

**KNOWLEDGE AND PREVENTIVE HEALTH CARE PRACTICES  
AGAINST EYE INFECTIONS AMONG POSTGRADUATE  
STUDENTS USING PUBLIC FINGER-TOUCH DEVICES  
IN UNIVERSITY OF IBADAN, IBADAN, NIGERIA**

**BY**

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## CERTIFICATION

I certify that this project was carried out by Temidayo Sola FAYOMI under my supervision in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Ibadan, Nigeria.

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## DEDICATION

This work is dedicated to the Almighty God; the one who was, who is and who is to come.

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## ABSTRACT

Disease prevention is recognised as a key strategy to reduce morbidity and mortality of different types of diseases such as eye infections. Studies have raised questions about the fact that some people have knowledge of eye infections such as Conjunctivitis and yet remain skeptical about adopting various preventive measures. One major way of contracting conjunctivitis is through contact with infected devices such as public finger-touch machines. These devices include; Automated Teller Machines (ATM), Point Of Sales machine (POS), public computer at cyber cafes, among others. Little empirical studies have been carried out on the preventive measures to take against conjunctivitis especially through these devices. This study therefore investigated knowledge and preventive health care practices against infections of the eyes among postgraduate students using public finger-touch devices in the University of Ibadan, Ibadan, Nigeria.

The study adopted a cross-sectional study design. Multistage sampling technique was adopted to select three hundred and sixty (360) University of Ibadan postgraduate students. Data were gathered through self-administered questionnaire developed based on the objectives of the study, comprising of five sections. The questionnaire elicited information on socio-demographic characteristics, prevalence, knowledge, preventive health care practices and sources of information. Knowledge was measured on a 19-point scale; scores of  $\leq 6$ ,  $>7$  to  $14$ ,  $> 14$  were categorised as poor, fair and good, respectively. Preventive health care practices was measured on a 12-point scale;  $\leq 6$  and  $> 6$  were categorised as poor and good. Data were analysed using Chi-square analysis and Pearson correlation at 0.05 level of significance.

Many (55.6%) of the respondents were females and the respondents' mean age was  $28.2 \pm 5.7$  years. Majority (72.8%) belong to Yoruba ethnic group. Respondents' mean knowledge and preventive health care practices were  $11.7 \pm 1.5$  and  $20.8 \pm 5.2$  respectively. Findings revealed that there exists significant relationship between prevalence of conjunctivitis and hygiene ( $X^2=9.54$ ), immediate disinfection of public finger-touch devices ( $X^2=13.16$ ), not sharing of sunshade ( $X^2=17.17$ ), and not sharing of personal belongings ( $X^2=6.84$ ). Also, it was discovered that there exists significant relationship between knowledge of conjunctivitis and preventive health care against conjunctivitis ( $r = .18$ ). Further, type of programme ( $X^2=17.43$ ) and monthly income ( $X^2=22.94$ ) had significant relationship with preventive practice against conjunctivitis. Finally, social media

( $X^2=11.389$ ) and television ( $X^2=5.92$ ) had significant relationship with preventive health care practices against eye infections e.g., Conjunctivitis.

It was concluded that knowledge, prevalence and source of information about conjunctivitis play significant roles in preventive practices against conjunctivitis. It is therefore recommended that considering the wide usage of public finger-touch devices in almost every aspect of daily living, efforts should be made especially by banks as well as public places that utilise public finger-touch devices such as ATM, POS, among others to provide hand washing facilities that clients/customers can always make use of immediately after use and more importantly, there should be awareness creation to improve knowledge on eye infections.

**Keyword:** Eye infections, preventive eye care practices, postgraduate students, public finger-touch devices

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## TABLE OF CONTENTS

Title page .....	i
Certification .....	ii
Dedication .....	iii
Acknowledgements .....	iv
Abstract.....	v
Table of contents .....	vii
List of tables .....	ix
List of figures .....	x
Appendices .....	xi
Glossary of abbreviations .....	xii
Operational definition of terms .....	xiii

### CHAPTER ONE: INTRODUCTION

1.1 Background to the Study .....	1
1.2 Statement of the problem .....	2
1.3 Justification of the Study .....	3
1.4 Research Questions .....	4
1.5 Broad Objective .....	4
1.5.1 Specific Objectives .....	4
1.6 Research Hypotheses .....	5

### CHAPTER TWO: LITERATURE REVIEW

2.1 Eye infections (Conjunctivitis) .....	6
2.2 Public finger-touch devices and the eyes .....	7
2.3 Prevalence of Conjunctivitis .....	7
2.4 Knowledge, Perception and Source of Information of Conjunctivitis .....	9
2.5 Effect of Conjunctivitis .....	13
2.6 Poverty, Eye care and Conjunctivitis .....	13
2.7 Preventive measures against Conjunctivitis .....	14
2.8 Conceptual Framework: PRECEDE MODEL .....	18

## **CHAPTER THREE: METHODOLOGY**

3.1 Study Design and Scope .....	21
3.2 Study Area .....	21
3.3 Rationale for study site selection .....	22
3.4 Inclusion and Exclusion Criteria .....	22
3.5 Sample Size determination .....	22
3.6 Sampling Technique .....	23
3.7 Instrument for data collection .....	24
3.8 Procedure for data collection .....	24
3.9 Validity and Reliability of Research Instrument .....	24
3.10 Analysis of data .....	25
3.11 Ethical Consideration .....	25
3.12 Limitations of the study .....	26

## **CHAPTER FOUR: RESULT**

4.1 Socio-Demographic Characteristics of Respondents' .....	27
4.2 Prevalence of Conjunctivitis .....	30
4.3 Knowledge of Conjunctivitis .....	32
4.4 Preventive Health Care Practices against Conjunctivitis .....	40
4.5 Sources of Information on Conjunctivitis .....	46
4.6 Hypotheses .....	49

## **CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS**

5.1 Discussion .....	57
5.2 Implication of findings for Health Promotion and Education .....	61
5.3 Conclusion .....	61
5.4 Recommendations .....	62
REFERENCES .....	63
APPENDIX A .....	69
APPENDIX B .....	71
APPENDIX C .....	75



## LIST OF TABLES

Table 4.1 - Socio-demographic characteristics of respondents'	28
Table 4.2 - Prevalence of Conjunctivitis	31
Table 4.3a - Knowledge on symptoms of Conjunctivitis.....	33
Table 4.3b - Knowledge of Conjunctivitis	35
Table 4.3c - Knowledge of Conjunctivitis	37
Table 4.3d - Knowledge on Conjunctivitis among postgraduate students	39
Table 4.4a - Preventive health care practices against conjunctivitis	42
Table 4.4b - Preventive health care practices against conjunctivitis	43
Table 4.4c - Preventive health care practices against conjunctivitis	45
Table 4.5a- Sources of information on Conjunctivitis	47
Table 4.5b- Sources of information on Conjunctivitis	48
Table 4.6 - Chi-square Analysis showing the relationship between prevalence and preventive health care practices against conjunctivitis	50
Table 4.7 - Pearson r correlation Summary Table Showing the relationship between knowledge of conjunctivitis and preventive health care practices against conjunctivitis.....	52
Table 4.8 - Chi-square Analysis showing the relationship between socio-demographic characteristics and preventive health care practices against conjunctivitis.....	54
Table 4.9 - Chi-square Analysis showing the relationship between sources of information on conjunctivitis and preventive health care practices against conjunctivitis.....	56

## LIST OF FIGURES

Figure 2.1 – Application of PRECEDE model .....	20
Figure 4.1 - Age of respondents' in years .....	29

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## APPENDICES

<b>Appendix A-</b> Informed consent .....	69
<b>Appendix B -</b> Questionnaire .....	71
<b>Appendix C -</b> UI/UCH Ethical Review Committee Approval letter .....	75

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## GLOSSARY OF ABBREVIATIONS

<b>CDC</b>	-	Centres for disease control
<b>WHO</b>	-	World Health Organisation
<b>PG</b>	-	Postgraduate
<b>UI</b>	-	University of Ibadan
<b>ATM</b>	-	Automated Teller Machine
<b>POS</b>	-	Point-of-sale systems

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## OPERATIONAL DEFINITION OF TERMS

**Eye infections:** These are medical conditions which occur when harmful microorganisms such as bacteria, fungi and viruses invade any part of the eyeball or surrounding area through contact with contaminated public finger-touch devices.

**Conjunctivitis:** This is the inflammation of the conjunctiva caused by bacteria, virus, allergies or irritants through contact with a contaminated public finger-touch device.

**Preventive eye care practices:** These are actions and measures taken to stop or prevent an individual from developing conjunctivitis.

**Public finger-touch devices:** These are electrical or technological devices such as Automated teller machine (ATM), Point-of-sale (POS) systems, Computer, and game consoles used by the public and not just an individual.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Eye infections are medical conditions which occur when harmful microorganisms such as bacteria, fungi and viruses invade any part of the eyeball or surrounding area. This includes the clear front surface of the eye (cornea) and the thin, moist membrane lining the outer eye and inner eyelids (conjunctiva). The wide acceptance and use of technology such as public finger-touch devices have immensely contributed to the rapid spread of eye infections which could have an adverse effect on the health of the public. These eye infections especially conjunctivitis are ubiquitous diseases which are community acquired infection with epidemic potential. Therefore, preventing the spread has major role in limiting the disease. The common types of eye infections are conjunctivitis, keratitis, endophthalmitis, blepharitis, sty, uveitis, cellulitis and ocular herpes. Conjunctivitis is the most common and highly contagious eye infection which is caused by bacteria, virus, irritation and allergy. Though the disease is self-limiting and the course is short lasting, the associated ocular disturbance, symptoms and functional impairment can affect the quality of life of affected individuals or cause visual impairment and blindness in some cases.

Conjunctivitis is the inflammation of the conjunctiva. The condition can be either infectious or non-infectious. Among the four (4) main causes of Conjunctivitis, the acute infective types caused by viruses and bacteria are the most frequently reported ocular disorders in primary care settings (Sheikh & Hurwitz, 2013). Public finger-touch devices are possible carriers of the microorganisms which predispose an individual to Conjunctivitis if not well prevented through good hand and eye hygiene practice.

The infectious type of Conjunctivitis is caused by bacteria and virus while non-infectious types are allergic conjunctivitis, caused by an allergic reaction and irritant conjunctivitis, caused by anything that irritates the eyes, such as air pollution or chlorine in pools. The commonest reported symptoms of acute infective conjunctivitis include foreign body sensation, mild pruritus, and mild photophobia while the most prominent signs include generalised conjunctival infection, crusted eyelids that are often matted shut, especially after sleep, and either purulent or

watery discharge from one or both eyes, but no loss of visual acuity (Wirbelauer, 2006). Conjunctival infections are the most frequently encountered eye diseases and the source of the organisms is exogenous. It spreads by direct contact with eye secretions or indirectly by contact with towels, washcloths, handkerchiefs and other objects that have been contaminated with eye secretion, affecting all ages and is worldwide in occurrence especially in developing countries, thereby, sometimes resulting in large outbreaks depending on the virus. The severity of conjunctivitis may differ from mild to severe process with membrane formation. Conjunctivitis is not in the absence of complications a painful disease. Discomfort, discharge, itchiness, redness, swollen lining of the eyelid, burning, dryness, the sensation of a foreign body under the eyelids, and irritation are common complaints (Keith, Alexander & Charle, 2008).

In association with trachoma, sporadic and epidemic types of bacterial conjunctivitis form the most common cause of preventable blindness in Nigeria (Ayanniyi, 2009). These eye infections can be contracted as a result of poor hand hygiene. According to Lord Quick (2013), hygiene is defined as the study and practice of preventing illness or stopping it from spreading by keeping things clean. This concept is most often associated with disease preventive measures in order to promote health. Little empirical focus has been paid to the preventive practices against conjunctivitis among users of Public finger-touch devices. The preventive health care practices against conjunctivitis in a community often influence individual's practices including health seeking behavior against contracting conjunctivitis. Improved hand hygiene can reduce the possibility of diseases which are transmittable through touch, such as conjunctivitis.

## **1.2 Statement of the Problem**

Public finger-touch devices are potential dispensers of diseases considering the population of pathogenic micro-organisms that may be present as large number of persons use them on a daily basis without adequate regard for sound environmental quality. Also, the wide acceptance of e-banking and other technology has created new environmental challenges on publicly used electronics and technological devices, serving as an avenue for high human dermal contact which could be a source of contamination, infection and health hazard to man.

The hygienic, aesthetic and environmental safety conditions have been at the mercies of employed general cleaners who may not have proper training to differentiate between

generalised and specialised cleaning; and the methods of cleaning regimes expose the devices to germs which could be transferred among the users.

Studies have raised questions about the fact that although people have knowledge about eye diseases such as Conjunctivitis, they remain skeptical about adopting various preventive measures (Adio, Alikor & Awoyesuku, 2011). This study found that there exist paucity of research in line with preventive health care practices against eye infection in Nigeria, and specifically University of Ibadan, Ibadan, Oyo state. Also, there exists lack of empirical evidence as regards practices against conjunctivitis among postgraduate students using public touch devices.

### **1.3 Justification of the Study**

Inspite of the widespread use of public finger-touch devices in Nigeria today, there is paucity of data on the health implications of the use of those devices with particular reference to Conjunctivitis. This study is perhaps one of the pioneer efforts. Also, postgraduate students are constant users of public finger-touch devices and the more the frequency of public finger-touch device usage, the greater the chances of contracting eye infectious diseases. Poor preventive health care practices predispose the student to a variety of other infections and diseases which could have been avoided through good hand hygiene practices.

This study is significant in so many ways and to different stakeholders. Firstly, it will bring about an increased knowledge to Postgraduate students on how public finger-touch devices such as Automated teller machine (ATM), Point-of-sale (POS) systems, Computer, and game consoles can influence the spread of eye infections such as conjunctivitis and the importance of good preventive health care practices since institutions providing the devices have failed to provide mechanisms that will prevent the contraction of eye infections.

Also, the study will serve as a reference point to the University management and Ministry of Health as regards the nature of how eye infections spread and what measures can be taken as regards taking into consideration, people's perception about the use of public finger-touch devices, most especially in seasons when certain bacterial and viruses spreads. For instance, knowing the practices of individuals against conjunctivitis during dry season when it comes to



usage of public finger-touch devices will inform the kind of policies to be instituted such that usage of the devices during these periods will be considered safe.

Further, this will provide practical recommendations as regards the need to make aware how conjunctivitis spread and how it can be prevented merely by individual behaviour. Finally, the study will contribute to body of knowledge as regards preventive health care practices against eye infections such as conjunctivitis, not only among postgraduate students using public finger-touch devices, but among the general populace at large.

#### **1.4 Research Questions**

The following research questions will be answered at the end of the study;

1. What is the prevalence of conjunctivitis among postgraduate students using public finger-touch devices?
2. What is the knowledge of Conjunctivitis among postgraduate students using public finger touch-devices in University of Ibadan?
3. What are the preventive eye care practices taken against contracting Conjunctivitis among postgraduate students using public finger-touch devices in University of Ibadan?
4. What are the source(s) of information on Conjunctivitis used by Postgraduate students using public finger-touch devices in University of Ibadan?

#### **1.5 Broad Objective**

The broad objective of the study is to investigate the knowledge and preventive health care practices against eye infections among postgraduate students using public finger-touch devices in University of Ibadan, Ibadan, Nigeria.

##### **1.5.1 Specific Objectives**

The following specific objectives will be achieved at the end of the study;

1. To determine the prevalence of conjunctivitis among postgraduate students using public finger-touch devices(such as ATM, POS, Computers, Game consoles etc)
2. To assess the knowledge of Conjunctivitis among postgraduate students using public finger-touch devices
3. To identify the preventive health care practices against Conjunctivitis among postgraduate students using public finger-touch devices

4. To identify the source(s) of Information on Conjunctivitis used by Postgraduate students using public finger-touch devices

### **1.6 Research hypotheses**

HO<sub>1</sub>: There is no significant relationship between prevalence and preventive health care practice against conjunctivitis

HO<sub>2</sub>: There is no significant relationship between knowledge and preventive health care practice against conjunctivitis

HO<sub>3</sub>: There is no significant relationship between socio-demographics of post-graduate students and their preventive health care practice against conjunctivitis

HO<sub>4</sub>: There is no significant relationship between preventive health care practices and source of information on conjunctivitis among the respondents’.

## CHAPTER TWO

### LITERATURE REVIEW

This chapter of the study is concerned with the review of related literatures and theoretical framework. Literatures related to this study were reviewed along with the understated sub themes.

#### 2.1 Eye infections (conjunctivitis)

The eye is said to be the window of the body by which the world is seen. The human eye has a unique structure and is vulnerable to numerous infections. Whenever the eye receives poor care, it is susceptible to various kinds of sight-threatening infections which could lead to visual impairment or blindness. The knowledge of eye infections can affect the preventive health care practice either positively or negatively.

Conjunctivitis, which is the most common eye infection caused by bacteria, virus, allergy and irritants through contact with contaminated public finger-touch devices is an inflammation of the conjunctiva (the thin membrane covering the eye) as a result of a reaction of the body's immune system to an allergen (Bielory and Friedlaender, 2018). There are several common eye infections which can be contracted as a result of poor hand hygiene practice, such as conjunctivitis, keratitis, endophthalmitis, blepharitis, sty, uveitis, cellulitis and ocular herpes. Conjunctivitis is the most common and highly contagious eye infection which is caused by bacterial, virus, irritant and allergy. There are broadly two types of conjunctivitis; viral and bacterial conjunctivitis. Viral and bacterial conjunctivitis can be spread by direct contact with eye secretions or indirectly by contact with towels, washcloths, handkerchiefs and other objects contaminated by contact with eye secretions. In some cases, it can be spread by insects such as flies. Conjunctivitis caused by chemicals or allergies are not infectious.

In other words, Conjunctivitis is a common condition that causes redness and inflammation of the thin layer of tissue that covers the front of the eye (the conjunctiva). People often refer to conjunctivitis as red eye. Other symptoms of conjunctivitis include itchiness and watering of the eyes, and sometimes a sticky coating on the eyelashes (if it's caused by an allergy).

## **2.2 Public finger-touch devices and the eyes**

Technology is a good thing and is developed constantly to meet the public's ever-changing needs in order to make certain work easier and for swift transactions. Therefore in today's world, we are compelled to make use of multiple digital devices and screens like cell phones, tablets, computers, POS, ATM, and television screens, especially in today's academic institutions.

Public finger-touch devices are common tools at workplace, homes, academic institutions, and facilities. Several studies mainly in developed countries have shown associations between computer use and visual related symptoms in both children and adults. Also, there are studies which have shown that technology is associated with several health-related challenges ranging from musculo-skeletal, visual and neural ailment (Akinbinu & Mashalla, 2014) but few published literatures stating the possibility of eye infections such as conjunctivitis been contracted through the use of public finger-touch devices. The wide use of technology and poor maintenance of these devices has therefore put the population at risk of contracting these eye infections when the contaminated hands come in contact with the eyes and this has the potential to cause an epidemic.

A study by Kozeis, (2009) investigated the impact of touchscreen devices on the eye of some selected students and stated several side effects. It was discovered that sharing of personal touch screen devices such as phone or personal computer contributes 90% to the likelihood of getting an eye infection. Jamil, (2014) also unraveled how other public finger-touch utilities such as hand rails contribute to infection of eye diseases. It was found that touch of an infected hand rails contributes 7.2% to the prevalence of conjunctivitis during its season.

Several studies have discovered that certain factors contribute to eye infections. Top of the list was public finger-touch devices, among others. A number of studies have also been carried out in ophthalmology clinics have demonstrated the role of hand hygiene in preventing the transmission of adenoviral keratoconjunctivitis (Rosenbach, Nadiminti, Vincent, et al., 2002).

## **2.3 Prevalence of Conjunctivitis**

Conjunctivitis is a common condition of the eyes that occurs worldwide, the prevalence varies according to the underlying cause, which may be influenced by the patient's age, as well as the season of the year. It affects all ages and social strata, affecting more than 2% of the population (Prashant, 2013).

Conjunctivitis can be divided into infectious and non-infectious causes. Viruses and bacteria are the most common infectious causes. Non-infectious conjunctivitis includes allergic, toxic, and cicatricial conjunctivitis, as well as inflammation secondary to immune-mediated diseases and neoplastic processes (American Academy of Ophthalmology, 2011). The disease can also be classified into acute, hyperacute, and chronic according to the mode of onset and the severity of the clinical response.

Viral conjunctivitis is the most common cause of infectious conjunctivitis both overall and in the adult population (Hørven, 1993) and is more prevalent in summer (Høvdning, 2008). Bacterial conjunctivitis which is the second most common cause is responsible for the majority (50%-75%) of cases in children; it is observed more frequently from December through April (Høvdning, 2008). Viruses such as Adenoviruses, Rubella virus, Rubeola (measles) virus, Herpes viruses, and Picornaviruses such as coxsackie virus A24 and enterovirus 70 (which has caused outbreaks in other countries) can cause viral conjunctivitis, with Adenovirus being one of the most common cause. Most of these viruses cause conjunctivitis spread through hand-to-eye contact with contaminated objects and also, having contact with infectious tears, eye discharge, fecal matter, or respiratory discharges can contaminate hands.

Allergic conjunctivitis is the most frequent cause, affecting 15% to 40% of the population (Bielory, O'Brien, Bielory, 2012), and is observed more frequently in spring and summer (Høvdning, 2008). Although allergic conjunctivitis affect about 20% of the world's population (Dana, 2009), the prevalence differ from place to place with no distribution pattern (Foliaki, Annesi-Maesano, Daniel, et al., 2007; Ait-Khaled, Pearce, Anderson, et al., 2007). In Kenya, it constitutes one fifth of all the total diagnoses made in eye clinics (MOH, 2000). Foliaki et al., (2007) and Bateman and Jithoo (2007) suggest that the high prevalence in poor countries may be due to the fact that it may not have been given priority as a disease. However, this contradicts the fact that allergies are on the increase in most of the industrialised countries with about 50 million Americans suffering from allergies (Scottsdale, 2009). Jeebhay (2004) explains that the workplace allergens may be responsible, as they are transported by the worker to their homes, thus affecting the rest of the family. In a research done in Gambia, it was found the prevalence of allergic conjunctivitis to be 7.9%, more predominant in children (Wade, Iwuora, Lopez &

Muhammed, 2012). In Jos-Nigeria, the prevalence was found to be 32%, and was highest in age group 1 to 16 years (Malu, 2014).

Although conjunctivitis is not a major cause of ocular morbidity or vision loss but it can cause serious, permanent damage to the eye. In fact, conjunctivitis has been reported as the initial manifestation of an ultimately fatal systemic infection.

#### **2.4 Knowledge, Perception and Source of Information of Conjunctivitis**

Historically, knowledge on the value of constant eye care is noted as a key player in seeking eye care. Moreover, eye health education has also been identified as an aid to preventing blindness. Some studies have examined different eye diseases, such as conjunctivitis. In cases where authors have not scaled knowledge, the liberal definition is noted as "at least one correct answer represents some knowledge". Seemingly, no standardised method is used for assessing conjunctivitis knowledge since all studies are basically different. Some studies employed focus group discussions and in-depth interviews approaches to assess the knowledge and attitudes that make it difficult to quantify conjunctivitis knowledge levels (Cross, Shah, Bativala & Spurgeon, 2007; Elish, Royak-Schaler, Passmore & Higginbotham, 2007). Moreover studies which employed the questionnaire system used varied question types, length and depths of questions. In view of this, Costa, Spaeth, Smith, et al., (2006) emphasised this challenge by investigating two different populations from urban settings in Brazil and United States of America. He identified differences in knowledge of conjunctivitis among these two populations. This is evident in Costa's study (Costa et al., 2006) which assessed two different urban populations (one in Brazil and one in United States of America). In their study, knowledge of conjunctivitis varied significantly between the two areas.

Furthermore, it was noted that at the various stages, lack of proper health education could be attributed to low knowledge in these. Juzych, Randhawa, Shukairy, et al., (2008) study stated that low conjunctivitis knowledge is expected in people with low health literacy who observes little or no preventive health care practices due to several underlying factors. Population-based studies, report low awareness (0.32%-2.4%) of conjunctivitis in rural India (Dandona & Dandona, 2001; Krishnaiah, Kovai, Attiya & Morsi, 2005), as high as 93% in Australia (Lau, Lee, Fan, et al., 2012) and 78% in Hong Kong (Hoevenaars, Schouten, Van Den Borne, et al,

2005). This brings to bare the essence of knowledge surveys for specific countries and populations. It is imperative for parents of children with conjunctivitis to have requisite knowledge as well as awareness of conjunctivitis and eye care to prevent future visual impairment (Bile, 2007). He asserted that when adequate awareness is given to parents, it turns to influence their perception on the eye condition and help prevent childhood blindness.

In Brazil, 20% of parents with children with childhood ocular illness were not knowledgeable and aware about the disease as well as how to start treatment (Salomao, Cinoto, & Berezovsky, 2010). Additionally, in their study, only 53% were knowledgeable in the correct time of ophthalmologic evaluation. These findings were relational to their educational background and sources of information obtained from health care providers as well as print and electronic media. A study in Nigeria revealed that 75% of parents of children with conjunctivitis did not know the initial management of the disease and do not follow guidelines provided by health care providers due to religious and cultural believes. In the same study, 63% were reported not to be aware and did not know the classic symptoms of the eye condition due to lack of information. This leads to late referral of children with conjunctivitis for treatment leading to childhood blindness (Clare, & Jungo 2012).

Another study (Edward & Rupal, 2012) conducted on awareness of conjunctivitis among parents of children with the condition in a tier two city of South India showed that 65.1% parents were aware of the disease. It was observed that, most parents got their sources of information on the diseases from their health care providers and television programs while 34.9% were not aware of the disease. About 39.8% answered that conjunctivitis was preventable, while 28.9% responded that it was not preventable. In the same study 41% of parents had no idea as to which part of the eye is affected. 51.8% however were aware that conjunctivitis is treatable with early diagnosis (Rewri & Kakkar, 2014). The study also revealed that parents with higher educational status were more aware and had higher knowledge of conjunctivitis compared to those with lower educational status.

In a study carried out on knowledge, attitude and practice of parents in respect of eye complications and care among children in Nepal, India, it revealed that Parents of children with

conjunctivitis do not follow guidelines for vision screening and referrals. The study revealed that two-third of sampled parent population had poor knowledge, attitude and perceptions on the diseases. About one-third did not begin visual acuity administration to their children due to religious and cultural believes. The study further revealed that those who did not have knowledge and poor perception attributed it to low level of awareness and lack of relevant information from health care providers about conjunctivitis (Khandekar et al, 2010).

Also, a study by Islam, Chakrabarti, Islam, et al., (2015) reported that factors associated with lower awareness regarding common eye diseases were advancement in age, lack of formal schooling, and lower socioeconomic status. A lower proportion (57%) of people with no schooling compared to those who had attained at least secondary school certificate education (72%) reported that they knew that blindness could be prevented. Overall 51% of people had heard of at least six (67%) out of nine items relating to awareness of common eye diseases.

A study done by Zhao, Pan, Sui, et al., (2000), revealed that 89.6% of parents had been aware of their children's condition for more than a year. Only 49.8% of all parents had known for over a year that their children's eye disease could be treated. The major obstacles for those seeking eye treatments included residual functional vision (49.0%), financial problems (36.7%), no demand for the operation (8.8%), and skepticism about the operation (8.8%). Poor vision function grade and female gender were two significant factors associated with a longer awareness (>3 years) of the existence of cataracts.

In a related study by Baker and Murdoch (2008), they reported that knowledge of all the eye diseases assessed was poor. Subjects aged >30 years were significantly more aware of all eye diseases assessed except night blindness. Multivariate analysis revealed that women were significantly less aware of night blindness. Education played a significant role in awareness of these eye diseases. Study subjects of upper socioeconomic status were significantly more aware of night blindness and those belonging to upper and middle socioeconomic strata were significantly more aware of diabetic retinopathy. Muslims were significantly more aware of eye diseases and less aware of night blindness. The major source of awareness of the eye diseases were family members, friends and/or relative suffering from that eye disease.



Research on the same topics in Australia found that awareness of conjunctivitis is satisfactory, but knowledge about the characteristics of the condition is poor (Livingston, McCarty & Tylor, 1998). Patients with higher education showed greater awareness regarding the nature of the disease. This outcome is supported by previous studies (Krishnaiah et al., 2005). Therefore, education plays a vital role in addressing the situation and ensuring early diagnosis. The higher the level of education, more likely were the conjunctivitis patients to know the seriousness of conjunctivitis as a cause for blindness.

In a recent study by Rewri and Kakkar (2014), out of 5000 individuals enrolled in a survey, only 8.3% were aware of conjunctivitis and 1.89% qualified as having adequate knowledge about conjunctivitis. They reported that level of education correlates with awareness and knowledge of conjunctivitis. In a related study conducted in China, on awareness of conjunctivitis in a multi-ethnic population in rural China. The researchers found that only 18% were aware of conjunctivitis and this was significantly associated with level of education. They also reported significant ethnic differences in the level of awareness of conjunctivitis among the population.

Nkum, Lartey, Frimpong, et al., (2015) in their study on awareness and knowledge of conjunctivitis reported that, amongst the participants, 74% were aware of conjunctivitis. There was no significant statistical difference in the various age groups, sex, ethnic group or religion and their awareness of conjunctivitis. There were statistically significant differences between those who had higher education and their awareness of conjunctivitis. Yet only 27% of these had accurate knowledge of conjunctivitis.

In Ghana, a study conducted on awareness, knowledge and perception of conjunctivitis reported out of the 300 respondents' surveyed majority 99.1% were aware of conjunctivitis. They observed significant associations of age and educational level with awareness and knowledge of conjunctivitis (De-Gaulle & Darko-Gyeke, 2016). Contrary to the above study, another study conducted in Ghana on awareness of conjunctivitis reported that 269 (56.0%) were aware of conjunctivitis and this was also significantly correlated with education, religious community, and older age. Their sources of information were television and radio.

## **2.5 Effect of Conjunctivitis on Quality of Life**

Conjunctivitis influences many quality of life parameters. First, it causes discomfort to the eyes due to itchiness and irritation (Ono & Abelson, 2013). In severe cases, the scratching and inflammation may result in ocular damage which can give rise to secondary infection of the eye (Ono & Abelson, 2013).

Conjunctivitis is associated with depression and anxiety in some patients. The symptoms such as running eyes can interfere with the patient's confidence in social places and limit the choice of outdoor activities. It can also affect one's ability to wear eye make ups making the patient to feel unattractive. This affects the patient emotionally. Both itching and running eyes can also affect visual tasks (D'Arienzo, 2005).

Another factor is the target age of the population which coincides with the average age of the work force and the most productive period of an individual's life. Economy is affected due to expenditures on prescriptions, productivity losses related to absenteeism and decreased job effectiveness due to discomfort from the symptoms of the ocular allergy (D'Arienzo, 2005).

The patients have to reschedule their activities to create time to consult a doctor for the eye problems especially in undeveloped countries where the waiting time at the health facilities is long due to few facilities that have to serve many persons over a long distance (Morris and Ferguson, 2007). Rubbing the eyes from the itchy feeling can also result in periorbital excoriations and bruising making the eyes to appear even worse (Du Toit, 2005).

## **2.6 Poverty, Eye care and Conjunctivitis**

Merriam-Webster defines poverty as, "the state of one who lacks a usual or socially acceptable amount of money or material possessions." Poverty is determined in most countries by a poverty threshold or line, the minimum amount of income deemed supportable in that given country. This amount varies greatly from country to country and is significantly higher in developed countries compared to developing countries. Eye diseases that cause preventable blindness are often the result of a mixture of factors including poverty, lack of education, deficient health-care services and lack of opportunity for people to control their health care. Other factors include; weather and environmental conditions (Foliaki et al., 2007; Dermot, 2013), age (D'Arienzo, 2005), access to good source of information, knowledge of the infections.

A study comparing the socio-economic status of countries and blindness prevention data, found an inverse relationship between economic development and the prevalence of blindness (Ho & Schwab, 2001). Poverty is visible in countries with the greatest burden of avoidable blindness, compounded by the disproportion of the quantity and quality of eye care services available in these countries. A study from India reported on the possible link between per capita income and blindness (visual acuity of less than 6/60 or central visual field of less than 20 degrees in the better eye), found the possibility of blindness increased with decreasing monthly per capita income (Dandona et al., 2011). Those in the lower (monthly per capita income of \$11.30 or less) and extreme lower (monthly per capita income of \$4.50 or less) and socioeconomic strata had a five and ten times higher risk of being blind, compared with those in the upper socioeconomic strata (monthly per capita income greater than \$45.50) (Dandona et al., 2011). Clearly stated, current research and literature shows that poverty and ocular complications have a correlation.

The state of eye care in Africa is an alarming contrast to the rest of the world. High practitioner-to-patient ratio, inadequate facilities, meager government funding and lack of educational programs are the norms of eye care in Africa. In a low-income country, basic healthcare cost are estimated to cost between \$30 to \$40 per person, per year, but across much of Africa healthcare spending is less than \$6 per person, per year (Naidoo, 2007). With only approximately 10 percent of the world's population, Africa contains 19 percent of the world's blind population (Naidoo, 2007). The continent accounts for almost seven million people with visual limitation with the leading causes being preventable and treatable ocular conditions.

## **2.7 Preventive measures against Conjunctivitis**

Health has been defined by WHO (1948) as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. The health of the population therefore involves multiple approach and closer study into the interrelated conditions and factors that influence the health of the population over the life course. Health can be affected by multiple determinants such as innate individual traits, social, family and community networks, living and working conditions, broad social, economic, cultural, health and environmental conditions and policies at all levels (IOM, 2003). Although, there are specific system-related consideration that could affect eye and vision outcomes (e.g. access to and quality of the health system), factors

that influence whether certain practices, policies and conditions are available to reduce the risk of eye infections, which could eventually cause vision loss.

The primary infectious Conjunctivitis occurs sporadically and this is as a result of exposure to pathogens from direct hand-to-eye contact, exposure to airborne pathogens, sexual transmission, or contact with contaminated devices. Virus such as adenoviruses can be recovered from non-porous surfaces for up to 49 days; this implies that improperly disinfected devices are a potential source of infection. Preventing the spread of infectious conjunctivitis involves both adequate infection control and comprehensive education. Careful attention to infection control procedures helps prevent the transmission of infection.

Preventive measures are preventive health care practices or actions taken to prevent disease, illness or prevent further deterioration of health. There are three (3) levels of prevention/ disease prevention and they include primary, secondary and tertiary prevention.

Primary prevention are those preventive measures which are observed before the onset of the disease or illness. It aims at preventing exposures to hazards that cause disease or injury. This primary prevention includes education about healthy and safe habits, good personal hygiene, proper care and protection of the eye.

Secondary prevention are those preventive measures that lead to early diagnosis and prompt treatment of a disease, illness or injury to prevent more severe problems developing by halting or slowing down the progress. Trained/professional health practitioners and health educators can detect disease in their early stage. This secondary prevention includes screening and regular examinations.

Tertiary prevention are those preventive measures aimed at rehabilitation following of people who have already been affected by a disease or a significant illness. Health workers retrain, re-educate and rehabilitate people who have already developed impairment or disability.

Although, notable factors that influences the preventive health care practices include poverty, ignorance, illiteracy, and beliefs and this can play significant roles in persons not seeking eye care (Ashaye, Ajuwon & Adeoti, 2006).

Prevention as it relates to Conjunctivitis is done mainly by practicing good hand and eye hygiene and this includes:

- Washing of hands often with soap and under running water especially after each use of public finger-touch devices.
- Washing of hands well especially after touching someone with pinkeye or their personal items.
- Avoid touching or rubbing your eyes.
- Avoid sharing personal items, such as eye drops, towels, bedding, contact lenses, eye cosmetics and eye glasses.
- Changing of pillowcases often.
- Wear protective eyewear.
- Avoid the use of non-recommended contact lenses (Azari & Barney, 2013).

Among the above mentioned preventive health care practices against conjunctivitis, hygiene is the keyword especially hand hygiene. It is a milestone of infectious disease control, and promotion of improved hand hygiene has been recognised as an important public health measure (Burton, Cobb, Donachie, et al., 2011). It has long been recognised to be a convenient, effective and cost-effective means of preventing communicable diseases (Tao, Cheng, Lu, et al., 2013). According to World Health Organisation, hand hygiene is a general term referring to any action of hand cleansing, i.e., it is the act of cleaning one's hand with or without the use of water or another liquid, or with the use of soap, for the purpose of removing soil, dirt, and/or microorganisms (World Health Organisation, 2010).

Health promotion and disease prevention is aimed at keeping individuals healthy. It engages people to choose healthy behaviors and make changes that reduce the risk of developing chronic diseases and other morbidities. This prevention often addresses social determinants of health which influences modifiable risk behaviours.

Social determinants of health are social, economic, cultural and political conditions, in which people are born, grow and live that affect health status. Typical activities for disease prevention include;

**Communication:** This involves raising awareness about healthy behavior for the general public. Examples of such strategies include health fairs, mass media campaigns, public service announcement and newsletters.

**Education:** This involves empowering change through behavioural change communication and actions through increased knowledge. Examples of such strategies include courses, and trainings.

**Policy, Systems and Environment:** This involves making systematic changes through improved laws, rules, and regulations (policy), functional organisational components (systems), and economic, social, or physical environment- to encourage, make available, and enable healthy choices.

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## 2.8 Conceptual Framework: PRECEDE MODEL

There are so many commonly used theoretical models in health promotion. These include but not limited to; the health belief model, trans-theoretical model, social cognitive theory, theory of reasoned actions, theory of planned behaviour and the PROCEED-PRECEDE model (Glanz, Rimer & Lewis, 2002). Each of these models identifies behavioural influences and factors relevant to issue targeted by health promotion programme. The PRECEDE model was developed by Dr Lawrence Green and colleagues to address the lack of direction and adequacy of public health promotion to sufficiently plan before implementing an intervention. (Glanz et al., 2002).

The PRECEDE is an acronym that stands for Predisposing, Reinforcing and Enabling Constructs in Educational Environmental Diagnosis and Evaluation. This theory helps to understand the causal factors of any given public health behaviour. The three (3) key concepts of this model are explained below:

The Predisposing factors: They are factors which motivate or provide a reason for behaviour; they include knowledge, attitudes, cultural beliefs, perceived needs and abilities and readiness to change.

The Enabling factors: These are what enable persons to act on their predispositions; these factors include available resources, accessibility, money, time, supportive policies, assistance, and services.

Reinforcing factors: This is that which come into play after behaviour has been initiated. They encourage repetition or persistence of behaviours by providing continuing rewards or incentives e.g. Social support (family, peers), health care workers, law enforcement, and the media.

### APPLICATION OF THE MODEL

Numerous studies have supported the positive impact the PRECEDE model has had on the effectiveness of health promotion programmes. This study employs the use of this model to explain knowledge and preventive health care practices against eye infections among postgraduate students using public finger-touch devices in University of Ibadan.

Using the various constructs of model, it will be applied to the current research as follows:

- i. Predisposing factor: The various factors that motivate the respondents (post graduate students) to practice preventive measures against conjunctivitis will be assessed. This includes knowledge, level of income, religion, beliefs, personality and attitudes.
- ii. Enabling factors: These are what enable the respondents to act on their predispositions. These will include; available resources and adequate water supply.
- iii. Reinforcing factor: They include what encourages the practices of preventive measures to be persistent and consistent among the respondents. They include the social support (family, peers) and the media.

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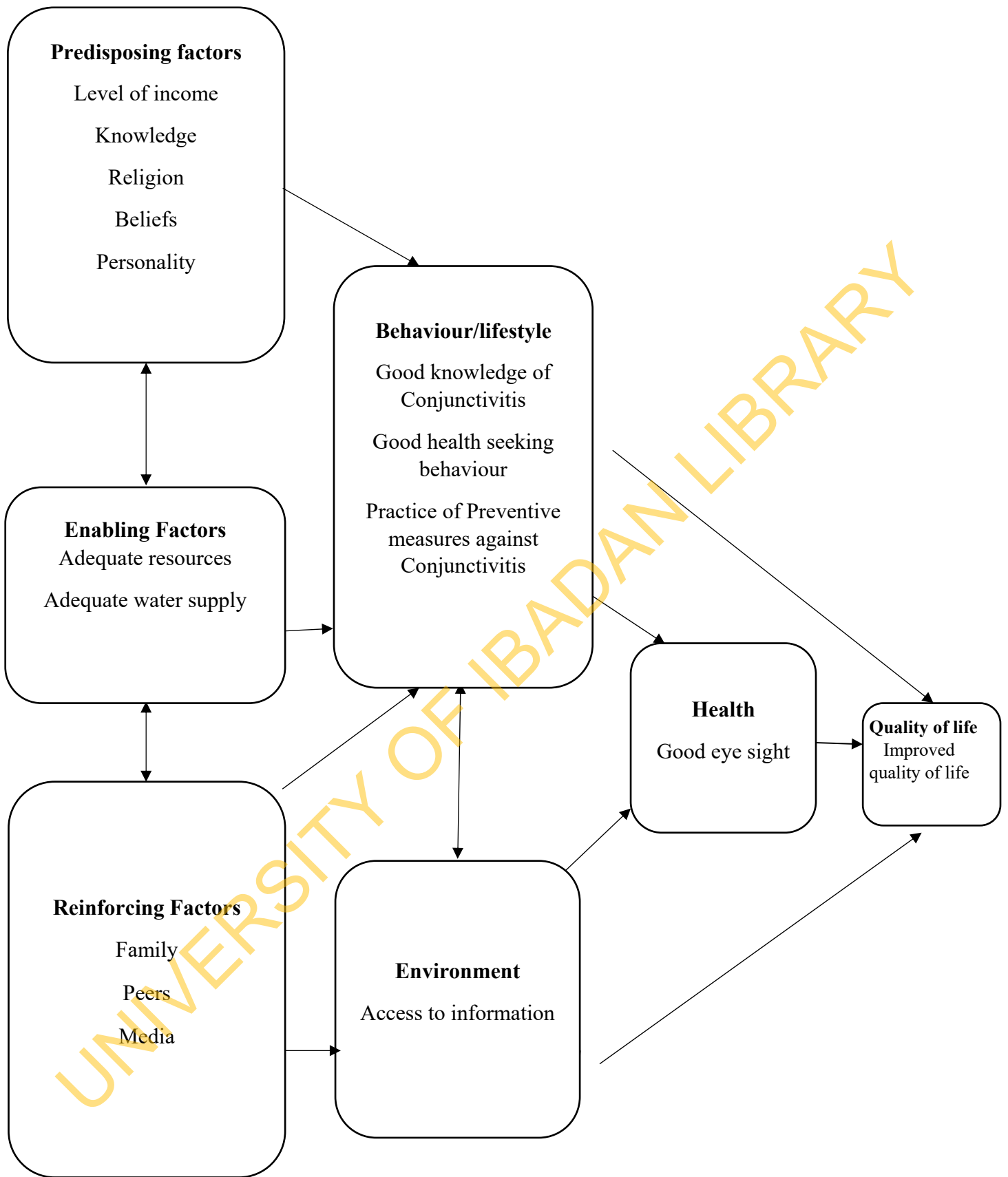


Figure 2.1 – Application of PRECEDE model

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Study Design and Scope

This study adopted Cross-sectional research design. This is because the study relied on gathering data from a sample with existing differences rather than random allocation. In other words, the design enabled the researcher measure differences among Postgraduate students using Public finger-touch devices on knowledge and preventive health care practices against eye infections in University of Ibadan.

#### 3.2 Study Area and Population

University of Ibadan is the premier university in Nigeria established in year 1949. The university comprises of 11 faculties and run both undergraduate and postgraduate programs, including a distance learning program. The University of Ibadan (UI) is the oldest degree awarding institution, located five miles (8 kilometres) from the centre of the major city of Ibadan in Western Nigeria. The University of Ibadan is located in Ibadan-North Local government area, along Oyo and Oke-Ogun road. It is popularly known as Unibadan or UI. Besides the College of Medicine, there are now 12 other faculties: Arts, Science, Agriculture Renewable natural resources, Social Sciences, Education, Veterinary Medicine, Pharmacy, Technology, Law, Public Health, and Dentistry and economics, environmental design and management.

The university has twelve (12) halls of residence (ten undergraduate and two postgraduate), with a total optimum capacity of 8,000. The undergraduate halls include Mellanby Hall, Tedder Hall, Kuti Hall, Sultan Bello Hall, Queen Elizabeth II Hall, Alexander Brown Hall, Independence Hall, Nnamdi Azikwe Hall and Obafemi Awolowo Hall while the postgraduate halls are Tafawa Balewa Hall and Abdulsalami Abubakar Hall. This study will make use of only postgraduate students which reside in the halls (Tafawa Balewa Hall, Obafemi Awolowo Hall and Abdulsalami Abubakar Hall). Tafawa Balewa Hall has a capacity of Two hundred and seven (207) bed space while Abdulsalami Abubakar Hall has a capacity of Six hundred and eighty (684) bed space for students.

## Study Population

The study population was postgraduate students using public finger-touch devices in University of Ibadan.

### 3.3 Rationale for study site selection

University of Ibadan was the study site due to the large population of postgraduate students using public finger-touch devices such as Automated Teller Machine and Computers. It is no doubt that postgraduate students are independent people and unlike undergraduate students, they have various needs for public finger-touch devices used for assignments and several transactions. Also, University of Ibadan is the biggest tertiary Institution in the whole of Oyo State and records having the highest number of postgraduate students who make use of public finger-touch devices.

### 3.4 Inclusion and Exclusion Criteria

The inclusion criteria are as follows;

1. Must be a postgraduate student of University of Ibadan;
2. Must be a user of at least one public finger-touch device;
3. Must give consent to participate in the study.

Exclusion criteria are as follows;

1. Not a post graduate student of University of Ibadan;
2. Not a user of public finger-touch devices;
3. Did not consent to participate in the study.

### 3.5 Sample Size determination

Cochran's sample size determination formula was used in this study to determine the sample size for this study. The formula is:

$$n = \frac{z^2 pq}{d^2}$$

Where  $n$  = sample size

$z$  = the standard normal deviation which corresponds to the 95% confidence level (1.96)

$p = 32\%$  ( $p = 0.32$ ) (Malu, 2014) Jos Nigeria

$$q = 1 - p = 1 - 0.32 = 0.68$$

$d = (0.05)$  degree of accuracy desired

$$\text{Therefore, } n = \frac{(1.96)^2 (0.32) (0.68)}{(0.05)^2}$$

$$= 334$$

A 10% was added for attrition, making a total sample size of 367

A total of 367 postgraduate students using public finger-touch device were selected for the study.

### 3.6 Sampling Technique

A sampling technique is the name or other identification of the specific process by which the entities of the sample have been selected.

In this study, multi stage sampling technique was adopted to select eligible participants through a three stage sampling technique using the number of postgraduate students who are registered residents of the school hostel.

**Stage 1:** The number of registered students in each hall was ascertained and proportion was allocated to each hall with respect to the sample size.

$$\text{Proportionate sampling} = \frac{\text{Number of registered students in the selected hall}}{\text{Total number of students in the entire postgraduate hall}} \times \text{Sample size}$$

**Stage 2:** The number of rooms in each hall was ascertained and the number of rooms to recruit respondents was decided with respect to the proportion allocated to each hall and systematic sampling will be used to select the rooms.

**Stage 3:** Random sampling was employed to select respondents in each of the selected rooms with respect to the expected number of persons to be selected from each room until the desired sample size of 367 is achieved.

### **3.7 Instrument for data collection**

A semi-structured, self-administered questionnaire was used to collect information from the respondents. This was developed based on the set objectives, reviewed literatures and guidance of the research supervisor. The questionnaire consisted of five (5) sections labeled as A, B, C, D and E. Section A of the questionnaire consisted of socio-demographic information of participants; Section B focused on the prevalence of conjunctivitis among postgraduate students; Section C contained items regarding knowledge of conjunctivitis; Section D comprised of items on the preventive health care practices adopted by the respondents against conjunctivitis. Section E was used to identify the respondent's source(s) of Information on Conjunctivitis.

There was scoring for knowledge of conjunctivitis among postgraduate students (section C) and preventive health care practices against conjunctivitis among postgraduate students (section D). Respondents' knowledge was measured on a 19-point scale; scores of  $\leq 6$ ,  $\geq 7$  to  $< 14$ ,  $\geq 14$  were categorised as poor, fair and good respectively while preventive health care practices was measured on a 12-point scale;  $\leq 6$  and  $> 6$  were categorised as poor and good.

### **3.8 Procedure for data collection**

Due to the uniqueness of the study participants, the researcher recruited the services of three research assistants. These research assistants were accustomed with the purpose of the study. They were also exposed to the research ethics guiding using human subject in research. The research assistants were compensated after the data gathering through monetary reward.

### **3.9 Validity and Reliability of Research Instrument**

#### **Validity**

The validity of the instrument is the extent to which it does measure what it is supposed to measure. The validity of the instrument for data collection was ensured by reviewing relevant literatures and the instrument was designed in line with the variables in the study objectives. The project supervisor was consulted on how the instrument should be designed and subsequently his comments were used to improve the tool. The draft of the proposed instrument was also subjected to independent, peer and expert reviews, particularly to experts in public health.

## **Reliability**

To ensure reliability, the research instrument was pretested among 10% (34) of the total sample size. Prior to the commencement of the actual study among postgraduate students in University of Ibadan, postgraduate students of University of Lagos were recruited for the pre-test because of the similarity in characteristics with the study population. A draft of the research instruments was used in the pre-test and revisions were made on questions that were not well understood.

Reliability was ensured through the use of Cronbach Alpha statistical test on the pre-test study. Cronbach Alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. A reliability of 0.7 was obtained.

### **3.10 Analysis of data**

A coding guide was developed along with the data collection tool in order to facilitate its analysis. Questionnaire was also reviewed to ensure consistency and completeness. Cleaning, recording and coding of data for analysis were also done. Using the coding guide, the data collected were carefully entered into the statistical software and analysed using descriptive statistics such as mean, median and mode and inferential statistics such as Chi-square. The results obtained from the Statistical Package for Social Science (SPSS version 20) analysis was summarised and presented in tables and charts.

Questionnaires were checked for errors and omissions at the end of each day. Data were entered and analysed using Statistical Package for Social Sciences (SPSS) version 20. Data error was checked for and corrected. Summary statistics were presented using frequency tables, charts, means and rates. Inferential statistics to test for associations between categorical variables were done using Chi-squared analysis.

### **3.11 Ethical Consideration**

Before collection of data, ethical approval was sought and obtained from the University of Ibadan UI/UCH research ethics committee(Appendix C). The following ethical considerations were ensured in the conduct of this study:

#### **a) Confidentiality of data**

The data collected were treated with utmost confidentiality. The anonymity of the participants was ensured. The information that provided was solely for research purposes and data were not be coded in a way that it can be traced to the participants.

**b) Beneficence to the participants**

Based on the results gotten from this study, the banks, health agencies and non-governmental organisations will be able to design a program to meet the sanitisation facilities to be positioned at ATM galleries and other public finger-touch devices stations.

**c) Non-maleficence**

The study was in no way harm the participants, they will be exposed to no risk at all as the questionnaire takes about 10 minutes to complete.

**d) Voluntariness**

Any postgraduate student who participated in the study was of his/her voluntariness. No participant was under any obligation to participate. And those that participated in the study had the right to withdraw if they wish as they are not compelled in any way.

**3.12 Limitations of the study**

This study was limited by various factors which included accessibility to students in the hall of residence, time, holiday and strike. These occurred several times during the academic year. The limitations were overcome by making good use of the available time.

## CHAPTER FOUR

### RESULTS

This chapter presents results of gathered data from three hundred and sixty (360) University of Ibadan postgraduate students.

#### 4.1 Socio-Demographic Characteristics of Respondents'

The socio-demographic characteristics of the respondents are presented in Table 4.1. The table shows that more of the respondents 200 (55.6%) were females. As regards age as at last birthday, more of the respondents 254 (70.6%) were between 20 and 29 years old.

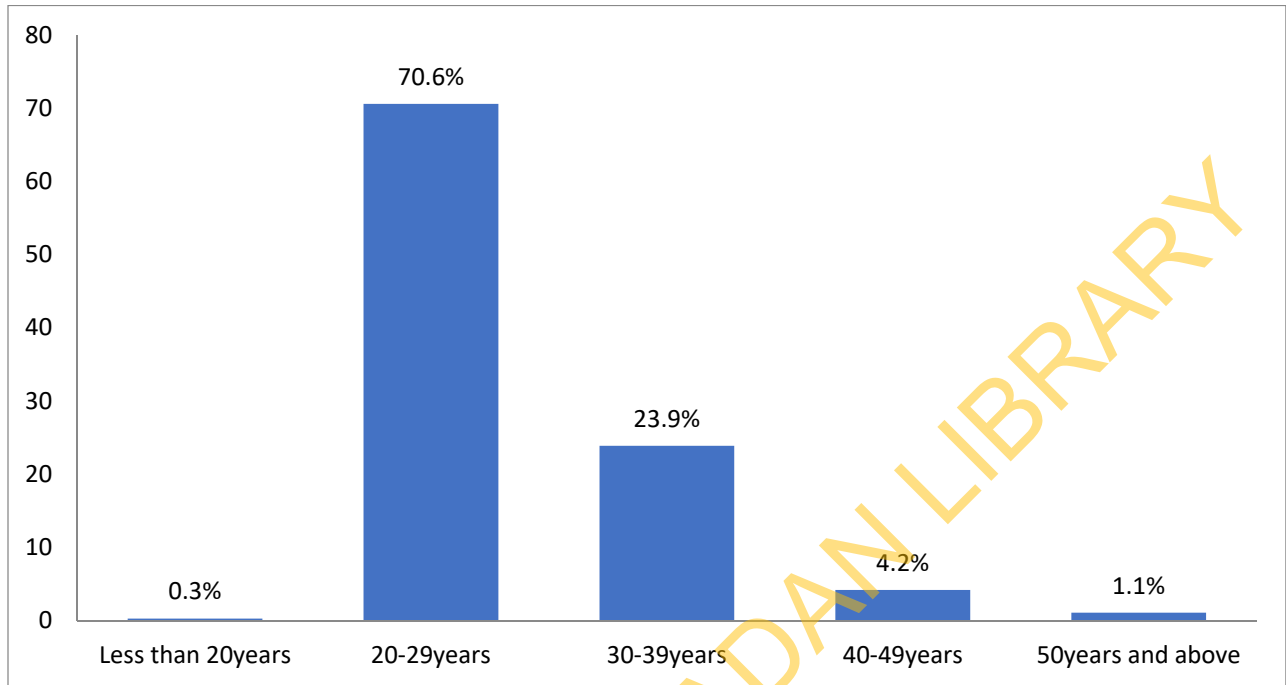
As regards marital status, more of the respondents 272 (75.6%) were single, 86 (23.9%). Ethnicity distribution revealed that more of the respondents 262 (72.8%) were Yorubas. As regards religion distribution, more of the respondents 291 (80.8%) were Christians, while the other 69 (19.2%) were Muslims.

From Table 4.1, it was also revealed that more of the respondents 313 (86.9%) indicated to have monogamous family type. Type of programme revealed that more of the respondents 298 (82.8%) were Masters students, 46 (12.8%) were undergoing professional course, 11 (3.1%) were PhD students, while the other 5 (1.4%) signified to be Mphil students. According to average monthly income, more of the respondents 92 (25.6%) earn between N20,000 and N39,999 every month, 83 (23.1%) earn between N40,000 and N59,999, another 83 (23.1%) gave no response, 35 (9.7%) earn N100,000 and above, 29 (8.1%) earn between N60,000 and N79,999 every month, 19 (5.3%) earn less than N20,000 while the other 19 (5.3%) earn between N80,000 and N99,999 per month. Hall of residence frequency distribution revealed that more of the respondents 270 (75%) were residents of Abubakar Abdusalam hall, 79 (21.9%) were residents of Obafemi Awolowo hall, while the other 11 (3.1%) were residents of Tafawa Balewa hall. Finally, as regards the public finger-touch often used, more of the respondents 284 (78.9%) utilizes ATM more, 49 (13.6%) uses POS more, while the other 27 (7.5%) utilizes computer the most.



**Table 4.1: Socio demographics characteristics of Respondents'****N=360**

<b>Variable</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Sex</b>		
Female	200	55.6
Male	160	44.4
<b>Marital status</b>		
Single	272	75.6
Married	86	23.9
Divorced	1	0.3
Separated	1	0.3
<b>Ethnicity</b>		
Yoruba	262	72.8
Hausa	11	3.1
Igbo	79	21.9
Others	8	2.2
<b>Religion</b>		
Christianity	291	80.8
Islam	69	19.2
<b>Family type</b>		
Monogamy	313	86.9
Polygamy	47	13.1
<b>Type of programme</b>		
Masters	298	82.8
Professional	46	12.8
MPhil	5	1.4
PhD	11	3.1
<b>Average monthly income</b>		
No response	83	23.1
Less than N20,000	19	5.3
N20,000-N39,999	92	25.6
N40,000-N59,999	83	23.1
N60,000-N79,999	29	8.1
N80,000-N99,999	19	5.3
N100,000 above	35	9.7
<b>Hall of residence</b>		
Abubakar Abdulsalam	270	75
Tafawa Balewa	11	3.1
Obafemi Awolowo	79	21.9
<b>Public finger-touch device often used</b>		
ATM	284	78.9
POS	49	13.6
Computer	27	7.5



**Figure 4.1: Age distribution of the respondents'**

## 4.2 Prevalence of Conjunctivitis

Table 4.2 presents results on the prevalence of conjunctivitis among University of Ibadan postgraduate students. It is shown that more of the respondents 225 (62.5%) indicated to have at a point in time contracted conjunctivitis, 128 (35.6%) indicated that they have never contracted conjunctivitis before, while the other 7 (1.9%) were not sure. Among those who have contracted conjunctivitis before, more of them 110 (30.6%) indicated to have experienced it between 1 and 3 years ago, 84 (23.3%) experienced it over 3 years ago, while the other 31 (8.6%) indicated to have contracted it less than a year ago.

When asked how many times they have had conjunctivitis in the last 2 years, 162 (45%) experienced it once in the past 2 years. When asked what time of the year they experienced conjunctivitis, 135 (37.5%) were not sure what time of the year they had conjunctivitis.

Further from Table 4.2, more of the respondents 226 (62.8%) indicated that one of their relatives have had conjunctivitis before, 95 (26.4%) signified no, 36 (10%) gave no response, while the other 3 (0.8%) were not sure. Finally, among those who indicated that one of their relative have had conjunctivitis in the past before, more of them 119 (33.1%) indicated that they were not sure what time of the year it was, 88 (24.4%) signified dry season, while the other 19 (5.3%) indicated that the relative experienced conjunctivitis during rainy season.

Table 4.2: Prevalence of Conjunctivitis

N=360

Items	Frequency	Percent(%)
<b>Have you ever contracted conjunctivitis (Apollo)?</b>		
Yes	225	62.5
No	128	35.6
Not sure	7	1.9
<b>If yes, when was the last time you had conjunctivitis?</b>		
Less than a year	31	13.8
1-3 years ago	110	48.9
Over 3 years	84	37.3
<b>How many times have you had it in the last 2 years?</b>		
Not at all	182	50.6
Once	162	45.0
2-3 times	6	1.7
Over 3 times	10	2.8
<b>What time of the years did you experience conjunctivitis?</b>		
No response	131	36.4
Dry season	77	21.4
Rain season	17	4.7
Not sure	135	37.5
<b>Has anyone (first degree relative) you know ever had conjunctivitis before?</b>		
No response	36	10.0
Yes	226	62.8
No	95	26.4
Not sure	3	0.8
<b>If yes, what time of the year did they experience conjunctivitis? (N=226)</b>		
Dry season	88	37.2
Rain season	19	8.4
Not sure	119	52.7

### 4.3 Knowledge of Conjunctivitis

Table 4.3 presents results on the knowledge of conjunctivitis among University of Ibadan postgraduate students. Table 4.3a shows more of the respondents 346 (96.1%) indicated that redness of the eye is a symptom of conjunctivitis, while 14 (3.9%) do not agree that redness of the eye is a symptom of conjunctivitis. Also, more of the respondents 212 (58.9%) indicated that having headache is a symptom of conjunctivitis, while the other 148 (41.1%) do not agree with headache. Further, more of the respondents 266 (73.9%) indicated that having a yellow eye is not necessarily a symptom of conjunctivitis, while only 94 (26.1%) agreed that yellow eye is a symptom of conjunctivitis.

An overwhelming proportion of the respondents 322 (89.4%) indicated that watery discharge is a symptom of conjunctivitis, while the other 38 (10.6%) do not agree with watery discharge as a symptom of conjunctivitis. In addition, more of the respondents 285 (79.2%) indicated that having a blurry vision is a symptom of conjunctivitis, while the other 75 (20.8%) signified that blurry vision is not a symptom of conjunctivitis. Further, majority of the respondents 285 (79.2%) indicated that pain is a symptom of conjunctivitis, while the other 75 (20.8%) signified that pain is not a symptom of conjunctivitis.

Some of the respondents 199 (55.3%) indicated that growth of a thin layer in the cornea is not a sign of conjunctivitis, while the other 161 (44.7%) indicated that growth of a thin layer in the cornea is a symptom of conjunctivitis. Also, 286 (79.4%) of the respondents indicated that having a puffy eye is a symptom of conjunctivitis, while the other 74 (20.6%) signified that having a puffy eye is not a sign of conjunctivitis.

**Table 4.3a: Knowledge on symptoms of Conjunctivitis****N=360**

<b>Variables</b>	<b>Yes (%)</b>	<b>No (%)</b>
Redness of eye	346(96.1)*	14(3.9)
Headache	212(58.9)*	148(41.1)
Yellow eye	94(26.1)	266(73.9)*
Watery discharge	322(89.4)*	38(10.6)
Blurry vision	285(79.2)*	75(20.8)
Pain	285(79.2)*	75(20.8)
Growth of a thin layer in the cornea	161(44.7)	199(55.3)*
Puffy eye	286(79.4)*	74(20.6)
Foreign-body sensation in the eye	175(48.6)*	185(51.4)

**\*Correct response**

The respondents were asked to mention one way through which conjunctivitis can be contracted, 201 (55.8%) indicated that conjunctivitis is contagious and could be contracted when in contact with an infected object, 54 (15%) gave no response, 27 (7.5%) signified sharing of glasses with an infected person, 21 (5.8%) indicated that been in contact with an infected person increases the chance of been infected, 16 (4.4%) indicated that conjunctivitis is airborne and can be contracted through environmental pollution, 13 (3.6%) indicated that touching discharge from an infected person increases the chances of contracting conjunctivitis, another 13 (3.6%) indicated that exposure to ray of sunlight increases the chances of contracting conjunctivitis, another 13 (3.6%) signified that sharing eye-drop with an infected person increases the chances of contracting conjunctivitis.

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**Table 4.3b: Knowledge of Conjunctivitis**

**N=360**

<b>Variables</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Ways through which conjunctivitis can be contracted</b>		
No response	54	15.0
Exposure to ray of sunlight	13	3.6
Airborne	39	10.8
Contact with infected objects	201	55.8
Sharing of glasses with infected person	27	7.5
Touching discharge from infected person	13	3.6
Sharing eye-drop with infected person	13	3.6
<b>Possible consequences of conjunctivitis</b>		
No response	114	31.7
Blurry vision	33	9.2
Headache	34	9.4
Affect facial look	11	3.1
Eye bore	23	6.4
Partial blindness	21	5.8
Rapid spread	4	1.1
Redness of eye	16	4.4
Pain in the eye	56	15.6
Watery discharge from eye	7	1.9
Stigmatization	16	4.5
Itching and vision distorted	18	5.0
Breakdown of immune system	2	0.6
Visual impairment	5	1.4



Table 4.3c presents further analysis on the knowledge of conjunctivitis. It is shown that an overwhelming proportion of the respondents 349 (96.9%) agreed that conjunctivitis mainly affects the eye, while the other 11 (3.1%) signified that conjunctivitis do not affect the eye alone. Also, majority of the respondents 284 (78.9%) indicated that conjunctivitis is contagious, while the other 76 (21.1%) indicated that conjunctivitis is not contagious. In addition, more of the respondents 202 (56.1%) indicate that conjunctivitis is an allergic disease, while the other 158 (43.9%) indicated that conjunctivitis is not an allergic disease.

More of the respondents 260 (72.2%) agreed that irritant materials and substances in the eye can cause conjunctivitis, while the other 100 (27.8%) indicated that irritant materials and substances in the eye can cause conjunctivitis. Also, more of the respondents 248 (68.9%) indicated that contact lenses has potential to cause conjunctivitis, while the other 112 (31.1%) disagreed that contact lenses has potential to cause conjunctivitis.

Also, more of the respondents 198 (55%) indicated that conjunctivitis can be contracted through public-touch devices, while the other 162 (45%) signified that conjunctivitis cannot be contracted through public finger-touch devices. Also, more of the respondents 287 (79.7%) indicated that conjunctivitis is not hereditary, while the other 73 (20.3%) indicated that conjunctivitis is hereditary. Finally, more of the respondents 219 (60.8%) indicated that during conjunctivitis outbreak, it can be prevented, while the other 141 (39.2%) indicated that during conjunctivitis outbreak, it cannot be prevented.

**Table 4.3c: Knowledge of Conjunctivitis****N=360**

<b>Items</b>	<b>True (%)</b>	<b>False (%)</b>
Conjunctivitis mainly affects the eye	349(96.9) *	11(3.1)
Conjunctivitis is not contagious	76(21.1)	284(78.9)*
Conjunctivitis is an allergic disease	202(56.1)*	158(43.9)
Irritant materials and substances in the eye can cause conjunctivitis	260(72.2)*	100(27.8)
Contact lenses has potential to cause conjunctivitis	248(68.9)*	112(31.1)
Conjunctivitis cannot be contracted through public-touch devices	162(45)	198(55)*
Conjunctivitis is hereditary	73(20.3)	287(79.7)*
During conjunctivitis outbreak, it cannot be prevented	141(39.2)	219(60.8)*

\*Correct response

Table 4.3d presents results on knowledge of conjunctivitis among postgraduate students. The mean score on knowledge about conjunctivitis is  $11.7 \pm 1.5$ . It is shown that more of the respondents 57.2% indicated having average knowledge about conjunctivitis, 31.4% had good knowledge of conjunctivitis, while the other 11.4% had poor knowledge of conjunctivitis.

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**Table 4.3d: Knowledge of Conjunctivitis among postgraduate students N=360**

<b>Knowledge</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Mean</b>
Good	113	31.4	11.7 ± 1.5
Average	206	57.2	
Poor	41	11.4	

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#### 4.4 Preventive Health Care Practices against Conjunctivitis

Table 4.4a & 4.4b present results on preventive health care practices against conjunctivitis among University of Ibadan postgraduate students.

Regarding what the respondents do after using a public finger-touch device, more of the respondents 220 (61.1%) indicated that they do nothing, 77 (21.4%) signified that they properly wash their hands, 39 (10.8%) indicated that they make use of hand sanitizer immediately after using a public finger-touch device, 12 (3.3%) cleaned their hands with handkerchief, while the other 12 (3.3%) cleaned their hands with tissue. It was also shown that more of the respondents 254 (70.6%) indicated that hand hygiene is a preventive measure to reduce transmission of conjunctivitis, while the other 106 (29.4%) indicated that hand hygiene is not a preventive measure to reduce transmission of conjunctivitis. Also, more of the respondents 240 (66.7%) indicated that frequent washing of cloths do not prevent conjunctivitis, while the other 120 (33.3%) signified that frequent washing of cloth prevents conjunctivitis. In addition, more of the respondents 287 (79.7%) indicated that soaking of cloth in warm water and putting it on the eye for few minutes per day do not necessarily prevent conjunctivitis, while the other 73 (20.3%) indicated that soaking of cloth in warm water and putting it on the eye for few minutes per day prevents conjunctivitis.

From the table, more of the respondents 287 (79.7%) indicated that conjunctivitis is preventable by avoiding dusty environment, while the other 73 (20.3%) disagreed. Further, more of the respondents 266 (73.9%) signified that reduced eye contact with a person having conjunctivitis can prevent transmission, while the other 94 (26.1%) disagreed. Also, more of the respondents 204 (56.7%) were of the view that immediate disinfection of public finger-touch devices before/after use reduces the spread of conjunctivitis, while the other 156 (43.3%) disagreed.

From Table 4.4, more of the respondents 260 (72.2%) indicated that conjunctivitis can be transmitted through sharing of sunshade or eye glass with family members, friends or others, while the other 100 (27.8%) indicated that sharing of sunshade or eye glass cannot transmit conjunctivitis. Further, more of the respondents 255 (70.8%) signified that keeping long nails facilitates the spread of conjunctivitis, while the other 105 (29.2%) indicated that keeping long nails do not facilitate spread of conjunctivitis. In addition, more of the respondents 277 (76.9%) agreed that preventive health care practices against conjunctivitis is done to improve the quality of life of individual, while the other 83 (23.1%) disagreed.

Further from table, more of the respondents 252 (70%) agreed that frequently touching the eye or areas around the eye allows easy transmission of conjunctivitis, while the other 108 (30%) disagreed. Finally, more of the respondents 223 (61.9%) agreed that sharing of personal belongings such as make up, eye drop, contact lenses and beddings does not influence the transmission of conjunctivitis, while the other 137 (38.1%) disagreed.

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**Table 4.4a: Preventive Health Care Practices against Conjunctivitis****N=360**

<b>Practice</b>	<b>Yes (%)</b>	<b>No (%)</b>
<b>What do you do after using any public finger-touch devices?</b>		
Nothing	220	61.1
Proper washing of hands	77	21.4
Use of hand sanitizer	39	10.8
Wipe hands with handkerchief	12	3.3
Wipe hands with tissue	12	3.3

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**Table 4.4b: Preventive Health Care Practices against Conjunctivitis N=360**

Practice	Yes (%)	No (%)
Hand hygiene is not a preventive measure to reduce transmission of conjunctivitis?	106(29.4)	254(70.6)*
Frequent washing of clothes prevents conjunctivitis	120(33.3)	240(66.7)*
Soaking of cloth in warm water and putting it on the eye for few minutes 3-4 times per day prevents conjunctivitis	73(20.3)	287(79.7)*
Conjunctivitis is preventable by avoiding dusty environment	287(79.7)*	73(20.3)
Reduced eye contact with a person having conjunctivitis can prevent transmission	266(73.9)	94(26.1)*
Immediate disinfection of public finger-touch devices before/after use reduces the spread of conjunctivitis	204(56.7)*	156(43.3)
Conjunctivitis cannot be transmitted through sharing of sunshade or eye glass with family members, friends and others	100(27.8)	260(72.2)*
Not keeping long nails prevents the spread of conjunctivitis	105(29.2)	225(70.8)*
Preventive health care practices against conjunctivitis is done to improve the quality of life of individual	277(76.9)*	83(23.1)
Frequently touching the eye or areas around the eye allows easy transmission of conjunctivitis	252(70)*	108(30)
Sharing of personal belongings such as makeup, eye drop, contact lenses and beddings does not influence the transmission of conjunctivitis	223(61.9)	137(38.1)*

\*Correct response



Table 4.4c presents results on preventive practices against conjunctivitis among postgraduate students in University of Ibadan. The mean score is  $1.6 \pm 0.5$ . It is shown that more of the respondents 20 (56.1%) indicated exhibiting good practices against conjunctivitis, while the other 158 (43.9%) signified poor practice against conjunctivitis.

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**Table 4.4c: Preventive Health Care Practices Against Conjunctivitis****N=360**

<b>Preventive practice</b>	<b>Frequency</b>	<b>Percent (%)</b>	<b>Mean</b>
Poor practice	158	43.9	1.6 ± 0.5
Good practice	202	56.1	
Total	360	100	

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#### 4.5 Sources of Information on Conjunctivitis

Table 4.5 presents results on sources of information on preventive health care practices against conjunctivitis among University of Ibadan postgraduate students. It is shown that more of the respondents 254 (70.6%) agreed that social media assists them to learn about preventive health care practices against conjunctivitis; also, more of the respondents 195 (54.2%) signified that television have never served as the source of information for preventing conjunctivitis, while the other 165 (45.8%) agreed that television have served as the source of information for preventing conjunctivitis.

Further from Table 4.5, it is shown that more of the respondents 185 (51.4%) agreed that radio served as the source of information for preventive health care practices against conjunctivitis, while the other 175 (48.6%) disagreed. In addition, majority of the respondents 289 (80.3%) agreed that the internet has served as the source of information on conjunctivitis, while the other 71 (19.7%) disagreed. Also, more of the respondents 251 (69.7%) indicated that friends have served as their source of information for conjunctivitis.

From table 4.5 as well, more of the respondents 198 (55%) disagreed that books have served as their source of information for conjunctivitis, while the other 162 (45%) agreed that books have served as their source of information for conjunctivitis. Also, more of the respondents 230 (63.9%) agreed that family members served as source of information for conjunctivitis, while the other 130 (36.1%) indicated that family members did not serve as source of information for conjunctivitis.

When asked their preferred source of information on conjunctivitis, more of the respondents 132 (36.7%) preferred the internet, 60 (16.7%) preferred social media, 46 (12.8%) preferred family as their source of information, 28 (7.8%) preferred the radio, another 28 (7.8%) preferred friends, 25 (6.9%) preferred the television, 20 (5.6%) preferred books as their source of information, 9 (2.5%) preferred getting the information from health assistants, 8 (2.2%) gave no response, 2 (0.6%) preferred family and friends as their source of information, 1 (0.3%) each indicated internet and family as well as the combination of books and social media.

**Table 4.5a: Sources of Information on Conjunctivitis****N=360**

<b>Items</b>	<b>Response</b>	<b>F</b>	<b>Percent (%)</b>
Social media	Yes	254	70.6
	No	106	29.4
Television	Yes	165	45.8
	No	195	54.2
Radio	Yes	185	51.4
	No	175	48.6
Internet	Yes	289	80.3
	No	71	19.7
Friends	Yes	251	69.7
	No	109	30.3
Books	Yes	162	45
	No	198	55
Family	Yes	230	63.9
	No	130	36.1
Magazines	Yes	84	23.3
	No	276	76.7
What is your preferred source of information on conjunctivitis?	No response	8	2.2
	Internet	132	36.7
	Family	46	12.8
	Friends	28	7.8
	Health assistant	9	2.5
	Social media	60	16.7
	Television	25	6.9
	Books	20	5.6
	Radio	28	7.8
	Internet & family	1	0.3
	Family & friends	2	0.6
	Books, social media	1	0.3

**Table 4.5b: Sources of Information on Conjunctivitis****N=360**

<b>Items</b>	<b>Response</b>	<b>F</b>	<b>Percent(%)</b>
What type of information do you get from the above chosen source?	No response	2	0.6
	Preventive	78	21.7
	Informative	54	42.8
	Educative	07	29.7
	Preventive & informative	5	1.4
	Preventive & educative	4	1.1
	Informative & educative	1	0.3
	Preventive, educative & informative	9	2.5
Did you find the information useful?	Yes	48	96.7
	No	12	3.3
If no, how can the information be improved? (N= 12)	Occasionally during an outbreak	5	1.4
	Regular health orientation	2	0.6
	Sharing the information	2	0.6
	Creating awareness and preventive measures	1	0.3
	Orientation on mode of prevention	2	0.6

#### 4.6 Hypotheses

There is no significant relationship between prevalence and preventive health care practice against conjunctivitis. This was tested using Chi-square analysis and the result is presented on Table 4.6;

Table 4.6 presents results on the relationship between prevalence of conjunctivitis and preventive health care against conjunctivitis. It is shown that there exists significant relationship between prevalence of conjunctivitis and hygiene ( $X^2 = 9.54$ ;  $p < .01$ ), immediate disinfection of public finger-touch devices ( $X^2 = 13.16$ ;  $p < .01$ ), not sharing of sunshade ( $X^2 = 17.17$ ;  $p < .01$ ), and not sharing of personal belongings ( $X^2 = 6.84$ ;  $p < .05$ ). However, prevalence of conjunctivitis had no significant relationship with the preventive health care practice against conjunctivitis.

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**Table 4.6: Chi-square Analysis Showing the Relationship between Prevalence and Preventive Health Care Practice against Conjunctivitis**

Preventive Health Care Against Conjunctivitis	Prevalence			X <sup>2</sup>	p-value
	Not sure	Yes	No		
Hand hygiene is not a preventive measure to reduce transmission of conjunctivitis					
Yes	2	79	25	9.54	<.01
No	5	146	103		
Frequent washing of clothes prevents conjunctivitis					
Yes	3	68	49	2.68	>.05
No	4	157	79		
Soaking of cloth in warm water and putting it on the eye for few minutes 3-4 times per day prevents conjunctivitis					
Yes	3	45	25	2.62	>.05
No	4	180	103		
Conjunctivitis is preventable by avoiding dusty environment					
Yes	5	178	104	.54	>.05
No	2	47	24		
Reduced eye contact with a person having conjunctivitis can prevent transmission					
Yes	6	158	102	4.31	>.05
No	1	67	26		
Immediate disinfection of public finger-touch devices before/after use reduces the spread of conjunctivitis					
Yes	5	111	88	13.16	<.05
No	2	114	40		
Conjunctivitis cannot be transmitted through sharing of sunshade or eye glass with family members, friends and others					
Yes	4	46	50	17.17	<.01
No	3	179	78		
Not keeping long nails prevents the spread of conjunctivitis					
Yes	1	63	41	1.41	>.05
No	6	162	87		
Preventive health care practices against conjunctivitis is done to improve the quality of life of individual					
Yes	4	168	105	4.07	>.05
No	3	57	23		
Frequently touching the eye or areas around the eye allows easy transmission of conjunctivitis					
Yes	4	157	91	.63	>.05
No	3	68	37		
Sharing of personal belongings such as makeup, eye drop, contact lenses and beddings does not influence the transmission of conjunctivitis					
Yes	4	151	68	6.84	<.05
No	3	74	60		

## Hypothesis Two

There is no significant relationship between knowledge and preventive health care practice against conjunctivitis. This was tested using Pearson r correlation and the result is presented on Table 4.7

Table 4.7 presents results on the relationship between knowledge of conjunctivitis among University of Ibadan postgraduate students. It is shown that there exists significant relationship between knowledge of conjunctivitis and preventive health care against conjunctivitis ( $r = .18$ ;  $p < .01$ ). This implies that the more adequate the knowledge of conjunctivitis, the higher the preventive health care practices against conjunctivitis.

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**Table 4.7: Pearson r Correlation Summary Table Showing the Relationship between Knowledge of Conjunctivitis and Preventive Health Care Practices Against Conjunctivitis**

Variable	Mean	SD	R	Df	p-value
Knowledge of Conjunctivitis	11.67	1.47			
			.18**	359	<.01
Preventive health care practices against conjunctivitis	18.79	1.54			

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### Hypothesis Three

There is no significant relationship between socio-demographics of post-graduate students and their preventive health care practice against conjunctivitis. This was tested using Chi-square analysis and the result is presented on Table 4.8;

Table 4.8 presents the relationship between socio-demographic factors and preventive health care practices against conjunctivitis. It is shown that type of program ( $X^2 = 17.43$ ;  $p < .05$ ) and monthly income ( $X^2 = 22.94$ ;  $p < .01$ ) had significant relationship with preventive practice against conjunctivitis. However, sex ( $X^2 = 3.09$ ;  $p > .05$ ), age ( $X^2 = 8.44$ ;  $p > .05$ ), ethnicity ( $X^2 = 2.96$ ;  $p > .05$ ), religion ( $X^2 = 2.03$ ;  $p > .05$ ), family type ( $X^2 = 1.31$ ;  $p > .05$ ) and most used public finger-touch device ( $X^2 = .86$ ;  $p > .05$ ) had no significant relationship with preventive health care practices against conjunctivitis.

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**Table 4.8: Chi-square Analysis Showing the Relationship Between Socio-Demographics and Preventive Health Care Practice Against Conjunctivitis**

Demographics	Preventive care		X <sup>2</sup>	p-value
	Negative	Positive		
<b>Sex</b>				
Male	96	104	3.09	>.05
Female	62	98		
<b>Age</b>				
Less than 20 years	0	1	8.44	>.05
20-29 years	102	152		
30-39 years	45	41		
40-49 years	10	5		
50 years above	1	3		
<b>Ethnicity</b>				
Yoruba	115	147	2.96	>.05
Hausa	3	8		
Igbo	38	41		
Others	2	6		
<b>Religion</b>				
Christianity	133	158	2.03	>.05
Islam	25	44		
<b>Family type</b>				
Monogamous	141	172	1.31	>.05
Polygamous	17	30		
<b>Type of program</b>				
Masters	140	158	17.43	<.05
Professional	8	38		
MPhil	4	1		
PhD	6	5		
<b>Monthly income</b>				
No response	26	57	22.94	<.01
Less than N20,000	8	11		
N20,000-N39,999	33	59		
N40,000-N59,999	40	43		
N60,000-N79,999	20	9		
N80,000-N99,999	14	5		
N100,000 and above	17	18		
<b>Most used public finger-touch devices</b>				
ATM	128	156	.86	>.05
POS	20	29		
Computer	10	17		

#### **Hypothesis Four**

There is no significant relationship between preventive health care practices and source of information on conjunctivitis among the respondents. This was tested using Chi-square analysis and the result is presented on Table 4.9;

Table 4.9 presents results on the relationship between source of information and preventive health care practice against conjunctivitis among postgraduate students. It is shown that social media ( $X^2 = 11.389$ ;  $p < .05$ ) and television ( $X^2 = 5.92$ ;  $p < .05$ ) had significant relationship with preventive health care practice against conjunctivitis. However, radio, internet, friends, books, family and magazines as sources of information had no correlation with preventive health care practice against conjunctivitis.

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**Table 4.9: Chi-square Analysis Showing the Relationship Between Sources of Information and Preventive Health Care Practice Against Conjunctivitis** N=360

Source of Information	Preventive care		$X^2$	p-value
	Negative	Positive		
<b>Social Media</b>				
Yes	97	157	11.38	<.05
No	61	45		
<b>Television</b>				
Yes	61	104	5.92	<.05
No	97	98		
<b>Radio</b>				
Yes	90	95	3.50	>.05
No	68	107		
<b>Internet</b>				
Yes	120	169	3.33	>.05
No	38	33		
<b>Friends</b>				
Yes	116	135	1.82	>.05
No	42	67		
<b>Books</b>				
Yes	72	90	.04	>.05
No	86	112		
<b>Family</b>				
Yes	104	126	.46	>.05
No	54	76		
<b>Magazines</b>				
Yes	35	49	.22	>.05
No	123	153		

## CHAPTER FIVE

### DISCUSSION, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Discussion

The study investigated the knowledge and preventive health care practices against eye infections among postgraduate students using public finger-touch devices in University of Ibadan, Ibadan. Four objectives as well as four hypotheses guided this study. Discussions will be done according to the socio-demographic characteristics of the respondents and the objectives of the study.

##### **Socio-demographic characteristics**

Three hundred and sixty (360) postgraduate students comprising of male and female who were either single, married, divorced or widowed residents in the postgraduate hall of University of Ibadan participated in this study. The respondents are frequent users of public finger-touch devices especially ATM and POS which are used for easy transaction purposes. This wide use of these devices allows easy transmission and contraction of microorganisms which can cause eye infection when they come in contact with the eyes.

From the data gotten, it shows that majority of the respondents were aged between 20-29 years which is the productive period of an individual's life and according to D'Arienzo, 2005), the age is an important factor to note because it coincides with the average age of the work force who are at the most productive period of their life. Economy may be affected due to expenditures on prescriptions, productivity losses related to absenteeism and decreased job effectiveness due to discomfort from the symptoms of the eye infection.

##### **Prevalence of conjunctivitis**

Conjunctivitis which occurs worldwide, is a common condition of the eye affecting all ages, social strata and more than 2% of the population according to Prashant et al., 2013. As regards the prevalence of conjunctivitis among the respondents', it was discovered that more of the respondents indicated to have at a point in time contracted conjunctivitis; thus, giving a high prevalence of Conjunctivitis. Among the 62.5% respondents who have contracted conjunctivitis, at least 45% of them indicated to have experienced conjunctivitis in the past 2 years. When asked what time of the year they experienced it, 21.4% said dry season, 4.7% said rainy season and

37.5% were not sure of the time of year it was. This agrees with findings of Høvdning (2008), who indicated that several types of Conjunctivitis occur at different times of the year but pose the same symptoms: viral conjunctivitis (which has caused outbreaks in several countries) is more prevalent in summer, bacterial conjunctivitis is observed more frequently from December through April while allergic conjunctivitis is observed more frequently in spring and summer season (Høvdning, 2008).

The prevalence of Conjunctivitis among the respondents can be said to be related to the use of un-disinfected public finger-touch devices. University of Ibadan has a total optimum capacity of 8,000 students (undergraduate and postgraduate), therefore, making the students easily susceptible to epidemic outbreaks such as Conjunctivitis and other transmittable eye infection if adequate preventive health care practices are not maintained after the use of public finger-touch devices.

Foliaki et al., (2007) and Ait-Khaled et al., (2007) suggest that prevalence differ from place to place with no distribution pattern. The high prevalence of Conjunctivitis implies poor hand and eye hygiene of the respondents, poor health seeking behaviour or the disease is perceived as not severe. Similarly, Foliaki et al., (2007) and Bateman and Jithoo (2007) suggest that the high prevalence in poor countries may be due to the fact that it may not have been given priority as a disease. However, this contradicts the fact that allergies are on the increase in most of the industrialised countries with about 50 million Americans suffering from allergies (Scottsdale, 2009). Jeebhay (2004) explains that the workplace allergens may be responsible, as they are transported by the worker to their homes, thus affecting the rest of the family. Several workplaces make use of public finger-touch devices for their day-to-day activities such as computers, lift-buttons, phones, tablets, POS and others, with little or no routine disinfection after use. Organisms causing infection can be easily introduced into the eye, thereby causing an eye infection.

## **Knowledge of Conjunctivitis**

The knowledge of causes and symptoms of eye infections such as conjunctivitis among the respondents' was average as only 31.4% of the respondents had good knowledge. This can be attributed to the fact that most health education talks focus solely on other ways the sight of an individual can be impaired or other ways conjunctivitis can be contracted and paying less attention to the possibility of eye infections being contracted through public finger-touch devices. As regards knowledge on symptoms of conjunctivitis, more of the respondents indicated that redness of the eye, headache, watery eyes, blurry vision, pain and puffy eye are symptoms of conjunctivitis; but yellow eye and growth of a thin layer in the cornea is not necessarily a symptom of conjunctivitis. The finding was corroborated by those of Quinn et al., (2002) who highlighted that purulent discharge, pain, tearing, itching, contact lens intolerance, foreign body sensation are the common symptoms of conjunctivitis.

From literature, Juzych et al., (2008) study stated that low conjunctivitis knowledge is expected in people with low health literacy. Population-based studies, report low awareness (0.32%-2.4%) of conjunctivitis in rural India (Dandona et al., 2001; Krishnaiah et al., 2005), as high as 93% in Australia (Lau et al., 2012) and 78% in Hong Kong (Hoevenaars et al, 2005). This brings to bare the essence of knowledge surveys for specific countries and populations. It is imperative for parents of children with conjunctivitis to have requisite knowledge as well as awareness of conjunctivitis and eye care to prevent future visual impairment (Bile, 2007). He asserted that when adequate awareness is given to parents, it turns to influence their perception on the eye condition and help prevent childhood blindness. In a recent study by Rewri and Kakkar (2014), out of 5000 individuals enrolled in a survey, only 8.3% were aware of conjunctivitis and 1.89% qualified as having adequate knowledge about conjunctivitis. They reported that the level of education correlates with awareness and knowledge of conjunctivitis.

In a related study conducted in China, on awareness of conjunctivitis in a multi-ethnic population in rural China. The researchers found that minority were aware of conjunctivitis and this was significantly associated with level of education. They also reported significant ethnic differences in the level of awareness of conjunctivitis among the population.



## **Preventive Health Care practices against conjunctivitis**

According to World Health Organisation (2010), hand hygiene is a general term referring to any action of hand cleansing, i.e., it is the act of cleaning one's hand with or without the use of water or another liquid, or with the use of soap, for the purpose of removing soil, dirt, and/or microorganisms. From this study, a higher proportion of respondents indicated that hand hygiene is a preventive measure to reduce transmission of conjunctivitis. In addition, more of the respondents indicated that soaking of cloth in warm water and putting it on the eye for few minutes per day do not necessarily prevent conjunctivitis; but conjunctivitis is preventable by avoiding dusty environment.

Also, study from Azari and Barney, 2013 agrees with result from the findings that sharing of personal items, such as eye drops, towels, bedding, contact lenses, eye cosmetics and eye glasses should be avoided as this can influence the transmission of eye infections.

More of the respondents agreed that preventive health care practice against conjunctivitis is done to improve the quality of life of individual and the infection can be prevented even. Another study (Edward & Rupal, 2012) conducted on awareness of conjunctivitis among parents of children with the condition in a tier two city of South, about 39.8% answered that conjunctivitis was preventable, while 28.9% responded that it was not preventable.

Finally, more of the respondents agreed that frequently touching the eye or areas around the eye allows easy transmission of conjunctivitis. This agrees with the study by Montgomery (2008) who stated that the eye is a sensitive part of the body that must be protected from foreign objects; therefore, practices that can adversely affect them should be avoided while practices that can prevent eye trauma should be promoted as part of School health programme.

## **Sources of Information on Conjunctivitis**

When asked about their sources of information, more of the respondents agreed that social media assists them to learn about preventive health care practices against conjunctivitis; when asked about the most preferred source of information on conjunctivitis, more of the respondents preferred the internet and suggested the informative information should be made available occasionally.

In a study carried out by Sukati, Moodley and Mashige (2018) to determine the practices of parents about child eye health care in the public sector in Swaziland. Out of 173 parents who were recruited in the study, 42(31.3%) of the parents indicated that they get information about eye diseases from medical doctors while other respondents indicated Television, Radio, Newspaper, Nurse, Friends, Neighbours and others.

Another study (Edward & Rupal, 2012) conducted on awareness of conjunctivitis among parents of children with the condition in a tier two city of South India showed that 65.1% parents were aware of the disease. It was observed that, most parents got their sources of information on the diseases from their health care providers and television programs.

## **5.2 Implication of findings for Health Promotion and Education**

Health education is an integral part of health promotion. The findings from this study have several implications for health promotion and education on adopting good preventive health care practice against eye infections such as conjunctivitis among postgraduate students. It has been revealed that several visual impairment and eye diseases that cause preventable blindness are often the result of a mixture of factors such as lack of proper health education, poor access to information, knowledge of the infections among other.

Therefore, to improve and encourage practice of maintaining good hand hygiene after the use of public finger-touch devices, the important sanitary resources should be made available and kept functional and this include clean tap water, soap, washing hand basins, towels for cleaning the hand after washing and hand sanitizers.

## **5.3 Conclusion**

The foregoing conclusions were drawn based on the findings of the study;

The study objectives were met, as the prevalence, level of knowledge, preventive health care practice and source of information were identified. This study concludes that there exists significant relationship between knowledge of conjunctivitis and preventive health care against conjunctivitis. This implies that the more adequate the knowledge of conjunctivitis, the higher the preventive health care practices against conjunctivitis.

However, sex, age, ethnicity, religion, family type and most used public finger-touch device had no significant relationship with preventive health care practices against conjunctivitis.

This study concludes that social media and television had significant relationship with preventive health care practice against conjunctivitis. However, radio, internet, friends, books, family and magazines as sources of information had no correlation with preventive health care practice against conjunctivitis.

Finally, it is important to note that good hand hygiene after the use of public finger-touch devices also guarantees good health sight and reduces the risk of visual impairment or blindness.

#### **5.4 Recommendations**

The following recommendations were made based on the conclusions reached by the study;

1. There should be more public awareness as regards the nature of conjunctivitis as well as the mode by which it spreads.
2. Also, considering the wide usage of public finger-touch devices in almost every aspect of daily living, efforts should be made especially by banks as well as public places that utilizes public touch devices such as ATM, POS, among others to provide disinfectants that clients/customers can always make use of immediately after use.
3. In addition, this study recommends that various means by which conjunctivitis can be prevented be inculcated into students and the general populace. This will help reduce the extent to which conjunctivitis can spread.
4. Finally, this study recommends that more studies should be carried out on other factors that could play in role in prevention of conjunctivitis.

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## APPENDIX A

### INFORMED CONSENT FORM

**Title of Research:**

Knowledge and Preventive health care practices against Eye infections among Postgraduate Students using Public finger-touch devices in University of Ibadan, Ibadan, Nigeria.

**Name of Researcher:**

This study is being conducted by Fayomi Temidayo Sola  
Department of Health Promotion and Education  
Faculty of Public Health  
College of Medicine, University of Ibadan

**Purpose of Research:**

The purpose of this study is to investigate the Knowledge and Preventive Health Care Practices against Eye infections among Postgraduate Students using Public Finger-touch Devices in University of Ibadan, Ibadan, Nigeria.

**Procedure of the Research**

A total of 367 Postgraduate students from University of Ibadan will be recruited for this study using a three stage sampling technique. This study will employ quantitative method of data collection using self-administered semi structured questionnaire. The respondents will be required to supply the necessary information which will be used for the purpose of this study by filling the questionnaire. The questionnaire contains questions relating to the prevalence, knowledge, preventive health care practices against Conjunctivitis and the sources of Information on Conjunctivitis among postgraduate students. This study will take 6months for completion.

**Risk**

The research does not require collection of invasive materials, therefore safety of participants is guaranteed.

**Costs to participants**

Your participation in this research will not cost you anything

**Benefits**

The goal of this research is to assess the knowledge and preventive health care practices against eye infections among postgraduate students using public finger-touch devices in University of Ibadan, Ibadan, Nigeria.

Although there are no direct and immediate benefits to participants, the information gathered from this study can be used to make necessary recommendations to improve quality of life of students who use public finger-touch devices.

**Confidentiality**

Information collected from this study will have no name or any kind of identifier thus cannot be linked to you in any way. Neither will your name reflect in the publication. The information gotten would be stored properly with limited access to unauthorized personnel.

**Voluntariness**

Your participation in this research is entirely voluntary, however, a student who feels uncomfortable with any of the questions asked may leave such questions unanswered.

**Statement of person obtaining informed consent**

I have fully explained this research to ..... and have given sufficient information, including about risks and benefits, to make an informed decision.

DATE ..... SIGNATURE.....

NAME.....

**Statement of person giving consent**

I have read the description of the research and I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research to agree that I want to partake in it. I understand that I may freely stop being part of this study at any time. I have received a copy of this consent form and additional information sheet to keep for myself.

DATE.....SIGNATURE.....

NAME.....

WITNESS' SIGNATURE (if applicable):.....

WITNESS' NAME (if applicable):.....

**APPENDIX B**  
**QUESTIONNAIRE**

**SECTION A: Socio-Demographic Characteristics of Respondents**

*In this section, please tick (✓) any of the responses that apply to you in the options provided or complete the blank spaces provided as applicable.*

1. Sex: (1) Female [ ] (2) Male [ ]
2. Age as at last birthday: \_\_\_\_\_ years
3. Marital status: (1) Single [ ] (2) Married [ ] (3) Divorced [ ] (4) Separated [ ]  
(5) Widowed [ ]
4. Ethnicity: (1) Yoruba [ ] (2) Hausa [ ] (3) Igbo [ ] (4) Others (specify) \_\_\_\_\_
5. Religion: (1) Christian [ ] (2) Muslim [ ] (3) Traditional African Religion [ ]  
(4) Others (specify) \_\_\_\_\_
6. Family type: (1) Monogamy [ ] (2) Polygyny (i.e. father has 2 or more wives) [ ]
7. Type of program: (1) Masters [ ] (2) Professional [ ] (3) MPhil [ ] (4) PhD [ ]
8. Average monthly income: \_\_\_\_\_
9. Faculty: \_\_\_\_\_
10. Hall of residence: (1) Abubakar Abdulsalam [ ] (2) Tafawa Balewa [ ] (3) Obafemi Awolowo [ ]
11. Mention one (1) Public finger-touch device you use: \_\_\_\_\_

**SECTION B: Prevalence of Conjunctivitis**

12. Have you ever contracted Conjunctivitis (Apollo)? (1) Yes [ ] (2) No [ ] (if no, move to question 15)
13. If yes, when was the last time you had Conjunctivitis? (1) Less than a year [ ]  
(2) 1- 3 years ago [ ] (3) Over 3 years [ ]
13. How many times have you had it in the last 2years? (1) Once [ ] (2) 2-3 times [ ] (3)  
Over 3 times [ ]
14. What time of the year did you experience conjunctivitis?  
(1) Dry season [ ] (2) Rainy season [ ] (3) Not sure [ ]

15. Has anyone (first degree relative) you know ever had conjunctivitis before? (1) Yes [ ]  
(2) No [ ] (if no, move to question 17)
16. If yes, what time of the year did they experience conjunctivitis?  
(1) Dry season [ ] (2) Rainy season [ ] (3) Not sure [ ]

### SECTION C: Knowledge of Conjunctivitis

Kindly tick (✓) either of the options provided and fill in the spaces provided below.

What are the symptoms of Conjunctivitis you know?

S/N	Symptoms	Yes	No	Score
17	Redness of eye			
18	Headache			
19	Yellow eye			
20	Watery discharge			
21	Blurry vision			
22	Pain			
23	Growth of a thin layer in the cornea			
24	Puffy eye			
25	Foreign-body sensation in the eye			

### Knowledge of mode of transmission

26. Mention one (1) way through which Conjunctivitis can be contracted \_\_\_\_\_
27. Mention a possible consequence of Conjunctivitis? \_\_\_\_\_

Please tick (✓) any of the responses that apply to you in the options provided.

S/N	Statement	True	False	Score
28	Conjunctivitis mainly affects the eye			
29	Conjunctivitis is not contagious			
30	Conjunctivitis is an allergic disease			
31	Irritant materials and substances in eye can cause Conjunctivitis			
32	Contact lenses has potential to cause Conjunctivitis			

33	Conjunctivitis cannot be contracted through public finger-touch devices			
34	Conjunctivitis is hereditary			
35	During Conjunctivitis outbreak, it cannot be prevented			

36. Total score obtained: \_\_\_\_\_

37. Code: \_\_\_\_\_

**SECTION D: Preventive Health Care Practices against Conjunctivitis**

Please, underline your suitable answer as regards your practice

38. What do you do after using any Public finger-touch device? (1) Nothing (2) Properly wash your hands with soap and water (3) Use hand sanitizer (4) Wipe your hands with your handkerchief (5) Wipe your hands with your tissue paper [ ] (5) Others (specify)

\_\_\_\_\_

Kindly tick (✓) either of the options provided (yes/no)

S/N	Statement	Yes	No	Score
39	Hand hygiene is not a preventive measure to reduce transmission of Conjunctivitis			
40	Frequent washing of clothes prevents Conjunctivitis			
41	Soaking of cloth in warm water and putting it on the eye for few minutes 3-4 times per day prevents Conjunctivitis			
42	Conjunctivitis is preventable by avoiding dusty environment			
43	Reduced eye contact with a person having Conjunctivitis can prevent transmission			
44	Immediate disinfection of public finger-touch devices before/after use reduces the spread of Conjunctivitis			
45	Conjunctivitis cannot be transmitted through sharing of sunshade or eye glass with family members, friends and others			
46	Not keeping long nails prevents the spread of Conjunctivitis			

47	Preventive health care practices against conjunctivitis is done to improve the quality of life of individual			
48	Frequently touching the eyes or areas around the eyes allows easy transmission of Conjunctivitis			
49	Sharing of personal belongings such as makeup, eye drop, contact lenses, and beddings does not influence the transmission of Conjunctivitis			

50. Total score obtained: \_\_\_\_\_

51. Code: \_\_\_\_\_

### SECTION E: Sources of Information On Conjunctivitis

What is/are your source(s) of information on Conjunctivitis (Apollo)?

S/N	Sources	Yes	No
52	Social media		
53	Television		
54	Radio		
55	Internet		
56	Friends		
57	Books		
58	Family		
59	Magazines		

60. What is your preferred source of information on Conjunctivitis? \_\_\_\_\_

61. What type of information do you get from the above chosen source? (1) Preventive [ ]  
(2) Informative [ ] (3) Educative [ ]

62. Did you find the information useful? (1) Yes [ ] (2) No [ ]

63. If no, how can the information be improved? \_\_\_\_\_

**THANK YOU.**

**APPENDIX C**  
**ETHICAL APPROVAL LETTER**



**INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)**  
**College of Medicine, University of Ibadan, Ibadan, Nigeria.**

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UI/UCH EC Registration Number: **NHREC/05/01/2008a**

**NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW**

**Re: Preventive Health Care Practices against Conjunctivitis among Postgraduate Students using Public Finger-Touch Devices in University of Ibadan, Oyo State, Nigeria.**

UI/UCH Ethics Committee assigned number: **UI/EC/19/0380**

Name of Principal Investigator: **Temidayo S. Fayomi**

Address of Principal Investigator: Department of Health Promotion and Education  
College of Medicine,  
University of Ibadan, Ibadan

Date of receipt of valid application: **09/09/2019**

Date of meeting when final determination on ethical approval was made: **12/12/2019**

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval by the UI/UCH Ethics Committee.*

This approval dates from **12/12/2019 to 11/12/2020**. If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC at least four weeks before the expiration of this approval in order to avoid disruption of your research.

*The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.*



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