CONTRIBUTIONS OF HEALTH EDUCATION TO ORAL HEALTH PRACTICES AMONG PHYSICALLY CHALLENGED PUPILS IN PUBLIC SPECIAL PRIMARY SCHOOLS IN KISUMU COUNTY, KENYA

OTIENO KENNEDY BRISKLEY
REG. NO. E55/CE/14565/2009
DEPARTMENT OF EDUCATIONAL FOUNDATIONS
KENYATTA UNIVERSITY

A THESIS SUBMITTED FOR THE DEGREE OF MASTER OF EDUCATION IN THE SCHOOL OF EDUCATION, KENYATTA UNIVERSITY

© May 2016
Declaration

Declaration by the Student:

This thesis is my original work and has not been presented for the award of a degree in any university.

Signature ........................................ Date ..............................................

Otieno Kennedy Briskley
E55/CE/14565/2009

Declaration by the Supervisors:

We confirm that the work in this thesis was carried out by the candidate under our supervision as university supervisors.

Prof. James E. Otiende

Signature ........................................ Date ..............................................

Department of Educational Foundations
Kenyatta University

Dr. Violet Wawire

Signature ........................................ Date ..............................................

Department of Educational Foundations
Kenyatta University
DEDICATION

To my dear family, wife: Ellen, daughters: Laurine, Sandra, Stansfield and Sally.

Thank you for the immeasurable love, peace and support.
Acknowledgements

I am obligated to thank my accomplished supervisors and senior researchers Prof. James E. Otieno and Dr. Violet Wawire for their very scholarly guidance and immeasurable support with this thesis. My sincere appreciation goes to the physically challenged pupils, the teachers, caregivers and parents from Public Special Primary Schools in Kisumu County: Joyland, Agai, Abwao, St. Martin Depores and Ngeny whose information and support made data collection and the study successful.

I also pay special tribute to my dear wife Ellen for her unmatched input in terms of financial support and encouragement, critical insights and peace of mind in the course of writing. I am eternally grateful. Finally, I wish to specially thank Dr. Andagallu Ben, Dr. Kabuka Erick, Mr Dolla, my sister Pauline and all whose names I forever will not forget for they made this work successful.
# ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
</tr>
<tr>
<td>ADA</td>
<td>Australian Dental Association</td>
</tr>
<tr>
<td>DMFT</td>
<td>Decayed Missing Filled Teeth</td>
</tr>
<tr>
<td>FGDs</td>
<td>Focus Group Discussions</td>
</tr>
<tr>
<td>FPE</td>
<td>Free Primary Education</td>
</tr>
<tr>
<td>GoK</td>
<td>Government of Kenya</td>
</tr>
<tr>
<td>HE</td>
<td>Health Education</td>
</tr>
<tr>
<td>HEC</td>
<td>Health Education Curriculum</td>
</tr>
<tr>
<td>HIV</td>
<td>Human Immune-Deficiency Virus</td>
</tr>
<tr>
<td>HL</td>
<td>Health Literacy</td>
</tr>
<tr>
<td>KIE</td>
<td>Kenya Institute of Education</td>
</tr>
<tr>
<td>KNSPWD</td>
<td>Kenya National Survey for People with Disabilities</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MoE</td>
<td>Ministry of Education</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>OH</td>
<td>Oral Health</td>
</tr>
<tr>
<td>OHP</td>
<td>Oral Health Practices</td>
</tr>
<tr>
<td>PI</td>
<td>Physical Impairment</td>
</tr>
<tr>
<td>PCPs</td>
<td>Physically Challenged Pupils</td>
</tr>
<tr>
<td>PWDs</td>
<td>People with Disabilities</td>
</tr>
<tr>
<td>SLT</td>
<td>Social Learning Theory</td>
</tr>
<tr>
<td>SNE</td>
<td>Special Needs Education</td>
</tr>
<tr>
<td>PSPS</td>
<td>Public Special Primary Schools</td>
</tr>
<tr>
<td>SSAK</td>
<td>Special Schools Association of Kenya</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

Declaration ........................................................................................................... i  
Dedication ........................................................................................................... ii  
Acknowledgements .......................................................................................... iii  
Abbreviations and Acronyms ......................................................................... iv  
Table of Contents ............................................................................................ v  
List of Charts .................................................................................................... x  
List of Figures .................................................................................................... xi  
List of Plates ...................................................................................................... xii  
List of Tables ..................................................................................................... xiii  
Abstract ............................................................................................................ xiv  

## Chapter 1: Introduction ...................................................................................... 1

1.0 Introduction ................................................................................................. 1  
1.1 Background to the Study ............................................................................. 1  
1.2 Statement of the Problem ........................................................................... 7  
  1.2.1 Purpose of the Study ............................................................................ 8  
1.3 Objectives of the Study .............................................................................. 8  
1.4 Research Questions ..................................................................................... 9  
1.5 Significance of the Study ............................................................................ 10  
1.6 Limitations and Delimitations of the Study ............................................. 10  
  1.6.1 Limitations .......................................................................................... 11  
  1.6.2 Delimitations ........................................................................................ 11  
1.7 Assumptions of the Study .......................................................................... 11
1.8. Theoretical Framework and Conceptual Framework ........................................ 12
  1.8.1. Theoretical Framework ................................................................. 12
  1.8.2. Conceptual Framework ................................................................. 14
1.9. Operational Definition of Terms .......................................................... 17

Chapter 2: Review of Related Literature ......................................................... 18
  2.0. Introduction .......................................................................................... 18
  2.1. Oral Health Practices of Physically Challenged Pupils ....................... 18
    2.1.1. Physical Disability and Health Practices ..................................... 18
    2.1.2. Oral health Practices of PCPs .................................................... 20
    2.1.3. Oral Health Attitudes ................................................................. 22
  2.2. Health Education and Oral Health Practices ..................................... 23
    2.2.1. Access to Health Education and Oral Health Care Services ........ 27
  2.3. Challenges in Oral Health Practices .................................................. 29
    2.3.1. Attitude and Curriculum Based Challenges .................................. 29
    2.3.2. Culture Based Challenges ......................................................... 30
    2.3.3. Economic and Infrastructural Challenges .................................... 30
    2.3.4. Weak Laws and School Rules .................................................... 31
  2.4. Strategies to Address Oral Health Challenges .................................... 32
  2.5. Summary ............................................................................................. 33

Chapter 3: Research Methodology ................................................................. 35
  3.0. Introduction .......................................................................................... 35
  3.1. Research Design .................................................................................... 35
    3.1.1. Variables ....................................................................................... 36
3.2 The Study Locale ............................................................... 37
3.3 Target Population ............................................................. 38
3.4 Sampling Techniques and Sample Size .................................. 39
  3.4.1 Sampling Techniques .................................................. 39
  3.4.2 Sample size ................................................................ 40
3.5 Research Instruments ........................................................ 41
  3.5.1 Pupils’ Focus Group Discussions ................................. 41
  3.5.2 Questionnaire for Teachers .......................................... 42
  3.5.3 Interview Schedule for Caregivers ............................... 43
  3.5.4 Interview Schedule for Parents ...................................... 44
  3.5.5 Customised Journal for Pupils ...................................... 44
3.6 Pilot Study ........................................................................ 45
  3.6.1 Validity .................................................................... 46
  3.6.2 Reliability .................................................................. 47
3.7 Data Collection .................................................................... 47
3.8 Data Analysis ...................................................................... 48
3.9 Logistical and Ethical Considerations .................................... 49

Chapter 4: Data Presentation, Analysis and Discussion ...................... 50
4.0 Introduction ........................................................................ 50
4.1 Demographic Characteristics of Participants ............................ 50
  4.1.1 Participation Levels by Gender ..................................... 51
  4.1.2 Learning Disability Challenges among Respondents ........... 53
  4.1.3 Characteristics of Parents of PCPs ................................. 56
4.1.4 The caregivers

4.2 Oral Health Practices among PCPs

4.2.1 Tooth Brushing

4.2.2 Dental Check-ups

4.2.3 Oral Hygiene Behaviours

4.3 Health Education and Oral Health Practices

4.3.1 Oral Health Knowledge, Skills and Attitudes

4.3.2 Care for Teeth

4.3.3 Attitudes of PCPs towards Oral Health Information

4.3.4 Application of Knowledge to OH Problems

4.4 Challenges in Oral Health Practice by PCPs

4.4.1 Time for Oral Health Practices

4.4.2 Challenges due to Severity of Disability

4.4.3 Oral Health Awareness and Adapted Facilities

4.4.3.1 Childhood Socialization of PCPs

4.4.4 Economic Challenges

4.4.5 Exposure to Risk Factors

4.4.6 Oral Health Facilities

4.5 Health Education Strategies that Address Oral Health Challenges

4.5.1 Strategies that Directly Address OH Challenges

4.5.1.1 Enrolling New PCPs into Special Class

4.5.1.2 Sending Shopping Guidelines to Parents

4.5.1.3 Providing Access to Clean Safe Water

4.5.2 General Strategies that Address Challenges to OH Practices
4.5.2.1 Friendly Infrastructure ........................................ 103
4.5.2.2 Economic Support ............................................. 104
4.5.2.3 Good Time Management .................................... 105
4.5.2.4 Rules against Foodstuff Vendors ............................ 106
4.5.2.5 Strict Dining Hall Rules ...................................... 107

Chapter 5: Summary, Conclusions and Recommendations ............ 108
5.1 Introduction .................................................................. 108
5.2 Summary of the Findings ........................................... 108
5.3 Conclusions .............................................................. 117
5.4 Recommendations .................................................... 118
  5.4.1 Policy Recommendations ...................................... 119
  5.4.2 Suggestions for further Research .............................. 121
REFERENCES .................................................................. 123
APPENDICES ..................................................................... 131
Appendix I : Focus Group Discussion Guide ......................... 131
Appendix II : Questionnaire for Teachers ............................ 132
Appendix III : Interview Schedule for Caregivers .................. 138
Appendix IV : Interview Schedule for Parents ...................... 139
Appendix V : Customised Journal for Pupils ....................... 140
Appendix VI : Oral Health Contents in Health Education Units .... 141
Appendix VII: Research Permit ........................................ 143
Appendix VIII: Map of Kisumu County ............................... 144
List of Charts

Chart 4.1  Physical Disabilities among PCPs ........................................ 54
Chart 4.2  Multiple Disabilities among Respondent ................................. 54
List of Figures

Figure 4.1: Conceptual Framework .................................................. 15
Figure 4.2: Oral Hygiene Practices .................................................. 65
Figure 4.3: Oral Health Practices by Class ......................................... 71
Figure 4.4: Common Oral Health Problems by Percentages .................. 75
Figure 4.5: Rating of Oral Health Service Providers .......................... 83
Figure 4.6: Oral Health Problems Faced by PCPs .............................. 91
Figure 4.7: Brushing Responses due to Resource Manipulability ........... 96
Figure 4.8: Attitude of PCPs towards Caregivers ............................... 98
Figure 4.9: Snack taking Responses .................................................. 107
List of Plates

Plate 4.1: Narrow Corridor ................................................................. 78
Plate 4.2: Caregiver Offering Oral Health Service to a Pupil ............... 84
Plate 4.3: Improvised Use of Feet to Brush Teeth ............................. 85
Plate 4.4: Adapted Toothbrushes ......................................................... 86
Plate 4.5: Water Containers ................................................................. 101
Plate 4.6: Teacher Serving a PCP in the Library ............................... 103
List of Tables

Table 3.1: Target Population and Sample Size ............................................. 41
Table 4.1: Population Sample of Participants ............................................. 51
Table 4.2: Pupils Participation by School and Gender .................................. 52
Table 4.3: Dropout Rate of PCPs by Gender ............................................. 53
Table 4.4: Participation of PCPs by Class and Gender .................................. 53
Table 4.5: Background Characteristics of Parents ..................................... 57
Table 4.6: Qualifications of Caregivers ..................................................... 58
Table 4.7: Tooth Brushing Responses by Class ........................................... 59
Table 4.8: Relationship between Tooth Aches and Dentist Visits ................. 61
Table 4.9: Frequency of Eating Washed and Unwashed Fruits ....................... 64
Table 4.10: Adequacy of Oral Health Content of HE .................................. 67
Table 4.11: Application of Oral Health Contents of HE ............................... 68
Table 4.12: Attitude of PCPs towards Oral Healthcare Service Providers...... 73
Table 4.13: Tooth Brushing Frequencies Compared ................................... 79
Table 4.14: Oral Health Resources ............................................................ 93
Table 4.15: Oral Health Care Items ............................................................ 104
ABSTRACT

The purpose of this study was to establish the contributions of Health Education (HE) to Oral Health Practices (OHP) among the Physically Challenged Pupils (PCPs) in Public Special Primary Schools (PSPS) in Kisumu County, Kenya. The objectives were to; determine oral health practices among the PCPs who study HE in PSPS, establish contributions of HE to Oral Health Practices among PCPs in PSPS, identify Oral Health (OH) challenges faced by PCPs who study HE in PSPS and to determine HE strategies put in place by the PSPS to address challenges in OHP among the PCPs. The study was guided by a theoretical framework adapted from Albert Bandura’s (1978) Social Learning Theory (SLT) and a conceptual framework showing the relationship between oral health contents in the primary school HE unit, intervening factors and identified oral health practices. Descriptive survey research design was adopted. Target population comprised of 925 people; 790 PCPs, 40 teachers, 87 parents and 8 caregivers drawn from 5 PSPS for Physically Challenged Pupils in Kisumu County, Kenya. Purposive Sampling technique was used to select 83 PCPs, 29 class teachers and 9 parents. All the caregivers participated in the study due to their small population. Data collection instruments included; FGD guidelines, a questionnaire, structured interview schedules and a customised journal. Validity of instruments was ascertained by experts from the Department of Educational Foundations at Kenyatta University. Piloting study was done among 37 pupils, 2 parents, 4 class teachers and one caregiver using test-retest method. Reliability coefficient index of 0.9 was obtained showing that the instruments were reliable. Data was analyzed using quantitative and qualitative statistical methods. The findings revealed that the most frequent OH practices included tooth brushing (80.47% responses) and rinsing the mouth with water at least once per day (85.22% responses) among the PCPs. The least performed practice was visit to dentist (5.42% responses) despite higher occurrences of tooth pain (43.35% responses). It was found that teacher centred HE lessons denied PCPs opportunity to practice learnt skills. Challenges found include; inadequate time for OH practices, lack of supervision and negative attitude towards OH care. Strategies to reduce challenges included; clear rules, organised OH talks and solicited donations of OH care items. The study concluded that; severity of disability limited operationalization of knowledge and skills besides compounding negative attitudes of the PCPs towards OH practices taught. However, it was evident that HEC content had relevant information which contributed to the improved oral health practices among PCPs as they progressed from class 7 to 8. The study recommends that teachers should be in-serviced on HE content and the course be a core unit for trainees. Lastly the government should provide adapted OH facilities like toothbrushes to PCP as routine OH examinations are organised by the PSPS.
CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter deals with the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, delimitations and limitations of the study, assumptions of the study, theoretical framework, conceptual framework and operational definition of terms.

1.1 Background to the Study

The United Nations (UN) gathering of 189 heads of states held in September 2000 resolved and declared the eight Millennium Development Goals (MDGs) to be met by 2015 (UN, 2012). The MDG number two aims at providing universal free basic education to all children with equality. Three of the goals focus on health matters. Goal number four, five and six address child health, maternal health and combating HIV/AIDS, malaria and other diseases (UN, 2007) respectively. Most of the diseases and illnesses have oral health (OH) implications or are oral in nature which forms the link to this study.

Although OH problems on their own do not seem to be life threatening, their high prevalence and the general discomfort they cause negatively affects overall quality of life (Pau, 2012). In developing countries e.g Kenya, the under privileged and rural communities are the most affected (Mutinda, 2006). According to the Surgeon General’s Report (2011) on ‘improving oral health’,
the mouth is a mirror that reflects general health or disease status of a person. The report says that oral tissue may signal presence of disease and its progression. Further, the mouth can be a window for diagnosis, treatment and exposure to risks. Similarly, Pau (2012) adds that the mouth is a portal of entry for infections that affect local tissues before spreading to other parts of the body. Precisely, OH is integral to general health and should be studied keenly among populations.

According to Kickbusch and Buse (2000), socio-economic and socio-cultural impacts of preventable diseases affect health of 15% of the World’s population with disability (WHO, 2012). Some of the disabilities arise from birth defects, chronic diseases or injuries (WHO/FAO, 2004). Studies have shown that if health care needs of people with disabilities (PWDs) are not serviced, they end up with poorer health and often miss education (Yeo, 2001). Besides, UNICEF (2005) and WHO (2012) confirms that PWDs need more social and health care services (screening, counselling, social support, treatment and rehabilitation) than their able-bodied counterparts (Mishra, 2008). Hence, Article 25 of the UN Convention on Rights of the Child (UN CRC, 2009) advocates for free access to health and education without discrimination against PWDs.

In Africa, statistics on disease burden show that 71.1% of people suffer from communicable diseases, 21% from non-communicable diseases and the remaining 7.9% suffer due to injuries hence the United Nations (UN) push to halve disease prevalence rates by 2015 (Strazuiso, 2013). Although data about health of able-bodied persons exist, little seems to be known about disease burden and patterns among PWDs in the sub-Saharan Africa (Nyamuryekung’e,
According to WHO (2012), this is due to their poor access to education and health services which if unattended will continue affecting their general health. Further, Harris, Nicolle, Adair & Pine (2004) specifically points at the fewer studies on OH practices and OH status of the underprivileged in Africa.

In Kenya, some of the challenges facing oral health care include, poor distribution of OH facilities (Kaimenyi, 2004), lack of equipment and qualified oral health personnel (Gathecha, Makokha, Wanzala, Omollo & Smith, 2012). Studies by WHO (2003) have shown that vulnerability of PWDs and challenges in conducting daily oral care activities like teeth brushing expose them to oral diseases. The most affected category of PWDs faced with these challenges is the physically challenged pupils (PCPs). They need OH care assistance due to their activity limitations and participation restrictions that Tomlinson, Swartz, Allana, Kit, Igor and Shekhar, (2012) term social constructs. In some communities the PCPs are kept behind scenes (Solarin-Lawal, 2012) to conceal their disabilities (Gaetan, 2010). Such practices violates the rights of PCPs to access free primary education (FPE), health education and good oral health at home, school or in the community (Tomlinson, Swartz, Alana, Kit, Igor, & Shekhar, 2012).

Studies on the relationship between education and health revealed that; people with high level of education have lower morbidity to common illnesses than those with low levels of education (Cuttler & Adriana, 2007). The state of a person’s physical health influences their educational attainment and income (Freund, Graybill, & Keith, 2005), while the WHO (2008) stated that, a direct
correlation exists between high income and better health. In 2011, the WHO reported that disability rate in Kenya was 19% higher among groups with lower educational attainment compared to 11% among the highly educated. Hence, the emerging reality is, because more PWDs achieve low education, their income is low and their morbidity to diseases is high (Freund, Graybill, & Keith, 2005). Health education (HE) taught as a unit in primary science subject from class one to eight in Kenya befits an OH care intervention. The HE contents include care of teeth, problems related to teeth, requirements for maintaining strong teeth, functions of teeth (K.I.E., 2009a) among others.

In a research on OH knowledge and OH practices among 5-17 year old school children in Uasin Gishu district; Kenya (Okemwa, Gatonga & Rotich, 2010), it is recommended that education programmes should be used to improve oral hygiene knowledge and practices among pupils. The same is urged for children with disabilities who have more marked OH pathologies due to their disability or other reasons: medical, economic, social, self-mutilating behaviours like excessive teeth grinding, cariogenic effect of medicines (Bharathi & Singh, 2012). In addition, failure by parents and care givers to assist PCPs in carrying out proper oral hygiene can change oral disease patterns among PCPs. This makes oral health of PCPs a potential research area.

In order to create equity and enhanced access to basic health information, the Government of Kenya (GoK) through the Ministry of Education (MoE) integrated HE in the primary school Science curriculum (Wanjira, 2009). However, the introduction of FPE in 2003 led to over-enrolment in schools and
congestion in existing Public Special Primary Schools (PSPS) for PCPs. A shortage of teachers with training in special needs education (SNE) ensued, curriculum handling became challenging and teaching of some practical demanding contents like HE became theoretical (MoE, 2008). Teaching focus shifted towards passing exams without regard to development of skills and attitudes (Sitienei &Mulambula, 2012) as stated in objectives of teaching HE in the syllabus where oral health is part of the content. As teachers became overwhelmed, Moumié, (2008) Non-Governmental Organizations (NGOs) and the GoK initiative of integrating OH in health education in the curriculum this study launches out to find out the contributions of HE has made to oral health practices among PCPs in Kisumu County.

In Kenya, the increase in populations poses notable challenges to oral health in terms of increased limited access to facilities and resources (Kaimenyi, 2004). While studies in this area seems to be scanty, oral health problems tend to increase causing students loss of precious study time (Nakre & Hirikiran, 2013) as well as pain, discomfort, low self-esteem and hospitalisation (Vernetti, 2013). According to CDC (2006), poor oral health practices which cause diseases like cavities and periodontitis are prevalent where illiteracy, low income and poor health care seeking behaviour thrive. The challenge this poses for the future of OH among PCPs in Kisumu is how to access OH information and translate the experiences into practices (Pirate, 2006) in order to achieve action competence (Bruun, Schnack, & Simovska, 2000) in practices that improve oral health. This will reduce the negative influences of cultural, economic, and environmental
factors which increase prevalence of oral diseases like periodontitis and caries among the PCPs (CDC, 2006).

In Kisumu County, though there are some achievements in oral health among able bodied populations, serious challenges remain among underprivileged groups (Petersen, 2003) like PCPs who also face socio-economic, socio-cultural and environmental challenges in access to accurate OH education and OH care services (Moumié, 2008). Kisumu County is number 44 out of 47 counties in Kenya in terms of morbidity to diseases. Using the 10% general rule provided by United Nations as minimum estimate of disabled people in a given population, 96,891 of the residents of Kisumu County have some form of disabilities. However, a paltry 940 PCPs are enrolled in PSPS (WHO, 2011b & KNSPWD, 2008). Statistics from the Educational Assessment Resource Centre (EARC) in Kisumu show that 33.3% of the PCPs dropped out of school between 2006 and 2010 and according to Ogadho and Ajowi, (2013) studies are needed about health and education among PCPs.

Lastly, this study was a response to appeals by the Association of People with Disability in Kenya Kisumu (APDK-Kisumu, 2012) for more studies about education and health trends among pupils with special needs in the county to identify risk reduction interventions. The study focused on how PCPs translate HE knowledge, skills and attitudes into oral health practices despite their activity limitations and participation restrictions which otherwise promote marginalisation, poor health orientation and inability to practice what they learn (Moumié, 2008). According to Gallagher, Kirk, Anastasiow and Coleman,
(2012) learning disabilities are defined by describing the discrepancy between ability and performance.

1.2 Statement of the Problem

Oral diseases are one of the most prevalent conditions in the world and are largely preventable for example; dental caries affects 60-90% of school children and most adults in industrialized countries. There is increasing prevalence of oral diseases in developing countries with higher ratios among people with disabilities (Nakre & Harikiran, 2013). Despite marked improvements in healthcare over the past century in Kenya, serious challenges remain in OH; the low allocation of 0.0016% of the Ministry of Health budget (3.8% of national budget) to the ill equipped and poorly staffed OH department with a Dentist: Population ratio of 1:42,000 (Ministry of Health, 2004). According to Bharathi and Singh (2012) oral health statuses of children with disabilities are generally poorer as compared to children without disabilities. In India they recommended enhanced preventive school based OH education. In Kenya, the equivalent of OH education is HE which is integrated in the Primary science Syllabus. The OH contents of HE like regular tooth brushing can inevitably enhance self-efficacy (Muia, 2000) in OH practices among the PCPs.

The remaining challenges in OH among PCPS arise from the pupils self debilitations which compound their activity limitations and participation restrictions leading to acquisition of knowledge without putting into practice (Sitienei & Mulambula, 2012). According to KNSPWD (2008) moderate disability limit application of what is learnt by 14.4 – 23.5% and severe
disability reduce practise by 15.4 – 20.45. Given that that 39.9% of PWDs have poorer overall health (KNSPWD, 2008) questions about the contributions of the HE content towards OH practices among the PCPs arise because poor OH practices expose PCPS to bad OH outcomes; caries, cavities, halitosis, dry lips and oral lesions and cariogenic effects of medicines. The influences of these OH outcomes if unattended increase learning problems; poor lesson attendance, interrupted nutrition and sleep patterns, poor academic performance.

In Kisumu County, statistics show that disabling factors under self care among children with physical disabilities include oral diseases (31%) and maxillofacial occlusions (26.9%). Records indicate that 10 to 15 out of 220 pupils (i.e. 4.54-6.81%) visit the hospital per day (SSAK-Kisumu, 2012) due to OH related problems like toothaches. Given that previous studies seem unavailable about contributions of HE in promoting OH practices among PCPs in Kisumu County, this study was not only warranted but timely.

1.2.1 Purpose of the Study

The purpose of this study was to establish the contributions of health education to oral health practices among the physically challenged pupils in Public Special Primary Schools in Kisumu County, Kenya.

1.3 Objectives of the Study

The specific objectives of the study were to;

a. Determine the oral health practices among physically challenged pupils in Public Special Primary Schools in Kisumu County, Kenya.
b. Establish the contributions of health education contents to oral health practices among physically challenged pupils in Public Special Primary Schools in Kisumu County, Kenya.

c. Determine the oral health challenges faced by physically challenged pupils in Public Special Primary Schools in Kisumu County, Kenya.

d. Determine health education strategies used in the Public Special Primary Schools to address challenges in oral health practice among physically challenged pupils in Kisumu County, Kenya.

1.4 Research Questions

The research was guided by the following questions:

a. What are the oral health practices among physically challenged pupils who study health education in Public Special Primary Schools in Kisumu County, Kenya?

b. What are the contributions of health education contents to oral health practices among physically challenged pupils in Public Special Primary Schools in Kisumu County, Kenya?

c. What oral health challenges are faced by physically challenged pupils in Public Special Primary Schools in Kisumu County, Kenya?

d. Are there health education strategies in use by Public Special Primary Schools to address challenges in oral health practice among physically challenged pupils in Kisumu County, Kenya?
1.5 Significance of the Study

The findings of this study hoped to:

a. Generate useful information for stakeholders in education about weaknesses and strengths of the HE interventions to OH practices among PCPs. This may help to improve the HE contents in the curriculum in order to address oral health challenges faced by PCPs in life.

b. Be pivotal in revealing current oral health practices among the PCPs in PSPS. The information would help partners with interest in promoting oral health and policy makers to support PCPs with oral health care facilities (toothpastes and brushes), assistive devices and supportive services (dental camps).

c. Benefit parents and guardians of PCPs to refine their responsibilities and oral health care services based on identified weaknesses or strengths to improve ways of encountering challenges facing children with physical disabilities in oral health practice.

d. Add to the pool of knowledge in health education with special reference to oral health among physically challenged pupils. The findings and recommendations would form reference point for further research in oral health and disability studies in Kisumu, Kenya and beyond.

1.6 Limitations and Delimitations of the Study

The study had the following limitations and delimitations.
1.6.1 Limitations

Limitations of the study considered here were potential weaknesses in the study which the researcher could not control. The study findings were limited to OH practices of PCPs in Kisumu County. The study utilized descriptive survey design where data was collected at a specific point in time in order to meet the study deadline. Data was collected using questionnaire, diaries, focus group discussion, and structured interviews within three months, whatever happened after data collection period was not considered. In cases where PCPs had multiple disabilities which incapacitated their speech and writing abilities, their data however vital remained uncollected.

1.6.2 Delimitations

These were choices the researcher made to define parameters of the investigation. The study targeted OH practices of PCPs in Public Special Primary Schools in Kisumu County and who are in class seven and eight. The study considered that they have been taught HE from class one to six and were adequately equipped with knowledge, skills and attitudes which was pre-requisite in this study.

1.7 Assumptions of the Study

The study assumed that:

(i) All PSPS in Kisumu County follow the ministry of education curriculum in which oral health is covered in HE units from between class 1 and 8.
(ii) Other sources of oral health information besides health education exist but they do not significantly contribute to oral health practices among the PCPs.

(iii) Pupils with physical disabilities have different activity limitations and participation restrictions expected to be with in different ways to achieve good OH outcomes.

(iv) Challenges facing PCPs in oral heal practices are known in the PSPS and there are strategies in place to address them in Kisumu County.

1.8 Theoretical Framework and Conceptual Framework

The theoretical framework was used as a hypothetical description of fundamental principles behind oral health practices among PCPs. The conceptual framework explained the relationship between the independent and dependent variables. It considered the intervening factors between the variables as well.

1.8.1 Theoretical Framework

The study was guided by the Social Learning Theory (SLT) by Albert Bandura (1978) which states that behaviour is learnt from the environment through the process of observational learning (McLeod, 2011). The theory proposes that interactions between environmental and cognitive factors contribute towards learning and behaviour (Bandura & Rosenthal, 1978). In this study on contributions of health education to oral health practices among PCPs, HE curriculum was the cognitive learning guideline and the dependent variable. However, it was not the only source of OH knowledge, skills and attitudes
found among the PCPs. The teachers’ skillfulness in addressing the special oral healthcare needs of the PCPs and use of appropriate teaching methods contributed towards learner’s application of knowledge and skills acquired. Teachers reported that pupils who don’t learn through cognition learn by observing and practicing what successful peer mates are doing.

This study agreed with Bandura’s SLT that cognitive learning alone cannot explain behavioural practices. Among PCPs, learning and practicing oral health require the health education curriculum, relevant curriculum support materials like text books and observing what Bandura calls models within the environment e.g. parents and caregivers. The theory helped the researcher to establish contributions of parents, peer mates, teachers and caregivers at family and school levels. In addition, media; television, the internet, radio, newspapers and materials in school libraries were found to contribute towards OH practices of PCPs.

Through observation, children learn by imitating beneficial practices voluntarily and drop those with negative consequences (Jensen, Schnack & Simovska, 2000). Challenges faced by PCPs in practicing what they observe limit their regular oral health practices like tooth brushing and flossing (Hubley & Copeman, 2008). This study endeavoured to find out how diet, income of parents, health care systems and school safety strategies put in place by the PSPS like school rules contribute towards cognitive learning and OHP of PCPS. The theory made it possible to identify causes (e.g. attitude) of poor OHP among the PCPs. The study presumed that oral health practices of PCPs
depended much on an individual’s own determination to achieve high standards of oral health and were not limited to attitude of others, social exclusion, neglect or poor oral health care service access among PCPs.

Finally, the oral health care practices among PCPs are a reflection of oral health practices within their environments. Using the SLT theory, it was implied that PCPs learn to develop and display oral health practices through observations perfected by applying knowledge, skills and attitudes stated in the HE curriculum. The researcher himself used observation while conducting interviews to find out OH practices of the PCPs, factors that affect oral health of PCPs and some strategies put by PSPS to address the challenges posed by the environmental and cognitive factors.

1.8.2 Conceptual Framework

The study was guided by a conceptual framework designed by the researcher. HE was the independent variable and was taught in the PSPS in Kisumu County. The HE content improves OH awareness and reduces OH challenges facing PCPs. It was found that indirect HE strategies put in place by the PSPS reduced social causes of vulnerability and enhanced good OH practices.

The dependent variable was OHP implying activities pupils do to free themselves from practices which cause OH problems like; plaque, cavities, drooling, periodontitis, dental carries, bad breath and oral lesions. On successful completion of HE studies at class eight, the pupils achieve basic competence in carrying out recommended OH practices like regular teeth brushing, rinsing mouth with plenty of clean water and regular visits to the dentist.
The outcomes of those practices fresh breath, frequent brushing, and reduced maxillofacial pains. These among other indicators constituted good OH practices and a means to general wellbeing. In case of negative outcomes (negative feedback), repeated teaching or review of HE (independent variable) contents should be pursued. The conceptualization is further illustrated by Fig. 1.1 below illustrating the contributions of primary school health education to oral health practices among PCPs.

**Figure 1.1: Conceptual framework showing contributions of HE to Oral Health practices of PCPs**
The intervening factors which moderate OH practices of PCPs arose from subthemes and were put into three categories. In the first category were factors within the individual like personal attitude, and self-efficacy. In the second category are family related factors; the cultural OHP like use of tooth sticks, family income, education of parents and the immediate family’s OH coping skills. The last category comprised of environmental and community factors; infrastructure, oral healthcare systems, social support services and technology. These factors had influence on pedagogical skills and consequently contribute towards the PCPs’ knowledge, skills and attitudes necessary for competence in oral health practices. Finally, the more OH knowledge, skills and attitudes were learnt from class one to class eight, the more OHP improved and the more PCPs achieved desirable outcomes by becoming self-motivated role models emulated by peer mates.
1.9 Operational Definition of Terms

Care Givers: This refers to people employed in special schools to provide assistive healthcare services like physiotherapy, nursing care, housekeeping, feeding, cleaning, and mobility support services.

Health Education: This refers to the content, strategies and learning experiences from the primary school syllabus Volume II which is taught in Kenya to improve health behaviour of primary school pupils.

Oral Care: In this study refers to taking care of the inner part of the mouth to keep the gums and teeth healthy.

Oral Health: Refers to the state of health where one is free from chronic mouth and facial pains, oral sores and bad breath.

Oral Health Practices: In this study refers to activities that lead to cleanliness of the mouth like regular teeth brushing, flossing, eating well, and visits to the dentist.

Oral Hygiene: This refers to oral care activities that lead to cleanliness of the mouth.

Physically challenged pupils: refers to children enrolled in Public Special Primary Schools with a single or multiple activity limiting condition/disability/impairment which interferes with the ability to practice learnt skills effectively.

Public Special Primary Schools: In this study refer to exclusive public primary schools for physically challenged pupils in Kenya.
CHAPTER 2

REVIEW OF RELATED LITERATURE

2.0 Introduction

This chapter presents the review of critical literature about the contributions of HE to oral health practices among PCPs in PSPS. The literature sheds light on the following aspects; oral health practices of PCPs, health education and oral health practices, challenges in oral health practices and strategies to address the OH challenges faced by the PCPs in PSPS in Kisumu County, Kenya.

2.1 Oral Health Practices of Physically Challenged Pupils

Although oral health problems are not life threatening, they are of public health concern globally due to their high prevalence, morbidity, general discomfort and negative effects on overall quality of life (Mutinda, 2006). Strengthening of oral health services can be achieved quickly and much more effectively through provision of trained manpower. Teaching oral health education is a means to reach many individuals and motivate them to achieve action competence (Gathecha, Makokha, Wanzala, Omollo & Smith, 2012) in OH self-care.

2.1.1 Physical Disability and Health Practices

According to WHO (2011) physical disability broadly refers to acquired and congenital disabilities and health issues which cause mobility impairments of varying severity. The degree of disability and the part of the body affected is predictive of the effectiveness of performance of basic survival practices unaided (KNSPWD, 2008). In the developing world, particularly in parts of Africa, the society portrays disability as a self debilitating condition. Generally
it is assumed that people with forms of disability lack capacity to manipulate parts of their bodies to achieve some unspecified level of competence in basic life procedures and even when they try; it is believed they end up performing poorly (Boika, 2009). For example, many would think that children with physical disability arising from lack of forelimbs cannot perform health practices like dressing, bathing, rinsing the mouth, brushing teeth or flossing like able bodied children could. However, this may only be to reaffirm that disability in some cases is a social construct.

Oral health disparities among children with disability are attributable to the environment, culture, peer influence, the socioeconomic status of the family and level of disability (Adair, Pine, Burnside, Nicolle, Gillett, Anwar, et al. 2004). A similar view held by Pirate, (2006) agrees that OHP of the parents greatly influence the OHP of their children. A study by Okada, Kawamura, Kaihara, Matsuzaki & Ishidori, et al. (2012) also found that parents who do not practice proper dental hygiene and those with little knowledge and belief in oral health care are less likely to impress proper oral hygiene skills to their children. Research on OH in Kenya reveal with consistence that groups that are worst affected by preventable oral health problems include children (Gathecha & Makokha, et al., 2012), the aged (Prevention & Population Health Branch, 2011), or people with disabilities (National Council of Disabilities, 2009).

According to Pau, (2012), the future of dental public health is faced by a big challenge. He states that,
“Although guidelines have been developed for the clinical prevention of oral diseases and community prevention of dental caries, the practice of evidence-based interventions is rarely evaluated or reported. The major challenges of the future will be to translate knowledge and experiences in oral disease prevention and health promotion into action programmes.”

The need to translate oral health research findings into policy and practices was one of the reasons why this study delved to find out the oral health practices among PCPs in Kisumu County where no previous reports existed.

2.1.2 Oral Health Practices of PCPs

Researches in oral and dental health conducted in Europe and Asia list tooth brushing as one of the key oral health practices (Bharati & Singh, 2012). In North Carolina, parental awareness that children should brush their teeth at least once a day was found to contribute towards prevention of tooth decay among children who eat sugary foods (Pirate, 2006). In a study on challenges in dental public health in Malaysia, Pau (2012) found that tooth brushing reduces bad breadth which contributes to loss of self esteem, lack of self confidence and inability to speak freely in public. A cross-sectional study on oral health status of 12-year-old children with disabilities and healthy controls in Southern India revealed that, children with special needs reported lower frequency of tooth brushing per day compared to the healthy controls (Bharati & Singh, 2012), their
response to use of toothpaste was even poorer and a higher percentage (88.1%) reported having never visited a dentist despite their poorer OH status.

In Bangalore City, 13-15 year old school children taking oral health education undertook regular dental examination, flossing and tooth brushing because of the benefits (Aradhya & D’cruz, 2013). In Australia, the Australian Dental Association (ADA) recommend a diet rich in calcium, high in fresh fruits, vegetables, cereals and lean meats but low in acids and sugars for maintenance of good oral health. Their drinking water is fluoridated at the source to offer protection against tooth decay (ADA, 2012). In Kenya, Kaimenyi (2004) reported that though regular dental check-up is an important OH practice, a majority of Kenyans only visit dentist when faced with severe toothache or oral health problems. Kaimenyi further lists some barriers to oral healthcare seeking behaviour among the general population like; high costs, poor access to the services, dominance of some cultural practices, few dentists and ill equipped facilities. He recommended OH studies among PWDs.

In terms of hygiene behaviour, Pengpid and Peltzer (2011) found that hand washing before meals among adolescents was more frequent (62%) than hand washing after toileting 58.4%. the study found a strong positive correlation between hand washing and tooth brushing which mirrors on adolescent hygiene behaviours. The implications of poor hygiene practices contribute to increase in communicable diseases.
2.1.3 Oral Health Attitudes

In Dar es Salaam Tanzania, a cross-sectional study on oral health knowledge, attitudes and behaviours of 16-20 year old secondary school students found that tooth brushing and dental checkups were regular practices. However, dietary behaviours like irregular eating patterns and snacking habits were of concern. Some students took alcohol, smoked cigarettes and a few had tried oral sex oblivious of their oral health risks (Nyamuryekung’e, 2012). In Uasin Gishu district, Kenya, Okemwa and Rotich (2012) conducted a cross-sectional descriptive study on oral health and oral hygiene practices among primary school children age 5-17 years and 92% reportedly brushed their teeth daily, 48% brushed twice a day, 59.1% reported using chewing sticks while the remaining 40.1% used commercial toothbrush. The female students brushed more frequently than their male counterparts.

In addition to the above studies, Vernetti-Callahan (2013) agrees that regular tooth brushing, flossing, dental checkups and proper diet are practices that can improve oral health. However, all the studies focused on people without forms of disability. In view of Bharathi & Sing (2012) findings that; disabled children were 30% and 60% more prevalent to caries and malocclusion respectively than the healthy controls. Recommendations of Kaimenyi that studies should be done among PWDs prompted this research about the oral health practices among the physically challenged pupils in Public Special Primary Schools in Kisumu County because no similar studies seemed to have been conducted previously. This study hence sheds light on oral health practices of PCPs which seemed to
be a neglected area of study within health education especially by social scientists in Kenya.

2.2 Health Education and Oral Health Practices

The aim of Health Education from class one to eight is to enable pupils acquire and apply health knowledge in their daily lives to improve health-enhancing behaviours while health-risking behaviours decrease (Gann, 1986). The health education course enhances health literacy (HL) among population groups and therefore requires accessible and reliable source of information (Xiamong, Yang, Shumei, & Xing, 2012). In a study by Bruun, Schnack, & Simovska (2000) on action competence, free access to information was found to help children make democratic, practical and responsible health decisions. Penny (2010) adds that continuous access to relevant updated information about physiology, aetiology, prevention and available health care services contributes to well-being. Similarly, Cinnar (2008) says that informed persons generally develop high self-esteem, self-efficacy with reduced chances of engaging in detrimental health practices.

In pursuit of the UN millennium development goals, many governments have put strategies to improve access to education and health. In China, promotion of HL is done to create health behaviour change among pupils through school curriculum in order to reduce disease prevalence (Manganello, 2008). In Kenya the re-introduction of ‘Free Primary Education’ (FPE) in 2003 was aimed at giving children equal access to formal education (UNESCO, 2006). While the FPE makes education accessible to all children in schools, HE makes
information about communicable and non-communicable diseases accessible to all (Oyaya & Rifkin, 2002). Given the three key objectives of a science lesson in Kenyan primary schools; to impart knowledge, develop skills and nature attitudes necessary for wellbeing, teachers have a duty to inculcate good health practices among children guided by the curriculum (Education Task Force Report, 2012). In view of this, school health literacy is an ideal strategy for promotion of oral health practices because it engages children in activities which develop their knowledge and skills into expected practices at their formative stage (Xiamong, et al. 2012).

In Kenya, the setting and objectives of HE seem to be similar to what happens in China (Mutinda, 2006). Mutinda adds that emphasis on examinable content of the syllabus has led to lack of practical skills and positive attitudes among school leavers. In Mutinda’s view, oral health care should be strengthened by employing trained personnel in schools to enhance self-efficacy among children. Pau, (2012) supported this position because the mouth is the portal of entry of disease into the body and need greater care especially among PWDs. This study identified OHP attributable to HE curriculum among PCPs in Kisumu County.

In view of the above foregoing, the school environment remains the ideal setting for teaching oral health to as many children as possible. HE is the approach to reach them with the right information Xiamong et al. (2012). The HE contents in Kenyan curriculum contain information about OH practices that can prevent dental caries, cavities, tooth decay, dental injuries and other oral
diseases (KIE, 2002). Its full implementation breaks the intergenerational cycles of chronic poor OH (UNICEF, 2009) by providing children with equal access to approved OH content through professionalized instruction, observation, and role modelling (WHO, 2003). Indicators of oral health outcomes of HE included mastery of oral health knowledge, a one week journal records of oral health practices like teeth brushing and snacking as well as attitude related behaviours like frequency of dental check-ups among the PCPs. The findings of this study therefore identify the preferred OH practices and suggest ways that favourably improve oral health practices among the PCPs in Kisumu County.

Despite improvements in OH care in parts of the world, some problems seem to remain among the underprivileged groups in developing countries (Petersen, 2003 & Mutinda, 2006). In Kenya for example, PCPs are among the underprivileged and discriminated groups. One fair opportunity they have to access OH education and know the benefits of OHP like teeth brushing, flossing, eating well, and regular dental visits (WHO, 2012) lies in HE. However, Otieno (2012) argues that previous curriculum changes to address such emerging concerns seemingly favoured able-bodied pupils more than the PCPs. Evaluation of learning outcomes in primary schools is too theoretical; based on written exams (Nyamuryekung’e, 2012). This explains the little focus put on practice of OH skills and attitudes. This study enumerates some outcomes of full implementation of the HE curriculum on OH practices of PCPs in Kisumu County.
While this study appreciates that health decision making has close links with level of education and health awareness (Penny, 2010), the low enrolment of PCPs in schools in Kisumu County means a majority will remain incompetent in certain health practices at old age. Some OH challenges they encounter arise from poor infrastructure development, prohibitive cultural practices and inadequate facilities and unskilled supportive care. The challenges limit achievement of objectives of HE (Kinoti, 2003 & Cinnar, 2008). They affect academic progress, oral health practices and the general well-being of the PCPs. Kinoti (2003) adds that staffing of PSPS with untrained SNE teachers enhance the focus on examination without equal attention to development of skills and attitudes objectives of the HE curriculum.

In a research by Ji (2005), elementary school pupils scored more than middle school students in both knowledge and behavioural (practical skills) examinations. In terms of HL, Xiamong, et al. (2008) found that, more than 50.7% of elementary school pupils did not know secondary sexual characteristics during puberty, 50% did not know how to do self care for common adolescent problems like menses and 40% did not know that sleeping for enough time is necessary for development and good health. The difference between the two studies suggests that HE alone may not be adequate for HL and practice. This study will seek to establish how HE contributes towards perfecting oral health practices among PCPs.
2.2.1 Access to Health Education and Oral Health Care Services

While the MoE strives to make HE accessible to all pupils, there are curriculum support materials (Wanjira, 2009) and services whose contributions to oral health practices may not be neglected. The complex multi-disciplinary nature of HE curriculum (Gray, Young, & Bernekow, 2006) calls for involvement of professionals from other disciplines like health (Anastasios & Christianthy, 2010 & Carlson & Simovska, 2012) otherwise realization of desired health outcomes may not be realized soon. Since previous studies do not seem to have identified the contributions of other sources of OH information that can support the HEC to influence OHP of PCPs in Kisumu County, this study will attempt to fill the gap.

In terms of human resource, Boika, et al., (2009) recognizes that parents and the community play supportive roles in children’s development of habits early in life. Pirate (2006) confirms that a strong association exist between oral health status of kindergartens and parental knowledge, attitudes and practices. However, Clift & Jensen (2005) disagrees because some outsiders pass information to pupils in boring or off-putting ways that may sensationalise problems. This study will endeavour to determine the role of caretakers and their contributions towards the oral health practices among the PCPs. Since no previous studies seem to have been done to establish if nurses and physiotherapists employed in PSPS contribute in HEC implementation, this study will attempt to find out any support they give PCPs in oral health.
The role of Information communication technology (ICT) in supporting HE (Buhi, Daley, Fuhrmann, & Smith, 2009) should not be ignored (Nutbeam, 2006) even though ICT can itself be another means of marginalization (Penny, 2010). In a report by BIREME, PATO & WHO, (2008), less than 5% of Africa’s population compared to 20% of the world can access ICT facilities including the internet. However, literature reviews reveal nothing about level of access to ICT by the PCPs. This study will attempt to determine the contributions of ICT (types of print and electronic) to HE and to oral health practices among the PCPs in PSPS in Kisumu County.

A study by Lawal-Solarin (2012) on access to information in libraries by physically challenged students in Universities in Nigeria rated libraries poorly due to difficult access. Popoola (2001) also concluded that physically challenged students are inadequately catered for in most libraries due to lack of ramps, inadequate space for wheel chairs between shelves and tall height of shelves. The KNSPWD (2008) agrees that students with disabilities (SWD) have a lot of issues to contend with about access to printed health and educational materials in libraries. This study will proceed to establish the accessibility of libraries in the PSPS, availability and relevance of resource materials they have to supplement OH lessons and their contributions towards proper oral health practices contained in the HE curriculum.

In view of the fore goings, further research in this subject is not only warranted but of necessity. The more accessible sources of information are, the more likely they are to be used (Ugah, 2008). However, Nnadozie & Nnadozie (2008)
argues that availability of information and teaching resources does not automatically translate to their effective use. In Kisumu County, the challenge of identifying contributions of HEC and other sources of information about OH knowledge and practice among PCPs remains; this is because curriculum implementation requires a variety of support materials which seem to be lacking in the PSPS in the County.

2.3 Challenges in Oral Health Practice

Pupils with physical disabilities have needs like any other children (Moumić, 2008). However, Bharathi & Sinsgh (2012) found that disabled children in India have more needs due to actual disability, medical and social reasons e.g. self-mutilating behaviours/cariogenic effects of medicines which some use. In some cases, parents are unable to help them carry out proper oral hygiene.

2.3.1 Attitude and Curriculum Based Challenges

A study by Tomlinson, et al., (2007) lists people’s attitudes, unfriendly infrastructure, and weak laws as factors which predispose PWDs to discrimination and misunderstanding by the public in the UK. In terms of oral health care, the study by Nyamuryekung’e (2012) in Dar es Salaam, a low alpha coefficient of 0.482 for oral health attitude was found. This represented “Bad attitude” on the scale and implied that oral care practices of students was greatly influenced by their beliefs and attitudes than by knowledge gained through teaching of OH in the school curriculum. The Human Rights Watch, (2007) agrees that learners with physical disabilities in Kenya face similar challenges.
2.3.2 Culture Based Challenges

The contents of HE curriculum pertaining to oral health should be culturally acceptable, relevant and adaptable for teaching oral health to the PCPs in their diverse environments. Gann (1986) opines that if health information contradicts people’s culture and beliefs, it may be ignored however good it is. In Bulgaria, 26% of students taking health education admitted they prefer traditional ‘healers’, prayers, or herbal remedies when sick. They delay to seek medical help until other methods have failed (Boika, et al. 2009). While HE programs are designed to create health awareness in communities, behaviour change depends on self-esteem and self-efficacy so that the individual accepts the knowledge, develops a vision and commits to practice (Carlson & Simovska, 2012).

According to Solarin-Lawal (2012), factors or interests of the pupils should be considered because they contribute towards the success of a health intervention like oral care. Nyamuryekung’e (2012) again noted the negative influences of culture in terms of dietary behaviour; use of tobacco and alcohol among other behaviours on OH knowledge gained through the school curriculum.

2.3.3 Economic and Infrastructural Challenges

A majority of PCPs with mobility disorders cannot afford the high cost of assistive devices. Others face neglect by peers, family and the community. The Ministry of Education Task Force Report (2012) on Re-Alignment of Education Sector to the Constitution of Kenya 2010 acknowledges that lack of funds aggravate the challenges facing PCPs in SNE due to poor infrastructure, ill-equipped facilities, low staff to population ratio and the slow pace of
implementation of the adapted syllabus for physically challenged learners (MoE, 2012 & UNESCO, 2006). The Human Rights Watch, (2007) notes that health challenges facing learners with physical disabilities in Kenya includes; poor access to health facilities and inadequate social support services among others. This was confirmed by Boika (2009) who found that due to poverty, most PCPs are poor and live in rural areas where health care services are inadequate and poorly networked.

Finally this study admits that economic and infrastructural challenges affect school oral health education and practices among PCPs in Kisumu County given that OH practices require financial support in terms of buying materials and there is less recognition of its contributions to the general well-being of individuals in Kenya (Kaimenyi, 2004).

2.3.4 Weak Laws and School Rules

Disability is said to be one of the barriers to access to information, education, and healthcare Middleton (1992). Middleton laments that, disabled children are treated differently and often suffer physical, geographical and social isolation even within their own families. Disability can be frustrating when it causes exclusion from facilities and services (Bradley, 2006). However, the existence of special boarding schools for learners with disability has attempted to solve this challenge even though Westcott (1991) says that, the likelihood of abuse of PCPs increases when they are in such exclusive special care institutions. According to Carlson & Simovska (2012) psychological and administrative factors within the special institutions influences the processes and outcomes of
HE among the PCPs. In view of this, Xiamong, et al. (2012) identified knowledge as input, motivation as a process factor and personal skills as indicators of outcomes in order to achieve the desired OH practices through health literacy programmes. The next section looks at provisions in the PSPS to help the pupils improve their oral health practices and general well-being.

2.4 Strategies to Address Oral Health Challenges

Factors that determine oral health and well-being were classified by Owens et al., (2010) based on the individual’s culture, genetics, environment, socioeconomic status, personal behaviours, access and organization of oral health care systems. These factors according to Tinanoff (1998) interact throughout life and determine oral health status of individuals, groups, and communities.

In a study of oral health status of 12-year old children with disabilities in India, Bharathi & Singh (2012) found that literacy level had influence on occupation and income of parents hence the amount of pocket money given to children. The study found that, the more pocket money the higher the consumption of sweetened foods between meals at school which negatively affects oral health of the children.

In Pitt County, North Carolina, a strong association was found between oral health status of Kindergarten children and the knowledge, attitudes, beliefs and practices of their parents (Pirate, 2006). However, the two studies did not identify strategies put to manage undesired parental or any other influences on the children’s oral health. Looking at “Risk factors for dental caries in young
children” Rebecca, Alison, Pauline, & Cynthia (2004) recommended that that, legislations to control childhood carries are required to regulate diet and promote good oral hygiene habits among children. In California, Susan & Stuart et al, (2007) listed individual, family and community level factors as major influencers in children’s oral health practices but also recommended that strategies to control their influences need to be established.

In Kenya, most of the previous oral health researches seem to have been conducted by dentists with bias on pathologies and clinical interventions. Little information exists from social sciences to show strategies put to promote healthy oral care practices through education. In 2004, a study by Kaimenyi recommended that Kenya government should improve national oral health structures and processes in order for outcomes of OH interventions to be more responsive to the needs of citizens and priorities of the government. In view of this and the fact that studies from America, China and India have not clearly determined strategies put by institutions to address oral health needs of PCPs, this study will seek to establish strategies put in place by the PSPS in Kisumu County to address the oral health needs of PCPs. The findings will form new oral health data about PCPs in special institutions in this area of study.

2.5 Summary

Oral health is a component of overall health. All pupils should access preventive and curative dental care. School HE creates opportunity for health awareness among pupils. Its OH content imparts knowledge, skills and attitudes
necessary for children to thrive well physically, mentally, emotionally and socially.

The literature reviewed in this study reveal the increasing need to recognize that OHP and problems facing PCPs are multi-causal due to the complex interactions between social and economic, environmental and behavioural or individual and genetic factors in life. It is therefore necessary to identify OHP and contributions of HE among physically challenged pupils in PSPS considering that HE program is a dependable source of OH information.

It seems that contributions of HE to OH are well documented in other countries but not as much in Kenya especially among PCPs. The literature recognized that challenges exist in OH care among PCPs and there seem to be few previous researches in this field. Lastly, there is evidence that existing oral health problems among PCPs contribute negatively to their education and general well being hence the need to identify strategies put in place to reduce their prevalence and improve well-being of the pupils.
CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter generally describes how the research was conducted. It discusses the research design, the study area, target population, population sampling techniques and sample size, research instruments, pilot study, data collection, data analysis and finally the logistical and ethical considerations.

3.1 Research Design

Research design refers to the schemes, outlines or plans that are used to generate answers to the research problems (Orodho, 2005). This study adapted a descriptive survey design to collect data about the cultural beliefs, practices, attitudes, economic background, and family or environmental factors which influence oral health practices of PCPs. Qualitative research technique was used according to Chambers, (1992) to enable the researcher collect in-depth information (through interviews and focus group discussions) from the informants concerning the contributions of health education to oral health practices among PCPs. Quantitative approach was used to establish relationships and facts statistically using a questionnaire for teachers and a journal for Pupils. This helped to guard against bias and other influences which may have skewed the results (Orodho, 2009).

This study identified causes of oral health problems among the PCPs, the contributions of HE and strategies put in place by the PSPS to mitigate them.
The approach was appropriate because the PCPs in class seven and eight were able to mark their OH activities and observed oral health behaviours, challenge or outcomes in the journals as soon as they occurred.

Descriptive survey design was preferred because it enabled the researcher to meaningfully collect data about beliefs, attitudes, background and environmental factors which influenced OH practices of PCPs. Secondary data collected from the teachers and caregivers added the researcher details about existing status and distribution of the variables (Mugenda & Mugenda, 2003).

3.1.1 Variables

The independent variable in this study was health education which is taught in all public schools from class one to eight. At the end of each HE lesson, the expected outcome is increased frequency of application of the OH practice taught for example tooth brushing. Oral health practices were the dependent variables given that they are products of interrelated oral care activities arising from knowledge, skills and attitudes prescribed in the HE contents in the Primary School Science Curriculum.

It was confirmed that PCPs join school with knowledge about some oral health practices learnt at family or community level. Within the school environment, policies, school rules, self-awareness and psychosocial factors influenced the translation of learnt HE content into OH practices. These intervening factors modified oral health practices of the PCPs learnt before school.
3.2 The Study Locale

The study was conducted in Kisumu County located between 0.2° - 0.5° North and 34.1° - 35.5° East. Kisumu County borders Vihiga to the North, Nandi to the North East, Kericho to the East, Nyamira to the South, Homa-Bay to the South West and Siaya to the West. The total area is 2085.9 Km². It has a population of 1,031,485; 48.9% male and 51.1% female (KNBS, 2012). It covers six Sub-counties namely; Kisumu East, Kisumu West, Kisumu Municipality, Kisumu Rural, Muhoroni, Nyando and Nyakach (CRA, 2011). The locale of Kisumu County is further shown in Appendix VIII.

According to Sanchez (2010) and WHO (2011), disability affects approximately 10% of every population. In Kisumu County 52,517 children with Physical disability have special needs (KNBS, 2012). Out of this, 2455 boys and 2670 girls of school going age required special needs education (Special Schools Association of Kenya: SSAK, 2012). However, only 790 (15.4%) of PCPs were enrolled in Public Special Primary Schools and integrated institutions in the county (Kisumu County Education Office, 2014) suggesting marginalization and poor access to HE and OH care services by the PCPs in the County. In total the county has 706 public primary schools with 240,538 pupils enrolled.

Demographic survey by the Ministry of public health and sanitation ranks Kisumu County below national average in most health ratings for example, 53.1% of children are immunized compared to the national average of 65.9%, 7.7% of rural households access fluoridated piped water compared to the national average of 38.5%, morbidity rate of 44.5% compared to the lower
national average of 25.5% (Oyaya & Rifkin, 2002). Kisumu County leads in HIV/AIDS prevalence which contributes oral lesions (Petersen, 2003). These ratings confirm the need for enhanced health education and research especially among the PCPs whose OH status and statistics seem to be lacking (Hawkridge & Tom, 1992).

The PCPs in PSPS in Kisumu County are drawn from diverse socio-cultural and socio-economic, rural and urban backgrounds from all over Kenya. In view of the facts presented above about Kisumu County in terms of resources and facilities, health and education it is a fair representative of other Counties in Kenya. Since almost no data seem available on OH practices, challenges and strategies to promote good oral health practices among PCPs in Kisumu County. It was a suitable location for this study.

3.3 Target Population

The study targeted 790 physically challenged boys and girls, 40 teachers, 87 parents, and 8 caregivers. The physically challenged pupils were enrolled in five Public Special Primary Schools for physically challenged pupils in Kisumu County. The study targeted teachers of science and class teachers because teachers of science deliver the HE lessons to the PCPs while the class teachers take care of administration, guidance and counselling of pupils in classes allocated to them. They interact closely with the pupils daily and are in a position to know their details. Parents of the pupils were included in the study as secondary informants because they know previous and current oral health practices and statuses of the PCPs. Furthermore, they are ideal respondents to
questions about contributions of cultural, economic and social life attributes to OH practices of the PCPs prior to school health education. Care givers involved were those in charge of welfare needs of the PCPs at school. In total the study targeted 925 people as illustrated in Table 3.1.

3.4 Sampling Techniques and Sample Size

This section deals with techniques used to sample participants in the study and their numbers.

3.4.1 Sampling Techniques

Purposive sampling technique was used to select special schools for physically handicapped, PCPs, class teachers and caregivers who participated in the study. According to Mugenda and Mugenda (2003), purposive sampling technique allows the researcher to use participants who have special characteristics and the required information with respect to the objectives of the study.

Special characteristics of the schools required in this study included; being a registered government special school for PCPS and confirmed use of the Kenyan primary school education curriculum in teaching HE. The special characteristics of PCPs included; being a physically challenged pupil enrolled in class seven or eight in the sampled PSPS within Kisumu County. Class seven and eight PCPs were sampled because they had acquired requisite oral health knowledge needed in the study from the HE lessons taken from class one to six. Class seven and eight teachers were most relevant because they interact with the targeted PCPs during HE lessons over OH activities. Multistage sampling technique was used to select parents. First, purposive sampling was used to
sample parents of class seven and eight pupils. Then those who live within Kisumu County were identified before narrowing down to the ones who reside close to the sampled schools. This criterion helped the researcher to remain focused within the study area, save time and cost of data collection given the academic nature of the study and the timeframe. Lastly simple random sampling was used to identify a male and female parent per class in each school. Finally, all caregivers concerned with well-being of the PCPs in the five schools were selected using purposive sampling technique due to their small population. According to Rippy (2007), saturated sampling is a technique used where target population is too small to be sampled. In each sub-population, attempts were made to consider gender balance.

3.4.2 Sample Size

The study was conducted on representative samples of 83 PCPs (49 boys and 34 girls) drawn from class seven and eight with OH background information from class one to six, 29 teachers (15 males and 14 females), 9 parents (4 males and 5 females) and seven caregivers (2 males and 5 females) all from the five schools. The 29 teachers from the five schools comprised of 19 teachers of science and 10 class teachers of class seven and eight. Because of the small population of caregivers, seven participated in the main study leaving out the one who participated in piloting. In total, 13.84% (128) of the target population was sampled for the study as illustrated further in Table 3.1 below.
Table 3.1: Target Population and Sample Size

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Categories</th>
<th>Target Population</th>
<th>Sample Size</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>1.</td>
<td>PCPs</td>
<td>790</td>
<td>49</td>
<td>34</td>
</tr>
<tr>
<td>2.</td>
<td>Teachers</td>
<td>40</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>3.</td>
<td>Parents</td>
<td>87</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>Care Givers</td>
<td>8</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>925</td>
<td>70</td>
<td>58</td>
</tr>
</tbody>
</table>

3.5 Research Instruments

The research instruments used in this study were Focus Group Discussions, a questionnaire, a Journal and Interview Schedules.

3.5.1 Pupils' Focus Group Discussions (FGDs)

The FGDs were special group interviews in terms of purpose, size, composition and procedures (Orodho, 2009) set for the PCPs. Each group comprised of 6 to 8 pupils who were not informed prior to the discussions. The small number of 8 ensured that all members of a group participated and each participant had enough time to present their views. This made the groups cohesive and interactive thereby reducing dominance and side consultations between respondents (Orodho, 2009).

The respondents were selected based on shared characteristics relevant for the study. Pre-determined criteria based on class, gender and ability to speak in English or Kiswahili was used to purposively select then randomly put informants into groups. Class teachers and teachers of Science were consulted during formation of the focus groups because of their experiences with the
pupils and their SNE training. The discussions were guided by carefully selected semi-structured questions to capture information about oral health knowledge, skills, attitudes, HE support materials, and the influence of economic, cultural and environmental factors on OH practices of the PCPs. In two instances, unstructured interviews were used to further probe PCPS.

The use of FGDs was justified because responses from groups provided more information than interviewing individuals (DePoy & Gitlin, 2005), it saved time and many respondents were handled at once. Lastly it was used in this study to obtain in-depth information (Mugenda & Mugenda, 2003) on contributions of HE on oral health practices of the PCPs as detailed in Appendix I.

3.5.2 Questionnaire for Teachers

A questionnaire is an instrument used to gather data which allows measurement for or against a particular viewpoint. It has ability to collect a large amount of information quickly (Orodho, 2009). In this study, the researcher used a closed ended questionnaire to collect information from the 10 class teachers and 19 teachers of Science because they were able to read, understand and respond appropriately to the listed questions. According to Kinoti (2003), teachers trained in SNE are familiar with the contents of HE in the science syllabus.

The questionnaire helped to determine the experiences of the teachers of HE, adequacy of oral health content in the syllabus, factors which influence teaching of oral health to PCPs and the strategies their schools have in place to address oral health care needs of the PCPs. The Closed-ended questions were be put on a five point Likert-type scale in order for the teachers to express their views,
opinions and attitudes on issues with impact on the study objectives (Mugenda & Mugenda, 2003) as detailed in Appendix II.

3.5.3 Interview Schedule for Care Givers

In this study, interview schedule refers to the oral administration of a planned questionnaire in a face to face encounter between the researcher and informants. In this study, a structured interview schedule was used to obtain in-depth information from the eight caregivers. Caregivers are people involved with taking care of the pupils in school like physiotherapists, matrons and housekeepers. Their job titles are assigned by the institutions. Interview was ideal because some of the caregivers could not accurately score questionnaires due to low literacy while others were highly trained professionals. It was good for collecting very personal and intimate information on a informant’s opinions, attitudes, values, beliefs, and experiences including future intentions (Orodho, 2009).

The interview schedule helped the researcher to find out challenges faced by the PCPs in OH practices from the time they joined school to the present. Caregivers were targeted because they deal with the pupils’ health and sanitation, socio-environmental and supportive care. Some of them were able to provide data including health records and hospital attendance used to verify information from teachers and the PCPs while responding to the questions in shown in Appendix III.
3.5.4 Interview Schedule for Parents

An interview schedule for parents was appropriate because it allowed the researcher to probe the parents in detail over a wide range of topics about oral health practices of their children. It also captured observed behavioural changes arising from HE lessons by end of Class six. The interview schedule helped the researcher to collect qualitative data about attitude, beliefs and social factors that contribute towards OH practices of the pupils from their own parents. Responses from parents were used to verifying information obtained from pupils, teachers and caregivers. Finally the interview with parents helped to determine relationships between oral health practices at family level and oral health practices learnt at school as detailed in Appendix IV.

3.5.5 Customised Journal for Pupils

A journal is a quantitative data collection instrument used in descriptive research to capture data about specific events in life as it is lived by an individual or events as they occur over a period of time. A customised journal made in form of a diary was designed to collect information about OH practices as they occurred for a period of one week. A week was long enough to capture adequate and relevant information without wearing out the participants (Shelbe & Wildemuth, 2009). In this study, a customised diary with structured logs was used to capture in details the pupils’ oral health practices, attitudes and values as repeated reports of OH events, reflections, moods, pains, or interactions as soon as they occurred (Cynthia, Jacelon & Imprerio, 2005). The details of qualitative data about the day-to-day activities, experiences and attitudes of the of the particular subset (PCPs who will be able to fill-in the journals) captured by the
diaries was explored further using participant checking methods (Clayton & Thorne, 2000) like the FGD discussed in section 3.5.1 above.

The customised journal was given to (all eligible pupils who were able to read well, write well and keep good personal records of events, feelings and opinions) a subset of class 7 and 8 pupils. The researcher sought the opinion of the class teachers, teachers of science and caregivers to identify the subset. This was because the task of scoring the journals daily could become burdensome to some PCPs like those with Multiple Challenges (e.g. Physical and mental handicap) since some could not log in the journal promptly due to reasons like slow coordination. A teacher and a caretaker were trained per school to assist the PCPs without influencing their responses. The PCPs were issued with a score sheet which was collected per day to limit loss, sharing information and altering of entries. Finally the journals were collected after a week from the teacher in charge for analysis. Using the journals, the researcher was able to determine relationships between oral health knowledge, skills and attitudes from HE and the oral health practices of PCPs as detailed in Appendix V.

3.6 Pilot Study

A pilot study is a survey done using a small number of exemplar participants (PCPs) with characteristics which are similar to those of the sample population. Their responses were used to test the research instruments in order to refine the validity and reliability of the instruments as recommended by Butter (2006). In this study, the pilot study involved 37 PCPs, 3 teachers, and one caregiver from one PSPS school set apart for piloting. The purpose of the pilot study was to
identify weaknesses of the instruments by checking clarity of the questions in soliciting comments from the respondents. This assisted the researcher to improve the instruments after revealing challenges which could have been encountered during the data collection using the instruments (Mugenda & Mugenda, 2003). Test-retest method was used to assess reliability within a span of two weeks between first administration of instruments and the repeat. The two results were correlated using Chronbach’s test. Errors observed from answers obtained in the first test were eliminated when the same questions were repeated during the retest. Respondents and informants who participated in the pilot study were excluded in the final data collection stage (Orodho, 2009).

3.6.1 Validity

Validity refers to the degree to which an instrument measures what it is supposed to measure (Kothari, 2004). It is a non-statistical method of measuring the degree to which results obtained from the analysis of data actually represent the phenomenon under investigation (Orodho, 2009). In the pilot study which was carried out, appropriateness of the language used in the questionnaire and journal was checked and appropriate modifications of the items made to suit the level of understanding of the respondents. The validity of the instruments was increased by prolonged field tests and retests. Analysis was done using ‘Stata 12’ computer software for data analysis to ensure matches between findings and participant reality. Data was collected during interviews using a voice recorder, the questionnaire and the journal. Lastly, comments, observations and recommendations on the instruments from the study’s supervisors regarding the subject matter of the instruments evaluated the content.
3.6.2 Reliability

Reliability refers to the ratio of true score variance over obtained score variance (Sutter, 2006). In simple terms, reliability is a measure of the degree to which a research instrument yields consistent results after repeated trials (Orodho, 2009). In this study, test-retest technique was used to establish the reliability of the questionnaire for teachers, journal and focus group discussion guidelines for the pupils, interview schedules for caregivers and the parents.

The instruments were administered to a few respondents during piloting who did not participate in the main study. The results were analyzed after the two weeks using Stata 12. Reliability was increased by triangulation of the results using multiple methods of gathering data. The reliability of the two sets of answers was tested using Cronbach’s alpha coefficient. After making relevant adjustments; removal of ambiguous questions and replacing others in the instruments, a final alpha coefficient $r=0.95$ was found which implied that the research instruments were very reliable.

3.7 Data Collection

The researcher sought permission to collect data from the National Commission for Science, Technology and Innovation (NACOSTI) in the Ministry of Education after clearance by School of Graduate Studies at Kenyatta University. After obtaining research permit, the researcher met the Director of Education in Kisumu County, the Sub-county Education Officers (Kisumu East, West, Central, and Nyakach Sub-counties).
The researcher proceeded to the schools to book appointments with the head teachers and to establish rapport with the respondents (teachers, care givers and PCPs). A time table was drawn based on agreed dates and time, copies were delivered to the head teachers. The researcher visited the schools after a week to train at least one teacher and a care giver per school on how to handle the journals. Instructions were given to each category of respondents before the teachers’ questionnaire was administered. The pupils were given a week to complete the journals. Interview of care givers followed. Focus group discussions were conducted after coding and entering the data from the journals for analysis. This was done to identify sub-themes which required further probing of the pupils using FGDs. The researcher obtained assistance from teachers to brief and conduct FGDs with the pupils. It was necessary to make some observations and take some records using a camera and voice recorder as data collection progressed.

3.8 Data Analysis

Qualitative data collected from pupils and caregivers using FGDs and unstructured interview schedules were sorted, edited, coded, classified and tabulated simultaneously during the study period. During each interview and FGDs, responses were either noted or audio recorded for further analysis while emerging themes were further interrogated and reported. Descriptive statistical methods of analysis such as frequency count, percentage and mean were used (Miles & Huberman, 1994). Qualitative data were transcribed, put into various categories and reported in an on-going process as themes and sub-themes
emerged (Jackson, 2009). Quantitative data obtained using the Likert-scale was analysed using Stata 12 computer programme for data analysis.

3.9 Logistical and Ethical Considerations

Logistical considerations refer to all processes, activities or actions the researcher must address or carry out to ensure successful completion of a research project (Mugenda & Mugenda, 2003). The researcher obtained permission to conduct the study from the National Commission for Science, Technology and Innovation (NACOSTI) as shown in Appendix VII. A letter of introduction from Kenyatta University was used to communicate procedurally to the County Director of Education, the Sub-county Education Officers, Head-teachers and the informants about the research.

Ethical considerations refer to observance of guidelines that encourage responsible research practice and protection of rights of research participants to prevent abuses and delineation of responsibility during research (Sutter, 2006). The participants were given codes and informed to conceal their identities to ensure confidentiality and that only the researcher was going to handle their responses. Ethics of informed consent was applied to seek their consent for voluntary participation in the study and any of them was at liberty to withdraw from the study at any time deemed fit for any reason (Orodho, 2009). All information obtained from participants was kept confidential and faces in photographs were covered to conceal their identity for ever in trust.
CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter presents the results of the study obtained through interactive data collection and analysis using qualitative and quantitative methods. The analysis of data and interpretation of findings was based on the following research questions:

a. What were the oral health practices among physically challenged pupils who study health education in Public Special Primary Schools in Kisumu County, Kenya?

b. What were the contributions of health education to oral health practices among physically challenged pupils in Public Special Primary Schools in Kisumu County, Kenya?

c. What oral health challenges were faced by physically challenged pupils who study health education in Public Special Primary Schools in Kisumu County, Kenya?

d. What health education strategies were in use by Public Special Primary Schools to address the challenges in oral health practice among physically challenged pupils in Kisumu County, Kenya?

4.1 Demographic Characteristics of Participants

Demographic characteristics of participants were analysed along variables like; the number of respondents, school, class, gender and their responses to oral
health questions by the participants (PCPs, teachers, parents and caregivers).

The demographic aspects of the participants are as indicated in Table 4.1 below.

**Table 4.1: Population Sample of Participants**

<table>
<thead>
<tr>
<th>Respondents/Sub-groups</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCPs</td>
<td>49 (38.28%)</td>
<td>34 (26.56%)</td>
<td>83 (64.84%)</td>
</tr>
<tr>
<td>Teachers</td>
<td>15 (11.72%)</td>
<td>14 (10.94%)</td>
<td>29 (22.66%)</td>
</tr>
<tr>
<td>Parents</td>
<td>4 (3.13%)</td>
<td>5 (3.91%)</td>
<td>9 (7.03%)</td>
</tr>
<tr>
<td>Caregivers</td>
<td>2 (1.56%)</td>
<td>5 (3.91%)</td>
<td>7 (5.47%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70 (54.69%)</strong></td>
<td><strong>58 (45.31%)</strong></td>
<td><strong>128 (100%)</strong></td>
</tr>
</tbody>
</table>

Overall, Table 4.1 illustrates that more males 54.69% (70) participated in the study than females 45.31% (58). In terms of Sub-groups, the table reveals 64.84% (83) of the respondents were the physically challenged pupils who were the primary source of data. The remaining proportion comprised of teachers 22.66% (29), Parents 7.03% (9) and the caregivers 5.47% (7). This shows there was gender balance among the study participants because either gender was represented by more than 30% of the participants as recommended by The Constitution of Kenya, (2010).

4.1.1 Participation Levels by Gender

A look at participation levels of PCPs in the study revealed that in terms of gender, male pupils (59.08%) participated more than female pupils (40.92%) as shown in Table 4.2 below.
Table 4.2 implied further that physically challenged males in the PSPS had greater willingness to participate in the study than girls. According to one caregiver, the higher number of responses by boys was reinforced by the motivating belief held by some parents in the region which regards sons highly than girls. This was deduced from a statement by a caregiver who while answering the question why population of boys was higher than girls in the school said,

“... yawuoi ngeny e skul nikech wuoi en siro ei ma ok dipim gi nyako ...” which means there are more boys in the school because a son is a symbol of strength not comparable with a girl ...” (Female Caregiver, 2015).

The above sentiment by extension highlighted that boys were esteemed highly. This is one reason behind the higher dropout rate of 38.1% (8); from 21 to 13 among female PCPs between class 7 and 8 compared to 25% (7); from 28 to 21 among male PCPs between class 7 and 8 in the same period as illustrated further by Table 4.3 below.

<table>
<thead>
<tr>
<th>School</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Abwao</td>
<td>48 (7.92%)</td>
<td>71 (11.72%)</td>
</tr>
<tr>
<td>Agai</td>
<td>59 (9.74%)</td>
<td>67 (11.06%)</td>
</tr>
<tr>
<td>St. Martin</td>
<td>77 (12.71%)</td>
<td>77 (12.71%)</td>
</tr>
<tr>
<td>Joyland</td>
<td>64 (10.56%)</td>
<td>143 (23.60%)</td>
</tr>
<tr>
<td>Total</td>
<td>248 (40.92%)</td>
<td>358 (59.08%)</td>
</tr>
</tbody>
</table>
Table 4.3: Dropout Rate of PCPs by Gender

<table>
<thead>
<tr>
<th>Col.</th>
<th>Class</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>a.</td>
<td>7</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>b.</td>
<td>8</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>c.</td>
<td>No. drop out = col. a-b</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>d.</td>
<td>Drop out % = col. (c/a) x 100</td>
<td>38.1%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Data from the County Education Office showed that the ratio of boys to girl’s enrolled in all the special public institutions in the county was 428:362 which supports the finding that more physically challenged boys were enrolled in schools than girls. Analysis of data collected using the Journals revealed that more boys 358 (59.08%) participated in the study compared to girls 248 (40.92%) due to their implied high sense of self-esteem derived from high societal regards. The responses obtained from male and female PCPs is shown in Table 4.4 below.

Table 4.4: Participation of PCPs by Class and Gender

<table>
<thead>
<tr>
<th>Class</th>
<th>Gender</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>7</td>
<td>146 (24.09%)</td>
<td>205 (33.83%)</td>
</tr>
<tr>
<td>8</td>
<td>102 (16.83%)</td>
<td>153 (25.25%)</td>
</tr>
<tr>
<td>Total</td>
<td>248 (40.92%)</td>
<td>358 (59.08%)</td>
</tr>
</tbody>
</table>

4.1.2 Learning Disability Challenges among Respondents

All the PCPs who participated in the study were physically challenged. It was found that some of the participants had other challenges in addition to their physical impairments (PI). The participants with additional challenges were
identified as PCPs with multiple disabilities in this study. Out of the 83 PCPs, 71.08% (59) were physically impaired and the remaining 28.92% (24) had multiple disabilities as summarised in Chart 4.1 below.

![Chart 4.1: Physical Disabilities among PCPs](image)

The PCPs with multiple disabilities had slightly more special needs when compared to those with physical impairment only. Details from records kept by the class teachers about PCPs with additional forms of disabilities showed that mental retardation was 10.84% more prevalent while Cerebral palsy and Autism were the least occurring as summarised in Chart 4.2 below.

![Chart 4.2: Multiple Disabilities among Respondents](image)
The information represented in Chart 2 above was inevitable because multiple disabilities posed further challenges to learning HE and subsequently OH practices among the PCPs. According to KNSPWD (20108), the degree of disability and parts of body affected are suggestive of limitations to performance by the disabled in Kenya. In this study, the opinion of PCPs about OH practices based on levels of disability was sought. The teachers and caregivers agreed that PCPs with multiple disabilities were more debilitated in terms of cognitive and psychomotor abilities required for OH practices unlike those with physical impairment alone. A Senior Teacher said;

“...OH practices are more challenging to teach among multiply disabled learners because each form of disability requires special attention. To achieve learning objectives, teachers require additional training to handle their learning related challenges ...” (Male Senior Teacher, 2015).

Reports from teachers and caregivers revealed that multiple disabilities increased the severity with which physical challenges affected 28.92% (24) of the PCPs by further limiting their ability to translate knowledge, skills and attitudes into oral health practices. All the teachers agreed that mental retardation reported among 10.84% (9) of the PCPs negatively affected cognitive abilities of the PCPs; four teachers (13.79%) said they had observed this in previous poor performances in examinations among the multiply disabled PCPs. Four other teachers said PCPs with physical impairment (PI) and
mobility challenges combined were not able to maintain proper oral hygiene without assistance as explained further in section 4.4.2.

From admission records it was found that 7.23% (6) of the PCPs had speech handicap in addition to physical impairment. Teachers said this affected the pupils’ ability to communicate effectively, 4.82% (4) had cerebral palsy which disrupted lessons and attention causing loss of learning time whenever one was attacked by fits, 3.61% (3) were hearing impaired which slowed their learning pace compared with the rest of the class, There was one case of Autism 1.2% (1). There was one case of physical impairment, mental handicap and cerebral palsy leading to several learning disorders like ineffective communication, short attention span and involuntary movement of body parts.

Disability as a factor itself affected mobility and communication skills among PCPs. This limited their day to day performance of oral health practices hence the need for supportive care. All the teachers agreed that although OH content in the primary science syllabus was adequate but recommended further training in health to teach the HE contents effectively given that PCPs with multiple disabilities require more specialised attention.

4.1.3 Characteristics of Parents of PCPs

Parents who participated in the study were purposively selected and this enhanced gender balance; 44.4% (4) were males and 55.5% (5) were females as shown in Table 4.5.
Table 4.5: Background Characteristics of Parents

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>44.4% (4)</td>
<td>55.56% (5)</td>
<td>100% (9)</td>
</tr>
<tr>
<td>Primary &amp; Secondary</td>
<td>33.3% (3)</td>
<td>44.4% (4)</td>
<td>100% (9)</td>
</tr>
<tr>
<td>College &amp; University</td>
<td>11.1% (1)</td>
<td>11.1% (1)</td>
<td></td>
</tr>
</tbody>
</table>

From Table 4.5 above, all the parents had a minimum of primary school education; 77.78% (3 males and 4 females) had between primary and secondary education while 22.22% (1 male and 1 female) had between college and university education. The basic education parents had implied they could also impart basic oral health knowledge, skills and attitudes to their children. This agrees with the views of Nyamuryekung’e (2012) that children learn health related behaviours from parents during their interactions in the home environment as explained by the SLT of Bandura and Rosenthal (1978) used in this study.

It was found in the study that 66.67% of the parents lived in rural areas while the rest lived in urban centres. Based on such backgrounds, the study sought to determine the contributions of social environment and cultural behaviour on OH practices taught in health education. Overall, 75% of the parents agreed that their oral health practices were not guided by what they learnt from school but by their income and attitude, 66.67% admitted that social status and the living environment determined their OH practices, 55.56% said income mattered most while 44.44% agreed that availability of resources determined what they used; whether toothbrushes or tooth sticks with or without toothpastes.
4.1.4 The caregivers

In this study, five female and two male caregivers making 9.64% of the participants were interviewed. Their occupations were not defined in their appointment letters; they were assigned roles by the head teachers. Two of the caregivers served as cooks, four were house mothers and one was a professional physiotherapist. The physiotherapist was trained and had a Diploma certificate from Kenya Medical Training College. He was employed by the missionary sponsors of one of the special schools. Qualifications of the caregivers are shown in Table 4.6 below.

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>5 (71.43%)</td>
<td>28.57% (2)</td>
<td>100% (7)</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooks</td>
<td>14.29% (1)</td>
<td>14.29% (1)</td>
<td>100% (7)</td>
</tr>
<tr>
<td>House mothers</td>
<td>57.14% (4)</td>
<td>0</td>
<td>100% (7)</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>0</td>
<td>14.29% (1)</td>
<td>100% (7)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary &amp; Secondary</td>
<td>14.29% (1)</td>
<td>14.29% (1)</td>
<td>100% (7)</td>
</tr>
<tr>
<td>College &amp; university</td>
<td>0</td>
<td>14.29% (1)</td>
<td>100% (7)</td>
</tr>
</tbody>
</table>

Information about qualifications of the caregivers revealed flaws in OH care services offered by non-professionals in the primary schools. Oral health service delivery require special training to deal with unique needs of the learners according to The Human Rights Watch, (2007) however all the caregivers (100%) admitted that they lacked oral health related training to qualify them as OH care services providers. It was found that clear professional training was not requisite during their recruitment. That was the reason why only two out of the seven were trained employees while one was undergoing in–
service training, the remaining 57.14% were untrained but offering services requiring professionalism.

4.2 Oral Health Practices among PCPs

The study revealed that PCPs carried out tooth brushing, occasional rinsing of the mouth with water in the morning, evening or after meals before going to bed in addition to practices like tooth picking with sticks. Some rinsed their mouths with water and ash. Those who lacked toothpastes also could gurgle salt water. Very few visited dentists for check-ups. These OH practices are further discussed below.

4.2.1 Tooth Brushing

Tooth brushing was the most observed oral health practice found among the PCPs. By adding the number of those who brushed twice and thrice a day, it was found that 43.35% (264) PCPs attempted to achieve WHO recommended tooth brushing frequency of at least twice a day using either a commercial tooth brush and toothpaste or alternatives like tooth sticks and ashes as shown in Table 4.7 below. The Table also shows that OH improved as OH knowledge increased as the PCPs transitioned from class one to seven then to eight.

Table 4.7: Tooth Brushing Responses by Class

<table>
<thead>
<tr>
<th>Class</th>
<th>0 (Nil)</th>
<th>1 (Once)</th>
<th>2 (Twice)</th>
<th>3 (Thrice)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>25.36%</td>
<td>37.61%</td>
<td>20.51%</td>
<td>16.52%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>(89)</td>
<td>(132)</td>
<td>(71)</td>
<td>(58)</td>
<td>(351)</td>
</tr>
<tr>
<td>8</td>
<td>13.95%</td>
<td>33.72%</td>
<td>34.5%</td>
<td>17.83%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>(36)</td>
<td>(87)</td>
<td>(89)</td>
<td>(46)</td>
<td>(258)</td>
</tr>
<tr>
<td>Total</td>
<td>20.53%</td>
<td>39.56%</td>
<td>26.27%</td>
<td>17.08%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>(125)</td>
<td>(219)</td>
<td>(160)</td>
<td>(104)</td>
<td>(609)</td>
</tr>
</tbody>
</table>
The OH contents of HE unit enlisted in Appendix VI in this thesis and expounded in MoE recommended class text books explains that teeth should be brushed at least twice a day. In the study tooth brushing responses showed that PCPs who did not brush at all reduced by 11.41% from 25.36% (89) to 13.95% (36) between class 7 and 8. The number of PCPs who brushed once a day reduced by 3.89% from 37.61% to 33.72% between class 7 and 8 pupils. On the other hand, the frequency of brushing twice a day increased by 13.99% from 20.51% to 34.5% and brushing thrice a day increased by 1.31% from 16.52% to 17.83% between the two classes.

As stated in contents of HE in the primary Science syllabus that teeth should be brushed at least twice a day, it was evident that as OH knowledge improved, the frequency of tooth brushing once a day reduced among PCPs from 63% to 47% between class 7 and 8. At the same time frequency of tooth brushing twice per day increased from 36.9% to 52.3%. Overall, tooth brushing was practiced by 79.47% of the PCPs. Therefore it is conclusive enough to say that the higher the class (8) the more OH knowledge, skills and positive attitudes the PCPs developed towards tooth brushing. Given that tooth brushing is an OH practise included in the Primary School HE content, it follows that HE contributes towards improving the OH practices among PCPs.

### 4.2.2 Dental Check-ups

During the FGDs, the PCPs admitted they were taught about regular dental check-ups and were aware that it was an important OH practice only dentists
should offer. However, Journal scores revealed that 80.36% of the participants did not attempt to seek dental care services from professionals regardless of their oral health status. The difference between those who knew about dental check-ups (92.24%) and those who attended (19.7%) was 72.54% representing the majority who did not practice what they were taught. This illustrated that very little knowledge was translated into the required OH practices.

In this study the journal which captures events as they occur and FGD were used to enumerate occurrence of tooth pain to compare with dental visits. It was found that 80.36% of PCPs did not visit dentist at all yet 43.35% of them experienced toothaches at least once in the week as shown in Table 4.8 below.

Table 4.8: Relationship between Tooth Aches & Dentist Visits

<table>
<thead>
<tr>
<th>Tooth pain</th>
<th>Dentist visit</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>51.23% (312)</td>
<td>4.6% (28)</td>
<td>0.49% (3)</td>
<td>0.33% (2)</td>
<td>56.65% (345)</td>
</tr>
<tr>
<td>1</td>
<td>12.97% (79)</td>
<td>4.27% (26)</td>
<td>1.15% (7)</td>
<td>1.31% (8)</td>
<td>19.7% (120)</td>
</tr>
<tr>
<td>2</td>
<td>8.37% (51)</td>
<td>2.79% (17)</td>
<td>0.66% (4)</td>
<td>0.49% (3)</td>
<td>12.32% (75)</td>
</tr>
<tr>
<td>3</td>
<td>7.72% (47)</td>
<td>0.99% (6)</td>
<td>0.49% (3)</td>
<td>2.13% (13)</td>
<td>11.33% (69)</td>
</tr>
<tr>
<td>Total</td>
<td>80.3% (489)</td>
<td>12.64% (77)</td>
<td>2.79% (17)</td>
<td>4.27% (26)</td>
<td>100% (609)</td>
</tr>
</tbody>
</table>

Key to table 4.8 above

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.42%</td>
<td>Felt no pain but visited dentist</td>
</tr>
<tr>
<td>29.06%</td>
<td>Felt pain but did not visit dentist</td>
</tr>
<tr>
<td>14.71%</td>
<td>Felt pain and visited dentist</td>
</tr>
<tr>
<td>2.13%</td>
<td>Visited dentist due to severe pain</td>
</tr>
</tbody>
</table>

From the table, 5.42% (33) of PCPs made visits to the dentist for regular check-up during the period of study. It was found that 14.71% of PCPs were compelled by pain to visit the dentist in conformity with findings of Kaimenyi
(2004) that dental check-ups are a practice reserved for people in extreme pain or severe toothaches. In line with this finding, Bharati and Singh (2012) explained that high percentages (88.1%) of children do not visit dentists despite their poor oral health status because of low income of families. The variation between knowing and ignoring to apply the knowledge in time need was evidence that some PCPs had negative attitude towards some oral health practices. In New York State (USA), it was found that society has not valued oral health, and the consequences for children are harsh chronic pain, academic failure in school, poor nutrition, and poor self-esteem (SCAA, 2005).

According to the Surgeon General (2000), pain in the mouth is a symptom of underlying OH problems. In HE learners are taught to visit dentists regularly for check-up and whenever they are in pain. As shown in Table 4.8, out of the 43.35% (100%-56.65%) occurrences of tooth pain, 19.7% (100%-80.3%) reached the dentist and only 5.42% (56.65%-51.23%) went for routine dental check-up. This demonstrated that regular visit to the dentist for check-up was the least OH information from HE translated into practice by the PCPs.

### 4.2.3 Oral Hygiene Behaviours

In this study, oral hygiene was used with reference to routine practices undertaken by PCPs to maintain clean mouth. It was found that the frequency of washing fruits before eating was 15.93% (97) in the week of study. The remaining 84.07% (511) were for eating fruits without washing. The PCPs reported that break and lunch time were short and inadequate for the long procedures. Much of the unwashed fruits were eaten during lunch break. The FGDs revealed that the PCPs were aware about the importance of washing foodstuff before eating as a preventive measure to
ingesting germs in the mouth. From the Journals, eating washed fruits was more common among boys 63.55% (387 responses) than girls 47.61% (290 responses). Similarly, 58.94% (211) boys ate unwashed fruits compared to 32.17% of girls (83).

When probed further, a participant during one of the FGDs said, “... boys eat a lot ...” while another elaborated in Kiswahili that;

> “Wavulana wanakula sana, wanakula saa yote.
> Sometimes wanaficha vyakula kama fruits na mandazi mfukoni na mifuko yao ni chafu”.
> Reaffirming that, “boys eat a lot all the time.
> Sometimes they hide foods like fruits and doughnuts in their dirty pockets” (Female PCP, 2015).

These sentiments were confirmed by the higher journal scores by boys for eating washed and unwashed fruits totalling 578 (60.79%) compared to 373 (39.21%) obtained from the girls. Most of the girls who ate unwashed fruits did so in the evening as revealed by one boy who reported that girls wait to eat their fruits in the evening when water is available. These responses implied that girls esteem themselves highly and were more concerned about hygiene than the boys who feared no threats of punishment or infections. It was also observed that girls did not over indulge in eating against school regulations. The combined scores for eating washed fruits among the PCPs was higher 677 (69.01%) than combined scores for eating unwashed fruits 304 (30.99%) as illustrated in Table 4.9 below.
This showed that by having OH knowledge, poor oral hygiene reduced by almost a half hence the conclusion that HE contributed towards improving oral hygiene practices even if slightly.

Details of discussions by the PCPs revealed an element of selective application of the OH contents in daily practice. Some practices were performed based on the individual’s attitude, amount of time available and the ease of access to required resources like water or by the influences of peer mates. The PCPs reported that beyond syllabus coverage, some OH concepts remained difficult to implement because of hurried explanations and lack of demonstrated practices unlike how parents teach at home. They reported that teachers were theoretical and where practical materials were missing they referred the pupils to practice when they get home.

The reports from teachers and interviews with PCPs showed that lesson delivery methods were teacher centred; theoretical and abstract with unrealistic practical expectations from the PCPs. A majority of the teachers 55.17% (16) blamed the poor delivery methods on the Primary school curriculum which they said does not consider differences in learning abilities of the PCPs and able bodied pupils. An attempt at finding an alleged Adapted Syllabus for SNE remained as elusive as

<table>
<thead>
<tr>
<th></th>
<th>Ate washed fruit</th>
<th>Ate unwashed fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Morning</td>
<td>112</td>
<td>90</td>
</tr>
<tr>
<td>Afternoon</td>
<td>143</td>
<td>99</td>
</tr>
<tr>
<td>Evening</td>
<td>132</td>
<td>101</td>
</tr>
<tr>
<td>Total</td>
<td>387</td>
<td>290</td>
</tr>
</tbody>
</table>
Otieno (2012) reported. Ineffective teaching approaches and learners physical challenges lead to their inability to unlearn some poor OH practices acquired before joining school. Examples of cultural OH practices found to be difficult to unlearn included use of tooth sticks presumed to be medicinal and ashes in tooth brushing as reported by some PCPs in class eight at school. Using the journals, other oral hygiene practices captured included tooth picking, rinsing the mouth with water and washing hands with water and soap as illustrated in Figure 4.2 below.

**Figure 4.2: Oral Hygiene Practices**

The PCPs agreed 100% that washing hands with clean water and soap before eating was hygienic. However, using journals, only 11.6% performed the practice arguing that water and soap could not be available everywhere all the time making it one of the least performed oral hygiene practices among the PCPs.

The relatively low rate of hand washing with water and soap had close association with low income of parents which leads to lack of required basic OH items. Care givers associated low income with poor OH orientation and role modelling, negligence, poor development of infrastructure and retrogressive cultural and oral
health coping skills which instil alternative ways of maintaining oral hygiene in the minds of PCPs. These findings showed that more PCPs practiced oral hygiene behaviours as taught in the HE lessons though some were limited by factors due to the school environment.

4.3 **Health Education and Oral Health Practices**

Health education contents in the Science syllabus tabled in Appendix VI were intended make health information accessible to pupils in order for them to develop appropriate skills and attitudes towards good health through right practices (MoE, 2002). Several researchers like Mutinda (2006) and Okemwa et. al. (2010) had postulated that, HE is a reliable source of oral health information capable of improving oral health practices among pupils if the contents would be applied accurately and routinely. Health education content of the science syllabus pertaining to oral health knowledge, skills and attitudes are summarised in Appendix V.

4.3.1 **Oral Health Knowledge, Skills and Attitudes**

In this study, Focus Group Discussions were used to find out the opinions of PCPs about contributions of HE lessons in terms of OH knowledge, skills and attitudes they had acquired during HE lessons. In pursuit of details about the information above, data from the FGDs were edited and transcribed. Key words used in rating the information contained in HE contents specifically; good. Fair and inadequate were coded and tallied using the ‘Stata computer software’ for quantitative data analysis. By simple percentages; good occurred 65.75% (48 times), fair 31.51% (28 times) and inadequate occurred 16.44% (12 times) from
the 8 groups admitted that knowledge content was adequate but lacked details as shown in Table 4.10.

Table 4.10: Adequacy of Oral Health Content of HE

<table>
<thead>
<tr>
<th>FGD No.</th>
<th>Good</th>
<th>Fair</th>
<th>Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>FGD 1</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>FGD 2</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>FGD 3</td>
<td>7</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>FGD 4</td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>FGD 5</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FGD 6</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>FGD 7</td>
<td>7</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>FGD 8</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>(48)</td>
<td>(23)</td>
<td>(12)</td>
</tr>
<tr>
<td></td>
<td>65.75%</td>
<td>31.51%</td>
<td>16.44%</td>
</tr>
</tbody>
</table>

In one (n=1) of the schools, the pupils reported that oral hygiene talks and practical examples done by the Rotary Club Doctors were understandable than the lessons delivered in a hurry by their teachers. Three (n=3) focus discussion groups had more than 50% of the participants say that school HE is a fair source of OH information. In total, 31.51% (23) of FGD participants said HE is fair. Only 16.44% (12) PCPs from three groups agreed that HE was inadequate for improving OH behaviours. The contents of HE was adequate enough to improve their OH outcomes when they translated the knowledge skills and attitudes into practice as illustrated in Table 4.10 above showing that a majority 65.75% (48) of the PCPs had a positive attitude towards OH practices taught in HE lessons.

4.3.2 Care for Teeth

In order to establish the role of HE in promoting OH practices among the PCPs, reference was made to the contents of HE Unit listed in the Primary science
Syllabus. All the HE contents pertaining to OH knowledge skills and attitudes were first extracted from the syllabus as shown in Appendix VI. Later, journals for data collection was prepared to find out the OH practices in the HE content applied by the PCPs and their frequency of application was calculated by percentages as summarised in Table 4.11 below.

Table 4.11: Application of Oral Health Contents of HE

<table>
<thead>
<tr>
<th>OH contents of HE</th>
<th>Taught % (n)</th>
<th>Applied % (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaning the teeth</td>
<td>72.60% (53)</td>
<td>100.00% (73)</td>
</tr>
<tr>
<td>Tooth brushing</td>
<td>97.26% (71)</td>
<td>71.23% (51)*</td>
</tr>
<tr>
<td>Good eating habits</td>
<td>43.84% (32)</td>
<td>93.15% (68)</td>
</tr>
<tr>
<td>How to deal with bad breadth</td>
<td>28.77% (21)</td>
<td>32.68% (199)*</td>
</tr>
<tr>
<td>How to deal with bleeding gums</td>
<td>46.58% (34)</td>
<td>15.07% (11)</td>
</tr>
<tr>
<td>Cavities (holes in teeth)</td>
<td>79.45% (58)</td>
<td>9.59% (7)</td>
</tr>
<tr>
<td>Tooth decay</td>
<td>75.34% (55)</td>
<td>23.29% (17)</td>
</tr>
<tr>
<td>Medical care (Dental care)</td>
<td>95.89% (70)</td>
<td>19.7% (12)*</td>
</tr>
<tr>
<td>Maintenance of strong teeth</td>
<td>5.48% (4)</td>
<td>0</td>
</tr>
<tr>
<td>Proper administration of sweetened medicines</td>
<td>35.51% (23)</td>
<td>6.84% (5)</td>
</tr>
</tbody>
</table>

*p<0.05 (significant difference)

From the table, 72.60% (53) of PCPs agreed during the FGD that they had been taught how to clean and care for their teeth, 97.26% (71) agreed they were taught how to use and clean a toothbrush, 5.48% (4) were taught about the requirements for good oral health, 28.77% (21) were taught about prevention and outcomes of poor OH. Responses to knowledge of the outcomes were as follows; bad breadth (100%), bleeding gums 46.58% (34), cavities 79.45% (58) and tooth decay 75.34% (55). Other OH related practices the PCPs mentioned though remembered by a few were; proper use and storage of medicines, effects
of some diseases like HIV/AIDS, some effects of drug abuse and STI’s on general health.

The PCPs who admitted to having been taught the above practices were probed further to establish the extent to which the acquired OH knowledge, skills and attitudes were applied in their daily oral health practices. Significant differences were found between responses to having been taught how to deal with bad breadth 28.77% compared to those who applied 32.68% the knowledge (p<0.05). The differences between the percentage that agreed a practice was taught and the percentage who applied (practiced) the information represented the general attitude of learners towards the OH information in the curriculum as shown in Table 4.11 above.

The table revealed that the PCPs could recall more than 50% of what they were taught in five of the ten oral health practices studied here in varying proportions. For example, 97.26% (71) remembered having been taught about tooth brushing compared to 71.23% (51) who applied the knowledge by brushing at least once a day in the week (p<0.05). Tooth brushing was the most remembered and most practised oral health care activity. Further probing revealed that PCPs used the different practices or their alternatives to clean their teeth whenever faced with difficulty in getting tooth brushes, toothpastes, dental floss or tongue brushes due to unavailability or lack of funds as listed below:

a) Use tooth brush and toothpaste or toothbrush and salt;

b) Use tooth stick and toothpaste or tooth stick and salt;

c) Use tooth stick made from medicinal plants;
d) Use commercial or improvised tooth picks;

e) Rinse mouth with clean water or salted water and

f) Use ash from medicinal herbs instead of toothpaste.

Oral health practices pertaining to maintenance of strong teeth were the least remembered by only 5.48% (4) of the PCPs. None reported having performed practices that help to maintain strong teeth in the study week. However, the syllabus mentions correct tooth brushing techniques, regular tooth brushing and flossing at least once a day each, cleaning the gums and tongue, and consumption of daily dose of vitamin C as practices that maintain strong teeth. From the journals used in data collection, 79.47% responses were obtained from PCPs who tooth brushed at least once a day during the study period. This was confirmed by an almost equivalent proportion of 71.23% from the FGD members who agreed that they brushed their teeth during the week of study.

It was found out that the differences were due to: challenges in pedagogy and the methods used to collect the data. The 79.47% tooth brushing responses were obtained using journals which capture events as they happen while 71.23% was obtained through FGDs where collection of information about previous and current events allows room for subjectivity. The FGD responses may have been influenced by other factors like attitude and peer group influences among the pupils. It was also found that contributions of HE to oral health practices improved class after class as new content was covered at each stage. It was evident that Class 8 PCPs carried out more oral health practices and exhibited improved OH than those in lower classes as illustrated in Figure 4.3 below.
4.3.3 Attitudes of PCPs towards Oral Health Information

Teachers reported that HE content in the syllabus help them to teach oral health and associated practices according to class and level of understanding of a child. A few teachers argued that the systematic teaching of OH at school gives PCPs room to continue using practices learnt at home. Practices learnt at home were found to interfere with what was taught at school. The PCPs who continued to use OH practices taught at home in school were 80.3%. The PCPs agreed that they occasionally used alternative OH methods and materials which they learnt at home because sometimes what was taught in HE was difficult to apply as one male PCP said:

“Some things we are taught are difficult, like the way to brush up and down, how and sometimes someone does not have tooth paste so I just use my fingers and salt to finish quickly and go to class...” (Male PCPs, 2015)
When one of the parents was asked why she thinks her son preferred OH procedures taught at home than what was taught at school she said;

“I think at home children are taught simple ways of doing things without following long procedures. Sometimes they just observe then try and discover their own ways of doing things because they know it is good to brush their teeth daily even when there is no toothpaste and tooth brush: sticks are there...! There is no special treatment here; the boy must learn to do the right thing at the right time ...“ (Female Parent, 2015).

The above statements represent the attitude observed among most parents; one argued that treating PCPs like any other children motivates them to learn. A similar opinion was expressed by 55.17% (16) teachers who disagreed with the statements that PTE training was adequate while 44.82% disagreed that HE content was adequate for guiding PCPs to deal with common OH problems. All the teachers admitted that the current syllabus does not have policy provisions for learners with special needs like physically challenged. A majority; 82.76% (24) felt that teaching HE and oral health contents should be accompanied with special training in health or should be the work of health professionals. Such negative sentiments from some teachers were associated with their attitude towards teaching some contents of OH. For example, 51.72% (15) of teachers reportedly lectured on how to care for the teeth (dealing with bad breadth) which 28.77% of the PCPs agreed they were taught but 0 % (none) of them
remembered to put the knowledge into practice during the week as discussed earlier in Table 4.11.

It is therefore conclusive enough to argue that, the attitude of teachers had direct influence on the attitude of PCPs towards some of the oral health practices they taught. Further, when the PCPs were asked to rate parents, teachers, peer mates and caregivers in terms of provision of information needed to promote proper OH practices now and in future on a scale of good, fair, poor and inadequate; 53.42% (39) agreed that teachers were good but ranked them third after parents 83.56% (61) and caregivers 58.90% (43) as shown in Table 4.12.

<table>
<thead>
<tr>
<th>Feeling</th>
<th>Peer mates</th>
<th>Teachers</th>
<th>Caregivers</th>
<th>Parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>48.84% (32)</td>
<td>53.42% (39)</td>
<td>58.90% (43)</td>
<td>83.56% (61)</td>
</tr>
<tr>
<td>Fair</td>
<td>48.84% (32)</td>
<td>15.07 (11)</td>
<td>28.77% (21)</td>
<td>13.7% (10)</td>
</tr>
<tr>
<td>Poor</td>
<td>8.22% (6)</td>
<td>1.37 (1)</td>
<td>12.33% (9)</td>
<td>1.37% (1)</td>
</tr>
<tr>
<td>Undecided</td>
<td>5.48% (4)</td>
<td>0</td>
<td>1.37% (1)</td>
<td>0</td>
</tr>
</tbody>
</table>

The PCPs said teachers teach and do not follow-up, they conducted few practical lessons and did not care what happens afterwards. They said caregivers do not fail to help when approached while parents teach and support them to do what they believe is right. These reports indicated that OH lessons were less stimulating and teachers had little opportunity to reinforce the practices. The caregivers were liked because they were compassionate. Parents were liked because of their personalised involvements with the children at home.
The study found that use of resources in teaching OH enhances translation of knowledge into practice. The PCPs reported that they had gained OH information from the following resources; television (46.58%), radio (39.73%), newspapers (56.16%), brochures, (31.51%), bill boards (52.05%), the internet 23.29%, libraries 23.29% and resource persons like the Rotary Doctors (53.42%). While HE was rich in OH information, the apparent lack of efficacy in OH practices among PCPs was due to failure of the PCPs to acquire the requisite skills and attitudes necessary for translating knowledge into practice.

Achievement of the attitude objectives of teaching HE was a challenge considering the negative attitude of teachers compared to the attitude of caregivers who worked under pressure to avoid losing their jobs. In view of this, the opinions and attitudes of teachers and caregivers had influence on the attitude PCPs described by some of the caregivers as neglectful. The coerced commitment of caregivers and the reported caring attitude of parents helped PCPs to implement OH knowledge skills and attitudes as taught.

4.3.4 Application of Knowledge to Oral Health Problems by PCPs

In order to identify common OH problems encountered by the PCPs during the week, the responses from group discussions were transcribed and sorted into categories then prevalence calculated as percentages shown in Figure 4.4 below.
As illustrated in Figure 4, the most prevalent OH problems were bad breadth (69.29%), coloured and decayed teeth (23.29%), sensitive teeth (19.18%), toothaches (16.43%), gum bleeding (15.07%) and the least occurring was cavities (9.95%).

During discussions, 46.58% (34) of the PCPs admitted that rinsing the mouth with salted water reduces bad breadth and controls gum bleeding as taught while 26% (11) practiced this in the week. During the same period, 15.06% (11) observed stains of blood while brushing. In comparison, 85.22% (519) responses for rinsing the mouth with water and 32.68% (199) for gurgling salted water were obtained using the journals. This implied that even though some PCPs could not implement all the oral health practices they were taught, the daily school routine reminded them about what to do as they observed peer mates. Through observation they got encouragement to equally take appropriate action even when OH care looked cumbersome as one female PCP said;
“Even if one forgets, the school routine guides us to do what is right at the right time. That is why each morning everyone goes for tooth brushing after waking up ... After lunch people eat then some drink water or uses it to rinse their mouths. Therefore someone cannot say he or she forgot because you can see what others are doing ...” (One Head Girl, 2014)

The above findings not only confirms the generalisation by Okemwa et al., (2010) that education can be used to pass knowledge about hygiene to pupils but also confirms that HE content improves the OH practices that improve oral hygiene practices and general well being among PCPs. However, the study found that teaching OH contents alone could not guarantee the translation of all knowledge into practice. Regular OH practices required consistent supervision, reminders and access to needed OH facilities within a favourable environment devoid of limiting factors like unrealistic rules and policies or inadequate time and unnecessary restrictions. For example, 79.45% (58) agreed that they were taught how to prevent cavities but only 9.59% (10) applied the knowledge in the week due to reasons like lack of time and lack of materials for the OH practices. However, this could also be as a result of the few reported cases of pain and cavities.

From the above example, if 9.59% out of 79.45% of the PCPs who applied knowledge about cavity prevention knew they had cavities, then use of the Social Learning Theories as presented by Brieger (2006) was justified. Knowledge of a ‘perceived threats’ (tooth ache, gum bleeding and cavities)
prompted behaviour change (regular tooth brushing) thereby enhancing competence in OH practices. The knowledge PCPs had about rinsing the mouth was equally practised to prevent tooth decay, toothaches and gum bleeding which were threats (painful) to good health. Combined knowledge and fear of pain contributed to the OH behavioural responses among PCPs in addition to the HE lessons. Finally because HE as such may not yield best OH practices considering the special needs of PCPs, teachers should enhance the practises with; demonstration of skills, motivation of learners, practical activities and consistent follow up activities.

4.4 Challenges in Oral Health Practice by PCPs

Millions of children are needlessly afflicted with dental diseases because they cannot obtain timely preventive, educational and treatment services (SCAA, 2005). Besides, society does not seem to recognise that oral health is a significant component of general well being (Surgeon General-USA, 2010). The consequences for children are harsh (Pengpid & Peltzer, 2011) and according to this study, they cause the PCPs chronic pain, educational failures due to missed school days, poor nutrition patterns, and low self-esteem. If these challenges are left unattended, the dental problems can turn children’s bright future into painful experiences (SCAA, 2005) of chronic pain and loss of teeth. The challenges found among the PCPs are discussed below.

4.4.1 Time for Oral Health Practices

When the question of adequacy of time for implementing oral health care practices was posed to the teachers, 62.07% agreed that PCPs eat then brush
their teeth. However, this view became complicated when 72.41% of the same teachers said time allocated for the practices after meals was inadequate. It was observed in two schools that PCPs crowd around water points and the narrow passages after lunch. Lack of order around such facilities discouraged those on wheel chairs and crutches who required wide spaces for mobility and more time due to their physical limitations as shown in Plate 4.1 below.

Plate 4.1: Narrow corridors

The PCPs admitted that they evade OH practices that entailed long procedures or involved intensive activities even if they knew the benefits. For example, teeth brushing after meals had known advantages but the inconveniences made them to skip the its regular practice during lunch break until morning when time, space and resources were conveniently available; as portrayed in Table 4.13 below.
Table 4.13: Tooth Brushing Frequencies Compared

<table>
<thead>
<tr>
<th></th>
<th>Frequency of tooth brushing</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>424 out of 609 responses</td>
<td>69.62%</td>
</tr>
<tr>
<td>Afternoon</td>
<td>181 out of 609 responses</td>
<td>29.72%</td>
</tr>
<tr>
<td>Evening</td>
<td>242 out of 609 responses</td>
<td>40.72%</td>
</tr>
<tr>
<td>Week days</td>
<td>261 out of 559</td>
<td>46.81%</td>
</tr>
<tr>
<td>Week ends</td>
<td>23 out of 50</td>
<td>45.33%</td>
</tr>
</tbody>
</table>

Table 4.13 above shows that 69.62% (424) of the PCPs tooth brushed in the morning when time was not a limiting factor. Then 40.72% (242) brushed in the evening hours. Only 29.72% (181) tooth brushed after lunch when time was short. A comparison of tooth brushing frequencies during the weekdays and weekends revealed nearly equal percentages of 46.83% and 45.18% respectively. However, tooth brushing frequency was higher during morning hours in the week than during the weekends by 24.29% compared with a difference of 1.48% between overall brushing rates during weekdays and weekends. This difference between tooth brushing in the morning during weekdays and during weekends was due to lack of supervision; the absence of caregivers and duty teachers over the weekends. Even scoring of journals was affected by the laxity of rules during weekends. Therefore, this study posits that inadequate time and wanting supervision contributed towards the low rate of application of OH care practices during the weekends.

The caregivers complained about the extraneous nature of their work aggravated by the carelessness or “I don’t care attitude” of the PCPs as one caregiver said,
“We are able to assist children but school programs are congested, we are few and time is inadequate so we don’t assist all children as required. We have to wake them up, prepare them for breakfast, ensure they get to class on time before clean rooms then proceed with sick ones to hospital. Lunch break is short, in the evening it’s chaotic... assist in bathing, combing hair, apply oil on their skin, tooth brush and where toothpaste is missing beg from others or get from the school store. Some parents are a problem too. They do not give children adequate OH items hence their children do not care about oral health practices...” (Female Caregiver, 2014)

The lamentations of this caregiver revealed they were overworked and could not provide quality OH assistance to the PCPs. There is need to decongest the school programmes, seek alternative ways of subsidising for ignored parental obligations due to income and care free attitudes.

4.4.2 Challenges due to Severity of Disability

According to the caregivers, children with special OH needs were at risk of oral diseases because of complications due to their conditions. Parents revealed that severity of disability among the PCPs cause dependence on medications and support services. Lack of supportive care exposed the PCPs to poor nutritional patterns and ineffective oral hygiene procedures. The caregivers concurred that if little needs were not attended, greater needs for social support arise the
caregivers’ burdens increase. Severe need for support was common among PCPs with multiple disabilities especially those with poor nervous coordination. They need assistance to eat, drink water, rinse their mouth and brush teeth slowly by slowly or they get chocked. A female caregiver at one point said,

Some of these pupils need a lot of assistance; to dress, brush their teeth, eat, drink and take medicines. It is risky to leave them do such activities unsupervised to avoid injuries or chocking. Pupils with drooling problems, urinary and bowel incontinence also need assistance to change clothing regularly or the saliva and faecal stains attract flies then other problems develop .... (Female Caregiver, 2015)

Another caregiver from a different school explained that three PCPs under her care have swallowing problems and cannot eat enough food or finish a meal without assistance due to fear of choking and vomiting. She went on to say that without assistance they often leave food in plates when meal time was over. However, when time was available and assistance was provided patiently the children fed well. In her view, the large number of pupils requiring assistance lowers quality of supportive OH care services. She further argued that regular assistance also makes the pupils develop laziness in order to win favours from the caregivers. She agreed that caregivers sometimes disregarded requests from children to instil responsibility and self-reliance by tooth brushing and maintaining their personal hygiene. Otherwise all caregivers reported that occasional failures were due to overwhelming work. It is due to such challenges
that Bharathi & Singh, (2012) concluded that children with disability have more needs than able bodied children which this study confirms.

A general observation by most of the caregivers was that when the PCPs return to school from holidays, a number presented bad breath, swollen gums and food particles between their teeth more than when they were at school. At school, the routine compels them to brush daily. The caregiver reported that PCPs under her care look healthier while at school than when they come from home. Her sentiments implied that oral health and general health of PCPs improves at school than at home. In one PSPS, nine FGD participants admitted that they do not go home during the holidays due to economic challenges at home while a senior teacher reported that some were considered social rejects; verifying this was beyond the scope of this study.

Further probing of the PCPs revealed that though caregivers presented a caring attitude towards them, they were occasionally unfriendly. The PCPs agreed that poor school infrastructure forced them to seek oral health assistance from caregivers who could not serve all of them. They also reported that ignored school rules exposed them to risks of unsafely prepared foods from vendors and drinking unsafe water from unsecured boreholes. When asked whose oral health care services they preferred, the responses were as follows; Parents 83.56% (61), Caregivers 58.9% (43), teachers 53.42% (39) and peer mates 43.84% (32). This is illustrated by Figure 4.5 below.
Data from parents confirmed that severely disabled PCPs needed social support to achieve self-efficacy in oral health practice. Four parents (44.44%) expressed confidence in the role played by the caregivers while two (22.22%) disagreed. The rest recommended that caregivers should be nurses or trained health care personnel not elderly non-professionals. From the parents’ views and previous demographic revelations, one could confidently conclude that while teachers had some HE training from their PTE training and the caregivers had neither academic qualifications nor basic health training, supportive care services in the schools was wanting.

When PCPs were asked whether their physical conditions exposed them to OH problems like bad breadth, carries and implied academic consequences like impaired speech and low self-esteem, a number of responses were obtained. Out of the eight focus discussion groups comprising 73 PCPs, 51% (38) agreed that physical conditions especially the severity of disability limited their ability to
manipulate locally available oral health items like tooth brushes hence their need for support as illustrated in Plate 2 below.

Plate 4.2: Caregiver Offering Oral Health Service to a Pupil

They also said that most of the locally available OH items were designed for people without physical challenges. The PCPs underscored that tooth brushing in ‘up and down’ continuous motion for at least two minutes as recommended in the curriculum is effective and healthy but difficult for those without limbs and skills to effect. The practice was viewed as over-demanding and those with nervous disorders could not sustain it for the recommended time. However, with continuous and compassionate training, some PCPs managed to improvise the use of other parts of the body (the feet) to carry out desired OH practices as demonstrated by one PCP without hands in Plate 4.3 below.
A total of 9 (18.75%) out of 48 PCPs from two of the schools appealed to the government for free customized tooth brushes which fit in fingerless hands or in the feet for PCPs.

### 4.4.3 Oral Health Awareness and Adapted Facilities

The PCPs reported that sinks and hand washers were too high and should be made low enough for easy access and use. During the Focus Group Discussions, 27.23% (20) of the PCPs said that commercial oral health care items were expensive and some parents could hardly afford enough OH items to last them a term. They reported the lack of adapted OH items like toothpaste dispensers and modified toothbrushes that physically impaired pupils could handle easily (Jaccarino, 2012) like their counterparts in Europe. They proposed that the government should avail affordable customized OH items like the ones found in one school shown on Plate 4.4 below.
Due to awareness about benefits of proper OH practices, PCPs who lacked the items borrowed compounds like Colgate from friends or reverted to cultural alternatives like tooth sticks and ashes from herbs with medicinal compounds. Some used salted water as an alternative. The challenge which remains for further research is, to test pharmacological potency of the alternative OH care materials used by the PCPs in Kisumu County.

It was found that 40.23% (29) of PCPs in Kisumu County were aware about how Information communication technology (ICT) can spread information about OH care. Seventeen pupils (23.29%) agreed that the internet was an alternative source of oral health information because they heard, saw or used it themselves. However, 6.85% (5) of the PCPs confirmed that they could manipulate computers and use mobile phones to search for OH information from the internet. The same percentage admitted that the internet had several
distracters. The findings concurred with a baseline survey report by Oloo (2009) where 5.36% of participants reported that the internet negatively impacts on attitudes of students in Kenya. The challenge faced by PCPs was lack of internet connectivity and adaptability of computer keyboards used by the PCPs. In summary, there were ten computers in the schools with a low 1:21 computer to PCP ratio.

4.4.3.1 Childhood Socialization of PCPs

According to Boika, et al., (2009) parents and the community play supportive roles in development of habits early in life. In this study, responses obtained from parents, teachers, and the PCPs indicated that oral health orientation of children in infancy and early teenage (1 to 7 years) contributed towards their oral health practices in later life. One parent said:

Children learn how to eat and care for their mouth at home (referring to infancy) but school exposes them to more expensive ways of maintaining oral hygiene and taking care of them becomes more expensive as they grow up ... (Female Parent, 2015)

The sentiments of this parent and a few teachers agreed with Boika, et al., (2009) that parents and the community play an important role in development of OH habits in early life. The teachers concurred with the parent that childhood was time for development of character but they did not agree that oral health orientation at infancy and early teenage shapes adulthood OH practices. One teacher said:
“School is ideal and incomparable with home environment in terms of adequacy of knowledge, skills and attitudes that children require for OH practice from the beginning to the end. Something taught following a curriculum cannot be compared with things taught by heart at home depending on convenience, background and ...“ (Male Teacher, 2015)

In general, 31% (9) of the teachers strongly disagreed with the statement that PCPs join school with adequate knowledge required for proper OH practices while 68% (20) simply disagreed. This meant only 1% agreed with the statement implying health education was necessary for improved oral health practices. According to the PCPs, more practical training takes place home than at school. In the group discussions, the PCPs said training in OH practices at home was need based and some parents considered the disability of the child when training. One PCP said,

“Parents do not follow a curriculum but teach what was necessary according to existing needs, if it is tooth brushing it will be repeated until someone can do it alone...“ (Female PCP,2015)

This study found that 75.86% (22) of the teachers were SNE trained. They follow MoE curriculum the PCPs said their oral health lessons were not learner-centred due to lack of practical activities. Some did not consider the disability limitations of the pupils. Therefore lack of teaching and learning activities
during OH lessons contributed towards the low confidence among PCPs in applying the OH practices they come across for the first time. One parent said.

“The Kenyan education system exposes learners to many new things; one objective at a time while at home, children learn only what is needful at the time and that make the difference” (Male Parent, 2015)

The parent’s sentiments imply that PCPs are taught many things about OH one at a time at school but without considering their immediate relevance so long as the syllabus is followed. The PCPs lack real life situations to apply all the OH practices taught at school. That is why social learning of OH survival skills and practices anyhow anytime in the home environment seemed more appropriate. On the contrary, teachers pointed out that once children learn a wrong OH practice at home or from the social environment, unlearning and relearning becomes difficult and that makes alternative cultural oral health care practices persistent among the PCPs.

4.4.4 Economic Challenges

A study done in the United States of America (USA) showed that dental visits among children enrolled in Medicaid and Child Health Plus fell short of the Healthy People 2010 goal of 56% because children from families with low-income visited dentists less frequently (SCAA, 2005). In this study, it was found that income level was one of the determinants of applied oral health practices. The visits to dentists and frequency of OH practises like tooth brushing and snacking were found to depend on income of the family. This was
depended on quality of shopping and the amount of pocket money given by parents or guardians per term. When asked the question, “Does the fact that you can afford OH items and the amount of pocket money given to you affect your OH practices?” 75% of PCPs responded “yes” admitting that low income lead to inadequate shopping for OH care facilities. Consequently bad breath was more prevalent in the afternoon and evening hours. The study ignored results showing bad breadth in the morning because morning halitosis is considered a normal phenomenon (ProFresh International Corp., 2006) unless investigated further. The participants agreed that bad breadth lowers self-esteem and is a sign of underlying OH problems (periodontitis or cavities) which indisposes them from studies thereby lowering grades due to pain and absenteeism.

When the same question about effect of income on OH practices of PCPs was posed to parents and caregivers, 33.33% (3) agreed they can afford regular dental check-up but only 22.22% (2) had done so in the last one year prompted by severe maxillofacial pains (e.g. toothache caused by injury from a fall) and drooling. Further probing revealed that parents had above college level of education and had stable income; they lived in urban centres where oral health services were accessible. The parents admitted that income determined quality of health services offered in their neighbourhoods. During discussions, it was revealed that one PCP regularly attended orthodontic clinics for correction of maxillofacial occlusion. They also reported that multiple disabilities inadvertently interfered with regular class attendance.
Reports from 85.71% (6) of the caregivers indicated that there were parents who leave children at school with very little OH care requirements promising to bring more before end of term. A majority do not come back until closing day. This showed how economic challenges affected OH practices among the PCPs leaving the caregivers with the responsibility of seeking help for those who finish their items before end of term. According to the PCPs, leading challenges due to unattended OH needs included dental plaque; decayed and discoloured teeth (23.29%) followed by sensitive teeth (19.18%), toothaches (16.44%), bleeding gums (15.07%), cavities and filled teeth (9.59%), missing teeth (6.85%), and braced teeth (1.37%) as illustrated by Figure 4.6 below.

![Figure 4.6: Oral Health Problems Faced by PCPs](image)

**Figure 4.6: Oral Health Problems Faced by PCPs**

### 4.4.5 Exposure to Risk Factors

One outcome of poor OH care is discolouration of teeth which was observed among some of the PCPs. According to Jenssen and Quoc (2010), causes of teeth discolouration include; genetic inheritance, continuous use of antibiotics like tetracycline, foods that expose people to high levels of fluoride, developmental disorders and tooth decay. This study was not able to determine
OH challenges due to genetic inheritance because that was beyond its scope. However, caregivers reported that PCPs frequently use of antibiotics for various reasons. During the week of study alone, Tetracycline and sweetened pain killers were prescribed to 16.44% (12) of the PCPs. The caregivers also informed the researcher about other probable causes of external discolouration like the untreated salty borehole water used when water taps dry. In one school, the researcher confirmed through tasting that water in the plastic containers was salty. It was not verified whether the water contained fluorides or not. However, it was true that several pupils in the school had brown teeth.

Some of the foods served in the schools contained tannins; tea, coffee and cocoa which (Jenssen & Quoc, 2010) says cause teeth discolouration. Using hot water served in the dining hall, the pupils make tea or ‘cold power’ (a mixture of cold water, sugar and coffee or cocoa) when hungry. In addition, the unlimited access to non-industrial snacks (assortment of edibles like fruits, ground nuts and ‘mandazis’ or doughnuts) from food vendors during break time and weekends because of weak rules. The caregivers blamed the variety of foodstuff for the teeth discolouration, oral and general health problems experienced by the PCPs.

It was found that out of 87.52% (533) journal responses on eating non-industrial snacks due to their affordability in the week of study alone, 43.35% (264) reported pain in their teeth and 19.7% (120) scores were made for hospital visits. Some of those who reported tooth aches said that to go for treatment at the dental hospital was difficult due to long permission procedures; reporting
sickness to caregivers, caregivers report to the duty teacher who decides cases to refer to hospital based on seriousness of sickness. Less serious cases are dealt with by matrons or house mothers with instructions to administer pain killers. The Caregivers complained that the opinion or attitude of teachers compromised the oral and general health of the PCPs because they lacked diagnostic competencies to determine seriousness of an illness or prescribe medicine. The caregivers who dispensed the medicines said they could not question the teachers’ decisions for fear of losing their jobs, so they served as directed.

4.4.6 Oral Health Facilities

The appropriate use of correct teaching resources makes Science and specifically HE lessons learner centred and effective (Kagunda & Agufana, 2007). In this study, the following statement was posed to teachers, “Oral Health perceptions and practices of PCPs improve progressively because they effectively learn more from health education unit from Class 1-8?” and scores obtained using a 5-point Likert scale were as follows; Strongly Agree (SA) 6.9% (2), Agree (A) 65.51% (19), Undecided (U) 0, Disagree (D) 17.24% (5) and Strongly Disagree (SD) 10.34% (3) as shown in row one of Table 4.14 below.

<table>
<thead>
<tr>
<th>Item</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral health practices of PCPs improves from class 1-8</td>
<td>2 (6.9%)</td>
<td>19 (65.51%)</td>
<td>0</td>
<td>5 (17.24%)</td>
<td>3 (10.34%)</td>
</tr>
<tr>
<td>PSPS equipped with resources for teaching OH practices</td>
<td>1 (3.45%)</td>
<td>3 (10.34%)</td>
<td>0</td>
<td>17 (58.62%)</td>
<td>8 (27.59%)</td>
</tr>
<tr>
<td>FPE funds adequately buy OH teaching resources</td>
<td>0 (0%)</td>
<td>1 (3.45%)</td>
<td>0</td>
<td>16 (55.17%)</td>
<td>12 (41.38%)</td>
</tr>
</tbody>
</table>
The Table illustrates that 6.9% (2) of teachers strongly agreed and 65.51% (19) agreed that Oral health perceptions & practices of PCPs improves from class 1-8. The total of 79.31% (21) teachers agreeing implied that most PCPs do not know how to maintain good oral hygiene when admitted but their OH perception and practices improve progressively as they get to class 8. The teachers also reported that teaching and OH practices would greatly improve if more teaching/learning resource materials were availed in the schools. Asked whether PSPS were equipped with resources for teaching OH practices, table 4.14 shows that 58.62% (17) disagreed and 27.59% (8) strongly disagreed blaming the shortages to inadequate FPE funds hence the low competence of PCPs in handling their oral health materials. When probed further to find out whether FPE funds were adequate or not to supply the OH materials; 3.45% (1) of the teachers agreed, 55.17% (16) disagreed while 41.38% (12) strongly disagreed. This meant 96.55% (28) of the teachers reported that inadequate FPE funds as one of the causes of inadequate OH materials (toothbrushes, toothpicks, and dental floss and tooth pastes) and a contributing factor to poor OH perceptions and practical skills among the PCPs despite HE contents being adequate.

On the same note, one caregiver pointed out that,

“While the government provided tuition fees, it should recognise the lack of customised OH materials for pupils with disabilities and intervene by donating. Manufacturers can also create more awareness about
their products by donating toothpastes and toothbrushes
to the PCPs ...” (Male Caregiver, 2015)

This caregiver and others observe that even if resources are made available, some PCPs with very severe disabilities or activity/mobility limiting multiple disabilities may still be unable to make full use of the resources and derive maximum benefits because they need assistance. All the caregivers interviewed complained about inadequate time to serve the large numbers of PCPs who need training and assistance to maintain good oral hygiene. Four of them said that even though training the PCPs on how to use functional limbs to carry out OH practices is done in a special class. It only takes one term (3 months) then they remain in the hands of the caregivers for the rest of their time in the PSPS. In their view, facilities and time are of essence in order for PCPs to achieve efficiency and competence in translating OH knowledge, skills and attitudes from HE lessons into practices for improving OH outcomes.

In the study, PCPs from three (60%) of the five PSPS confirmed that they got OH training and some OH care materials as a welcome gesture from sponsors while in the special class but the project stopped. There was a feeling among the PCPs, Caregivers, Parents and 89.66% of the teachers that the government should supply customised OH materials to schools for both practical teaching and continuous general use by the PCPs instead of focusing on tuition fees only. The moneys sent to schools to buy learning materials were often diverted to sort out prevailing needs in the schools. The teachers and caregivers know that learner centred teaching and training are important if PCPs were to achieve competence as Muai (2001) proposed. However, while three quarters of the
PCPs agreed that commercial OH care materials identified for use in the HE contents were effective, freshened breadth and left the mouth with a pleasant taste for longer hours, they were expensive and difficult to manipulate hence the reducing frequency of tooth brushing ratios from 35.96% to 17.05% in the order once to thrice due to difficulty in manipulative challenges arising from severity of disability as shown in Figure 4.7 below in the week of study.

![Bar chart showing brushing responses due to resource manipulability.](image)

**Figure 4.7: Brushing Responses due to Resource Manipulability**

From the trends observed in Figure 7 above, it was clarified by one PCP who was born without hands that practices like tooth brushing were cumbersome and could not be performed as frequently as expected. He said:

> I cannot brush three times a day but i try at least once because if I open my box many times sometimes I’m forced to leave it open and people steal my property ...

(Male PCP, 2014).

The Male PCP, (2014) implied that it is not only difficult to toothbrush frequently, but it is also difficult to open the box frequently hence the lower
frequency of tooth brushing and leaving the box left open exposes it to social problems like theft.

4.5 **Health Education Strategies that Address Oral Health Challenges**

This part presents the findings based on the fourth objective. The gaps were; to identify HE strategies put by the PSPS to address OH challenges faced by PCPs in pursuit of proper OH practices and to show how the special primary schools promote oral health practices through the HE lessons. The strategies found were placed into two categories; those directly related to promotion of OH practices taught in health education referred to as health education strategies that directly address OH challenges and general strategies that reinforce application of OH practices taught in health education hereby called general strategies that address challenges to OH practices.

4.5.1 **Strategies that Directly Address OH Challenges**

The study did not find any strategies that directly promote OH practices through HE. However, the following strategies had indirect influence on OH practices of the PCPs in some of the PSPS; special classes, development of disability friendly infrastructure, improved access to clean water supply and strategies that address economic challenges.

4.5.1.1 **Enrolling New PCPs into Special Class**

This study found that all the PSPS had or linked with other schools that conduct beginner lessons in a unit called ‘Special Class’. This is the receiving class where newly admitted pupils get orientation and correct counterfeit information acquired before joining school. It is here that basic survival or life skills and
some OH practices contained in the HE units are taught. The study found that carelessness and “I don’t care attitude” displayed by some PCPs towards some OH practices were of great concern according to teachers and caregivers. Hence, the caregivers were under strict instructions to supervise oral hygiene practices in the morning before PCPs go for breakfast.

In view of the strict adherence to instructions by caregivers as given by teachers, the PCPs rated them lowly in terms of OH care giving services and as the least consulted for OH assistance. However, they ranked them second with 58.9% (43) score after parents for willingness to support when contacted while 12.33% (9) said they were too strict as represented in Figure 4.8 below.

![Bar chart showing attitude of PCP towards caregivers.](Image)

**Figure 4.8: Attitude of PCP towards Caregivers**

In order to overcome attitudinal challenges discussed above, the special class was essential for unlearning bad OH habits and instilling new OH practices through practical remedial HE lessons conducted by the caregivers. Three special schools conducted special classes within while one school relied on their more established sister school signifying the need for proper behavioural orientation of admitted PCPs. In the special class PCPs learn basic life skills, personal hygiene, self-reliance and how to manipulate new equipment not
experienced before like toothbrushes or wheelchairs. More than half of the respondents; 52.05% (38) admitted they came to know about regular tooth brushing and other oral health practices for the first time in the special class before joining the primary section. The OH practices taught in the special class are adapted from the HE unit in primary school science syllabus.

4.5.1.2 Sending Shopping Guidelines to Parents

With reference to findings of Freund, Graybill, and Keith, (2005) that income of parents influence shopping, this study found that PSPS standardise shopping for PCPs by providing parents and guardians with shopping guidelines containing list of personal items and OH care prescribed by teachers of HE as recommended in the syllabus. Each PCP requires personal toothpaste and a toothbrush for cleaning the teeth. The schools also recommend between 700 and 1000 shillings for pocket money per term per PCP to reduce wastage and over-snacking. All pocket moneys are deposited in the senior teacher’s office. A maximum of fifty shillings is issued to a child per week on request. These regulations are directed at ensuring the PCPs have the right quality and quantity of personal items for oral health care among other requirements for OH care listed in the HE syllabus.

According to the caregivers, some parents give children very little quantities of OH care items and pocket money or sometimes nothing at all. Those who do not have basic OH items reportedly ignored or skipped the OH practices. Those with excess money on the other hand over-indulged in eating commercial and alternative snacks; sweets, biscuits and doughnuts without regard to what they
are taught in HE. The side effects include toothaches and wastage of time loitering around open yards where food vendors displayed their goods. The prevailing OH problems interfere with class attendance and academic performance. In response, teachers of Science/HE have recommended one official visiting day per month when parents, teachers, caregivers and other stake holders find opportunity to deliberate on academic affairs and the well being of the PCPs. On such occasions matters encompassing OH care are addressed. In one of the schools, the visiting day doubles as open day when health talks and free medical camps are occasionally conducted.

4.5.1.3 Providing Access to Clean and Safe Water

Clean safe water for drinking and rinsing of the mouth is one of the basic requirements recommended in the primary science syllabus as illustrated in Appendix VI. It was found that three of four (75%) schools in the study were connected to clean piped water systems. When their taps dry out, they revert to use of water stored in reservoir tanks and containers like the ones shown in Plate 4.5 below.

Plate 4.5: Water Containers
In one of the four schools, a borehole and a neighbourhood pond were the main sources of water fetched by the caregivers for use in the school. They store it in plastic barrels and pots where the PCPs collect for drinking, rinsing the mouth and cleaning utensils. The caregivers reported that they clean the containers as hygienically as possible using detergents whenever available as recommended in the HE curriculum. The researcher observed that water storage facilities were clean and accessible in two schools. Poor hygiene was observed in the remaining two schools. The schools with hygienically maintained containers applied HE skills to make water safe for OH use. In one school where poor hygiene was observed, a dirty cup was used for fetching water using dirty hands or feet as illustrated in Plate 5 above. The cup was used by different PCPs for drinking without washing for days. It was not verifiable when it was last washed.

During the interviews, caregivers and PCPs reported that drinking water was often treated with water purifiers (e.g. Water Guard) to kill germs as taught. However, 51.72% (5) of teachers of HE argued that addition of chemicals in the salty waters increased browning of teeth among pupils. This finding showed that some strategies put by schools to improve OH were themselves challenges despite being recommended in the syllabus. Therefore, without putting into consideration the required balances between environmental conditions and formulations of chemicals used in OH care materials (water, tooth pastes & etc), HE can itself be a threat to proper OH care and status of PCPs if all concepts were applied without considering other factors around the child.
4.5.2 General Strategies that Address Challenges in OH Practices

Although Sitienei & Mulambula, (2012) wrote that school rules and teacher centred teaching methods used in some schools focuses on good grades in national exams. This study found some strategies that had indirect relationship with HE contents but which had capacity to reduce bad OH outcomes for example strict school rules could address the challenges due to inadequate time for OH practices and hence eliminate bad breadth. The strict rules enhanced swift movement and adherence to routine practices like regular tooth brushing in the morning hours by the PCPs in some schools as taught in HE. It is to say that some school administrators (the four senior teachers) had never noticed before that sections of their school rules requiring strict adherence to dining hall rules, shopping guidelines sent to parents and rules prohibiting consumption of foods sold by food vendors undoubtedly improved OH status of the PCPs. In this study such strategies emerged as subthemes where no explicit HE strategies to address identified OH challenges seemed to be in place in the PSPSs. The indirect strategies are discussed under the sub-headings below.

4.5.2.1 Friendly Infrastructure

The constitution of Kenya 2012 and the Disability Act 2003 emphasize on rights and privileges of persons with disabilities; rights to education, health, accessibility and mobility within public buildings (The Constitution of Kenya, 2012 & The Disability Act, 2003). The Ministry of education in their school safety booklets provides guidelines on how to implement the Act. The booklet lists free access to facilities like water points, classrooms, toilets and sinks should be reasonably high. In two schools, libraries had been improved by
rearranging shelves so that the upper ones hold short loan books while the lower ones carry quick reference books for PCPs to access without assistance as illustrated in Plate 4.6 below.

![Plate 4.6: Teacher Serving a PCP in the Library](image)

As displayed in plate 4.6 above, the teacher in charge of the library ably issued the PCP with a text book for oral health from the general reference section in the lower shelves. Short loan books appear on the upper shelves of the fairly accessible library. The library had a few oral health books and wall charts for promoting OH. It was observed that ramps leading to the library and classes where oral health lessons were conducted and those leading to washrooms and water points where OH practices were conducted needed repairs. A few sinks in one school were too high for PCPs on wheel chairs because they were built without the disabled in mind.

A caregiver with 17 years of experience in one school said that inappropriately developed infrastructure unnoticeably limited the PCPs from applying proper OH practices taught because facilities like sinks were fitted for use by able
bodied pupils before the institution became a special school. The challenges posed to OH practice by infrastructure persist because of failure to implement HE and policy interventions due to shortage of funds, one teacher said.

4.5.2.2 Economic Support

The interviews held with caregivers and FGDs held with PCPs revealed that family income and economic challenges facing parents/guardians influenced the type, quality and quantity of oral health care items PCPs carried to school. Ultimately, this affected the application of OH practices as summarised in Table 4.15 below.

Table 4.15: Oral Health Care Items

<table>
<thead>
<tr>
<th>Item offered</th>
<th>Quality provided</th>
<th>Quantity provided by PSPS</th>
<th>Frequency of OH Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toothbrushes</td>
<td>New &amp; Good</td>
<td>Adequate</td>
<td>Regular</td>
</tr>
<tr>
<td>Toothpastes</td>
<td>Commercial</td>
<td>Adequate</td>
<td>Regular</td>
</tr>
<tr>
<td>Water</td>
<td>Clean/treated</td>
<td>Adequate</td>
<td>Regular &amp; sufficient</td>
</tr>
<tr>
<td>Dental check-ups</td>
<td>Irregular</td>
<td>-</td>
<td>Irregular in severe cases</td>
</tr>
</tbody>
</table>

Table 4.15 above illustrates that the quality and quantity of items availed to a child influenced the frequency of OH practices. The duration over which the PCPs would sustain their preferred practices depended on the quantity of items provided. Earlier, this study had determined that lack of OH items prompted the use of alternatives like tooth sticks and ash to clean teeth. The teachers also reported that income of parents influenced pocket money, diet and snacking rates of the pupils. They said in order to limit use of alternative oral health items like tooth sticks, the teachers of Science/HE recommend that parents must buy
adequate OH care items to sustain the OH practices among PCPs as taught in HE throughout the term. To ensure this, parents are reminded officially through admission letters and every end term newsletters.

The PCPs who were not able to acquire the recommended OH items from home sought assistance from the schools that depend on free primary education funds. The caregivers reported that schools occasionally received donations of toothbrushes, toothpastes, bar soaps and chemicals for treatment of water from well-wishers or sponsors. The donations were centrally stored and distributed to needy PCPs while some could be used for demonstration teaching of OH practices during HE lessons. Table 4 shows that dental check-up was most irregular hence the need to identify a qualified dentists to conduct regular dental check-ups in the schools.

4.5.2.3 Good Time Management

In order to decongest programs, the schools set specific times for hygiene practices including OH practices in the morning and evening hours. From 5 pm to 6.30 pm the PCPs go for oral hygiene assistance by the caregivers. Those who can bathe and clean themselves also do so during the same period just before breakfast. The school routines are strictly adhered to in order to reduce congestion in the washrooms and to allow caregivers to attend to as many PCPs as possible in a day.

4.5.2.4 Rules against Foodstuff Vendors

All the schools had written rules and guidelines to direct operations. There were rules that prohibited consumption of foodstuff from outside the school, rules
that restricted time to open school canteens and buy from food vendors. The restrictions indirectly reduce taking of snacks and alternative foods between meals and hence minimize bacterial proliferations in the mouth. They also ensured that only hygienically prepared foods were served and consumed in the dining halls. Teachers and caregivers agreed the efforts reduced eating snacks by 39.24% (239) in the morning when supervision was strict compared to increased responses of up to 51.06% (511) in the evening due to minimal supervision as shown in Figure 4.9 below.

**Figure 4.9: Snack taking Responses of PCPs**

Contrary to the good expectations from strict observance of the school rules and other regulations, the PCPs revealed that lack of enforcements compromised adherence by parents and food vendors alike. Parents brought foodstuff from home without regard to prohibitions while teachers granted visitors permission to deliver shopping without inspection as stipulated in school rules. The food vendors sold wares to PCPs and teachers alike before, during or after break time and lunch time without reference to rules. Their merchandise; sweets,
doughnuts, assorted fruits (raw or ripened) and candies are among the sugary foodstuff pupils are cautioned against during oral health education lessons.

4.5.2.5 Strategy of Strict Dining Hall Rules

In half of the schools, there were clearly stated rules displayed in the dining halls. According to Xiamong, et al. (2012) rules reinforce practices like OH practices taught in HE. In one school, rules were not displayed but the pupils could paraphrase them remotely. A cook for 17 years in one integrated unit for PCPs said that management of lunch program was easy due to clear rules. According to him, dining hall rules indirectly promoted OH practices by restricting PCPs to eating foods prepared under hygienic conditions in school while prohibiting snacks from outside the school. One school rule posted on the dining hall declared: “Do not eat food from outside the school in the dining hall” and its observance was a credit to good general wellbeing.
CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the key findings, conclusions and recommendations of the study. It also contains suggestions for further researches in the area covered.

5.2 Summary of the Findings

The study was carried out in Public Special Primary Schools for physically challenged pupils. The focus of the study was to find out the contributions of health education to oral health practices among physically challenged pupils in Public Special Primary Schools in Kisumu County. The study aimed at determining oral health practices among physically challenged pupils, establishing the contributions of health education to oral health practices among the physically challenged pupils, determining oral health challenges faced by physically challenged pupils who study health education in Public Special Primary Schools and determining health education strategies in use by the Public Special Primary Schools to address challenges in oral health practice among the physically challenged pupils in Kisumu County.

Demography

It was found in the County website that there were 706 primary schools with an enrolment of 240,538 pupils. Out of this were Special Public Schools and Integrated Units for children with physical challenges. The study was conducted in 4 PSPS with a target population of 925; 790 PCPs, 40 teachers, 87 parents

108
and 8 caregivers. In the sample population were 83 PCPs (45.82% girls, 54.18% boys) 29 teachers (48.28% females, 51.72% males), 9 parents (55.56% females, 44.44% males) and 7 caregivers (71.43% females, 28.57% males).

Among the PCPs, 30.12% (25) had multiple disabilities which limited their ability to appropriately apply the oral health knowledge, skills and attitudes learnt in HE further. Disabling factors due to multiple disabilities found included; mental retardation (12.04%) which affect cognitive abilities, speech handicap (7.23%) which affect ability to communicate effectively, and hearing impairment (4.82%) which slows learning pace when performance of victims in examinations was compared with the rest of the class. A small number of PCPs (4.82%) suffered from cerebral palsy which disrupts learning leading to loss of time during whenever one was attacked by fits. There was one (1.2%) case of Autism with marked communication challenges and short attention span.

It was found that all the parents interviewed had at least basic education. Having passed through primary schools, they admitted that they were taught oral hygiene in school. However, a majority reported that their oral health practices were not solely guided by what they learnt in the HE, but by other determinants like; income, availability of required items and the social environment or residence among other social factors.

It was found that female caregivers 71.43% (5) were preferred in the schools than male ones. Most of the caregivers lacked professional training with 57.14% (4) having no health related training but some were assigned nursing care and oral health care duties. The lack of OH training among caregivers had
debilitating effects on efforts made to instil good oral health practices among the PCPs because some caregivers were victims of poor oral health care and bad role models.

**Oral health practices among physically challenged pupils who study health education in Public Special Primary Schools**

The findings of this study revealed that all the PCPs were able to undertake at least one of the oral health practices taught at school or learnt before joining school. Some of the OH practices identified among the PCPs were; tooth brushing, rinsing of the mouth with water, tooth picking and dental check-ups. Out of the 609 responses collected from PCPs using journals, rinsing the mouth with clean water was the most practiced OH behaviour. The mean response rate for rinsing the mouth with water was 1.8. There were 85.22% (519) responses for rinsing the mouth more than once a day during the week of study. The practice was dominant because of accessibility, less manipulative skills required and the availability of water in the schools. The second most common OH practice was tooth brushing with 80.47% (490) responses for brushing at least once a day with a mean brushing rate of 1.4. Tooth picking was third at 56.32% (343) responses in the week. The methods used in tooth picking to remove food particles between the teeth varied depending items available; some PCPs used sticks, others used fingers or even stems of grass.

During FGDs, it was found that 92.24% (77) of the PCPs knew about regular dental check-ups. However, 80.36% (59) experienced oral health problems during the study period but did not seek dental care services from dentists or
other oral health experts. This showed inconsistency between acquired knowledge (cognitive) and translation of knowledge into practice (exhibited psychomotor effects) that improve wellbeing.

The differences between knowledge and practices correspond well with negative attitude observed among some PCPs towards some of the oral health practices precipitated by severity of the disability or their multiplicity. For example, out of 43.35% (264) occurrences of tooth pain, 19.7% (119) visited the dentist, 14.71% (89) were compelled by the severity of pain while only 5.42% (33) visited the dentists for regular check-up. This indicated that despite the OH challenges realised, knowledge of different OH practices form class one to eight contributed more theoretically for exam purposes than to OH practices and behaviour change. Other deterrents to translation of knowledge to practice found were; lack teaching resources, negative attitude of teachers and reluctance of learners. Finally, the frequency and efficiency of carrying out OH practices improved slightly from 1.28 to 1.56 per day between class seven and eight it is therefore conclusive enough to say that the higher the class (8) the more regular the OH practices undertaken by PCPs despite sustained discouragement due to disabling factors and lack of customised OH facilities.

Contributions of health education to oral health practices among physically challenged pupils in Public Special Primary Schools

Results obtained from 79.31% (23) of teachers revealed that SNE was necessary for teaching in PSPS however 55.17% (13) of the SNE trained teachers felt that the curriculum content was inadequate for teaching OH to PCPs because
consideration of physical limitations of PCPs seemed not to have been considered at the beginning. Besides, 82.76% (24) of teachers said there was need for further training in health which casted doubt on their competence in teaching OH practices in HE contents. While 66.97% (19) of the teachers recommended that the OH contents should be handled by trained health personnel, they agreed caregivers and parents supplemented in teaching OH practices. It was concluded that the negative attitude of some teachers towards teaching OH practically affected their delivery and by extension the attitude of PCPs to application of OH skills despite the much knowledge they displayed.

The negative attitude of teachers was evident in the subjective permission of PCPs to seek professional services of doctors/dentists. Denial of permission to seek dental clinics enhanced poor OH status of those who missed treatment routine check-up.

From the study findings, the most remembered OH practice was tooth brushing (97.26%) and the most practised was rinsing the mouth with water (85.22%). The least remembered and least practiced OH activity was visit to the dentist for check-up due to costs involved. The common OH practices were those requiring less manipulative skills or where materials and relevant information was available and accessible. That is why 65.75% (48) of PCPs said OH contents in HE were appropriate for improving OH status. However, this study also found that not all knowledge acquired during OH lessons were translated into desired OH practices by the PCPs. The PCPs rated parental training as good 83.56% (61) and reported that they also learnt some practices by observation peer mates who they rated good 48.84% (36). The caregivers were rated good but less
efficient due to overwork. Other sources of OH information included televisions (46.58%), radios (39.73%), newspapers (56.16%), Brochures, (31.51%) and bill boards (52.05%). They said the internet (23.29%), libraries (23.29%) and resource persons (53.42%) reinforced what they were taught in class.

It therefore emerges that OH knowledge, skills, and attitudes were not exclusively learnt from HE (teachers) in the classroom environment but also from caregivers, parents, peer mates and the outside class environment as projected earlier in the conceptual framework. Health education should therefore be hosted by HE but extended out of the class. It also emerged that pain and punishment following OH malpractices reinforced responsible OH behaviour. Hence, a combination of knowledge, reasoning and perceived threats improved the translation of OH knowledge into practices. By implication, the success of oral health practices will depend on innovations that instil the knowledge, skills and attitudes identified in the HE contents more naturally and practically among the PCPs.

**Oral health challenges faced by physically challenged pupils in Public Special Primary Schools**

In summary, the study confirmed that severity of disability calls for more time for OH care and supportive services. Shortage of time and OH care resources in all the schools discouraged the PCPs and caregivers who were overwhelmed with work from regular OH practises. Teaching methods were not learner centred but aimed at completing the syllabus in order to prepare the PCPs for examinations. The desire to pass exams superseded the general objective of
teaching HE in Science to improve the body’s physical fitness and good health especially among the PCPs in PSPS in Kisumu County who were the targets in this study.

In the study, 72.41% (21) of the PCPs felt that time allocated for OH practices after meals (breakfast, lunch and supper) was inadequate denying them opportunity to implement all OH practices taught as taught. More time was needed because of the severity and disabling nature of some of their physical disabilities which calls for assistive services and limits their action competence. The time challenge was worsened by disorderliness and congestion witnessed at the water points when walking aids (crutches and wheel chairs) lockup and movement was hampered during rush hours after lunch and break. During weekends, time was not a limiting factor but lack of supervision due to absence of teachers and caregivers. That was why tooth brushing responses were lower during weekends (45.33%) than during the weekdays (46.81%). The lack of weekend supervision also affected data collection and prolonged the duration of research. In general, time constraints diluted the quality of OH care services and OH practices among the PCPs.

Another finding was that, 51% (37) of participants from five of the eight focus discussion groups agreed that severity of disability limited their ability to manipulate available, un-customised but affordable oral health items. They felt the government should facilitate accessibility of OH items like tooth brushes modified for use by physically impaired and multiply disabled children according to their ages. It was found that PCPs who could not afford or use
available OH items in the market resorted to alternatives like chewed sticks and ashes for cleaning or ignored the practices as a whole. Further research is needed on their pharmacological potency of the alternative OH compounds like ashes and sticks.

The use of ICT by the PCPs in finding OH information was 6.85% (5) slightly above the national baseline survey findings of 5.36%. The OH practices the PCPs learnt at home before enrolling in school were found to interfere with OH practices learnt during HE lessons in the PSPS. Parents reported that learning in the home environment aimed at addressing prevailing needs and took place at the pace of the PCPs without following any order or curriculum. It was therefore conclusive enough to say that although 75.86% (22) of the teachers were trained in special needs education (SNE) and had a curriculum to follow; their methods of teaching OH practices were teacher-centred as criticised by the PCPs. Therefore teaching OH for daily life application require ‘a need based learner-centred approach’ where the teacher and the learner interact closely using realistic approaches to address real OH needs of the PCPs.

Economic challenges posed by income disparities among parents were reflected in the OH practices and eating habits of the PCPs. Those from able families had better OH care orientation while those from poor families did poorly and often used alternative OH care methods like use of ashes and sticks presumed to have medicinal value. Income also exposed PCPs to risks of over eating sweetened snacks, use of sweetened un-prescribed medicines and the unhygienic state of some OH facilities like water containers and cups.
Health Education Strategies to Address Challenges in Oral Health Practice among Physically Challenged Pupils in Public Special Primary Schools.

It was found that on admission PCPs were enrolled in a ‘special class’ for training on basic survival skills and use of new facilities. The skills taught include OH practices and how to use OH care items never handled before joining the PSPS. Some PCPs admitted they were introduced to tooth brushes/brushing in the special class. Some schools had libraries, books, charts and pictures containing relevant OH information/messages displayed or stored in classrooms. School rules and guidelines for PCPs and parents promoted correct OH practices and restricted items the PCPs carried to school. Some schools got donations while others used FPE funds to buy OH items for the PCPs in economic hardship. Other schools organised open days to discuss and formulate regulations that improve wellness like how to minimise extravagance and excess snacking by restricting amount of pocket money given to the PCPs.

In summary, the study found that strategic timely preventive health education, access to appropriate (adapted) oral health care materials and treatment services appropriately reduced OH challenges facing PCPs. Direct strategies related to HE like teaching which was teacher centred, special class, provision of clean safe water, shopping guidelines and use of health resource personnel generated expected outcomes. Some implied strategies arose as sub-themes during the interviews including; infrastructure development, economic strategies, time management, rules against foodstuff vendors and strict dining hall rules.
5.3 Conclusions

Based on the study findings, the following conclusions were made:

a) While contents of HE in the primary school curriculum seemed adequate and relevant for the improvement of OH practices, they lacked adaptations necessary for application by PCPs. The syllabus used in the schools was developed without considering learning challenges faced by PCPs. The associated activity limitations and multiple disabilities reduce the ability of PCPs to translate knowledge, skills and attitudes acquired into practices that improve their OH status and self-efficacy in OH care. The most practiced OH skills found were; tooth brushing, mouth rinsing, and tooth picking because the PCPs could either engage OH practices learnt in HE or apply alternative OH practices learnt socially. In both situations, commercial or alternative OH care materials were applied.

b) Health education was taught across board in all primary schools. It improves OH status of the PCPs as they progressed from one class to the next. It was found that PCPs joined school with poor OH behaviours but improved their regularity and frequency of OH practices like tooth brushing by class 7 and 8. Daily reports also showed that their oral health problems reduced. In conclusion, even though HE contributes positively towards improving OH practices among the PCPs, existing policies do not seem to address the special circumstances under which OH contents of HE programmes ought to be delivered. This by itself subjects the PCPs to additional unrealistic learning objectives.
c) The HE challenges faced by the PCPs in OH practice were; inadequate training of teachers and caregivers in OH care, inadequate time for PCPs with activity limitations to complete the same OH practices as their able bodied counterparts. The school routine prepared by Kenya Institute for Curriculum Development for all primary schools least considered the requisite HE interventions to promote OH practices among PCPs like the appropriate and customised OH care item for the PCPs. While the pupils creatively improvised ways of using locally available OH care items, the strains involved often discouraged them. However, with assistance from caregivers and Parents, the desired oral health practices among PCPs improved despite challenges with conventional methods in which cases alternative OH were applied and OH outcomes improved.

d) While the study revealed several OH challenges affecting OH practices among PCPs the interventions/strategies to address them were put into two categories: those that directly address the challenges like enrolling new PCPs into the special class and general strategies with indirect relevance to OH practices among PCPs like infrastructure development, restricting the amount of pocket money kept by PCPs, rules against eating sweetened foodstuff among others.

5.4 Recommendations

Based on the study findings and the conclusions above, the following policy recommendations and suggestions for further research were made about contributions of health education to oral health practices among physically challenged pupils in Public Special Primary Schools.
5.4.1 Policy Recommendations

a) In-Service Training in Health Education and Oral Health Care Practices

There is need to give primary school teachers further training in health education. Therefore, a special unit comprising of health and education experts should be established within the Ministry of Education to co-ordinate a multidisciplinary in-service training for teachers on health education (oral health practices) among learners with special needs. The training will empower teachers who felt they needed detailed knowledge and methodological competence to teach OH contents of HE to PCPs. The unit will help in reviewing curriculum with a view to develop adapted school routines, syllabus and evaluation procedures for SNE in Kenya.

b) Oral Health Items for Physically Challenged Pupils

While the government support through FPE funds in which children with special needs get more than able bodied ones was appreciated, there is need for better policies to guide on supply and use of materials for practical teaching of OH in PSPS. The government should consider supplying all PCPs with customised tooth brushes, toothpaste dispensers, dental floss, and programmed dentist visits to eliminate existing disparities and diversion of FPE funds to non-academic commitments. This will eliminate the use of alternative OH materials like ashes and tooth sticks which even though prohibited still remain unavoidable among PCPs from families with low income.
c) **Time for OH practices**

The Ministry of Education should review school routines and add more time in the morning before or after breakfast, during tea break, lunch and in the evening after supper so that PCPs and children with other forms of disability can adequately carry out OH practices. They should also employ qualified caregivers based on school enrolment to assist the PCPs with severe disability.

d) **Regular Oral Health Examinations**

Due to the study design, time and resource constraints, the researcher was not able to compare the findings with oral health practices among PCPs in the lower primary classes or with their able bodied counterparts to determine best practices among the groups hence cross sectional studies are recommended. Despite their minor weaknesses, the pupils’ journals and the teachers self-administered questionnaires generated rich data that looked socially desirable and therapeutic to the subjectivity of interviews. This study therefore recommends that clinical OH examinations should be done to establish the DMFT ratios of the PCPs while teachers’ unqualified assessment of ill health and administration of medicine should be investigated while they remain advised to refer all PCPs with OH problems to qualified medical personnel for assistance.

e) **Health Education Strategies to Curb Oral Health Challenges**

Since most of the strategies put by the PSPSs to counter the OH challenges facing PCPs in the PSPSs were implied and not directly related to HE contents of the primary science syllabus yet effective, this study recommend that primary school curriculum developers should consider a review that give prominence to
application of knowledge gained through curriculum or non-curriculum based training in OH care within and without the classroom environment given that the mouth is strategic enough to improve or not the general health of and individual. Free customised OH care items, practical lessons and dental care services which take into account the various forms and severity of disabilities should be offered to all PCPs in PSPS to eradicate existing disparities.

5.4.2 Suggestions for Further Research

This study has revealed that gaps still exist in this area of study and there is need for further researches in the following key areas:

a) Longitudinal studies to investigate improvements in oral health practices due to HE between PCPs in lower primary classes and those in upper primary classes.

b) Similar studies should be done to find out contributions of health education to oral health practices among pupils with other forms of disabilities like the deaf, mental and the visually impaired in the county.

c) Further cross sectional studies should be conducted to compare applications of oral health practices based on degree of severity of different forms of physical disabilities.

d) There is need for clinical oral health studies to establish the DMFT ratio in order to verify the causes of the OH problems identified in this study and determine realistic clinical interventions to control the problems which are beyond the scope of health education.
REFERENCES


http://www.who.int/about/en/

WHO. Geneva, Switzerland.


http://www.euro.who.int/en/what-we-do/health-topics/healthdeterminants/millennium-development-goals


APPENDICES

Appendix I: Focus Groups Discussion (FGD) Guideline

Instructions: the purpose of this FGD guideline is to gather information on contributions of health education on oral health of physically challenged pupils (PCPs) in special schools for the physically challenged in Kisumu County. All your responses and any other information given will be treated with uttermost confidentiality. Please answer these questions as honestly as possible. Do not disclose your name anyhow during the discussion.

Part A: General information

1) What do you know today about oral health through your study of health education that you did not know earlier?

2) Discuss the contributions of the following contents of health education to oral care knowledge and practices among PCPs in Kisumu County?
   (a) Physical Health Education
   (b) Diet
   (c) Hand washing
   (d) Care of the body
   (e) Dental hygiene
   (f) Environmental safety
   (g) Allergies and immunization
   (h) Clean and safe drinking water
   (i) Sanitation
   (j) Common infectious diseases
   (k) HIV/AID.

3) How do the various sources of OH information influence oral health practices among PCPs in Kisumu County? (Resource persons, Mass media; TV, Newspapers, Radio, Bulletins, Posters & Billboards, ICT facilities like; Computers. Mobile phones, Internet etc)

4) Discuss the contributions of the following persons to OH knowledge of PCPs in Kisumu County? Parents Teachers? School caregivers

5) List OH practices you undertake even if it were not for health education?

6) What are the oral health issues that health education does not seem to address well according to your opinion?

7) What does your school provide you with in a bid to promote oral health care among PCPs?

8) Discuss the impact of socio-economic, socio-environmental, physical and infrastructural factors on oral health outcomes of PCPs?
Appendix II: Questionnaire for Teachers

Instructions: the purpose of this questionnaire is to gather information on contributions of health education on oral health of physically challenged pupils (PCPs) in Public Special Primary Schools (PSPS) for the physically challenged in Kisumu County. All your responses and any other information you give will be treated with uttermost confidentiality. Please answer the questions as honestly as possible. Do not write or disclose your name(s) anywhere in any way in this questionnaire.

General information.
In the questions that follow, please put a tick (√) in the appropriate box that corresponds with your response on the Likert-type scale below each question.

1.0 Please file your personal details by putting a tick in the boxes beside each question below

1.1 Teaching experience in Public Special Primary Schools (PSPS)

1.2 For how long have you taught Health Education to the physically challenged pupils

1.3 What is your highest academic achievement?

1.3 Do you agree that training in Special Needs Education (SNE) is necessary for teaching physically challenged pupils?

1.4 Do you agree that Primary Teacher Education (PTE) Course adequately prepares teachers to teach health education to PCPs in PSPS?
1.5 Do you agree that PTE course prepares teachers adequately to teach oral health care to PCPs in PSPS?

1.6 Do you agree that, in order to teach PCPs health education effectively, one needs additional training in a health related field?

2.0 Health Education and Oral Health Practices among PCPs: Do you agree with the following statements about behaviours of PCPs on exposure to health education content related to oral care.

2.1 The students find it necessary to brush their teeth after eating.

2.2 After oral health education lessons, students end up complaining about inadequate time and facilities to brush teeth after meals.

2.4 Information on Oral Health Practices in the Health Education curriculum is adequate for oral health behaviour change among PCP’s.

2.5 Oral health problems reduce among pupils in class 5-8 due to improved oral health practices resulting from Oral/health education taught in the lower classes 1-4.

2.6 Health Education has adequate information on oral health practices to help PCPs deal with common problems like periodontitis, dental caries, drooling etc?
3.0 To establish sources of information about oral care and their influences on oral health of physically challenged pupils in special primary schools

3.1 School curriculum is a good source of information about Health Education for Physically Challenged Pupils in special primary schools.

3.2 Physically Challenged Pupils join special schools with adequate knowledge of oral health practices from home so oral health content in health education is not necessary.

3.3 Sources of oral health information other than school Health Education curriculum content promote poor oral health practices observed among the PCPs in school.

3.4 School library has adequate Oral Health information for the PCPs for now and in future.

3.5 The PCPs do not know how to access Oral Health information from the internet.

3.6 Teachers are not health professionals and therefore cannot teach Oral Health Care practices well like health professionals like dentists would do.

4.0 To establish challenges which affect Oral Health Practices among Physically Challenged Pupils in primary schools.
4.1 Pupils in Class 1-4 do not care very much about their oral health status like their counterparts in class 5-8 do.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

4.2 Pupils with poor economic background join school with poor oral health background and do not practice regular oral care as those from able families.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

4.3 Pupils from economically able families have basic knowledge of oral health practices when they join school.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

4.4 Nature of physical disability (mild - severe) has negative influence on oral health practices among the PCPS.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

4.5 Belief in culture based oral health practices like brushing teeth using sticks interfere with curriculum based oral health practices taught at school like use of toothbrush.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

5.0 Oral health content of Health Education strongly influences change in oral health perceptions and practices among PCPs despite their inherent cultural orientation and disability limitations.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

5.1 Oral Healthcare practices of PCPs improve progressively because they effectively learn more from health education unit from class 1-8?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

5.2 By the end of primary education, PCPs develop good oral healthcare skills which can sustain them throughout life without need further need for social support/care givers.
5.3 By the end of class eight, PCPs have adequate oral health knowledge, skills and attitudes required to take good care of his/her oral health needs including regular visits to the dentist without further advice from other people like caregivers or parents.

6.0 Health Education Strategies put by Public Special Primary Schools to address oral health needs of PCPs

6.1 Public Special Primary Schools are well equipped with facilities that promote oral healthcare among PCPs.

6.2 PCPs are provided with adequate time after meals for oral care (e.g. time to brush teeth etc.)

6.3 The school has employed enough caregivers to assist PCPs who cannot practice oral care on their own by assisting/supporting or guiding them during tooth brushing.

6.4 The school makes adequate provisions for proper oral health care in terms of infrastructure developments like strategic location of water taps or tanks

6.5 Government funds (FPE) is adequate enough to supply all requirements for effective and practical teaching of oral health practices.
6.6 School regulations promote good oral health practices i.e. prohibits excess sugar in school meals, restricts shopping and eating of sweetened foodstuff between meals.

[Tree diagram for Strongly agree, Agree, Undecided, Disagree, Strongly Disagree]

6.7 Parents and visitors are not allowed to supply pupils with sweetened foodstuff at school.

[Tree diagram for Strongly agree, Agree, Undecided, Disagree, Strongly Disagree]

6.8 School rules prohibit smoking, consumption of alcohol, and drugs with negative impacts on oral health like chewing of Miraa etc.

[Tree diagram for Strongly agree, Agree, Undecided, Disagree, Strongly Disagree]

6.9 The school arranges visits to or by a dentist for needy students at least once a term.

[Tree diagram for Strongly agree, Agree, Undecided, Disagree, Strongly Disagree]

6.10 There are no arrangements by the school for promotion of oral care among the PCPs

[Tree diagram for Strongly agree, Agree, Undecided, Disagree, Strongly Disagree]
Appendix III

Interview schedule for Caregivers

Instructions: the purpose of this interview is to gather information on contributions of health education on oral health of physically challenged pupils (PCPs) in Public Special Primary Schools for the physically challenged in Kisumu County. All your responses and any other information given will be treated with uttermost confidentiality. Please answer the questions as honestly as possible. Do not disclose your name(s) in relation to this questionnaire to anyone.

1. (a) How long have you worked in this school as a caregiver (physiotherapist, school nurse, house keeper etc.)?
   (b) What are the oral health care services you provide to the pupils in the school?
   (c) Are you aware that Oral health is part of Health education which is in the curriculum?
2. (a) Which Oral health support services do you find Physically Challenged Pupils in primary schools seeking the most at school?
3. (b) Which oral health support services Physically Challenged seek a lot from outside the school? There is a belief that education should make learners become more responsible. What is your opinion about this in relation to oral health practices of PCPs?
4. (a) What are some of the commonly reported/observed oral health problems of PCPs when they first join school?
   (b) Do these problems reduce or increase with schooling towards class8?
   (c) What do you think causes increase or decrease of the problems above?
   (d) What would you recommend to reduce common OH illnesses mentioned above among PCPs in primary schools?
5. (a) What can you say about the age at which PCPs start school?
   (b) Do they start schooling late or early?
6. How do the following factors affect behaviour of the PCPs in this PSPS?
   (a) Age and Gender
   (b) Economic and Cultural background
7. Nature of physical challenge and Diet
8. Other than the HE program, what other sources of information about HE does your pupils have access to?
9. How does physical disability relate with (or influence) physical health of the pupils under your care?
10. Are there some factors which limit the achievement of good oral health among PCPs under your care through HE?
Appendix IV

Interview Schedule for Parents

Instructions: the purpose of this interview is to gather information on contributions of health education on oral health of physically challenged pupils (PCPs) in Public Special Primary Schools for the physically challenged in Kisumu County. All your responses and any other information given will be treated with uttermost confidentiality. Please answer the questions as honestly as possible. Do not disclose your name(s) in relation to this questionnaire to anyone.

1. What is your highest educational achievement?
2. How do you keep your mouth and teeth clean and healthy?
3. How many times do you clean your mouth and teeth per day?
4. Have you ever taken your child with disability to a dentist for check-up or treatment?
5. What are some of the oral health practices you taught your child?
6. What type of assistance do you think your child needs in oral care at home and at school?
7. Do you think education/school has assisted your child to do oral care differently and how?
8. What do you feel schools should do to improve OH practices among PCPs in school?
9. What do you think are the most challenging issues that affect OH practices among PCPs?
10. What advice can you give the government to improve OH practices among PCPs?
APPENDIX V: Customised Journal for Pupils

Instructions:
1. The purpose of this journal is to gather information on contributions of health education on oral health practices of physically challenged pupils in Public Special Primary Schools in Kisumu County. Your responses will be treated with uttermost confidentiality.

2. Please fill the tables honestly as possible by putting a tick in the box immediately after performing any of the listed practices. Tick as many times as you do them according to the time of day.

3. Do not disclose your name(s) in this questionnaire to anyone. Strictly use your assigned code number as directed.

<table>
<thead>
<tr>
<th>Code Number</th>
<th>Class</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Health Practice</td>
<td>Morning Hours/ Before Lunch</td>
<td>Afternoon hours/After Lunch</td>
</tr>
<tr>
<td>Brushed teeth with brush &amp; tooth paste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used toothpick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used fingers as toothpick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used tooth stick to brush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rinsed mouth with water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gurgled salt water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ate snack (sweets, soda, chips, sugary food etc)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ate washed raw fruit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ate fruit unwashed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Felt pain in tooth/teeth/mouth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visited Nurse/Dentist for check-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensed friend had bad breath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Got oral health care assistance from someone else</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix VI: Oral Health Contents in Health Education Units

<table>
<thead>
<tr>
<th>Class</th>
<th>Unit No. and title</th>
<th>Topic/Sub-Topic</th>
<th>Content(s)</th>
<th>Related oral health practice taught</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Human body</td>
<td>Parts of the human body</td>
<td>External body parts (the mouth)</td>
<td>Care for the mouth as portal of entry into the body</td>
</tr>
<tr>
<td></td>
<td>2. Health education</td>
<td>Hygiene</td>
<td>Cleaning the teeth</td>
<td>Rinsing the mouth, tooth brushing, and flossing. Pupils should not share personal items e.g. toothbrush</td>
</tr>
<tr>
<td></td>
<td>6. Water</td>
<td>Uses of water</td>
<td>Uses of water for drinking</td>
<td>Use of water in rinsing mouth</td>
</tr>
<tr>
<td>2</td>
<td>1. Human body</td>
<td>Senses/ Sense of taste</td>
<td>Uses of sense of taste</td>
<td>Sweetened foods nourish bacteria in the mouth.</td>
</tr>
<tr>
<td></td>
<td>Health education</td>
<td>Hygiene</td>
<td>Personal items and their use (toothbrush)</td>
<td>How to use and clean a toothbrush</td>
</tr>
<tr>
<td></td>
<td>8. Foods</td>
<td>Handling foods</td>
<td>Cleaning hands and cleaning food (raw)</td>
<td>Raw food should be cleaned before eating</td>
</tr>
<tr>
<td>3</td>
<td>Health education</td>
<td>Good health</td>
<td>Requirements for good health e.g. food and medical care</td>
<td>Regular dental check-up and diet containing fibre and minerals is necessary for good OH.</td>
</tr>
<tr>
<td></td>
<td>Plants</td>
<td>Uses of plants to human beings.</td>
<td>Uses of plants as food and medicine</td>
<td>Some plants with medicinal value are culturally used as tooth sticks</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>Making and storing clean water for drinking</td>
<td>Making and storing clean water for drinking</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Human body</td>
<td>Teeth</td>
<td>Types and functions of different teeth. Shedding of teeth.</td>
<td>Do not open bottles using teeth</td>
</tr>
<tr>
<td></td>
<td>Health Education</td>
<td>Teeth</td>
<td>Care of teeth. Problems related to teeth -Bad smell -Bleeding gums Cavities (holes) -Tooth decay</td>
<td>Visit the dentist for treatment or regular check-up</td>
</tr>
<tr>
<td></td>
<td>Foods and nutrition</td>
<td>Food groups</td>
<td>Requirements for maintaining strong teeth</td>
<td>Toothbrush (should not be shared) Toothpaste &amp; clean safe drinking water</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Protective foods</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Human body</td>
<td>Digestive system</td>
<td>Mouth (teeth and tongue)</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>------------</td>
<td>-----------------</td>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td>Health education</td>
<td>Use and storage of medicine</td>
<td>Proper use and storage of medicine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foods and nutrition</td>
<td>Nutrients found in food</td>
<td>minerals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6</th>
<th>Health education</th>
<th>Effects of HIV</th>
<th>Effects of HIV on an individual, family and nation</th>
<th>HIV and poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Water borne diseases</td>
<td>Preventive measures for some water borne diseases (Proper hygiene)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foods and nutrition</td>
<td>Food Preservation</td>
<td>Traditional and modern methods of preserving food (salting)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7</th>
<th>Health education</th>
<th>Drug abuse</th>
<th>Effects of drug abuse on health</th>
<th>Some drugs affect OH (cause bad breadth, itchy gums, discoloured teeth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants</td>
<td>Interdependence between plants and animals</td>
<td>Interdependence in terms of food, nutrients and medicines</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8</th>
<th>Health education</th>
<th>Sexually transmitted infections</th>
<th>Examples of STIs</th>
<th>Syllabus does not cover STIs that affect OH e.g. gingivitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Soft and hard water</td>
<td>Disadvantages of hard water</td>
<td>Syllabus includes effects of fluoride on dental health.</td>
<td></td>
</tr>
<tr>
<td>Foods and nutrition</td>
<td>Food poisoning</td>
<td>Causes of food poisoning (chemicals, bacteria and viruses)</td>
<td>Some causes of food poisoning affect OH, bacteria cause decomposition of teeth, and some chemicals erode the enamel</td>
<td></td>
</tr>
</tbody>
</table>

**Key**
- Other primary science syllabus contents relevant to oral health
- Health education content with relevance to oral health practice

**Source:** M. O. E. Primary school syllabus Volume Two 2002
Appendix VII: Research Permit
Appendix VII: Map of Kisumu County