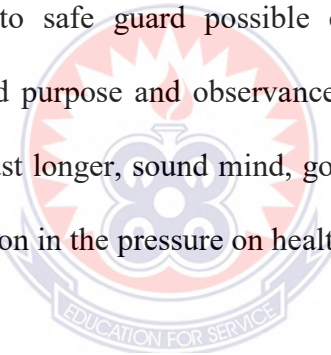
According to Dimoko (2013), a consultant dermatologist, Dr. Olufunmilayo Ajose, stated that if consumers wash, properly disinfect and iron used second-hand underwear, no disease will cling permanently to them. On the contrary, a Consultant Surgeon at the Lagos University Teaching Hospital, Dr. Philip Ogunjimi, advised that consumers should avoid the use of used second-hand underwear entirely because some bacteria are very resistant and can survive harsh conditions for long on clothes. Therefore regular wash may not get rid of some of the bacteria, especially those that come with discharge from the body of the previous user.

In conclusion, the review indicates consumers should select and use the right fabric type to suit the weather condition at a particular point in time. The review also echoes the use of appropriate style, good fit or correct size of undergarment. Also, the review cautions consumers to take note of information on care labels in order to give the right treatment to undergarments, and to cultivate the habit of drying undergarments outdoors during the dry season and iron them during the rainy season where there is

no or little sunshine. It unfolds from the review that users of undergarments should mend damages in undergarments that pose problems to prevent further damage. The review recommends the non-use of second-hand undergarments entirely to prevent infection or subject them to high heat after washing, disinfecting them, and ironing them before use.

## **2.7 Summary of Related Literature**

The review of related literature on undergarments indicates that consumer demand for undergarments has some factors that influence the choice of specific type of made. Whatever undergarment to be selected has reasons for their usage. Such as modesty, immodesty, protection and adornment. Consumers are responsible for caring for their undergarments in order to safe guard possible challenges. The right choice of undergarment for intended purpose and observance of appropriate care habit, keeps the undergarment fresh, last longer, sound mind, good posture, save money, prevents infection thereby a reduction in the pressure on health personnel and facilities.



## CHAPTER THREE

### METHODOLOGY

#### 3.0 Overview

This chapter discusses the methods used to carry out the study. It includes the research design, population, sample and sampling techniques, instrumentation, validation of research instruments, reliability of instrument, data collection procedure, ethical considerations, and method of data analysis.

#### 3.1 Research Design

Science consists of steps often referred to as method. A research design comprises the steps that are used to collect data. In the opinion of Babbie (2010), scientific enquiry borders on making observations of phenomenon and interpreting what is observed. Burke and Christensen (2008), describe research design as the overall plans for collecting data in order to answer the research questions. Seidu, (2007), purports that surveys are usually used to identify present conditions and to point to current needs. He indicated that they are used as needs assessment tools to provide information on which to base sound decision. A descriptive study is concerned with finding out who, what, where and how of a phenomenon which is the concern of this study. The cross-sectional survey which is descriptive and quantitative in nature was adopted for this study. Frankel and Wallen (2000), aver that descriptive survey is used to collect the views or practices of a group of people through interviews or by administering questionnaires. It is concerned with the condition or relationships that exist such as determining the nature of prevailing conditions, practices, attitudes and opinions that are held, processes that are going on; or trends that are developed. It also involves some type of comparison or contrast and attempts to discover relations between existing non- manipulated variables. This will enable the researcher come to

a concrete generalisation by determining prevailing conditions, practices, attitudes and opinions of respondents in selection, use and care of undergarment. With this survey, one can collect a lot of information on a large sample in a short period of time (Mitchell & Jolley, 2004). The main advantage of this type of design is that it enables the researcher to assess the situation within the study area at the time of the study. The cross-sectional survey was adopted to describe the nature of a condition, as it takes place during the time of the study, and to explore the causes of the selection, use and care of undergarments among students. It was also considered the best approach for this study because of its relatively inexpensive way to get information about students' attitudes, beliefs and behaviours in the selection, use and care of undergarment.

### **3.2 Population of the Study**

Kankam and Weiler (2010), explained that a population refers to all the people who are focused on in a study. It is the larger group upon which a researcher wishes to generalise and it includes members of a defined class of people, events or objects (Creswell, 2009). Kwanyako Senior High School is a mixed school with both day and boarding facilities, and a total population of two thousand and forty (2,040) students in the 2017/2018 academic year. While 1,163 were day students, 877 were boarding students. The population for the study comprised all boarding students. Out of this number, 303 students were boys while 574 were girls. Thus, the population for this study comprised male and female boarding school students in first, second and third year. These students were offering Home Economics, Visual Arts, Agricultural Science, Business, General Arts and Science programmes. Only students in the boarding house were involved in the study because of ease of access to students with respect to information. This enabled the researcher to collect data on a large sample in a short period of time within the same environment.



### 3.3 Sample and Sampling Techniques

A combination of probability and non-probability sampling techniques was used to sample 176 (20%) students comprising 115 females and 61 males for the study. Specifically, multi-stage sampling, namely stratified, simple random, convenience and purposive sampling techniques was used to sample the students for the study. The choice of 20% of the respondents is based on Dornyei's (2007), assertion that between 1% and 10% of a study population gives an adequate sampling fraction.

For this study, the purposive sampling technique was used to select boarding students of Kwanyako Senior High School because they were readily available with the information needed for the study. This procedure relies on data collection from the characters that were available to participate in the study.

A stratified random sampling is a simple two-stage process. First, characteristics which appear in the wider population which must also appear in the sample were identified, that is the wider population was divided into homogeneous groups (strata). It is a probability sampling technique in which each stratum is properly represented so that the sample drawn from it is proportionate to the stratum's share of the population. It is a sampling technique where by the population is sub-divided into homogenous groups called „strata“, from which the samples are selected on a random basis (Cohen, Manion & Morrison, 2000). After the students have been purposively sampled, they were stratified into gender as male and female; forms as form one, two and three; and by programme of study as Home Economics; Visual Arts; General Arts; Business; Science; and Agriculture Science. A proportionate stratified sampling method was employed. This is because, students from each stratum were selected in proportion to the size of the strata since the total number of students for the various programmes

differed from programme to programme. Categories with more students were therefore apportioned higher as compared to those with fewer numbers of students. The proportionate sampling technique was used because it has the advantage of offering a high degree of representativeness.

Secondly, simple random sampling technique using the lottery approach was used to select the students to give room for equal chances of selection without bias (Seidu, 2007). The simple random sampling is where sample units are drawn directly from the population by some procedure. The lottery method is designed to meet the essential criterion of randomness. In the lottery approach to random sampling, pieces of paper which equalled the total number of study units (sampling frame) of the students by gender, form and programme categories were designed by the researcher. In order to select the female students, the researcher designed one hundred and fifteen (115) pieces of paper with the inscription “Yes” whilst the other remaining seven hundred and sixty two (762) pieces of paper was captioned “No”. The pieces of paper were folded, and put in a box. Home Economics students were made to assemble at a hall to pick the pieces of paper at random after a briefing session. The box was shaken over and over again to ensure that the pieces of paper were well mixed to guarantee that each student had an equal opportunity of being included. This process was repeated to select students from the Visual Arts, Science, Business, Agric Science and General Arts programmes in proportion to the size of the categories. A student who picked a piece of paper which had „Yes“ response was enrolled as a participant for the study. Twenty percent (20%) of each group was randomly selected based on Dorneyi’s (2007), assertion that between 1% and 10% of a study population gives an adequate sampling fraction. Therefore 20% was considered appropriate and a sample size of 176 respondents were selected.

The random selection ensured that each student had an equal chance of being selected, and this is required for generalisation of the results to the target population as stated by Creswell (2009). The stratified and simple random sampling techniques ensured representativeness of the sample and it also eliminated selection bias.

### **3.4 Instrumentation**

Questionnaire was used for this survey. It contained a four-point close-ended Likert-type items ranging from strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD), with 4 to 1 as their values, some multiple choice items and few open-ended questions. The items were developed to reflect on the key themes raised in the research questions. The questionnaire consisted of sections: A, B, C, D and E. Section „A“, was on personal data of the students. Section „B“ was on the types of undergarments used by the students. Section „C“ captured items on factors that influenced their selection of undergarments. Section „D“, contained questions on care methods of undergarments. The last section, „E“, was on undergarment related challenges. The questions were straightforward, concise, and brief and demanded short answers. In this study, the independent variables that were measured in the instrument included the physical, psychological and socio-economic factors, while the dependent variable were undergarment selection, use and care practices.

The physical indicators influenced students“ decision making in clothing selection and buying practices. The following variables were used to assess the physical factors: undergarments looking well-constructed and finished, coordinated colours, design for figure type and suitability for purpose. Psychological factors are defined as psychological indicators which influence students“ decision making in undergarment selection and buying practices. The following variables were used to assess the psychological factors: smart looking, comfortable, personal beliefs and values,

fashionable and unique. The following variables were used to assess the socio-economic factors: availability of money, cost of the item, gender and age of the student.

### **3.5 Validity and Reliability of Instruments**

Validity according to Kankam and Weiler (2010), refers to the “Degree to which an instrument accurately measures what it intended to measure” (p. 78). Thus it refers to the extent to which the research instrument serves the use for which it is intended (Seidu, 2007). To ensure that the instrument is valid, it was scrutinized by the researcher’s supervisor. Face validity was done by giving the instruments to colleague M.Phil. Home Economics (Clothing and Textiles) students for scrutiny. Indeed, their comments were considered for review of the questions. The content validity of the instruments was granted by experts in the area of Clothing and Textiles as well as the research supervisor who scrutinized the items for their suitability before pre-test. All the necessary corrections in the items were made and declared valid by the supervisor.

To ensure reliability of the research instrument it was pre-tested on 20 students of Agona Swedru Senior High School. Two weeks later, the test-retest technique was used. The same 20 students who took part in the pilot trial were asked to answer same questions. The results was subjected to Cronbach’s alpha reliability analysis using version 21 of Statistical Package for Social Sciences (SPSS). A reliability coefficient ( $r$ ) of 0.775 deemed as an acceptable measure of reliability which is above the 0.70 threshold value of acceptability (Dörnyei & Taguchi, 2010, Frankel & Wallen, 2000) was obtained. Tavakol, Mohagheghi and Dennick (2008), also indicated that the acceptable values of alpha ranges from 0.70 to 0.95. The pilot study offered the researcher an opportunity to identify some of the problems that were likely to occur in

the main study with regards to data analysis for the necessary preparations to be made ahead of time in the main study.

### **3.6 Data Collection Procedure**

In conducting a study, Creswell (2009), advised researchers to seek and obtain permission from authorities in charge of the site of the study. In line with this, the researcher though a teacher in the school, obtained permission from the headmistress to conduct the study. After permission was granted, the researcher informed the study participants of the impending administration of the questionnaire. The administration of the questionnaire was done personally and with the help of colleague teachers at one of the school's halls. The researcher assured respondents of their anonymity and the confidentiality of whatever information they provide.

### **3.7 Data Analysis and Presentation**

Yin (2003), stated that before interpretation takes place, data should be analysed statistically and presented. Responses from respondents on the questionnaire were tallied in order to get the number of respondents who answered each set of items. The quantitative data were keyed or fed into the SPSS version 21 software and analysed. Frequency counts, percentage distributions, means and standard deviations of responses were generated according to each research question raised and presented in tables. The researcher used the SPSS to run independent samples t-test to find significant differences among male and female students in the selection and care of undergarments. This was done at a significance level of  $p \leq .05$  using a confidence interval (C.I) of 95%. The interpretation of the t-test results made it possible to make appropriate inferences. For the qualitative data, responses by the respondents to each

question were categorised into themes according to the research questions. Hence, the qualitative data was analysed thematically.

### **3.8 Ethical Considerations**

Babbie (2007), defined ethical issues as the general agreement, shared by researchers about what is proper and improper in the conduct of scientific inquiry. These include seeking permission, voluntary participation, and no harm to participants, informed consent, anonymity and confidentiality (Punch, 2009). In other words, it is a method, procedure or perspective for deciding on how to act and for analyzing complex problems and issues. Protection and consent of participants and their responses was assured by obtaining due permission, protecting privacy and ensuring confidentiality. In doing this, description of the study, the purpose and the possible benefits and risks were mentioned to participants. The researcher permitted participants to freely withdraw or leave at any time if they deemed it fit. A statement of consent was given to participants to sign as evidence of their willingness to participate in the study. As a way of preventing plagiarism, all ideas, writings, drawings and other documents, or intellectual property of other people have been referenced, indicating the authors, title of materials, year of publication, and publishers. In the case of unpublished documents, permission was sought from owners.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0 Overview

This chapter presents and discusses the results of the study under the following headings:

- i. Demographic data of the respondents.
- ii. Types of undergarments used by the respondents.
- iii. Factors that influenced the respondents' selection of undergarments.
- iv. Cleaning methods used by the respondents for their undergarments.
- v. Undergarment related challenges the respondents experienced.
- vi. Testing of hypotheses.

#### 4.1 Demographic Data of the Respondents

The demographic data of the respondents cover the following attributes: sex, age, form, programme of study and house of residence.

*Table 1: Distribution of the Respondents by Sex, Age, Form, Programme and House of Residence*

Variable	Variable category	No.	%
1. Sex	Female	115	65
	Male	61	35
<b>Total</b>		<b>176</b>	<b>100</b>
2. Age range (in yrs)	13-15	38	22
	16-18	123	70
	19-21	14	8
	22-24	1	1
<b>Total</b>		<b>176</b>	<b>100</b>
3. Form	SHS 1	60	34
	SHS 2	67	38
<b>Total</b>	SHS 3	49	28
		<b>176</b>	<b>100</b>
4. Programme			

	Home Economics	41	23
	Visual Arts	15	9
	Science	11	6
	Business	14	8
	Agric. Science	2	1
	General Arts	93	53
<b>Total</b>		<b>176</b>	<b>100</b>
<b>5. House of residence in school</b>			
	House 1	47	27
	House 2	41	23
	House 3	45	26
	House 4	43	24
<b>Total</b>		<b>176</b>	<b>100</b>

Table 1 shows that there were more female (65%) than male (35%) students in this study. With regard to the age distribution of the students, majority (70%) were between 16 and 18 years, while very few (1%) were between 22 and 24 years old. The distribution of the students by their class level showed that S.H.S 1 students were 34%, S.H.S 2 students were 38% while S.H.S 3 students were 28%. The information on programme of study showed that students who pursued Science were 6%, Visual Arts were 9%, Business were 8%, General Arts were 53%, while Home Economics were 23%, and Agriculture Science students were only 1%. The distribution of the students by their house of residence recorded 27%, 23%, 26%, and 24% respectively for Houses 1, 2, 3 and 4.

The results from Table 1 again show that out of a total of 176 respondents, 22% were between 13-15 years, 70% were between 16-18 years, and 9% were 19 years and above. It can be deduced from the results that more students aged 13 to 18 participated in the study than students in the other age groups. This result indicates that 92% of the students in the study were adolescents. Asare and Kwafoa (2009), described adolescents as individuals who are between the ages of 10-19 years; characterized by rapid physical growth, significant emotional, psychological, social



and sexual changes involving personal relationships. They are of the view that during this stage of development, the internal body activities like secretions, hormonal reactions, and basal metabolism, biochemical reactions and behavioural changes increase remarkably. At this stage of development, there is strong need for quality clothing and desire in order to be recognised by the opposite sex.

## 4.2 Results and Discussion of Data on Research Questions

### 4.2.1. Research Question 1: *What types of undergarments were worn by students of Kwanyako Senior High School?*

The data presented and discussed under this theme bears on research question 1 which sought to find out the types of undergarment worn by the students, the person responsible for the selection of their undergarments, and where they were purchased from (sources). To find answers to this research question, responses to questions 6, 7, 8 and 9 were analysed. The quantitative data are presented in frequency and percentage tables and figures in this section.

*Table 2: The Types of Undergarments Worn by the Female Students*

(*n* = 115)

Undergarment Type	Often Worn		Seldom Worn		Never Worn	
	No.	%	No.	%	No.	%
Chemise	94	82	11	10	10	9
Brassiere	93	81	10	9	12	10
Boy shorts	92	80	9	8	14	12
Brief	85	74	12	10	18	16
Underskirt	78	68	18	16	19	17
Thong	52	45	10	9	53	46
G-string	22	19	12	10	81	70

*n* = 115 < 176 (female responses only)

Table 2 presents data on the types of undergarment worn by the female students and how frequent they wore them. The table shows that 82% of the female students often wore chemise, while 10% occasionally wore it, and 9% never wore it. Majority (81%)

of the female students often wore brassiere, 9% sometimes wore it, while 10% never wore it.

Majority (80%) of the female students often used boys' shorts, 8% sometimes wore it, and 12% never wore it. Female students who wore brief often were 74%, while those who occasionally wore it were 10% and those who never wore it were 16%. Female students who often wore underskirt were 68%, 16% occasionally wore it, while 17% never wore it. A moderate percentage (45%) of the female students frequently wore thongs, while 9% sometimes wore it, and 46% never wore it. G-string was often worn by only 19% of the female students, and sometimes by 10% female students. But it was never worn by the majority (70%) of female students. The results imply that the patronage of chemise, brassiere, boys' shorts, brief and underskirt was high among the female students, but moderate in the case of thong and low with regard to G-string. The high patronage of chemise and brassiere might be because of their form fitting and their suitability with other undergarment when used. As indicated by Sujatha *et al.*, (2016), the brassiere is a form-fitting undergarment designed to cover, support and elevate a woman's breasts. It is one of the undergarments for the upper part of the body. Wallace (2019), also asserted that chemise, provides protection from possibly rough clothing, allows clothes to lie flat, and might provide corseting, or breast support that makes it the best for a dress since it would not show a middle line separating it. In the case of thongs and G-string, their moderate percentage might be as a result of the minimal butt coverage and health hazards attributed to thongs and G-string. This is in agreement with Wellness (2016), Ati (2018), Ryan (2017), and Pearson (2017), observation that the frequent use of thongs and G-string could injure the skin around the genital area and increase the risk of urinary tract infections as they

make it easier for bacteria to move from the anus to the vagina therefore the percentage of female students who patronised them might be at risk.

Table 3: shows the distribution of the types of undergarments used by the male students of Kwanyako Senior High School.

*Table 3: The Types of Undergarments Worn by the Male Students*

(n = 61)

Undergarment Type	Often Worn		Sometimes Worn		Never Worn	
	No.	%	No.	%	No.	%
Boxer shorts	54	89	2	3	5	8
Undershirt	45	74	5	8	11	18
Singlet	41	67	2	3	18	30
Boxer brief	33	54	8	13	20	33
Brief	16	26	6	10	39	64

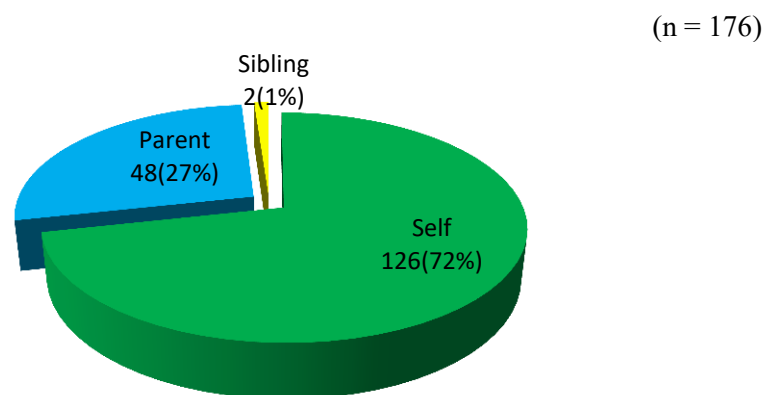
n= 61 < 176 (male responses only)

Table 3 gives information on the types and rate of undergarment usage among male students of Kwanyako Senior High School. Eighty-nine percent (89%) of male students often wore boxer short, 3% occasionally wore it, while 8% never wore it. Majority (74%) of the male students frequently wore undershirt, 8% sometimes wore it, but 18% never wore it. Sixty-seven percent (67%) male students often wore singlet, 3% sometimes wore it, and 12% never wore it. Boxer brief was often worn by 54% male students, sometimes by 13% male students, and never by 33% students. A few (26%) male students often wore brief, 10% sometimes wore it, while 64% never wore it. This imply that boxer shorts, undershirt and singlet were the most preferred undergarments among male students but moderate in the case of boxer brief and less preferred as in the use of brief. This results reflects the view of Datta (2018), that the baggy or loose nature of boxer shorts allows air flow that provide ample ventilation when worn, making it extremely comfortable. Centeno (2013), and Roach (2018), stated that the main purpose of the undershirt is to serve as a sweat rag to absorb sweat and keep outer clothing dry. This might have accounted for its high patronage.

However, when wet undershirt is worn for long under an outer garment, might create warmth for micro-organisms to thrive. Singlet was less preferred by male students as compared to undershirt. This might be because its outline is seen through outer wear when worn and has no sleeves therefore fails to protect outer garments from absorbing sweat around the armpit (Schneider 2010). Boxer brief was moderately (54%) preferred and this might be because of its comfortable and supportive nature. Data (2018), indicated that the skivvy style provides both body-hugging fit and ultimate support. The anatomically correct design of boxer brief is till date the most recommended option for those who seek comfort, support as well as freedom around the genitals.

In the case of brief, it was less preferred by male students. According to Alves (2014), choosing the wrong size and incorrect fit of brief would not offer the wearer the needed comfort since tight briefs pose obvious discomfort by creating marks and cause irritations and jock itch on the skin. Briefs tend to lose their shape fast, therefore consumers need to replace them more often.

Figure 27 presents data on the person who usually selected the undergarments for the students.



*Figure 27: Persons who usually Selected Undergarments for the Students*

Figure 27 shows that majority (72%) of both sexes of the students usually selected their own undergarments, 27% students' parents did the selection for them, while 1% students had it selected by their siblings. The results of this study established that students would want to select their own undergarments rather than their parents and siblings selecting for them because they are in the best position to make the right choices to suit fashion and their own association with their peers to make them feel accepted in their groups. This finding agrees with the view of Riungu (2009), who asserted that an elderly person might purchase clothing that offers more physiological comfort, whereas teenager would pay greater attention to the latest fashion. Furthermore, members of the same social group turn to display their unity outlook and values in their clothing trends.

*Table 4: Cross Tabulation of Sex Selection of Undergarment*

(n = 176)

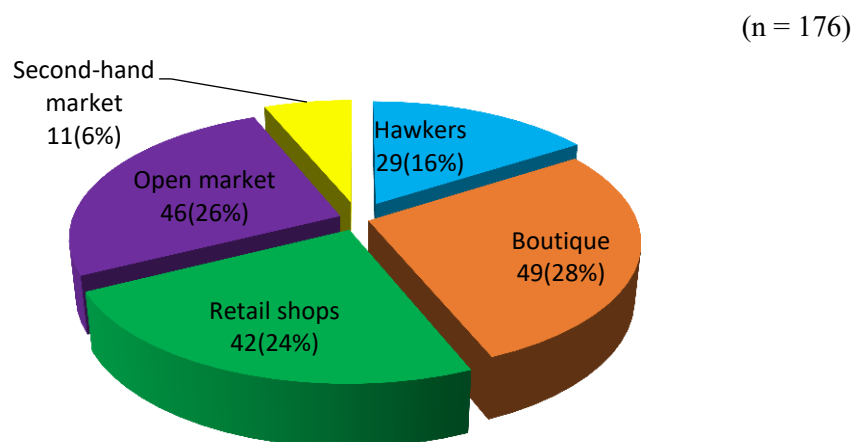
Variable Category	Person who selects undergarment			Total F (%)
	Self F (%)	Parent F (%)	Sibling F (%)	
Female	78(68)	35(30)	2(2)	115(65)
Male	48(79)	13(21)	0(0)	61(35)
<b>Total</b>	<b>126(72)</b>	<b>48(27)</b>	<b>2(1)</b>	<b>176(100)</b>

F = Frequency; % = Percentage

Table 4 shows that 68% female and 79% male students selected and purchased undergarments by themselves. The percentage distribution shows that more male than female students selected their own undergarments by themselves. A few female students (30%) and male students (21%) had their parents selecting for them. Similarly, 2% female students had siblings who selected undergarments for them.

Majority of the students (72%) therefore made the selection themselves as indicated by Riungu (2009).

Sources of the undergarments selected by students are in figure 28.



*Figure 28: Sources of Acquisition of the Students' Undergarments*

Figure 28 shows that students of Kwanyako Senior High School bought their undergarments mostly from the boutique (28%), open market (26%) and retail shops (24%). Hawkers and second-hand sources recorded low patronage, i.e. (16%) and (6%) respectively. This suggests that they had no problem with affordability and that they could purchase them in their new state from boutiques and retail shops. On the contrary, Shah (2010) cited in Komasi (2017), indicated that a person with less money and savings will purchase inexpensive products just as consumers patronise used second-hand undergarment with the reason that they are cheap (Daily Graphic, 2017) but the few who might have patronised them from such a source might have done that because they are cheap. They might have also heard of the infections second-hand undergarments can cause to its patrons. The ban on the importation of used undergarments in Ghana (LI 1586), has however not been understood by a significant percentage (6%) of the students as it appears. If it is about poverty then

these patrons of the second-hand undergarments are rather likely to incur more cost through infections from the use of infected second-hand undergarments.

Table 5 presents data on the quantity of undergarments worn by the female students.

*Table 5: The Number of Undergarments Used by the Female Students*

(n = 115)

Type of Undergarment	Number of Undergarment used									
	0		1		2		3		≥4	
	No.	%	No.	%	No.	%	No.	%	No.	%
Brassiere	9	8	5	4	16	14	33	29	52	45
Underskirt	20	17	12	10	25	22	29	25	29	25
Chemise/vest	13	11	7	6	16	14	29	25	50	43
Brief	17	15	12	10	18	16	20	17	48	42
Thongs	43	37	5	4	21	18	14	12	32	28
Boy shorts/undershorts	16	14	10	9	23	20	18	16	48	42
G-string	83	72	3	3	9	8	10	9	10	9

N= 115 < 176 (female responses only).

Only forty-five percent (45%) of the female students were using four or more brassieres as per the school kit requirement, 29% used three brassieres, 14% used two brassieres, 4% students used only one while 8% wore no brassiere. Twenty-five percent (25%) female students had four or more underskirt, 25% had three 22% had two, 10% had one while 17 had no underskirt. Forty-three percent (43%) female students had four or more chemise, 25% had three, 14% had two, 26% owned only one while 11% had no chemise. A moderate percentage (42%) of the female students were using four or more briefs as compared to the use of thongs. Only twenty-eight percent (28%) female students owned four or more thongs. Forty-two percent (42%)



female students had four or more boys' shorts. Majority (72%) female students had no G-string.

Per the school kits of Kwanyako Senior High School, eight (8) panties, two (2) boys' shorts and two (2) underskirt are the minimum quantities of undergarments required of a female student. The result of this study revealed that not too many female students (45%) had four or more of the listed undergarment categories. Hence the female students might be using their undergarments repeatedly within a week which might affect personal hygiene. Forster (2014), indicated that several sets of undergarments are needed because frequent washing is essential to ensure a high standard of personal hygiene.

Among undergarments that covers the upper part of the body, brassiere and chemise were the most preferred ones. Brief and boys' shorts were the highly preferred undergarments that cover the lower part of the body, with just a few (9%) using G-string. This suggests that the female students are very particular about giving support and shaping to their breast and to make an outfit look good on them. Hence the high patronage of brassiere and chemise. Greenbaum *et al.*, (2003), indicated that a bra provides comfort and adequate support to make an outfit look good on a wearer, while Wallace (2019), asserted that brassiere might still be worn with chemise at the same time by patrons. These observations of Greenbaum *et al* and Wallace might have accounted for the high usage of the two items.

Briefs and boys' shorts were mostly preferred for the lower part of the body. This observation might be due to the support, comfort and modesty derived from them. Fogarty (2018), and Kimmay (2017), stated, that brief and boys' shorts provide full coverage to the butt and more side coverage on the hip area for comfort and modesty.



The less patronage of G-string might be as a result of its health related hazards posed to consumers. As asserted by Wellness (2016), some women report an increase in urinary tract or yeast infections when they make use of *G-string* because the string between the buttocks may slide back and forth to transfer fecal bacteria from the anus to the urethra, possibly resulting in a urinary tract or vaginal infection.

Table 6 presents data on the number of undergarments used by the male students.

Table 6: *The Number of undergarments Used by the Male Students*

(n = 61)

Type of undergarment	0		1		2		3		≥4	
	No.	%	No.	%	No.	%	No.	%	No.	%
Singlet	17	28	4	7	8	13	18	30	14	23
Undershirt	13	21	13	21	22	36	10	16	3	6
Boxer brief	23	38	9	15	10	16	10	16	9	15
Boxer shorts	10	16	3	6	7	11	21	34	20	33
Brief	39	64	7	11	6	10	5	8	4	7

N= 61 < 176 (male responses only).

Only twenty-three percent (23%) of the male students were using four or more singlets as per the school kit requirement, 30% used three singlets, 13% used two singlets, 7% students used only one while 28% wore no singlet. Only six percent (6%) male students had four or more undershirt, 16% had three 36% had two, 21% had one as well as no undershirt. Fifteen percent (15%) male students had four or more boxer brief, 16% had three, 16% had two, 15% owned only one while 38% had no boxer brief. A moderate percentage (33%) of the male students were using four or more

boxer shorts as compared to the use of boxer brief and brief. Only seven percent (7%) male students owned four or more briefs with sixty-four (64) using none.

Per the school kits of Kwanyako Senior High School, eight (8) panties, three (3) singlets and one (1) round neck T-shirt are the minimum quantities of undergarments required of a male student. The result of this study revealed that not too many male students had four or more of the listed undergarment categories. Per the school kits, three singlet were the minimum number required of a male student yet twenty-eight percent (28%) of them used no singlet. This might be as a result of the inability of a singlet to absorb sweat around the armpit due to its sleeveless nature (Schneider, 2010). This might also mean that male students might be using the available undergarments more often.

Only (21%) of the male students were able to meet the school's minimum requirement for undershirt with over (50%) of them using two or more. Undershirts are made from special fabrics that can absorb moisture by providing an absorbency layer that can catch sweat before it seeps through onto outer garment and still keep it dry. This give users a layer of protection from skin irritation and allow them to enjoy all of their favourite fashions without having to worry about their comfort (Cruickshank, 2016). This might have accounted for its high patronage against singlet though the requirement was just at least one undershirt.

Boxer brief, boxer shorts and briefs are male undergarments that covers the lower part of the torso. Even though the school kit required of male students was a minimum of eight (8) panties, thirty-three (33%) of them had four or more boxer shorts as against fifteen (15%) and seven (7%) boxer brief and briefs respectively. Students' preference for boxer shorts might be as a result of the loose nature which allow airflow that

provide ample ventilation making it extremely comfortable as compared to briefs and boxer briefs. This observation is a justification that boxer shorts baggy or loose nature allows airflow that provide ample ventilation, reduction of chafing and sweat secretion that results in gradual reduction of skin problems such as rashes, itchiness, and irritation as observed by Datta (2018).

The data in Table 7 presents the number of times female students wear particular undergarments in a week.

*Table 7: Number of Times the Female Students Wore a Particular Undergarment in a Week* (n = 115)

Type of undergarment	No.	Number of times undergarment are worn		
		%	M	SD
Brassiere	106	92	3.50	0.83
Chemise/Vest	102	89	3.44	0.83
Boy shorts	99	86	3.34	0.84
Brief	98	85	3.57	1.02
Underskirt	95	82	3.13	0.79
Thong	72	63	3.11	1.07
G-string	32	28	2.34	0.61

M = Mean; SD = Standard Deviation

A minority (28%) female students most frequently wore G-string (M=2.34). G-string, according to Pearson (2017), has a string that passes through the buttocks. This may cause friction and irritation which may injure the skin around the genital area. The implications are that this minority group of students may have to suffer skin irritation, unpleasant odour and bacterial infection.

A greater percentage (92%) of female students frequently wore brassiere (M= 3.50) in a week to give support to their breast because it is one of the undergarment that is

worn to cover the upper part of the body (Sujatha *et al.*, 2016). Frequently wearing brassiere may contribute to poor posture, skin inflammation by underwire, and displacement of breast tissue Chan, *et al.*, (2015). This implies that this percentage of female students may suffer the consequences.

Eighty-nine percent (89%) of the female students frequently wore chemise (M= 3.44). Adolescents sweat a lot therefore, they might frequently use the chemise to help absorb sweat and provide protection from possible rough clothing. This is in line with Wallace (2019), assertion that chemise provides protection from possibly rough clothing, absorb sweat, allow clothes to lie flat, and provide breast support that makes it the best for a dress since it would not show a middle line separating it.

The result in Table 5 shows that almost a close percentages (85% & 86%) of female students used briefs and boys' shorts. Among undergarments that covers the lower torso, the findings suggest that female students were likely to wear them twice or more in a week. The implications are that briefs and boys' shorts, according to Yan (2016), and Ati (2018), provide full seat coverage and total comfort especially during the time of the month. According to Kimmay (2017), the boy's shorts may dig into the top of the thigh and cause bulge and discomfort as well as cause panty lines to show through outer garment when not seamless. This may have implications on this majority of students.

Eighty-two percent (82%) of the female students frequently used underskirt twice or more in a week. Underskirt serve as a middle layer that mediate between panties and outer wear (Haugland, 2003).

A moderate percentage (63%) of female students wore thongs (M=3.11) between two and four times weekly. This implies that the frequent use of thongs by this percentage of female students may cause discomfort when worn. This might have accounted for its low usage as compared to briefs and boys' shorts. Wellness (2016), stated that thongs slide back and forth between the genital and anal areas when worn therefore can transmit urinary infections.

Reasons given by the female students.

*I have more than three therefore, I change them on daily basis. (Female student #1)*

*I have a lot so I change on daily basis to prevent diseases and keep to personal hygiene. (Female student #2)*

One female student who said she repeated the use of particular undergarment within the week said:

*It is because of economic problems. I do not have enough money to buy more. My mom buys them for me. (Female student #3)*

Finally, a female student explained:

*I have many undies that I change on daily basis. This is a hygienic practice. It protects me from infection. It is not advisable to wear them more than twice a week. (Female student #4)*

The results of this study indicate that most of the female students regularly wore same undergarment mostly thrice and four or more times in a week. The evidence gathered from this study indicated that 40% - 50% of the female students wore same undergarment thrice in a week, while 60% - 71% wore same undergarment four times in a week. Undergarments which were repeatedly used by the female students, either thrice or four times in a week, were: brassiere (74%), chemise (68%), brief (61%) and boys' shorts (58%). The repeated use or wearing of these undergarments has health, social and economic implications.

Table 8 shows data on the rate or the number of times male students wear particular undergarments in a week.

*Table 8: Number of Times the Male Students Wear a Particular Undergarment in a Week* **(n = 61)**

Type of undergarment	Number of times undergarment are worn			
	No.	%	M	SD
Brief	22	36	2.68	1.06
Boxer brief	38	62	3.05	1.06
Undershirt	48	79	3.38	1.04
Singlet	44	72	3.11	0.88
Boxer shorts	51	84	3.44	0.98

M = Mean; SD= Standard Deviation

It is evident from the result in Table 8 that a few (36%) male students had between one and four briefs or more. The conjecture is that if the male students had a maximum of three or less of each types of the undergarments, then they were either likely to use it twice in a week or they were likely to wash and wear it on each day. This has implications on the durability or life span of the undergarment and the implications on the health of the user. This observation agrees with Forster (2014), who stated that several sets of undergarments are needed because frequent washing is essential to ensure a high standard of personal hygiene.

Sixty-two percent (62%) of the male students frequently wore boxer briefs in a week as compared to briefs. Boxer brief is a form fitting undergarment that covers one third portion of the thighs and it provides maximum support and comfort (Datta 2018). For this reason, there could be the likelihood that male students might repeat the usage of the boxer briefs without frequently subjecting them to washing.

The singlet and the undershirt are male undergarments that cover the upper part of the torso. Among them, the undershirt was frequently worn in a week more than the singlet although it also covers the upper part of the torso. This might be because the undershirt has the ability to absorb moisture by providing an absorbency layer that can catch sweat before it seeps through onto outer garment and still keep it dry (Cruickshank, 2016) as against the inability of a singlet to absorb sweat around the armpit due to its sleeveless nature (Schneider, 2010).

A majority of the male students (84%) frequently wore boxer shorts many times a week. Boxer shorts according to Datta (2018), is a baggy and loose male under wear that provide ample ventilation when worn, making it extremely comfortable as compared to briefs and boxer briefs. Its usage reduce chafing and sweat secretion as well as skin problems. This might have led to the frequent usage weekly.

Reasons given by male students.

*I have more than six sets of each underwear which I use. I have a lot. It is because I feel safe when I put them on. I wear each twice a week. (Male student #1)*

*I have only four underwear to use. I must keep them clean. (Male student #2)*

*I'm unable to afford more undergarments. They aren't enough so they become dirty as I repeatedly use them. (Male student #3)*

*There is no money to buy enough. Therefore, using it twice or thrice in a week make me feel uncomfortable when dirty. (Male student #4)*

*I do not have enough undergarments because of financial issues. (Male student #5)*

Regarding the number of undergarments they had, most of the students commented as follows:

*As a lady you have to change your undergarments at least twice a day. I have more of the undergarments because I change them every day. This is necessary for good personal hygiene. (Female student #1)*



*I have many undergarments because I can afford that quantity. I have to be neat always. It is for healthy living and wellness. (Female student #2)*

*I must change undergarments every day because I want to be neat all the time to maintain personal hygiene. In addition, I frequently change panties during menstrual period to keep to personal hygiene. Hence I have more of each type (Female student #3)*

*It is hygienic to always change undergarments on daily basis. So I have many in order to change them frequently. This is to avoid body odour and ensure personal hygiene. (Female student #4)*

*I do not have many of the undergarments because of problem with affordability. I mean financial constraints. (Male student #1)*

*I do not like wearing briefs, I have singlet, but I don't wear it often. (Male student #2)*

*Some of my undergarments have been stolen by my friends in the dormitory. (Male student #3)*

*I have enough undergarments so that I can change them regularly. I want to be neat, clean and feel comfortable among my friends. (Male student #4)*

In conformance to the protection theory, both male (boxer shorts, boxer briefs, singlets, undershirt, and female (brassieres, chemise, briefs, boy shorts) students selected and used undergarments to lessen friction of undergarments against the skin and to support the genitals.

#### **4.2.2. Research Question 2:** *What were the factors considered by the students in the selection of undergarments?*

This section covers the factors influencing selection of undergarment namely, colour, style, affordability, durability, interest, suitability, fashion, association, fabric type, outer wear, intention, convenience, comfortability, ease in washing and drying time. Reasons for colour choice are also presented in this section. Responses to questions 10 to 12 on the questionnaire provided data for this research question. The responses for these questions were coded: 4 = Strongly Agree (SA); 3 = Agree (A); 2 = Disagree

(D), and 1 = Strongly Disagree (SD). The data (responses) were further collapsed into categories: agree and disagree. This was done in order to facilitate the interpretation of the results. The results are presented in frequency counts and percentages tables.

Table 9 presents the Factors that Influenced Undergarment Selection by the Female Students.

*Table 9: Factors that Influenced Undergarment Selection by the Female Students  
(n = 115)*

<b>Factor</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
	<b>No. %</b>	<b>No. %</b>	<b>No. %</b>	<b>No. %</b>
Association	64(56)	40(34)	1(1)	10(9)
Intention	31(27)	56(49)	14(12)	14(12)
Outer wear	57(50)	36(31)	9(8)	13(11)
Convenience	58(50)	34(30)	10(9)	13(11)
Quick to dry	58(50)	40(35)	9(8)	8(7)
Affordability/cost	49(43)	43(37)	7(6)	16(14)
Fashion	51(44)	29(25)	18(16)	17(15)
Ease in washing	23(20)	32(28)	27(23)	33(29)
Fabric type	57(50)	32(28)	4(3)	22(19)
Suitability	40(35)	31(27)	15(13)	29(25)
Colour	22(19)	38(33)	22(19)	33(29)
Durability	36(31)	36(31)	18(16)	25(22)
Interest	77(67)	23(20)	6(5)	9(8)
Design/style	51(44)	31(27)	17(15)	16(14)
Comfortability	43(37)	32(28)	14(12)	26(23)

Majority of the female students (87%) stated that they selected undergarments based on their interest. However, 13% of them held incongruent views.

Similarly, (90%) female students stated that they selected undergarments because of association. However, 10% of them held incongruent views.

Also Majority of the female students (85%) selected undergarments because they dry quickly. A few of them (15%) disagreed with the statement. Similarly 80% of them agreed, while 20% disagreed with the statement that they selected undergarments based on convenience.

Similarly, 81% female students selected undergarments because of their utility value of outer wear. However, 19% held opposing views. Eighty percent (80%) female students affirmed that affordability (cost) was a significant factor which influenced their selection of undergarments. However, 20% held opposing views.

Seventy-eight percent (78%) of the female students agreed while 22% disagreed with the statement that fabric type was a factor that influenced the selection of undergarments. Moderate percentage (71%) of the female students confirmed that design or style was a significant factor which influenced their selection of undergarments. But 29% disagreed with the statement.

With regard to fashion as a factor influencing undergarment selection, 69% of the females students asserted, whereas 31% disagreed. The mean value suggests that fashion did not influence their selection of undergarments.

Seventy-six percent (76%) of the female students selected undergarments because of intended usage. Conversely, 24% did not. Sixty-five percent (65%) female students selected undergarments based on comfort. However, 35% held incongruent views. Sixty-two percent (62%) also stated that durability was a significant factor which influenced their selection of undergarments. Conversely, 38% female students held contrary views.

Similarly, 62% female students admitted, while 38% denied that suitability of undergarment was a factor which influenced the selection. Fifty-two percent asserted that colour was a significant factor which influenced their selection of undergarments. However, 48% disclaimed this statement. Ease in washing was the least factor which influenced the selection of undergarments by 48% female students. However, 52% of them held incongruent views.

From the results in Table 9, the factors which significantly influenced undergarment selection by female students of Kwanyako Senior High School were; association, intention, outer wear utility value, convenience, quick drying and affordability.

Psychological factors of clothing provide one of the most visual and easily manipulated means of presentation of an individual's personality or self-concept as asserted by Kaizer (1990). The interest in a particular undergarment easily manipulates its selection because a feeling that causes special attention to oneself has the potential to influence. This observation validates the assertion of Storm (1987), who indicated that self-concept is the individual's mental system of organizing his or her perception and concept about self. Clothing is a significant force in the enhancement of the self and when used positively it contributes to one's feeling of self-acceptance and self-respect. For instance as indicated in Table 2 the patronage of chemise, brassiere, boys' shorts, brief and underskirt was high among the female students, but moderate in the case of *thong* and low with regard to *G-string*. The high patronage of chemise, brassiere, boys' shorts, brief and underskirt might be because of the feeling to own them.

The finding that the female students selected undergarments because of association suggests that the students need affection and participation in social groups or classes. Accordingly, they might wear undergarments to attract and show affection towards the opposite sex. This observation validates the assertion of Jensen and Ostergaard (1998), cited in Riungu (2009), who pointed out that dressing contributes to express individuality as well as the need to conform to others.

The results of this study established that the convenience derived from the use of an undergarment influenced the selection pattern of the female students. An undergarment should be able to perform the specific functions for which it is acquired since the suitability of an undergarment makes it very convenient in its usage. As indicated by Centeno (2013), and Sujatha *et al.*, (2016), the undershirt's main purpose is to keep the user warm in cold weathers and serve as a sweat rag to absorb sweat and keep outer clothing dry. Women might also change their brassieres to suit daily and special occasions or choose a brasserie type such as padded, non-wired, sports brassier and daily brassier to suit the purpose for which it is patronised for which it is patronised (Sujatha *et al.*, 2016).

The outer garment the female students wore influenced their undergarment selection. This might be because particular styles of undergarments are worn under specific outer garments to provide comfort, adequate support, reduce the risk of infections, unpleasant odour, prevent skin irritation and match with outer garment (Burse, 2017). For instance, *G-string* panty is usually worn under *leggings*, body-con dresses and skirts and under a pair of trousers to prevent panty lines from showing, thongs can be worn with bodycon dresses and pencil skirts to avoid panty lines, while the Brazilian briefs is worn under high waisted jeans to prevent wedgies and provide full seat for total comfort. (Ati, 2018 & Sharma, 2018).

It also emerged from the findings of this study that female students selected undergarments because of affordability in relation to cost which is an economic motive that influences undergarment selection pattern of the students. Affordability is an important factor that influences a consumer to either patronise more, less or quality undergarments. According to Shah (2010), cited in Komasi (2017), a person

with less money and savings will purchase inexpensive products. Figure 28 in research question 1 showed that students bought their undergarments mostly from the boutiques, open market and retail shops. Second-hand sources recorded low patronage. According to Oluseye (2015), washing used second-hand undergarments with regular detergents may not be enough to get rid of some bacteria and some parasitic organisms which are naturally conditioned to withstand harsh conditions for survival. This suggest that patrons of second-hand undergarments are prone to contracting infections that might have been transmitted by previous users if not well treated hence, the low patronage by students. Again, they might have the financial means to purchase undergarments from boutiques and retail shops in order to protect themselves from infections that second-hand undergarments might transmit.

Fabric type was found to influence the female students in their selection of undergarment. The preference for fabric in the selection of undergarment is a key factor to ensure quality, comfort, and durability. This is because each fibre has its own independent characteristics that contribute to the performance quality of the final fabric from which undergarments are made. Since underwear is worn all day next to the skin, it is important to find those made from comfortable fabrics. According to Sujatha *et al.*, (2016), the preference for fabric depends on climate, season, and type of work, comfort, durability, fashion ability and trendiness. Since Kwanyako Senior High School is in the tropical region, students might consider the fabric make up and the climate of the geographical location where they live in their selection to ensure comfortability. This observation is in agreement with Forster (2014), who indicated that nylon emits electrostatic charges which do not promote comfortability when worn in warm climate hence, it is not recommended for use as undergarment in the tropics.

The findings of this study also identified design or style as a factor that influenced undergarment selection of the female students. It is important to note that style is a primary factor that a consumer considers in the choice of an underwear. This observation is in tandem with the views of Ati (2018), and Ryan (2017), who pointed out that some panties are not necessarily healthy for consumers, especially in certain situations. Some make it easy for bacteria to travel from the anus to the vagina, and this can lead to conditions like urinary tract infections. Some brassieres are also made to be used for specific purposes and activities such as sports and maternity periods as well as to arouse sexual interest. This suggests that students might consider the design or style of an undergarment in order to make the best choice to ensure they leave no uncomfortable health implications.

From the results in Table 9 all the female students generally disagreed that fashion, comfortability, durability, suitability for purpose, colour and ease in washing were factors that influenced their selection for undergarments. To the female students these factors do not matter so much in the selection of undergarments.

According to Riungu (2009), an elderly person might purchase clothing that offers more physiological comfort, whereas teenager would pay greater attention to the latest fashion. For example, members of same social class will display their unity outlook and values in their clothing trend that may be easily identified by their style. This assertion basically describes the student who is a teenager. On the contrary, the female students disagreed fashion influenced their undergarment selection. The reason might be that because the undergarments are always worn under the fashion dress next to the skin (Forster, 2014), it might not really matter to consider fashion in the selection of undergarments. It might also be because most of the adolescents



are financially dependent. Hence they are constrained to purchase undergarments when there are new or latex styles in vogue.

Alves (2014), noted that choosing the wrong size and incorrect fit of undergarment would not offer the wearer the needed comfort and suitability. This is to say comfort is key to underwear selection. However, female students disagreed it was a factor that influenced their selection. This might be as a result of students giving priority to association or style rather than comfort and suitability as indicated by Jensen and Ostergaard (1998), cited in Riungu (2009), that dressing contributes to express individuality as well as the need to conform to others.

Table 10 presents the Factors that Influenced Undergarment Selection by the Male Students.

*Table 10: Factors that Influenced Undergarment Selection by the Male Students*  
(*n* = 61)

Factor	SA	A	D	SD
	No. %	No. %	No. %	No. %
Association	36(59)	16(26)	5(8)	4(7)
Outer wear	31(51)	22(35)	4(7)	4(7)
Intention	23(38)	29(47)	4(7)	5(8)
Quick to dry	39(64)	13(21)	4(7)	5(8)
Convenience	29(48)	21(34)	3(5)	8(13)
Fabric type	24(39)	23(38)	8(13)	6(10)
Fashion	26(43)	20(33)	9(14)	6(10)
Affordability/cost	29(48)	20(32)	6(10)	6(10)
Durability	20(33)	26(43)	8(13)	7(11)
Suitability	16(26)	24(39)	10(16)	11(19)
Ease in washing	9(14)	33(54)	9(14)	10(16)
Colour	17(28)	22(36)	13(21)	9(15)
Design/style	29(48)	23(38)	6(10)	3(5)
Interest	35(57)	20(33)	3(5)	3(5)
Comfortability	26(43)	16(26)	8(13)	11(18)

Table 10 shows that the male students considered only association; outer wear; intention; quick to dry and convenience in their selection of undergarments.



To the male students colour suitability; ease in washing and comfortability do not matter so much in the selection of undergarments.

The male students agreed to the fact that association influenced their undergarment selection. This might be because the adolescent male students would want to be recognised and accepted by their peers, therefore, they would pay attention to the latest fashion in order to be associated with a class and not old fashioned. Gavor *et al.*, (2015) and Sproles (1981), stated that clothing fashion is a style of dress that is temporarily adopted by a discernible proportion of members of social group because that chosen style is perceived to be socially appropriate for the time and the situation. Riungu (2009), added that members of same social class will display their unity outlook and values in their clothing trend that may be easily identified by their group.

Selecting an undergarment for an intended purpose had a great influence on male students. Alves (2014), noted that briefs are ideal for skinny jeans, comfortable while seated when worn, above all keeps the genitals in place. Datta (2018), also explained that the boxer shorts loose nature allows airflow that provide ample ventilation making it extremely comfortable. The abrasion-free pouch also reduces chafing and sweat secretion resulting in gradual reduction of skin problems such as rashes, itchiness, and irritation. The main purpose of an undershirt, according to Centeno (2013), is to keep the user warm in cold weathers and serve as a sweat rag to absorb sweat and keep outer clothing dry. Thus the male students might have considered the purpose for which undergarments are used in their selection.

The results showed that quick drying of undergarments and convenience are both influential factors for selection by male students. Forster (2014), indicated that synthetic fibres are used to produce fabrics for undergarments. Synthetic fibres accept warm temperature, light in weight and dry quickly due to their low absorbency rate. She added that they are not destroyed by detergents. This then suggests that male students might have selected undergarments that dry quickly after washing in order to manage a few for their daily routine use and have ample time to study. This also suggests that they selected some undergarments made with synthetic fabrics because they dry quickly and are very convenient in their usage.

From the results in Table 10 the male students generally disagreed that colour, suitability for purpose, ease in washing and comfortability were factors that influenced their selection for undergarments. To them these factors do not matter so much.

According to Riungu (2009), an elderly person might purchase clothing that offers more physiological comfort, whereas teenager would pay greater attention to participation in social groups for a sense of belongingness. For example, members of same social class will display their unity outlook and values in their clothing trend that may be easily identified by their style. This assertion basically describes the student who is a teenager. This preference might have accounted for the less consideration for colour in undergarment selection.

Alves (2014), noted that choosing the wrong size and incorrect fit of undergarment would not offer the wearer the needed comfort and suitability. In similar lines, Datta (2018), advised patrons to consider the standard measurements that conform to certain underwear waist sizes in order to find comfort in their use.

This is to say comfort is key to underwear selection. However, male students disagreed it was a factor that influenced their selection. This might be as a result of students giving priority to association rather than comfort and suitability as indicated by Jensen and Ostergaard (1998), cited in Riungu (2009), that dressing contributes to express individuality as well as the need to conform to others.

Table 11 shows the mean comparison of undergarment colour preferences by female students of Kwanyako Senior High School.

*Table 11: Mean Comparison of Undergarment Colour Preferences by Female Students*

(n = 115)

Colour of undergarment	SA	A	D	SD
	No. %	No. %	No. %	No. %
White	64(56)	32(28)	8(7)	11(10)
Blue	43(37)	8(42)	3(11)	11(10)
Pink	56(49)	32(28)	9(8)	18(16)
Yellow	31(27)	4(38)	23(20)	17(6)
Green	29(25)	43(37)	24(21)	19(17)
Cream	23(20)	45(39)	22(19)	25(22)
Black	26(23)	38(33)	27(23)	24(21)
Wine	22(19)	42(37)	19(17)	31(27)
Grey	21(18)	36(31)	19(17)	39(34)
Red	16(14)	5(22)	39(34)	5(30)
Others				
Brown	46(40)	34(30)	12(10)	23(20)
Violet	7(6)	5(4)	1(1)	102(89)

SA – Strongly Agree; A – Agree; D – Disagree; SD – Strongly Disagree

Majority (84%) of the female students preferred white undergarments while 17% held incongruent views. Similarly, 77% female students had preference for pink undergarments. But 23% female students held contrary views. A moderate percentage 59% of female students had preference for cream undergarments. However, 41% disagreed with the statement. Similarly, (56%) female students had preference for black undergarments. Forty-four (44%) female students held opposing views. A

minority of female students, 36%, preferred red undergarments but 64% did not like it. Similarly, 49% female students preferred grey undergarments while (51%) did not.

It could be concluded from the results that female students of Kwanyako SHS had preference for white, blue, pink and yellow undergarments. The least preferred undergarments were red, grey and violet.

Even though undergarments are ostensibly hidden from view, the colour can still be important to the wearer because colour is one of the most important factors and usually the first aspect of a garment or accessory to which consumers respond (Ofori et al., 2014). Colour can influence or signal a woman's mood and emotions due to its symbolic nature. The female students might have attributed some meanings to the colours of undergarments and that might have led to their preferences. The high preference for white, pink, blue and yellow undergarments might be as a result of what they symbolise, that is the psychological meaning and the outer garment under which they were worn. As indicated by THE BOTTOM DRAWER (2014), white symbolizes peace, joy and happiness, pink is for luck in love; blue brings good health and yellow brings good fortune and prosperity.

It is also likely that some of the students selected and used undergarments to boost or enhance one's self-concept, self-esteem, self-confidence and self-consciousness. The colours of underwear denote a different mood and feelings. As Grove-White (2001) stresses, colours can denote or affect an individual's mood.

Table 12 shows the mean comparison of undergarment colour preferences by male students of Kwanyako Senior High School.

*Table 12: Mean Comparison of Undergarment Colour Preferences by Male students*

<b>Colour of undergarment</b>	<i>(n = 61)</i>			
	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
	<b>No. %</b>	<b>No. %</b>	<b>No. %</b>	<b>No. %</b>
Blue	34(56)	19(31)	4(6)	4(6)
Yellow	22(36)	24(39)	10(16)	5(8)
White	24(39)	18(30)	11(18)	8(13)
Green	21(34)	22(36)	5(8)	13(21)
Red	15(25)	21(34)	6(26)	9(15)
Wine	14(23)	21(34)	12(20)	14(23)
Cream	10(16)	23(38)	5(25)	3(21)
Grey	12(20)	19(31)	17(28)	13(21)
Black	13(21)	18(30)	14(23)	16(26)
Pink	7(12)	19(31)	1(18)	4(39)
<b>Others</b>				
Brown	27(44)	18(30)	7(12)	9(15)
Violet	5(8)	2(3)	0(0)	54(89)

SA – Strongly Agree; A – Agree; D – Disagree; SD – Strongly Disagree.

Majority (87%) of male students preferred blue undergarments, while 13% students held incongruent views. Seventy-five percent (75%) male students had preference for yellow undergarments while, 25% did not like them. Seventy percent (70%) preferred brown undergarments, whereas 30% did not.

A Moderate percentage (68%) of male students had preference for white undergarments, but 32% did not. Similarly, green undergarments were preferred by 70% male students, but 30% did not like it.

A few of the male students 43% preferred pink undergarments. But 58% male students held contrary views. Similarly 11% of the female students preferred violet undergarments.

It could be concluded from the results that male students of Kwanyako SHS had preference for blue, yellow, white, green and brown undergarments. These findings are reinforced by Grove-White's (2001), argument about how colours not only can establish new trends in fashion, but can also affect or denote the wearer's mood. According to Gavor *et al.*, (2015), people have associated luck with particular colours to clothing. They believe that, some colours give them good luck or lead them to victory and this make them consider some peculiar coloured undergarments than others. This might have influenced the male students' preference for blue, yellow, white and green. Blue symbolises good health and yellow brings good fortune and prosperity while white symbolizes peace, joy and happiness. The colour of an undergarment to choose does not only depend on personal taste but also the outer garment to be worn. The colour of an undergarment should blend to some extent with that of the most generally worn outer garment. Though Neal (2005), cautioned that dark coloured undergarments could harbour dirt than lighter ones therefore, it should not be chosen because it does not show dirt, male students might have used that opportunity to make use of brown undergarments for convenience sake and that might have led to its high preference.

Table 13 presents Data on Undergarments under which Female Students wore Undergarments.

*Table 13: Garments under which Female Students Wore Undergarments*

<b>Outer garment Category</b>	<b>Did wear undergarment</b>		<b>Did not wear undergarment</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
School uniform	110	96	5	4
Church uniform	108	94	7	6
House uniform	94	82	21	18
Ceremonial uniform	93	81	22	19
P.E kits	50	43	65	57
Sleep wear	38	33	77	67

(n = 115)

**Key:** n= 115 < 176 due to female responses only

Ninety-six (96%) female students confirmed that they wore undergarments under their school uniform, but 4% did not. Similarly, (94%) of the female students answered in the affirmative that they did wear undergarments under their church uniforms, whereas a few (6%) of them gave a negative response. Eighty-two (82%) of the students affirmed that they did wear undergarments under house uniform, but 18% did not. Similarly, (81%) of the female students did wear undergarments under their ceremonial uniform, but a few (19%) of them did not. Less than 50% female students admitted that they did wear undergarments under their P.E kits (43%) and sleep wear (33%) whereas fifty-seven percent (57%) and 67% did not.

Table 14 presents data on undergarments under which male students did not wear undergarments.

*Table 14: Garments under which Male Students Wore Undergarments*

<b>Outer garment Category</b>	<b>Did wear undergarment</b>		<b>Did not wear undergarment</b>	
	<b>No.</b>	<b>%</b>	<b>No.</b>	<b>%</b>
School uniform	55	90	6	10
Church uniform	54	81	7	11
Ceremonial uniform	51	84	10	16
House uniform	37	61	24	39
P.E kits	29	48	32	52
Sleep wear	13	21	48	79

**Key:**  $n = 61 < 176$  (male responses only).

Majority (90%) of the male students did wear undergarments under their school uniform while a few (10%) did not. Eighty-one percent (81%) of them wore undergarments under their Church uniforms, while 11% did not. Similarly, 84% wore undergarment under ceremonial uniform but 16% did not. Sixty-one percent (61%) also indicated they did wear undergarments under their house uniforms, while 30% of them did not. A few (48%) wore undergarments under their P.E. kit while an average percentage (52%) did not. Similarly, 21% wore undergarments under their sleep wear while majority of them (79%) did not.

It could be inferred from the results of this study that many male and female students wore undergarments under their outer garments. It emerged from the result that more than 65% of the male and female students use undergarments under their outer garments such as school uniform, church uniform, house uniform and ceremonial uniform. This revelation confirms students' consideration on outer wear before selecting undergarments because the outer garment influenced their undergarment selection. This might be because particular styles of undergarments are worn under



specific outer garments to provide comfort, adequate support, reduce the risk of infections, unpleasant odour, prevent skin irritation and match with outer garment (Burse, 2017). These outer garments are worn by students to all social gathering in the school. Students therefore need to wear undergarments under them to make outer garments hang well, feel comfortable and to look presentable. Male and female students might also consider wearing undergarments that might blend with outer garments mostly worn as asserted by Neal (2005), that the colour of an undergarment to choose does not only depend on personal taste but also the outer garment to be worn. The colour of an undergarment should blend to some extent with that of the most generally worn outer garment.

With the adornment theory, undergarments may be worn to provide shape to the body and help outer garments drape well, provide fitness at the bust, buttocks and genitals. The revelation that male and female students considered association, intention for use, outer garment and convenience conforms to the theory.

#### **4.2.3. Research Question 3:** *What care methods did students adopt to maintain their undergarments in school?*

This section covers the care practices which were employed by the students in caring for their undergarments. These included laundry and storage practices such as washing, bleaching, soaking, drying, airing, ironing, mending, packing and storage. Responses to questions **20** to **25** provided data for the section. The responses for this research question were coded: 4 = Strongly Agree (SA); 3 = Agree (A); 2 = Disagree (D), and 1 = Strongly Disagree (SD). The data were further collapsed into two categories: agree (4.0-2.1) and disagree (2.0-1.0). The quantitative data are presented as frequency counts, percentages means and standard deviations in tables.

Table 15 gives information on undergarment care practices or methods used by the female students.

*Table 15: Undergarment Care Practices or Methods Used by the Female Students (n=115)*

<b>Care practice</b>	<b>SA No. %</b>	<b>A No. %</b>	<b>D No. %</b>	<b>SD No. %</b>	<b>M</b>	<b>StD</b>	<b>Decision</b>
Bleached discoloured white undergarments.	87(76)	24(21)	4(3)	0(0)	3.09	1.01	Agree
Separated undergarments from clothes.	70(60)	26(23)	6(5)	14(12)	3.03	1.09	Agree
Mended torn or worn undergarments.	51(44)	19(17)	18(16)	27(23)	2.78	1.21	Agree
Washed second-hand undergarments before using.	49(43)	29(25)	13(11)	24(21)	2.67	1.20	Agree
Washed undergarments after every use.	27(23)	27(23)	18(16)	43(38)	2.18	1.23	Agree
Packed used undergarments and washed at weekends.	27(23)	18(16)	23(20)	47(41)	2.10	1.17	Agree
Aired undergarments after every use.	16(14)	19(17)	25(22)	55(47)	1.69	1.03	Disagree
Soaked used undergarments and washed at weekends.	13(11)	15(13)	36(32)	51(44)	1.28	.52	Disagree
Ironed undergarments after drying.	3(3)	1(1)	100(96)	11(10)	1.21	.46	Disagree

**Key:** n – sample; M- Mean; SD- Standard deviation

Majority of the female students (97%) agreed, while 3% disagreed that they often bleached discoloured white undergarments (M= 3.09, SD= 1.01). Similarly, 83% of them separated undergarment from clothes before washing, but 17% did not (M= 3.03, SD= 1.09). Additionally, 68% of them washed second-hand undergarments before using them (M= 2.10, SD= 1.17), but 32% did not. Sixty-one percent (61%) female students often mended torn or worn-out undergarment, but 39% did not (M= 2.18, SD= 1.23). Also, 46% female students washed their undergarments after every

use ( $M= 2.67$ ,  $SD= 1.20$ ). However, only 4% ironed their undergarment after drying ( $M= 1.21$ ,  $SD= .46$ ). Conversely, 96% gave incongruent responses. More so, 39% of them packed used undergarment and washed them at weekends ( $M= 2.78$ ,  $SD= 1.21$ ) while, 54% did not.

It emerged from the findings of this study that the female students significantly carried out the following undergarment care practices (in rank order): 1<sup>st</sup> - bleached discoloured white undergarments and washed them. 2<sup>nd</sup> - separated undergarments from clothes before washing; 3<sup>rd</sup> - mended torn undergarment before washing; 4<sup>th</sup> - washed second-hand undergarments before using; 5<sup>th</sup> - washed undergarments after every use.

Undergarment care practices which were less carried out by the female students were: ironing after drying, soaking used undergarments and washing at weekends, and packing used undergarments and washing at weekends.

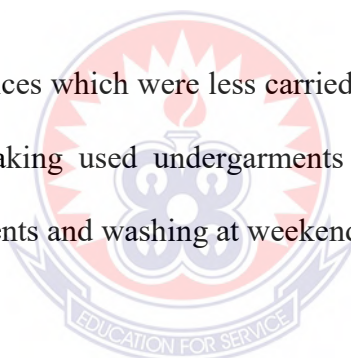


Table 16: Undergarment Care Practices or Methods Used by the Male Students

(n = 61)

Care practice	SA No. %	A No. %	D No. %	SD No. %	M	StD	Decision
Bleached discoloured white undergarments.	44(72)	15(25)	2(3)	0(0)	3.13	.43	Agree
Separated undergarments from clothes.	33(54)	18(30)	2(3)	8(13)	3.04	.97	Agree
Washed second-hand undergarments before using.	21(34)	15(25)	13(21)	12(20)	2.90	.97	Agree
Washed undergarments after every use.	9(15)	19(31)	13(21)	20(33)	2.84	1.07	Agree
Mended torn or worn undergarments.	7(11)	19(31)	12(20)	23(38)	2.72	1.08	Agree
Aired undergarments after every use.	7(11)	12(20)	24(39)	18(30)	2.26	1.14	Disagree
Packed used undergarments and washed at weekends.	5(8)	14(23)	24(39)	18(30)	2.87	.97	Disagree
Soaked used undergarments and washed at weekends.	6(10)	9(15)	22(36)	24(39)	1.75	1.03	Disagree
Ironed undergarments after drying.	0(0)	2(3)	49(80)	10(17)	1.31	.53	Disagree

Key: n – sample; M- Mean; SD- Standard deviation

In Table 16, Majority (97%) of the male students bleached discoloured white undergarments (M= 3.13, SD= .43), while, 3% did not. Similarly 84% separated undergarments from clothes before washing but 16% did not (M= 3.04, SD= .97). Also, 59% of them washed second-hand undergarment before using but 41% did not (M= 2.90, SD= .93). Forty-six percent (46%) washed undergarments after every use but 54% did not (M= 2.84, SD= 1.07). Again, 46% washed their undergarments after every use, but 54% did not (M= 2.72, SD= 1.08).

Thirty-one percent (31%) of them aired undergarments after every use (M= 2.26, SD= 1.14) while 69% did not. Also, 42% mended torn undergarments before washing but 58% did not (M= 1.87, SD= .97).

The findings of this study reveal that the male students significantly carried out the following undergarment care practices: bleaching discoloured white undergarments, separating used undergarments from clothes before washing, washing second-hand undergarments before using, washing undergarments after every use and mending torn or worn out undergarments.

Undergarment care practices which were less carried out by the male students were; ironing after drying, soaking and washing at weekends, packing used ones and washing at weekends and airing undergarments after every use.

Forster (2014), explained that water and detergent alone or routine cleaning will normally not be able to clean stains which are well fixed on a surface and applying perfume directly to clothes can damage them. Hence she advised that perfume should be applied around the neck, ear and underarm before putting on your clothes. Since undergarments are worn close to the skin, they are normally stained with body secretions like sweat, genital discharge, blood and antiperspirants build-up which may require harsh laundry treatment such as bleaching. This might have led both female and male students to include bleaching as part of their care methods for undergarments. As indicated in Research Question 2, white was one of the most preferred colours of both female and male students who frequently used their undergarments in a week. To maintain freshness, the students they would have to subject such articles to bleaching.

It is not hygienic to wash all clothes together because of the specific functions they perform or how they are used (Forster, 2014). A study by Gerba advised consumers to wash underwear separately from other articles to avoid spreading of germs (Laliberte, 2017). Consequently, students in this study separated undergarments from other

clothes before washing. They might have also separated undergarments from other clothes because some coloured and stained articles are likely to cause staining in light or white coloured undergarments as stated by Forster (2014). Forster (2014), hinted that washing undergarments together can cause staining and transfer germs onto other types of undergarments.

According to Forster (2014), mending is done for various reasons such as to extend the life span of articles, for personal satisfaction, for decency and to prevent accidents. The female and male students might have mended their undergarments because few of them had four or more which were being used frequently, thereby wearing out quickly. They might have also developed some personal preference for those particular undergarment, as a result of the satisfaction derived from their use. Mending therefore becomes the best option when they are damaged in order to continue using them for longer periods.

The few percentage (6%) of the female and male students who purchased undergarments from second-hand sources washed them before using. This might be to eliminate the risk of getting infected by clothes previously used by infected persons if undergarments are not properly washed (Moore, 2017). However, students might not use the correct detergent or laundry practice for such undergarments because the use of bar soap is very common in Ghana (Forster, 2014) and this might leave them at a high risk, especially where the water is hard.

Undergarments which were frequently used by female and male students were washed after every use. This might be because students wanted to keep to a high standard of personal cleanliness by preventing the breeding of bacteria to enhance the freshness of clothes and also make them last long (Forster 2014). Effective care for clothes demands

that routine or everyday care processes are carried out on one's clothing (Anyakaoha & Eluwa, 2007). It might also be that students washed their undergarments after every use in order to have access to them when the need arise.

Table 17 presents data on the number of times female students washed their undergarments in a week.

*Table 17: Number of Times the Female Students Washed their Undergarments in a Week*

(n = 115)

Types of undergarment	Frequency of washing per week							
	1		2		3		Did not own any	
	No.	%	No.	%	No.	%	No.	%
Brassiere	37	32	40	35	26	23	12	10
Underskirt	12	10	42	37	42	37	19	17
Chemise	40	35	51	44	14	12	10	9
Brief	67	58	24	21	6	5	18	16
Thongs	54	47	5	4	3	3	53	46
Knickers (boy shorts)	39	34	55	48	7	6	14	12
G-string	15	13	13	11	6	5	81	70

**Key:** 1 = after each wear; 2 = weekly at weekends; 3= whenever it is dirty

Thirty-two percent (32%) female students washed their brassiere after each wear, 35% washed it on weekly basis and 23% washed it whenever it is dirty. Ten percent (10%) female students washed their underskirt after each wear, 37% washed it weekly as well as whenever dirty. Thirty-five percent (35%) female students washed their chemise after each wear; 44% washed it once in a week; 12% washed it whenever it was dirty.

Fifty-eight percent (58%) washed their brief after each wear; 21% washed it once in a week; 5% washed it whenever it was dirty. Similarly, 47% washed their thongs after each wear, 4% once in a week, 3% whenever it was dirty. Thirty-four percent (34%) washed their boy shorts after each wear, 48% once in a week and 6% whenever it was



dirty. Thirteen percent (13%) washed their G-string undergarment after each wear, 11% washed it on weekends; 5% whenever it was dirty.

The results in Table 18 indicate that most of the female students washed a particular undergarment after each wear and on weekends. The findings revealed that briefs (79%), thongs (51%) and G-strings (24%), were mostly washed after each wear while brassiere (35%), underskirt (37%), chemise (44%) and boy shorts (48%) were mostly washed on weekly basis. Again, the result indicated that a moderate percentage (37% and below) of them washed their undergarments whenever they were dirty.

It is likely that the female students washed their briefs thongs and G-strings after each wear because they had few of these undergarments. Another reason might be they want to maintain good personal hygiene in order to prevent infection and to remove stains which might be caused by body fluids such as sweat, vagina fluid and blood because they are worn on the lower part of the body therefore frequent washing is very necessary. This observation agrees with Forster (2014), that undergarments are intimate clothes that are fundamental and play significant functions in the life of users, therefore, several sets of them are needed because frequent washing is essential to ensure a high standard of personal hygiene.

According to Haugland (2003), and Wallace (2019), an underskirt or a slip provides a middle layer that mediates between panties and outer-wear. They also noted that undergarments or brassiere might still be worn with full slips. Though these are undergarments, they are not usually stained with genital fluids and faeces which may demand immediate cleaning. Hence, the female students mostly washed their brassieres, chemise and underskirt on weekends.



Table 18 presents data on the rate at which male students washed particular undergarments in a week.

*Table 18: Number of Times the Male Students Washed their Undergarments in a Week*

(n=61)

Types of undergarment	Frequency of washing per week							
	1		2		3		Did not own any	
	No.	%	No.	%	No.	%	No.	%
Singlet	9	15	26	42	8	13	18	30
Undershirt	12	20	26	42	12	20	11	18
Boxer brief	9	15	18	30	14	23	20	32
Boxer shorts	12	20	30	49	14	23	5	8
Brief	2	3	8	13	12	20	39	64
<b>Total</b>								

Key: 1 = after each wear; 2 = weekly at weekends; 3= whenever it is dirty

Fifteen percent (15%) male students washed their singlet after each wear, 42% washed it on weekly basis, and 13% washed it whenever it was dirty. Twenty percent (20%) washed their undershirt after each wear, 42% washed it weekly, and 20% washed it whenever it was dirty. A small percentage 15%, washed their boxer brief after each wear, 30% on weekly basis and 23% whenever it was dirty. Twenty percent (20%) washed their boxer shorts after each wear, 49% once in a week, 23% whenever it was dirty. Three percent (3%) washed their briefs after each wear; 13% washed it once in a week; 20% washed it whenever it was dirty.

It could be deduced from the results in Table 18 that most of the male students washed almost all their undergarment on weekly basis and whenever it was dirty. It emerged that singlet (55%), undershirt (60%), boxer brief (53%) boxer shorts (72%) and briefs (33%) were washed on weekly basis and whenever they were dirty. Quite a moderate number of them washed their undergarments: singlets (13%), undershirts (20%), boxer briefs (23%), boxer shorts (23%) and briefs (20%) whenever they were dirty. Again, the result indicates that a few students (3% to 20%) washed their undergarments after each wear.

This study has shown that the male students frequently wore singlet (72%), undershirt (79%), boxer shorts (84%) and boxer brief (62%) in a week. This revelation should have influenced the male students to wash their undergarments after each use to maintain good personal hygiene in order to prevent infection and to remove stains which might be caused by bodily fluids rather, they wash them on weekly basis and whenever dirty. There is therefore the likelihood that the undergarment worn repeatedly throughout the week without washing might get stained and give out unpleasant odour when worn. Male students might also contract infections since frequent washing is essential to ensure a high standard of personal hygiene (Forster, 2014).

Table 19 shows places where the students often dried their undergarments after washing them.

*Table 19: Places where the Students Dried their Washed Undergarments*

(n = 176)

Response	Female		Male		Grand Total	
	No.	%	No.	%	No.	%
In the sun on drying lines	67	(58)	38	(62)	105	120
In the sun on hedges/grass	29	(25)	13	(21)	42	46
In the sun on walls	7	(6)	3	(5)	10	11
Indoors on chop boxes, trunks/rails of beds	12	(10)	7	(11)	19	21
<b>Total</b>	<b>115</b>	<b>100</b>	<b>61</b>	<b>100</b>		

Table 19 shows that 58% female and 62% male students dried their undergarments in the sun on drying lines; 25% female and 21% male students dried them in the sun on hedge or grass; 6% female and 5% male dried their undergarments in the sun on walls; while 10% female and 11% male students dried their undergarments indoors on chop boxes, trunks and rails of beds.

Reasons given by students for their drying methods were varied.

Reasons given by female students.

*Animals could walk over it on the grass. That is why I dry it on the drying lines. It will dry quickly. I also dry it in the sun because of bacteria. This is to expose it to sunlight in order to destroy the bacteria. (Female student #1)*

*I dry it on the drying line for air to pass through, for easy and fast drying of the undergarment. Allowing excessive sunlight and air to pass through them ensures good drying. Air and sunlight makes it to dry well. (Female student #2)*

*I dry them in the sun on the drying lines to make them dry well, kill germs, keep clean, fresh and free from germs. The sunlight kills the bacteria or micro-organisms in them. This is to prevent infection such as candidiasis. (Female student #3)*

*There are inadequate drying lines. So, I dry it in the sun on walls. The sunlight would heat it to kills germs. I mean the sunlight kills germs to prevent candidiasis. (Female student #4)*

*Yes, undergarments come into contact with pubic parts of the body when I wear them. Therefore, I dry them in the sun on drying lines to prevent contamination of diseases at our pubic parts, to remove chemicals from body fluids like sweat, and odour. (Female student #6)*

Reasons given by the male students.

*It is for the sun to shine on it and air to pass through. The sunlight kills germs. I also dry it in the sun on drying lines because it dries faster and kill germs (Male student #1)*

*I dry it indoors because I don't want people to steal it. It is also because there are inadequate dry lines and inadequate drying space. (Male student #2)*

*Drying undergarments on the drying line makes them dry quickly, dry well and it kills germs. It is the only place where we dry it because it needs more sunshine. (Male student #3)*

*Drying undergarments in the sun is advisable. Sunshine is needed to kill germs. It also dries faster. However, there are not enough drying lines. I dry it in the sun on grass or hedge. The sunlight kills the germs. (Male student #4)*

*Drying lines are not enough. I dry it in the sun on grass or hedge. The sunlight kills the germs. Sometimes, I dry them on rails of beds in order to keep watch over them and prevent theft. (Male student #5)*

*I dry them in the sun on drying lines to allow air to pass through, to avoid diseases, and to make them dry faster. (Male student #6)*

It could be concluded from the results that more than half (58% to 62%) of the students dried their undergarments in the sun on drying lines. In agreement with students' reasons for drying their undergarments in the sun on drying lines and not indoors. Anyakaoha and Eluwa, (2007), asserted that clothes that are dried outdoors with the help of the sun, dry faster, bacteria which may have escaped other laundry process are destroyed and whitened as well. They added that indoor drying would require a longer time to dry and this might expose clothes to bacteria or mildew attack due to the slow drying pace. This then suggests that the few who dried their undergarments indoors on rails of beds, trunks or chop boxers for fear of theft, stand a higher risk of getting infected by diseases since indoor drying might expose clothes to bacteria or mildew attack due to the slow drying pace.

Table 20 indicates places where the students often stored their undergarments.

*Table 20: Places where the Students Stored their Undergarments*

<b>Storage facility</b>	<b>(n = 176)</b>		
	<b>Female No. %</b>	<b>Male No. %</b>	<b>Grand Total No. %</b>
Trunk	26 (23)	24 (39)	50 (62)
Bags together with clothes	31 (27)	12 (20)	43 (47)
Polythene	20 (17)	4 (7)	24 (24)
Hanger	17 (15)	4 (7)	21 (22)
Drawer	10 (9)	10 (16)	20 (18)
Chop box	8 (7)	7 (11)	15 (18)
Others	3 (3)	0 (0)	3 (3)
<b>Total</b>	<b>115 100</b>	<b>61 100</b>	

Seven percent (7%) female and 11% male students stored their undergarments in a chop box. Ten 9% female and 16% male students stored them in a drawer. Twenty-

seven percent (27%) female and 20% male students stored their undergarments in their bags with other clothes. Seventeen percent 17% female students and 7% male students also stored them in polythene bags. Moreover, 15% female and 7% male students stored undergarments on hangers. In addition, 23% female and 39% male students stored them in their trunks. Only 3% female students stored undergarments at other places.

It could be deduced from the results that students mostly stored their undergarments in trunks and bags together with other clothes. This option is in tandem with Forster (2014), and Gavor *et al.*, (2015), who included trunks and suitcases, as some storage facilities for clothes. In her view, clothes will keep very well and remain fresh and neat if they are packed and stored well. On the contrary, Gavor *et al.* (2015), cautioned against placing garments next to raw wood because they would be exposed to the acids in the wood which may lead to staining. This therefore suggests that the percentage of students who stored their undergarments in their chop boxes are likely to have their undergarments stained. The percentage of students who stored their undergarments in polythene bags might have mould growing on them as indicated by Forster and Gavor *et al.*

The protection theory suggest that clothes protects the skin from hot weather and keep it warm in cold weather. Undergarments acts as additional layer beneath outer garments against chills and skin irritation. In view of this students used appropriate care methods to maintain their undergarments in order to serve their functions.

**4.2.4. Research Question 4:** *What undergarment related challenges did students experience?*

This research question is discussed on the theme “*Undergarment related challenges of the students*”. Quantitative data are presented in frequency and percentage tables and figures in this section.

Table 21 gives information on the challenges students faced when using undergarments.

*Table 21: Challenges Faced by the Female Students in Using Undergarments*

(n=115)

Challenges	SA	A	D	SD
	No. %	No. %	No.%	No. %
Rashes on the buttocks and genital	13(11)	17(15)	33(29)	52(45)
Frequent candidiasis	10(9)	23(20)	31(27)	51(44)
Rashes under breast	14(12)	16(14)	33(29)	52(45)
Skin irritation	18(16)	21(18)	29(25)	47(41)
Brassiere bone coming out	20(17)	25(22)	18(16)	52(45)
Discolouration of underwear	16(14)	18(16)	45(39)	36(31)
Blisters under breast	20(17)	19(17)	31(27)	45(39)
Blisters at the waistline	18(16)	30(26)	29(25)	38(33)
Profuse sweating	21(18)	31(27)	24(21)	39(34)
Sweating between thighs	25(22)	42(37)	27(23)	21(18)

Twenty-six percent (26%) female students agreed that they developed rashes on the buttocks and genital due to the wearing of undergarments, while 74% disagreed with the statement. Furthermore, 29% female students often suffered candidiasis while using undergarments, while 71% did not.

Female students who developed rashes under breast while using undergarments were 26%, while, 74% did not. Thirty-four (34%) experienced skin irritation, 39% had their brassiere bones coming out; discolouration of undergarment was a challenge to 30%; 34% developed blisters under the breast; 42% developed blisters at the waistline; 45%

experienced profuse sweating; and 59% experienced sweating between their thighs but 41% did not.

The findings of this study revealed that the female students significantly experienced the following problems while using undergarments: sweating between thighs, profuse sweating, blisters at waist line and brassiere bones coming out. These were followed by blisters under the breast, skin irritation, discolouration of undergarment, candidiasis, rashes on the buttocks and genitals and rashes under breast.

Briefs, underskirt and boy shorts are all undergarments that cover the lower part of the body. Profuse sweating which includes sweating between the thighs of the female students might be as a results of wearing briefs together with underskirt or boy shorts at the same time. A moderate percentage of female students experienced blisters at the waist line. This might be because the elastic in their briefs, underskirt and boy shorts was too tight.

From the study, brassiere was one of the highly patronised undergarments by female students and this might be as a result of its form fitting and suitability with other undergarments when used, as indicated by Sujatha *et al.*, (2016).

The few percentage of female students that suffered from candidiasis as a result of using undergarments might be part of the moderate percentage who frequently wore thongs and *G-string*. *Thongs* and *G-string* place the students at increased risk of contracting urinary tract infection as they make it easier to transfer bacteria from the anus to the vagina (Wellness, 2016). Wellness observed that some women report of increase in urinary tract or yeast infections when they wear thongs; because thongs are tight against genital and anal areas, so they may inflame the sensitive skin there.



According to Anyakaoha and Eluwa (2007), indoor drying might expose clothes to bacteria or mildew attack due to the slow drying pace. Gavor *et al.*, (2015), cautioned that placing garments next to raw wood and in polythene bags would exposed them to mould. This then suggests that the few who frequently wore thongs and *G-string*, dried their undergarments indoors and stored them in trunks, chop boxers and polythene bags were likely to contract candidiasis.

The undergarment related challenges faced by the male students when using undergarments are captured in Table 22.

Table 22: Challenges the Male Students faced in Using Undergarments

(n = 61)

Challenges	SA	A	D	SD
	No. %	No. %	No. %	No. %
Rashes on the buttocks and genitals	9(15)	7(11)	20(33)	25(41)
Discolouration of underwear	7(11)	13(21)	18(30)	23(38)
Profuse sweating	8(13)	14(23)	16(26)	23(38)
Skin irritation	7(11)	14(23)	21(34)	19(31)
Blisters at the waistline	10(16)	14(23)	15(25)	22(36)
Sweating between thighs	8(13)	16(26)	22(36)	15(25)

A few male students (26%) developed rashes on the buttocks and genitals due to the wearing of undergarments. Discolouration of undergarment was a challenge to 32%; 36% of them experienced profuse sweating while using undergarments; 34% experienced skin irritation; 39% developed blisters at the waistline; while 39% experienced sweating between their thighs.

Briefs, boxer shorts and boxer briefs are all undergarments that cover the lower part of the body. Profuse sweating which includes sweating between the thighs of the male students might be as a results of wearing these undergarments frequently within a



week under almost all school clothes. This might have accounted for the rashes and blisters at the waist line and skin irritation.

Discolouration of undergarment was a challenge to both male and female students. From the study, Tables 15 and 16 recorded that majority (97%) of both female and male students often bleached their discoloured white undergarments to maintain the whiteness. Probably these students experienced the challenge of discolouration of undergarments because of wrongful use of bleach as indicated by Gohl & Vilensky, (1993), that not all garments can be treated with bleach since the wrong use of bleach will result in discolouration which adversely affect the appearance of the garment.

These challenges might cause physical, social, health and psychological discomfort to the students. For instance, skin infections could lead to body odour. Socially, this could lead to teasing, name calling and tagging or labelling of a student. Physically, this could lead to body odour. Psychologically, body odour and discolouration of undergarment could lead to withdrawal, low self confidence and self-esteem. The observation that body odour is a challenge associated with the use of undergarments substantiates the assertion by Anyakoaha and Eluwa (2007), that stale perspiration in particular will spoil clothes by making them smell badly and sometimes by removing the colour in some areas. In the perspectives of Ashenburg (2007), body odour is considered appalling. In this regard, Forster (2014), advises that a high standard of personal cleanliness will make a lot of difference to the freshness of clothes such as airing after every use.

The results show that there are health implications in the use of undergarments. Such challenges influence an individual's health wellness and status as noted by Ukpore (2006) and Arubayi (2003).

In the protection theory, undergarments act as additional layer beneath outer garments against chills and skin irritation. On the contrary, the study revealed that both male and female students had health problems such as blisters at the waist. Female students had rashes under the breast and candidiasis infection in the usage of undergarments.

### 4.3 Testing of Hypotheses

Independent samples test (t-test) was used to determine significant difference in the factors for the selection of undergarments among male and female students and the care methods adopted by both male and female students. The hypotheses were tested at a significance level of  $p < 0.05$  at a Confidence Interval (C.I.) of 95%. The t-test results are presented in Table 23 and 24.

#### Hypothesis 1

$H_{01}$  = *There is no significant difference in the factors for the selection of undergarments among male and female students in Kwanyako Senior High School.*

Table 23 shows the Independent samples t-test of differences in factors influencing Undergarment selection by male and female students of Kwanyako Senior High School

*Table 23: Independent samples t-test of differences in factors influencing Undergarment selection by male and female students of Kwanyako Senior High School*

	Gender	Sample (N)	Mean	f-value	Sig.	t	Df
Agg. Factor	Female	115	30.37	.135	.18	1.33	174
	Male	61	28.48			1.34	

T-test is significant at the .05 level

The result in Table 23 shows that there is no statistically significant difference (F-value = .135, p-value= .18) in the factors considered in the selection of undergarments by female and male students. However, the mean score for the female students (M=

30.37) and their male counterparts ( $M= 28.48$ ) shows that there is a little difference in the factors considered in their selection, but the difference between the two mean scores is not significant. This implies that the null hypothesis ( $H_{01}$ ) was not rejected. This finding suggests that similar factors were considered by both female and male in the selection of undergarments for use. Asare and Kwafoa (2009), describes adolescents as individuals who are between the ages of 10-19 years; characterized by rapid physical growth, significant emotional, psychological, social and sexual changes involving personal relationships. At this stage of development, there is a strong need for quality clothing and desire to be recognised by the opposite sex. Female and male students of Kwanyako Senior High School are adolescents with such characteristics and that might have accounted for the consideration of similar factors by both sexes in their undergarments selection.

## Hypothesis 2

$H_{02} =$  *There is no significant difference in the care methods used for undergarment among male and female students Kwanyako Senior High School*

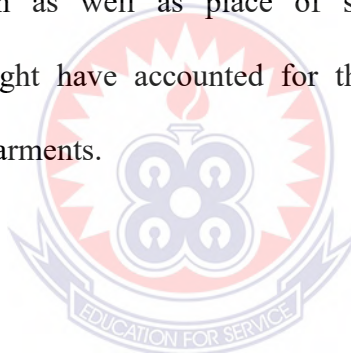
Table 24 shows the Independent samples t-test in the Care Methods used for Undergarment by male and female students of Kwanyako Senior High School

*Table 24: Independent Samples t-Test of Differences in the Care Methods used for Undergarments by Male and Female Students of Kwanyako Senior High School*

		(n = 176)					
	Gender	Sample (N)	Mean	f-value	Sig.	t	Df
Agg. Care Methods	Female	115	18.81	.199	.21	1.26	174
	Male	61	19.72			1.27	

T-test is significant at the .05 level (2-tailed).

The result in Table 24 shows that there is no statistically significant difference (F-value = .199, p-value= .21) in the care methods used for undergarments by male and female students. However, the mean score for the female students (M= 18.81) and their male counterparts (M= 19.72) shows that there is a little difference in the care methods used for undergarment, but the difference between the two mean scores is not significant. This implies that the null hypothesis ( $H_{02}$ ) was not rejected. This finding suggests that similar care methods were adopted by both female and male students for their undergarments. Female and male students of Kwanyako Senior High School are adolescents with similar characteristics in the same geographical location therefore, both sexes might be affected by similar influencing factors such as laundry practices, time to wash as well as place of storage in terms of caring for undergarments. This might have accounted for the consideration of similar care methods for their undergarments.



## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH**

#### **5.0 Overview**

This chapter highlights the summary of the study, conclusions and recommendations drawn from the study. Suggestions for further studies are also put forward.

#### **5.1 Summary**

The study investigated how students in Kwanyako Senior High School select, use and care for their undergarments. The objectives of the study were to identify the types of undergarments used by students, examine the factors considered by the students in the selection of their undergarments, evaluate the care methods adopted to maintain their undergarments and explore undergarment related challenges students experience.

Related literature was reviewed and conceptual framework was drawn to guide the study. The research design used was the descriptive cross-sectional survey. The population was all boarding students in Kwanyako Senior High School. Multi-stage sampling technique was used to select a sample of one hundred and seventy-six students comprising 115 females and 61 males for the study. Data were collected with a structured questionnaire. Descriptive statistics were run on the data using SPSS software version 21 to generate frequencies, percentages, means and standard deviations and independence t-test presented in tables and charts.

#### **5.2 Summary of Key Findings**

The findings of this study were the following:

**5.2.1** The first research question sought to identify the types of undergarments used by students of Kwanyako Senior High School. The female students often wore chemises (82%), brassieres (81%), boy shorts (80%), briefs (74%), underskirts (68%). A moderate percentage of them wore *thongs* (45%) and a few of them wore *G-strings* (30%). Among the undergarments that cover the upper part of the body, brassieres (74%) and chemise (68%) were the most undergarments owned by female students. A good number of them owned briefs (62%) and boy shorts (60%) while less than 50% owned *thongs* (40%) and *G-strings* (18%).

The male students often wore boxer shorts, (89%), undershirts (74%), singlets (67%) and moderate in the case of boxer briefs (54%). A few of them wore briefs (26%). More than 50% of them owned more undershirts (58%) than singlets (22%). Thirty-three percent (33%) of them owned four or more boxer shorts as against 15% and 7% boxer briefs and briefs.

**5.2.2** The second research question examined the factors considered by students in the selection of undergarments. The study revealed that both female and male students considered similar factors in their selection. The female students considered association (90%), intention for use (86%), outer wear (81), convenience (80%), quick to dry (85%) and affordability (80%) in their selection. Similarly, the male students also considered association (85%), outer wear (86%), intention for use (85%), quick to dry (85%) and convenience (82%) in their selection.

**5.2.3** The third research question sought to evaluate the care methods which the students used to maintain the cleanliness of their undergarments. Similar care methods such as mending, washing, airing, bleaching, drying, ironing and storing were used by both female and male students. Very few female (31%) and male (31%) students aired

their undergarments after use. Only 4% females and 3% males ironed their undergarments after drying. Female students frequently washed their briefs (79%), *thongs* (51%), and *G-strings* (24%) after each wear while brassieres (35%),

underskirts (37%) and chemise (44%) were washed on weekly basis. Male students washed almost all their undergarments on weekly basis and whenever they were dirty thus; singlet (55%), undershirts (60%), boxer briefs (53%), boxer shorts (72%) and briefs (33%).

**5.2.4** The fourth research question explored students challenges associated with the use of undergarments. The study found out that both sexes took proper care of undergarments such as briefs, *thongs*, *G-strings*, singlets, undershirts, boxer shorts and boxer briefs. However both students had health problems such as blisters at the waist and discolouration of undergarments. In addition, the females had rashes under their breast had brassiere bones coming out earlier than expected and candidiasis infection.

**5.2.5** The independent t-test was used to determine the significant differences in the factors considered by male and female students in the selection of undergarments and the care methods used to maintain their undergarments. The results of the test showed that there was no statically significant difference in the factors (female:  $M= 30.37$ , male:  $M= 28.48$ ) considered and the care (female:  $M= 18.81$ , male:  $M= 19.72$ ) methods used in their undergarments usage. Thus both hypotheses ( $H_{01}$ ,  $H_{02}$ ) were not rejected. This implies that similar factors and care methods were considered in the selection and use of undergarments by male and female students.



### 5.3 Conclusions

The evidence gathered from this study based on the research objectives concluded that undergarments such as chemise, brassieres, thongs, underskirts, briefs, G-strings, boxer shorts, undershirts, singlets and boxer briefs were used by the students. Factors such as association, intention for use, convenience, outer wear, quick drying and affordability influenced undergarment selection of the students. Care and maintenance activities such as mending, bleaching, washing, drying, airing and storage were adopted by students for their undergarments. Undergarment use is associated with some physical and health challenges.

### 5.4 Recommendations

In the light of the findings and the conclusions drawn, the following recommendations are put forward:

- i. Teachers in the school should advise students to buy panties that fit them well to avoid blisters at the waistline.
- ii. House mistresses and masters in the school should advise students to desist from the use of undergarments made with synthetic fabrics to avoid rashes.
- iii. House mistresses and masters should insist on the minimum number of undergarments required of a student per the school kit to promote the frequency of changing and prevent discolouration.
- iv. Enough drying lines should be provided by school authorities to enable students dry their undergarments outside for complete drying.
- v. The Home Economics teachers of the school should give talks on counselling days on the health implications of using *thongs* and *-strings* in order to avoid candidiasis.

- vi. House mistresses and masters should advise students to desist from stealing of panties in school to prevent the transmission of infections.

### **5.5 Suggestions for Further Research**

The results and conclusions of this study are in no way applicable to the wider and diverse population of Senior High School students in Ghana. Similar research could therefore be conducted in schools in the Central and other regions of Ghana. Thus, a comparative study between Senior High School students in mixed-sex and single-sex schools would have been an interesting addition in developing a theory of how underwear is consumed in different contexts. This research is dominantly quantitative in nature. An interesting path of this research could have explored the phenomenon both quantitatively and qualitatively.



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## APPENDICES

### APPENDIX A

#### INTRODUCTORY LETTER



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HED/A13/VOL.3/162

3<sup>rd</sup> July, 2018

Kwanyako Senior High School  
P. O. Box 291  
Agona Kwanyako

Dear Sir/Madam,



**INTRODUCTORY LETTER  
MS. SUSAN BANASAM**

We write to introduce, Ms. Susan Banasam, an M.phil student with index number (8160100003) of the Department of Home Economics Education, University of Education, Winneba, who is conducting a research titled: **“Selection, Use and Care of Undergarment among Students of Kwanyako Senior High School”**.

We would be very grateful if you could give her the assistance required.

Thank you.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Theresa A. Amu'.

**MS. THERESA A. AMU  
AG. HEAD OF DEPARTMENT**

## APPENDIX B

### QUESTIONNAIRE FOR PARTICIPANTS

#### Introduction

This questionnaire is designed to investigate how students in Kwanyako Senior High School select, use and care for their undergarments. The information is being sought for, through this medium is for research purpose only. You are kindly requested to read through the items and respond to them as honest and objective as possible. Every information provided shall be treated as confidential and private. Besides, your anonymity is assured.

#### SECTION A: PERSONAL DATA

Please tick as applicable (✓)

1. Sex: Female
- Male
2. Age: 13-15 years
- 16-18 years
- 19-21 years
- 22-24 years
3. Form: 1<sup>st</sup> Year
- 2<sup>nd</sup> Year
- 3<sup>rd</sup> Year
4. Programme : Home Economics  Visual Arts  Science
- Business  Agricultural Science  General Arts
5. House : 1  2  3  4





**SECTION B: TYPES OF UNDERGARMENTS USED BY STUDENTS**

6. Which of these undergarments do you use?

Please indicate with a tick () the most appropriate option.

	<b>Undergarment</b>	<b>Very Often</b>	<b>Often</b>	<b>Seldom</b>	<b>Never</b>
<b>GIRLS ONLY (a – g)</b>					
a.	Brassiere				
b.	Underskirt				
c.	Chemise (vest)				
d.	Brief (covers entire buttocks)				
e.	Thong (covers the upper half of the buttocks)				
f.	Knickers/boy shorts (underwear shorts)				
g.	G string (“trumu”)				
<b>BOYS ONLY (h – l)</b>					
h.	Singlet				
i.	Undershirt (“round neck”)				
j.	Boxer Brief (“tight”)				
k.	Boxer Shorts (“flare”)				
l.	Brief (“supporter”)				

7. Who usually selects your undergarment for you? a. Self [  ] b. Parent [  ] c. Sibling [  ] d. Friend [  ]  
Others (specify) .....

8. Where do you buy your undergarments? a. Hawkers [  ] b. Boutique [  ] c. Retail shops [  ] d. Open market [  ] e. Second hand market [  ] f. Hand-downs from friends and relatives [  ]  
Others (specify) .....



9. Please indicate with a tick (✓) the number of undergarments you have.

	<b>Undergarment</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>More than 4</b>
<b>GIRLS ONLY (a – g)</b>						
a.	Brassiere					
b.	Underskirt					
c.	Chemise (vest)					
d.	Brief (covers entire buttocks)					
e.	Thong (covers the upper half of the buttocks)					
f.	Knickers/boy shorts (underwear shorts)					
g.	G string (“trumu”)					
<b>BOYS ONLY(h – l)</b>						
h.	Singlet					
i.	Undershirt (“round neck”)					
j.	Boxer Brief (“tight”)					
k.	Boxer Shorts (“flare”)					
l.	Brief (“supporter”)					

Why? .....

10. Please indicate with a tick (✓) the number of times you wear your undergarments in a week.

	<b>Undergarment</b>	<b>Once</b>	<b>Twice</b>	<b>Thrice</b>	<b>Four times</b>	<b>More than 4</b>
<b>GIRLS ONLY (a – g)</b>						
a.	Brassiere					
b.	Underskirt					
c.	Chemise (vest)					
d.	Brief (covers entire buttocks)					
e.	Thongs (covers the upper half of the buttocks)					
f.	Knickers/boy shorts (underwear shorts)					
g.	G string (“trumu”)					
<b>BOYS ONLY (h– l)</b>						
h.	Singlet					
i.	Undershirt (“round neck”)					
j.	Boxer Brief (“tight”)					
k.	Boxer Shorts (“flare”)					
l.	Brief (“supporter”)					

Why? .....

**SECTION C: FACTORS CONSIDERED BY STUDENTS IN THE  
SELECTION OF THEIR UNDERGARMENTS**

11. Which of these motivates you to select a preferred undergarment?

Please indicate with a tick (✓) the most appropriate option.

NOTE: **Strongly Agree = (SA), Agree = (A), Disagree = (D), Strongly Disagree = (SD)**

	<b>Factors</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
a.	Style				
b.	Cost				
c.	Colour				
d.	Durability				
e.	Interest				
f.	Suitability				
g.	Fashion				
h.	Association				
i.	Fabric type				
j.	Outer wear				
k.	Intention				
l.	Convenience				
m.	Comfort ability				
n.	Ease in washing				
o.	Quick to dry				

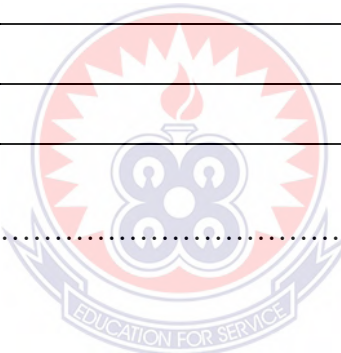
12. What colours of undergarment do you like?

Please indicate with a tick (✓) the most appropriate option.

NOTE: **Strongly Agree = (SA), Agree = (A), Disagree = (D), Strongly Disagree = (SD)**

	Colours	SA	A	D	SD
a.	White				
b.	Black				
c.	Red				
d.	Blue				
e.	Yellow				
f.	Pink				
g.	Green				
h.	Grey				
i.	Cream				
j.	Wine				

Others (specify).....



13. Under which garment do you not use undergarment?

- a. House uniform
- b. school uniform
- c. P. E kits
- d. Church uniform
- e. ceremonial uniform
- g. Sleep wear
- g. Boxer shorts

**SECTION D: CARE METHODS ADOPTED BY STUDENTS TO MAINTAIN  
THEIR UNDERGARMENTS**

14. I regularly carry out the following care practices before or after laundering undergarments.

Please indicate with a tick (✓) the most appropriate option.

NOTE: **Strongly Agree = (SA), Agree = (A), Disagree = (D), Strongly Disagree = (SD)**

	<b>Care practices</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
a.	Separates undergarments				
b.	Wash second-hand undergarment before using				
c.	Wash undergarment after every use				
d.	Air undergarment after every use				
e.	Pack used undergarment and wash at weekends				
f.	Soak used undergarment a day before washing				
g.	Mend torn or worn out undergarment				
h.	Bleach discoloured white undergarment				
i.	Iron undergarment after drying				

15. How often do you wash your undergarment?

	<b>Undergarment</b>	<b>After each wear</b>	<b>Weekly at weekends</b>	<b>Whenever it is dirty</b>
<b>GIRLS ONLY (a-g)</b>				
a.	Brassiere			
b.	Underskirt			
c.	Chemise (vest)			
d.	Brief (covers entire buttocks)			
e.	Thongs (covers the upper half of the buttocks)			
f.	Knickers/boy shorts (underwear shorts)			
g.	G-string (“trumu”)			
<b>BOYS ONLY (h-l)</b>				
h.	Singlet			
i.	Undershirt (“round neck”)			
j.	Boxer Brief (“tight”)			
k.	Boxer Shorts (“flare”)			
l.	Brief (“supporter”)			

16. Where do you dry your undergarments?

- a. In the sun on drying lines [ ] b. In the sun on hedges/ grass [ ] c. In the sun on walls [ ] d. Indoors on chop boxes, trunks/ rails of beds [ ]

Please give reasons.....

17. In what storage facility do you store your undergarment? a. Chop box [ ] b.

- Drawer [ ] c. Bag together with clothes [ ] d. Polythene [ ] e. Hunger [ ] f. trunk [ ]

**SECTION E: UNDERGARMENT RELATED CHALLENGES OF THE STUDENTS**

Please indicate with a tick (✓) the most appropriate option.

18. Which of these challenges do you face in using undergarment?

Please indicate with a tick (✓) the most appropriate option.

NOTE: **Strongly Agree = (SA), Agree = (A), Disagree = (D), Strongly Disagree = (SD)**

	<b>Challenges</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
<b>BOTH BOYS AND GIRLS( a-f)</b>					
a.	Profuse Sweating				
b.	Skin irritation				
c.	Blisters at the waistline				
d.	Sweating between thighs				
e.	Rashes at the buttocks and genital				
f.	Discolouration of underwear				
<b>GIRLS ONLY(g-j)</b>					
g.	Blisters under breast				
h.	Frequent candidiasis				
i.	Rashes under breast				
j.	Brassiere bone coming out				