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Use of Information Technology in Capacity Building: An Evaluation of Computer-based Training in Substance Use Disorders In Kenya

BY

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Date of submission

October, 2014

DECLARATION

I hereby declare that this Project Report is my original work and has not been presented for any other academic award at the University of Nairobi or any other institution.

Name……..

Date……

Sign…….

APPROVAL BY SUPERVISORS

The research project has been submitted for the award of the Degree of Master of Arts, Rural Sociology and Community Development, University of Nairobi with our approval as supervisors

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While this is my original work, I am responsible for any errors that may be contained thereof.

Bernice Auma Apondi

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TABLE OF CONTENTS

DECLARATION ii
APPROVAL BY SUPERVISORS iii
ACKNOWLEDGEMENTS iv
TABLE OF CONTENTS v
LIST OF TABLES viii
LIST OF ACRONYMS AND ABBREVIATIONS ix
ABSTRACT x

CHAPTER ONE: INTRODUCTION 1
1.1. Background of the study 1
1.2 Statement of the research problem 3
1.3 Study goals and objectives 4
1.4 Specific objectives 4
1.5 Justification of the study 4
1.6 Scope of the study 5
1.7. Limitations 6
1.8 Definitions of terms 7

CHAPTER TWO: LITERATURE REVIEW AND THEORITICAL FRAMEWORK 8
2.1 Mental Health and Mental Disorders 8
2.2 The link between mental disorders and substance abuse 10
2.3 Patterns of substance use in Kenya 10
2.4 Gaps in Mental Health Care Training 12
2.5 Computer Based Learning in Kenya 15
2.6 Effectiveness of Computer Based Learning (CBL) 16
2.7 Computer Based Learning (CBL) in health professions 18
2.8 Theoretical framework and conceptual framework 21
2.8.1 Theoretical framework 21
2.8.2 Conceptual framework 23

CHAPTER THREE: RESEARCH METHODOLOGY 24
3.1 Methodology 24
3.2 Study site 24
3.3 Description of study tools 24
3.4 Sample selection 26
3.5 Sampling procedure 26
3.6 Data collection procedure 26
3.7 Challenges encountered in the field 27

CHAPTER FOUR: DATA ANALYSIS PRESENTATION AND INTERPRETATION OF FINDINGS 28
4.1 Introduction 28
4.2 Response turnout 28
4.3 Social, demographic information about the respondents 29
4.3.1 Age 29
4.3.2 Sex of participants 31
4.3.3 Marital status 33
4.3.4 Residence of the respondents 34
4.3.5 Access to computer and internet 36
4.4 Analyzing the goals and objectives of the study. 37
4.4.1 Experience of participants in mental health training 38
4.4.2 Factors which influence completion and utilization of the course by the participants 40
4.4.3 Appropriateness of Computer Based Learning (CBL) in substance use disorder training. 42
4.4.5 How Institutional infrastructures affect the implementation of CBL 49

CHAPTER FIVE: DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 51
5.1 Discussions 51
5.2 Conclusion 52
5.3 Recommendations 52
5.4 Suggested area of research 53

REFERENCES 54
APPENDICES 59
APPENDIX I: FGD Guides and Questionnaire 59
APPENDIX II: Journal Writing Instructions 60
APPENDIX III: Questionnaire (primary healthcare worker course) 63
APPENDIX IV: Memorandum of Understanding 71

LIST OF TABLES

Table 4.1 Distribution of respondents by area of training 28
Table 4.2 Percentage distribution of respondents by age group 30
Table 4.3 Percentage Distribution of respondents by age and duration of training 31
Table 4.4 Percentage distribution of respondents by sex..... 31
Table 4.5 Percentage Distribution of respondents by marital status 33
Table 4.6 Percentage Distribution of respondents by Marital Status and completion of training..... 34
Table 4.7 Percentage Distribution of respondents by residence 35
Table 4.8 Percentage Distribution of respondents by residence and completion of training 35
Table 4.9 Percentage distribution of respondents by access to computer 36
Table 4.10 Percentage distribution of respondents at different stages of the training 38
Table 4.11 Self-efficacy for computer-based learning before the training..... 43
Table 4.12 Self-efficacy for computer-based learning after the training..... 44
Table 4.13 Self-efficacy in clinical practice before the training..... 45
Table 4.14 Self-efficacy in clinical practice after the training..... 47

LIST OF ACRONYMS AND ABBREVIATIONS

ADA	Alcohol and Drug abuse
AMHF	Africa Mental Health Foundation
AMREF	African Medical Research Foundation
CBL	Computer-based learning
DSM1V	Diagnostic Statistical Manual for Mental Disorders
HIV	Human Immunodeficiency virus
Next Gen U	Next Generation University
MH-GAP	Mental health Global Action Program
LMIC	Low and Middle Income Countries
MH	Mental Health
NACADA	National Authority for the Campaign Against Drug and Alcohol Abuse
SUD	Substance Use Disorders
TB	Tuberculosis
UBC	University of British Columbia-Canada
UNODC	United Nations Office on Drug and Crime
UN	United Nations
WHO	World Health Organization

ABSTRACT

The purpose of this study was to evaluate the effectiveness of computer based learning in mental health training in Kenya. The study used Computer Based Learning (CBL) as a tool to build the capacity of health care workers in assessing and treating mental illness related to drug Alcohol, Tobacco and Drug abuse. Treatment and care of people with alcohol and drug abuse problems is currently not a health service priority in Kenya. Unfortunately the area of mental health has recorded a double digit rise due to increased drug, alcohol and tobacco use.

In the first phase, the questionnaires with the self efficacy scale in Computer Based Learning and clinical practice were filled. Focus group discussions were done to bring out their motivation and knowledge towards computer based learning and drug use. They were then introduced to mental healthcare training on the Next Gen U website and were expected to answer the journal questions during the training period. In The second phase (which was after 3 months) the post test questionnaires were given to participants who completed the training and another round of focus group discussion was done for the whole group.

The study found out that 71.0 percent of respondents were male, while being 29.0 percent were female, 49.2 percent of those who participated in the training were between 21-23 years of age. Self efficacy of the participants improved in clinical practice from 38.8 percent before the training to 81.0 percent after the training. Self efficacy in computer based learning improved from 62.2 percent before the training to 71.8 percent after the training. Interference of cultural values while dealing mentally ill patients reduced from 40.0 percent to 4.0 percent.

The study concludes that computer based learning is an effective way of training in mental health. However, it is also clear that internet availability and computers are necessary for effective computer based learning to be realized.

It recommended that computer based learning can be used to increase the numbers of mental healthcare personnel in low income [1] countries.

[1] Next Gen U is the world's first portal free accredited, higher education and graduate level courses founded in 2001.

CHAPTER ONE: INTRODUCTION

1.1. Background of the study

According to the World health organization over 800'000 people commit suicide every year due to mental disorders. According to the American National Institute of Mental Health, about 25.0 percent of adults (those ages 18 and older) and about 13.0 percent of children (those ages 8 to 15) are diagnosed with a mental disorder during a given year most of which can be successfully treated (WHO, 2005).

Substance use disorders are severe mental disorders caused by excessive drug abuse. Alcohol and Drug abuse (substance abuse) is defined as a maladaptive pattern of drug use as indicated by continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by the use [or by] recurrent use of the drug (WHO, 2012).

The United Nations Office on Drug Control (UNODC) estimates that, in 2009, between 149 million and 272 million people, or 3.3 percent to 6.1 percent of the population aged 15-64, used illicit substances at least once in the previous year and are at risk of substance use disorders, (UNODC, 2011).

According to the World Drug Report (2011), there has been an increase in drug production worldwide, including substances that are not under international control. In Europe, seizures of ecstasy pills more than doubled. Heroin, cocaine and other narcotic drugs continue to kill around 200,000 people a year, shattering families and bringing misery, insecurity and the spread of HIV to thousands of other people (World Drug Report, 2012).

In Africa, levels of alcohol, tobacco and drug use are continuing to rise due to increase in drug trafficking activities in the region. Five metric tonnes of heroin and cocaine get consumed every year in Africa and concerns over lack of policies and poverty is cited as the reason why these problems will get worse in future. West Africa is the most affected, followed by the North, then Southern and lastly East Africa whose data on drug use remains elusive (UNODC, 2011). Kenya, due to its weak and corrupt criminal justice system has become a haven for drug lords since 2004.

Mental disorders form 5.8 percent of the disease burden, while leading causes of death like HIV is at 24.2 percent, malaria 7.2 percent and TB 4.8 percent. This ranks it among leading diseases killing more people than tuberculosis. The burden of substance use disorders (SUD) is therefore heavy and growing, with alcohol being the fourth-highest cause of years lost-to-disability in low and middle-income countries (Ndetei et al, 2007).

Mental disorders, is not currently part of what Kenyan clinicians typically address in primary health care. This is evidenced by studies done by (Ndetei, 2007; WHO, 2011; UNODC, 2011) It further reported that by 2007, Kenya had only 67 psychiatrists for an estimated population of 35 million, giving a psychiatrist-to-population ratio of 1:522400 (Ndetei, 2007).

In mid-1997, Kenya had 53 psychiatrists for an estimated population of 28.8 million, or 1:543400. This shows that there has hardly been any improvement in the ratio over the last 10 years, despite an enormous allocation of resources for the training of psychiatrists (Ndetei et al 2007, 2001).

Some of the contributing factors are lack of interest in mental health because of cultural beliefs, high population growth and immigration of professionals to wealthy countries where there are better financial rewards (Ndetei and Szabo, 2011). Most of the other countries in sub-Saharan Africa have one psychiatrist serving a population of between 100000 and 700000. In Nigeria the estimated ratio was 1:1000000 in 1997 and 1:1600000 in 2007 (Ndetei et al 2007). It is therefore not sufficient that every patient with mental health problems be treated by a mental health specialist. The solution lies in empowering the available healthcare workers through skills and training (Ndetei and Szabo, 2011).

The computer-based training was focused on disorders which generated a high burden of disease, and for which there are existing evidence-based primary care interventions not currently offered in Kenya (Ndetei, 2001). It was to provide an answer to the challenge of [2]integrating mental health services into routine primary health care. The learning took three

[2] Quiz. These were test questions at the end of every lesson to help trainees evaluate their knowledge of various topics in the training.

months, it was self supervised and built on the already available digital platform offered by the current Government.

The project goal was to train mental health care service providers and their leaders on mental disorders. It adapted the Next Generation University (NextGenU.org) online training which draws from an already-existing, free, expert-created competencies and learning resources from accredited sources certified by its partners.

The course was divided into two categories: Primary health care worker training for nurses and clinical officers and lay health care worker training for any non-medical professionals.

Each syllabus had seven modules. Every module had two lessons and a quiz at the end of every lesson. There were also peer-to-peer activities which involved students writing essays about their reflections on the reading materials provided online. The students were also expected to do mentoring activities which involved role play with a mock client in the presence of the mentor.

1.2 Statement of the research problem

Studies have shown that there is a shortage of mental health care personnel in Kenya and other low income countries. This is due to the fact that training for psychiatrists takes too long and is expensive compared to other courses. This has led to fewer students enrolling in psychiatry and clinical psychology compared to other disciplines. Even those who are trained in psychiatric nursing get posted to general wards where they don't perform their duties. Other reasons are migration of professionals to Europe and America where the pay is good. This has left Kenya with a psychiatric population ratio of 1:524000. The probability that an ordinary Kenyan will get the services of a psychiatrist is close to none.

Elsewhere computer-based learning has been seen a successful way of delivering continuing education and training in many sectors of career development, it has shown that computer-based learning overcomes the traditional barriers of time, travelling and minimized costs in the long term. Similar studies have brought to the fore the positive experiences of learners in computer-based learning as serving the needs of graduates and working students.

This study was motivated by the realization of the need to explore the extent to which computer based learning would increase the number of mental healthcare personnel in Kenya Notably for the First time in the history of mental health training in Kenya, the Africa Mental Health Foundation is in the process of addressing this major gap. This study aimed at filling in this apparent gap by piloting the computer based training to mental health care service providers.

1.3 Study goals and objectives

The goal of this study was to evaluate the training and participants' experience in computer based learning.

1.4 Specific objectives

1. To assess the training experience of mental health care service providers
2. To determine the factors which influence the completion and utilization of the learning by the mental health care service providers.
3. To determine the appropriateness of CBL in mental healthcare training
4. To determine how institutional infrastructures affect the implementation of the computer based learning

1.5 Justification of the study

The need for integrating mental health in primary health care facilities has been seen as a viable strategy for increasing access to mental health care in low and medium income countries (WHO, 2005). Studies by Ndetei (2007) revealed that there has been a double digit increase in substance use disorders in patients attending primary health care facilities in urban and rural areas in Kenya which has led to increase in the people suffering mental disorders.

The use of CBL has brought about the advances in training both in the government and the private sector. Other literature has shown the gap in mental health personnel in Kenya and Africa (Ndetei, 2007) and rules out the possibility of mental health patients being seen by professionals because of their few numbers versus the populations they serve.

This study highlights the effectiveness of computer based learning in mental healthcare training and its ability to capacity build mental health care service providers and increase their numbers to improve mental health in Kenya.

1.6 Scope of the study

This study was carried out among the students of the Presbyterian University of East Africa, Kikuyu Campus, Nairobi County in Kenya. The study was confined to the students within the campus who enrolled for the training on mental disorders.

In conceptualizing computer based learning in mental health the study was confined to what the Next Gen U had on its website for mental disorder training, the nature of the syllabus offered and the reading materials and instructions provided.

On the experience of the mental healthcare trainees the study looked at how the trainees responded to the demands of the training in terms of time allocation, what they liked and what they did not like, what they found challenging during the training period and any area that they felt needed to be changed. It also looked at how they accessed the computers they used during the training, whether it was provided for by family members, borrowed from a friend or used the computers in the university computer lab. To gather this information the study used focus group discussions and journal questions which the trainees answered and mailed to the researcher. The theory used here was social learning theory where the learners' needs, interests and learning objectives are emphasized and also Andragogy theory which talks about adult learning.

On institutional factors that affected the training the study looked at the availability of computers and internet at the Presbyterian University Kikuyu campus computer laboratory. This information was collected using focus group discussions and pre and post survey.

In examining the effectiveness of computer based learning in mental disorder training, the study confined itself to comparing the self efficacy of students before and after the training. Here the study used Banduras' self efficacy theory and the scale was adapted to suit elements of the training.

1.7. Limitations

Self reported data: All the information that was collected from the students in the journaling questions and focus group discussions concerning their experience during the training was not verified. Every student gave their story which depended on selective memory and their ability to recall or not recall their experiences during the training period. The information could have been exaggerated or falsely attributed to the training period.

Access: During the study period, access to students was a major limitation. Due to different class timetables, it was not possible to find all the students together for a meeting, this meant that the focus group discussions could only be held with one class at a time, this could have limited the objectivity of the information given.

Follow up: The study used phone calls to follow up on trainees and emails to get progress reports and replies to the journal questions, some students switched off their phones and some did not answer emails. This resulted in fewer students responding to the journal questions. Some phone numbers were changed in the course of the training, others were switched off most of the times and the study lost track of those particular students due to lack of communication.

1.8 Definitions of terms

Mental health

A state of physical, psychological and social well-being, and not just the absence of disease

Mental disorder

Any physical or psychological disease, severe enough to interfere with mental health

Substance use disorder

Severe mental illnesses caused by alcohol, tobacco or drug use

Primary health care worker

Doctor, nurse, or clinical officer, trained to assess and treat patients

Lay health care worker

Hospital staff with no medical background.

Computer-based learning/e-learning/online learning

Learning that is facilitated through the use of computer software and internet.

Mentor

A person with medical training was enrolled to assist trainees with the mentoring activities.

Mental health care worker

People who attend to mentally ill patients

CHAPTER TWO: LITERATURE REVIEW AND THEORITICAL FRAMEWORK

2.1 Mental Health and Mental Disorders

The Gale Encyclopaedia of Medicine Fourth Edition (2011) defines substance abuse as a disorder that is characterized by a pattern of continued pathological use of a medication, non-medically indicated drug or toxin, which results in repeated adverse social consequences related to drug use, such as failure to meet work, family, or school obligations, interpersonal conflicts, or legal problems. There are ongoing debates as to the exact distinctions between substance abuse and substance dependence, but current practice standard distinguishes between the two by defining substance dependence in terms of physiological and behavioural symptoms of substance use, and substance abuse in terms of the social consequences of substance use.

According to a World Health Organization (WHO, 2005), mental disorders comprise a broad range of problems, with different symptoms. They are generally characterized by a combination of impaired thoughts, emotions, behaviour, perceptions and relationships with others. These are psychosis, schizophrenia, depression, mental retardation and disorders due to drug abuse, epilepsy, or other disorders affecting the nervous system.

Accordingly, mental disorders are also caused by psychological trauma or drug abuse. Over 800'000 people commit suicide every year due to mental disorder. According to the United states department of Health and Human Services (National Institute of Health) 25 percent of adults and 13 percent of children are diagnosed with a mental disorder in a year, most of which can be successfully treated. The report Further, states that over 40 percent of patients in outpatient hospitals worldwide have diagnosable and treatable mental disorders. The most frequent ones were depression, and anxiety. Conversely 60 percent of patients with mental disorders have physical illnesses which were attended to.

The World Drug Report (2011) states that determinants of mental health and mental disorders include not only individual attributes such as the ability to manage thoughts, emotions, behaviours and interactions with others, but also social, cultural, economic, political and environmental factors such as national policies, social protection, living standards, working

conditions, and community social support and exposure to drugs.

The report further states that in poor countries there is little money allocated to mental health compared to other illnesses which cause high burden like Human Immunodeficiency Virus (HIV) and Tuberculosis (TB). They also have 0.05 psychiatrists and 0.42 nurses per 100 000 people, compared to 170 times more psychiatrists in high-income countries and 70 times more nurses. The majority of low income countries allocate less than 2 percent of their health budget to mental health services. Moreover, 80 percent of the mental health budget in developing countries is spent on mental hospitals that serve only 7 percent of patients (World Drug Report, 2011).

Substance use disorders can be treated or prevented if addressed at the primary care or community level, avoiding higher health care costs and increased risk of disability and mortality. The role of general practitioners, nurses and community health workers in addressing mental health is pivotal, as is the specific training they require. Both the number of health workers as well as in-service education is to be substantially scaled-up to alleviate the burden of these conditions (World Drug Report, 2011).

The poor state of mental health in low income countries has been linked to the current global financial crisis in Europe, America and the rest of the world. It is seen a powerful factor leading to cuts in funding despite a concomitant need for more mental health and social services. This has led to higher rates of disorders resulting from substance use and suicide as well as the emergence of new vulnerable groups (for example the young unemployed). In many societies, mental disorders are related to marginalization and impoverishment, domestic violence and abuse, and overwork and stress are of growing concern, especially for women's health (Ndetei et al, 2007).

A study done in America by Lambert (2008), examined the prevalence of substance use disorders across four geographical regions, found out that the youths in rural areas have a higher risk of mental disorders than their counterparts in the urban areas. This is because those living in the rural areas have nearly twice the rate of drug and alcohol use patters than

their urban counterparts. There is therefore need for concentration on preventive and health care centres to be staged in rural areas as much as urban areas.

In Kenya a study done at Kenyatta National Hospital by Makanyengo, (2005) on referrals showed that 8.7 percent of patients presented mental disorders which were not attended to, the majority were under 44 years of age, 28.8 percent had alcohol disorders, 9.19 percent depressive disorders, 4.96 percent schizophrenia and 2.92 delirium. Females had more depressive disorders than males, while males had more substance use disorders, bipolar and childhood disorders than females

2.2 The link between mental disorders and substance abuse

According to UNODC (2011), Substance abuse may lead to addiction or substance dependence. Medically, physiological dependence requires the development of tolerance leading to withdrawal symptoms. Both abuse and dependence are distinct from addiction, which involves a compulsion to continue using the substance despite the negative consequences, and may or may not involve chemical dependency.

Substance use or exposure at any age is an established preventable risk factor for mental disorders. Depending on the local context, certain individuals and groups in society may be placed at a significantly higher risk of using drugs, alcohol or tobacco. These vulnerable groups may (but not necessarily) include members of households using drugs, alcohol or tobacco. People living in poverty, people with chronic health conditions, infants and children exposed to maltreatment and neglect, adolescents due to peer influence, minority groups, indigenous populations, older people, people experiencing discrimination and human rights violations, lesbian, gay, bisexual, and transgender persons, prisoners, and people exposed to conflict, natural disasters or other humanitarian emergencies. These same groups of people become at high risk of mental disorders (WHO, 2005)

2.3 Patterns of substance use in Kenya

In Kenya, mental disorders form 5.8 percent of the disease burden, while leading causes of death like HIV, is at 24.2 percent, Malaria 7.2 percent and Tuberculosis 4.8 percent. This

ranks it among leading diseases killing more people than tuberculosis. The burden of substance use disorders is therefore heavy and growing, with alcohol being the fourth-highest cause of years lost-to-disability in low and medium income countries (Ndetei et al, 2007).

The National Authority for the Campaign against Drugs and Alcohol Abuse (NACADA) the Kenyan authority tasked with responsibility and control of drugs reported that drug abuse is becoming a social problem in Kenya and even though it is not yet being classified as a disaster, substance abuse and related illnesses kill more people than HIV and TB combined. Consumers in Kenya are aged between 15-24 years (NACADA, 2010).

NACADA also reports that 75 percent of the Kenyan population consuming drugs are made up of young people aged below 35 years, 33 percent of this population are between15-30 years. 56 percent of crimes committed is related to drug abuse and the youths involved are aged 24-25 years. Research that has been done shows that 75 percent of students in secondary and college have tried drugs and alcohol at least once in a life time (NACADA, 2010).

In a study of out-patients attending rural and urban health centers in Nairobi and Central province, it was found that mental disorder resulting from alcohol use in patients in a clinic in Muranga was 54 percent, same as that of Jericho clinic an estate in Nairobi (Ndetei et al.,2000).

Further studies by Muruingia and Ndetei (2013) on the alcohol and substance abuse risk on Kenya Medical Training College (KMTC) students in Nairobi, found out that the risk of alcohol and substance use exists among KMTC students at different levels. The study recommended screening of students for substance use, awareness creation and provision of appropriate intervention to prevent drug use and its related co-morbidities at the clinic level.

In a pilot survey carried out in secondary schools in western Kenya, it was found that in most school compounds, there are a wide variety of drugs that is sold to students. The study gives an example of a school in Lugari District, where it was confirmed from the records in the

school in five years, that more than 20 students had either been suspended or dismissed from Lumakanda Secondary School for drug related problems (Chesile, 1996).

A report by the Star Newspaper (2011) points out that about 4.9 % of youths living in Kenyan cities are heroin users, a similar percentage exists in the Kenyan coast. According to the newspaper report, development workers reported that heroin was more widely used and easily available at the Kenyan Coast than any other town in East Africa. The supply came from Dar-es-Salaam, Tanzania, where injected drug use is widespread. The newspaper reported that this had raised serious concern with stakeholders advocating the setting up of needle and syringe supply programs in the coastal region. In Nairobi County, the streets downtown like river road and slum areas of Kibera, Korogocho, Mukuru and Mathare have been targeted by anti narcotics police for suspected drug trade. This rapid growth of drug use amongst the Kenyan population is linked to the increased availability due to the drug trade. Also the frequent set up of rehabilitation centres in the country's major towns is a sign that the number of people affected by mental disorders due to drug abuse is growing in Kenya.

2.4 Gaps in Mental Health Care Training

According to the Mental Health Atlas (2011), the treatment gap in mental health is well documented. In various studies conducted by the WHO, the treatment gap was 32 percent for schizophrenia, 56 percent for depression, 50 percent for bipolar disorder and 5 percent for anxiety disorder. Alcohol and substance dependency disorder was at 7 percent. In Africa and other low income countries the treatment gap was recorded at 67 percent compared to 45 percent in Europe. In Africa, the WHO records that only 12 percent of people in need of mental health had received it according to the study done in 2010, compared to 45 percent in Europe.

Mental health as an integral part of the primary care level, but the actual implementation of this at ground level is highly uneven. Often mental health facilities are restricted to particular towns and do not extend to the whole country. Availability of these treatment facilities for severe mental disorders in primary care settings across different countries also varies greatly (Ndetei et al. 2007).

A study conducted by WHO (2011) in Brazil, China and the United States, revealed that Primary health care providers fail to recognize mental disorders in patients by 10-75 percent and even if they do, many people are diagnosed with depression even if it is substance use disorder. This study found out that despite the fact substance use disorder was common, 0 percent was detected in Brazil. China failed to detect 45 percent, and the US, 12 percent. This led to serious consequences in occupational and family dysfunction and physical disability. This un-detection of mental disorders was attributed by these studies to inadequate training in mental health, misunderstanding about mental disorders and stigma from the health care providers, the patients and the community towards people with mental health (Ndetei et al, 2007; WHO, 2011).

Whereas in some countries primary care is essentially provided by medical assistants, nurses or other primary care workers, in other countries it is provided by primary care doctors. Training also varies across countries. While some have regular and more comprehensive programs for different types of personnel, others do not. The data, however, do not reflect these differences in quality and coverage of training activities in different countries. (Ndetei, et al., 2007).

Service provision and training in mental health are interconnected. Currently, the number of specialized and general health workers dealing with mental health in low-income and middle-income countries is grossly insufficient. Almost half the world's population lives in countries where, on average, there is one psychiatrist to serve 200 000 or more people (Ndetei et al., 2007).

Other mental health care providers who are trained in the use of psychosocial interventions are even scarcer. Similarly, a much higher proportion of high-income countries than low-income countries reports having a policy, plan and legislation on mental health for instance, only 36 percent of people living in low-income countries are covered by mental health legislation compared with 92 percent in high-income countries (WHO 2012).

According to Ndetei (2007) Kenya has 67 psychiatrists for an estimated population of 35 million, giving a psychiatrist-to-population ratio of 1:522400. In mid-1997, Kenya had 53 psychiatrists for an estimated population of 28.8 million, or 1:543400, meaning there has hardly been any improvement in the ratio over the last 10 years, despite an enormous allocation of resources for the training of psychiatrists. Some of the contributing factors are high population growth and migration. Most of the other countries in sub-Saharan Africa have one psychiatrist serving a population of between 1,000 and 7,000,000. In Nigeria the estimated ratio was 1:1000000 in 1997 and 1:1600000 in 2007. The fact that the overall ratio has not improved over the short term and the uneven national distribution mean that Kenya will not have sufficient psychiatrists in the foreseeable future. This has far-reaching, almost radical implications for both clinical practice and overall mental health policy.

According to Ndetei and Mutiso (2001), Psychiatric nurse training is present in Kenya but is not attractive to students. The study attributed this reduced attraction to the common practice of most qualified psychiatric nurses in Kenya being assigned to general nursing duties, thus denying them the opportunity to serve in their area of specialization. Then there is the problem of the training in mental health taking too long before they can be recognized as specialists in psychiatry. Other mental-health-related postgraduate training programs are in clinical psychology and at the moment, there are no clinical officers in Kenyan hospitals that have specialized in psychiatry and there is no training of psychiatric clinical officers. This is the reason attributed to alarming shortages of mental health personnel in Kenya and other African countries.

Another significant aspect of training is the non- equipping of medical students with adequate clinical skills in psychiatry so that their competence in psychiatry is at par with their contemporaries in other disciplines. Data from the Department of Psychiatry show that Kenya produces about 300–400 medical graduates annually, of which only 5 of them are psychiatrists. The training of 300 medical graduates when equipped with competency in mental health appropriately will be therefore much greater in reward to the sector than training five psychiatrists in a year (Ndetei, 2007).

In a cross sectional study by Ndetei and Ongecha-Owuor (2006) in various outpatient hospitals in Kenya, it was found that mental illness was highly prevalent in general health facilities but goes unrecognized by both the patients and clinicians and therefore not managed. The substance use disorders recognized were referred to psychiatric nurses who were available and hardly managed by the doctors themselves.

The study also concluded that staff did not generally recognize substance use disorders and 30 percent of the staff do not adequately communicate to the parents on diagnosis and management of their children. The staff felt inadequate towards diagnosis and management of substance use disorders and they felt the need for continued medical education (CME) on clinical mental health service provision. The study also found out that negative attitude and stigma towards patients was common, but they were unaware of it (Ndetei and Ongecha-Owuor, 2006).

2.5 Computer Based Learning in Kenya

The growth of the internet can be traced back to the 90s when the internet was seen as good for business and advertising. From there it expanded far and faster than most had predicted. It soon became the world's largest database of information, graphics, and streaming video making it an invaluable resource for educators and web sites which offer individuals a place to put personal information became popular, as did an internet-based publishing and discussion forums.

According the Kenya Education Network report on e-readiness of Kenya institutions to use computer based learning (2007), Africa and Kenya had not been left behind in this development. The Kenya Government and its academic institutions have since embraced computer technology and internet as an administrative tool, education and education management information systems (EMIS).These institutions are now offering distance learning courses to students. The six major institutions of higher learning with high uptake of distance learning include the University of Nairobi, Kenyatta University, Moi University, Egerton University, Maseno University and United States International University (KENET 2007).

2.6 Effectiveness of Computer Based Learning (CBL)

Technology-enhanced learning has become an essential part of the learning process for today's students. Institutions worldwide have recognized the Internet's value as an instructional tool and have developed, or are developing, online learning programs.

A study carried out by Dr. Gunilla Mårald from the Umeå University to evaluate the benefit of CBL education, and to investigate the students' reasons for cancelling courses explored the changes in different actors' attitudes towards information and communication technology (ICT) in higher education between 2003 and 2006. The results showed that with the establishment of the Net University, Sweden reached new groups of people, especially students who don't have the chance to enjoy an education on campus due to other obligations like part-time job family or children. Flexibility was the most important factor causing the demand of CBL learning. The study emphasized that this demand can sometimes be the toughest challenges for students that can cause dropout (Marald, 2006).

A study of online learning in the UK undertaken in February 2010 found out that 60 percent of courses offered online were in the business field and 50 percent were post graduate level, making online popular with older people (Oxford University, March, 2010). In 2008, the US National Centre for Education recorded a 25 percent increase in the demand for online courses. It was related to the economic downturn which raised the demand for training by the American workforce.

In a study to determine the effects of different professional group membership on the rate of adoption of e-learning, Gallaher and Wentling (2004) sampled professionals from Engineering, Finance, Human Resources, Legal, and Marketing professionals from a fortune manufacturing company. These groups were categorized based on five categories of adoption: Laggard, Late Majority, Early Majority, Early Adopter, and Innovator. The survey was the method of data collection. A mail questionnaire was used to measure the rate of adoption of CBL, concerns about CBL, and specific demographic variables. Results revealed that professional groups adopt CBL at different rates, but that primary concern about CBL was the same across the groups. (Gallaher, and Wentling, 2004),

Other studies to evaluate an online dementia care program aimed at enabling healthcare teams deliver better service to residents with dementia in continuing care and long-term care facility orientation was adopted and the Demand-Driven Learning Model (DDLM) and evaluation tool were used to evaluate the programs. Findings showed that learners enjoyed the program and acquired and applied new knowledge and skills that led to a better level of care for the residents they worked with. The research further revealed that there is a desperate need for more accessible training programs on dementia care to ensure residents in the facilities and homes receive high quality care and are treated with dignity and respect (Gallaher, and Wentling, 2004).

Emerging technologies allow educators to "foster interaction and collaboration among learners. In computer based learning (CBL), environmental interaction has long been considered as one of the most important factors in student satisfaction. Student satisfaction is considered one of the pillars of quality in online education. Furthermore, technologies allow educators to personalize and humanize e-learning by including rich media components in online courses that endeavours to engage students in active, meaningful learning (Allen and Scama, 2010).

The report further concluded that the combination and availability of different media in CBL provide learners with choices and accommodates individual differences such as personality traits, cognitive styles, preferences, and learning styles. Adult learners increasingly expect a personal or customized learning environment. Students want learning options, choices, and personalization. By providing learners with the freedom of choice, instructors can set the stage for student success.

In an attempt to evaluated costs of CBL in training programs in 1995, A study by Clarke (2001) used direct and indirect (distribution) costs for CBL and compared it with text production and classroom instruction. However, they did not consider the educational design costs for either modality and assumed that hardware, software, and other equipment were available, and that the institution had a commitment to technology.

Clarke concluded that based on one paper, cost saving in the printing and distribution of materials is a potential advantage of CBL, but further study is needed to determine whether lower distribution costs offset the costs of technical support, and whether CBL saves or costs money in terms of faculty time.

In Kenya, the Kenya Education Network (KENET) conducted a survey on the e- readiness of Kenyan higher learning institutions in 2006. They found no significant difference in gender when it comes to ICT usage, even though males were found to be intense internet users. Students in the humanities were more intense users of internet compared to their counterparts in the medical field (KENET Report, 2007).

Overall public and private universities in Kenya have embraced CBL as part of the education system, though they are still faced with a lot of challenges like costly infrastructure, limited internet, lack of enough computers and untrained academic staff who still find it difficult to upload their lessons on the internet (KENET Report, 2007).

2.7 Computer Based Learning (CBL) in health professions

In a study on CBL in medical education in low income countries, Clarke (2001) found out that severe faculty shortages in resource-constrained countries, has led medical schools to look to CBL for improved access to medical education. It took many forms. But blended learning approaches were the most common methods used. In the sample of 49 articles, computer based learning (CBL) comprised the majority, 45 articles. Other approaches included simulations and the use of multimedia software, which was 20 articles, web-based learning14articles, and e-Tutor/e-Mentor programs 3 articles.

In the evaluation of the 69 articles on the effectiveness of CBL, 35 studies compared outcomes between CBL and other approaches, while 34 studies qualitatively analyzed student and faculty attitudes toward CBL modalities. They concluded that, CBL in medical education is a means to an end, rather than the end in itself. Utilizing CBL resulted in greater educational opportunities for students while simultaneously enhancing faculty effectiveness and efficiency. However, this potential of e-learning assumes a certain level of institutional

readiness in human and infrastructural resources that is not always present in LMICs, (Clarke 2001).

The interactions depend on the stimuli that the CBL material can resent to the learners, different learners will respond differently, so it's important to be aware of the factors that may influence the learner's response e.g. age, computer literacy, previous experience with computer based learning, education experience and learning skills, gender, physical characteristics reading age and knowledge of his subject. Older learners may not have the dexterity to operate input devices to operate devices with degree of accuracy required.

According to Clarke (2001), successful adult learning requires relevant material meaningful to learners, it allows for extensive life experience, allows for the different motives and for different learning styles of the learner. Two studies evaluated changes in learning efficiency. One well-designed randomized controlled trial comparing CBL with text-based learning reported that learners achieved equivalent test scores with shorter study times using CBL materials (27 minutes versus 38.5 minutes). The authors calculated efficiency scores (median improvement in score per hour with 95% confidence interval) of 8.6 (7.1–11.7) for CBL and 6.7 (5.9–8.1) for text-based learning 9.0.

According to Dulworth and Carney (1996), there are four levels of computer based learning, each based on the application's complexity and its level of interactivity with the user. Level one is the training similar to a standard power point/ overhead presentation with little Interactivity. Level two is instructor-led, nonlinear presentation. Level three is a facilitator-led training, a multimedia presentation accompanied by classroom-based training. Level four is self-paced training, a multimedia presentation that trainees use with minimal assistance, also known as stand-alone training. Individuals can train at their own pace, either at an outside lab or on their own desktop computer, and complete the exam provided in the program.

In an evaluation study, Curran and Hoakman (2005) assessed the instructional effectiveness of a hybrid computer-mediated course ware delivery system of dermatological procedures. The study revealed that a hybrid computer-mediated course was an effective means of increasing knowledge and improving self-reported competency in dermatological procedures, and that participants were very satisfied with the self-paced instruction and use of asynchronous computer conferencing for collaborative information sharing among colleagues.

The study suggested that online education builds skills, improves knowledge, and thus increases the number and quality of referrals made by health care providers. Providers nonetheless reported ongoing barriers to providing tobacco services and referral, including lack of reimbursement and patient unwillingness to accept a referral (Curran and Hoakmann, 2005).

According to African Medical Research Foundation (AMREF) Kenya (2010), CBL offers students the attractive opportunity to combine training with their regular work, and overcomes the traditional barrier to continuing education and thus does not require them to take time off from work. This has been linked to the massive enrolment in the AMREF on-line nurses upgrading project. The program which was the first of its kind in East Africa, reported a positive impact on the quality of nursing care in the hospitals where the students and graduates of the CBL program work. The learners were reported to be more motivated, knowledgeable and proactive. The learners who completed the program took on additional activities which were earlier performed by doctors (AMREF 2010).

The evaluation concluded that the end results led to an improvement in overall patient care. Whereas patients used to stay for up to a month in the wards, the maximum stay was reduced to 14 days. The wards became less congested and the doctors could then concentrate on other patients. It recommended that CBL courses for health workers, should be expanded to include all cadres of health workers, and exploiting new technologies to increase reach, and that CBL can effectively address critical shortages of human resources for health and skills in Africa (AMREF, 2010)

In summary, there is substantial evidence that mental disorders is continuing to be a problem in low and medium income countries due to the rise in drug and alcohol use. Challenges like funding, shortage of personnel and negative attitude still remain a hurdle. Computer based learning has been recommended as it is less involving compared to in-service for improved medical education. Is computer based learning suitable in mental health training as it has been proven in other academic departments.

2.8 Theoretical framework and conceptual framework

2.8.1 Theoretical framework

This study was grounded on two sociological theories of learning: Malcom Knowles Andragogy theory (adult learning) and: Social learning theory by Albert Bandura. The concepts of Malcom Knowles (1984) Andragogy theory of self concept, adult learner experience, readiness to learn and motivation to learn, fit well in this study since the participants were adults. The training was self directed since there was no supervision. The experience of the learners was one of the objectives of the study, and is brought out in the journal replies and focus group discussions.

Another concept of andragogy that supports this study is that participants knew what to expect and also felt their needs were taken care of in the training, this was brought out in the focus group discussions. Bandura's social learning theories also supported this study in the use self efficacy of the participants. This helped to bring out the confidence in computer based learning and clinical practice before and after the training. The improved self efficacy pointed to effectiveness in computer based learning. The social learning environment explained by the social learning theory also explains the difference in experience by participants. Some found it interesting while others did not. This contributed a lot to the high dropout rate that was witnessed during the study.

The two theories are explained below

Malcom Knowles Andragogy Theory

Knowles made 4 assumptions about the characteristics of adult learners (Andragogy) that are

different from the assumptions about child learners (pedagogy). In 1984, Knowles added the 5th assumption. This includes the self-concept which means as a person matures his/her self concept moves from one of being a dependent personality toward one of being a self-directed human being: there is also the adult learners' experiences, which means that as a person matures he/she accumulates a growing reservoir of experience that becomes an increasing resource for learning. Readiness to learn means that as a person matures his/her readiness to learn becomes oriented increasingly to the developmental tasks of his/her social roles. And their orientation to learning which means that as a person matures his/her time perspective changes from one of postponing application of knowledge to immediacy of application, and accordingly his/her orientation toward learning shifts from one of subject- centred to one of problem- centred and internal motivation (Knowles 1984).

Knowles in his theory provides an example of applying Andragogy principle to the design of personal computer training. He notes that there is a need to explain the reasons specific things are being taught (e.g., certain commands, functions, operations, etc.)

Albert Bandura's Social learning Theory

Bandura, (1982) states that people learn by: a) observing others within their environment b) By behaviour and by cognition. These factors are not static and influence each other in a process of reciprocal determinism. Bandura also stressed that the easiest way to display moral development would be via the consideration of multiple factors, be they social, cognitive, or environmental. The relationship between the aforementioned three factors provides even more insight into the complex concept that is morality. Further, development in social cognitive theory posits that learning will most likely occur if there is a close identification between the observer and the model and if the observer also has a good deal of self-efficacy.

Self-efficacy beliefs function as an important set of proximal determinants of human motivation, affect, and action which operate on action through motivational, cognitive, and affective intervening processes. Identification allows the observer to feel a one-to-one connection with the individual being imitated and will be more likely to achieve those imitations if the observer feels that they have the ability to follow through with the imitated

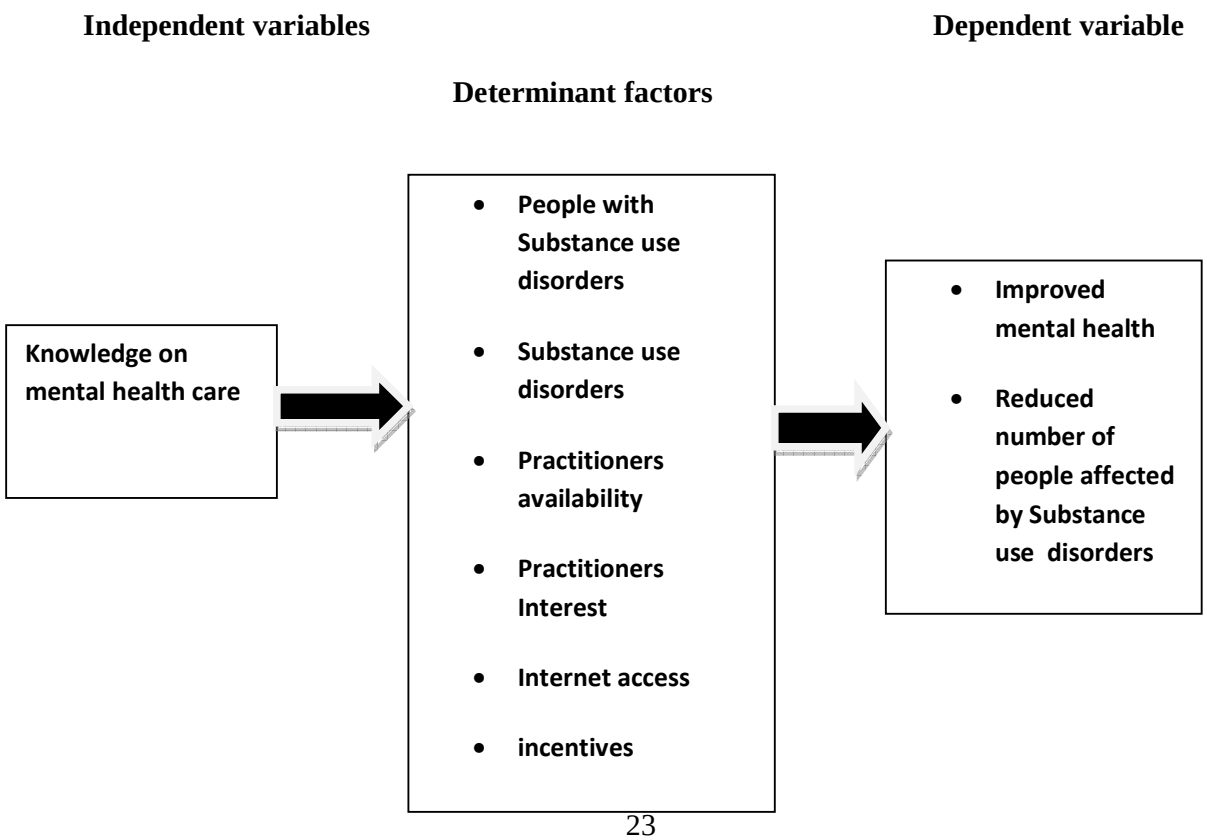
action **(**Bandura, 1982).

Self-efficacy has also been used to predict behaviour in various health related situations such as weight loss, quitting smoking, and recovery from heart attack. In relation to exercise science, self-efficacy has produced some of the most consistent results revealing an increase in participation in exercise as self-efficacy increases **(**Bandura, 1982). These two theories provide guidance in this study and were selected because of their relevance in this study.

2.8.2 Conceptual framework

Guided by the theories discussed above, the study identified independent and dependent variables presented on the framework below. Knowledge and skills in computer based learning is the independent variable, while improved mental health and reduced number of people with substance use disorders are the dependent variables. Several variables were identified as determinant factors.

Figure 1 Diagrammatic presentation of the conceptual frame work



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Methodology

This study adopted an action oriented research (This is research whose aim is to solve a problem or improve on peoples practice Riel, M. (2010). This particular project was consciously designed with the aim of producing results that would support interventions in the treatment of mental disorders.

3.2 Study site

This study was conducted at the Presbyterian University of East Africa (PUEA), Kikuyu campus. PUEA is a Kenyan Institution of higher learning registered under the Ministry of Education and the Commission for Higher Education. It is situated on the Kikuyu Main Campus near Kikuyu town 20 kilo meters from Nairobi City. The University utilizes the PCEA St. Andrews Church Hospital Teaching Site, for medical practice. PUEA has remote sites across thirteen campuses, including five hospitals. It has an average of one thousand, six hundred and fifty students (1650). PUEA offers Diplomas and certificates as well as Degree programs in Computer Studies, Business Administration, Clinical Sciences, Nursing, Education and Psychology.

3.3 Description of study tools

The study used both quantitative and qualitative tools

i) Quantitative

Under quantitative tools, the study used a survey questionnaire to obtain information on the social and demographic information of the respondents, their self efficacy in computer based learning and clinical practice. This tool was also used in getting information for the self efficacy scales.

Table 3.1 Distribution of respondents who participated in the quantitative survey

Department	Primary health care training	Lay healthcare training	Total
Clinical medicine	23	0	23
Nursing	21	0	21
Information Technology	0	4	4
Business Administration	0	4	4
Computer science	0	5	5
Education	0	6	6
Psychology	0	4	4
Total	44	23	67

ii) Qualitative

Under this method the study used focus group discussions, key informant interviews and journal questions. This method was used to collect information on participants experience during the training, institutional challenges and implementation of CBL

Table 3.2 Distribution of respondents who participated in the qualitative data

Qualitative tool	Primary health care training	Lay health care training	Total
Focus group discussion	10	6	16
Key informant interview	1	1	2
Journal questions	4	2	6
Total	15	9	24

3.4 Sample selection

The study targeted participants from PUEA. This was due to the presence of medical students who would benefit from the substance used disorder training. The primary health care worker category invited participants with a medical background and 44 participants registered for the training. The lay health care worker category invited participants from other departments and students from the department of Psychology, Business Administration, Education and Computer Science registered. Mentors came from the lecturers of nursing and clinical medicine. Participation was voluntary and all the participants who expressed interest were enrolled.

3.5 Sampling procedure

The study employed purposive sampling. This was because the entire population of students at PUEA had the characteristics and skills that the study was looking for. There were medical students who would utilize the skills in the field and there were also students from other departments who would train for the lay healthcare course.

3.6 Data collection procedure

The study collected data in two phases. The first phase was before the participants started the training and the second phase after they completed the training. Before the training started, the Institution (PUEA) was approached through the Online and Distance Learning Department (ODL) and agreement with the Administration. An advert with information about the training were put up on the student notice board, and was followed by emails to the same department to remind the students who were interested. A meeting with the researcher and the interested students was scheduled and the students who were interested gave out their names, email address and telephone numbers.

This exercise went on for one week after which the survey was done. Focused group discussions and key informant interviews followed the next day. Then the training was introduced one day after all the pre-training data had been collected. Every participant was given a login password to access the website and commence the training whenever they had time.

It took the participants four months (Oct 2013-Jan 2014) to complete the training. It consisted of a training syllabus with seven modules. These were; the introduction to Mental health and substance use disorders, communication with people with substance use disorders and their families, human rights and legal issues surrounding people with mental disorders, brief intervention in mental illness, treatment and assessment of substance use disorders, follow up and referral of patients.

Every module had lessons and a quiz at the end. There were resources to be downloaded and read from various organizations websites like the World Health Organization (WHO), American Centres for Disease Control (CDC), the American Institute of Health (NIH), The National Authority for the Campaign against Drug and Alcohol Abuse (NACADA) and the Ministry of Health (MOH). During the training, journal questions were sent every week through the mail to the trainees. At the end of the training another survey was conducted with those who had completed the training, focus group discussions and interview, however involved even those who did not completed the training.

3.7 Challenges encountered in the field

First, scheduling interviews with participants was facilitated by the Online Department at PUEA. Some participants promised to attend the focus group discussions, but did not turn up on the appointed day. The ones that came took more than one hour after the scheduled reporting time. The discussions therefore took several hours and often went late till evening. This was an inconvenience for the research assistants because Kikuyu town was far away.

Another challenge was about follow up of participants, this was done through phone calls but some participants did not pick the researchers call. Because of this they remained unreached throughout the study. These groups of participants were counted as dropouts.

CHAPTER FOUR: DATA ANALYSIS PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents the data from the already selected area. The obtained results have been represented through the use of frequency tables and percentages. Interpretation of the represented data findings is also done in this chapter. Explanations which include discussions are then made available to explain further the findings in relation to the study objectives.

4.2 Response turnout

The study targeted 120 respondents who registered for the training. These were distributed as shown in the table below

Table 4.1 Distribution of respondents by area of training

Training category	Area specialization	Targeted	Participated
Primary health care	Nursing	27	23
Primary health care	Clinical Medicine	40	21
Lay health care	Business Administration	12	0
Lay health care	Information Technology	10	0
Lay health care	Bachelor of Education	8	0
Lay health care	Counselling Psychology	10	0
Lay health care	Computer science	13	0
Total		**120**	**67**

Participants who were registered were contacted via short message service and phone calls. A meeting was scheduled in Lecture Hall 16a and 16b at the Kikuyu Campus for research assistants to administer questionnaires. In the end only 67 questionnaires were returned. The study established that some participants lost interest in the training at this early stage due to the work load and their perceived inability to use a computer for learning.

The 67 participants were allocated their user names and passwords to access Next Gen U website. After two months, only 45 had logged in to the website. After three months (project time line) 21 of the 45 participants who had logged in managed to complete the training.

4.3 Social, demographic information about the respondents

In this section the general information about the respondents is analyzed by the use of frequencies and percentages and discussions on the data presented. This is supported by existing theories and concepts found in various readings.

4.3.1 Age

The research was done at Presbyterian University of East Africa, Kikuyu campus. The age of the participants ranged between 18-44 years. There was only one participant who was above 30 years old even though there were several in the campus who were qualified to do the training. This meant that the training mostly attracted participants in their early twenties. The average age was 22 years. The ages were put into categories of 1: Teenagers, 2: Participants in their twenties and 3: Above 30 years.

Table 4. 2 Percentage distribution of respondents by age group

Age category in years	**Lay healthcare category**		**Primary healthcare category**	
	Frequency	Percentage (%)	Frequency	Percentage (%)
18-19yrs	4	17.4	6	14.0
20-26yrs	18	78.1	38	88.6
Above 30yrs	1	4.3	0	0
Total	**23**	**100**	**44**	**100**

The findings above show that even though the training was free and voluntary, many participants who expressed interest were in their twenties, the older adults, 30 years and above were very few even though they were qualified and available in the campus.

These findings can be linked to the concept of the digital divide which refers to inequalities in IT knowledge and accessibility by age disparity. In Kenya, The term used for people who are thought to be technologically challenged is *analogue* and largely older adults are placed in this category. On the other hand the term *digital* is used to refer to young adults who are thought to be at par with current technology. Among young people, this concept in the modern society introduces a form of social class. Knowledge in computer is seen as being of high class and developed while the lack of it is viewed as underdeveloped. The findings above can be supported by the cross tabulation shown on the table below.

Table 4.3 Percentage Distribution of respondents by age and duration of training

Age category in years	Time taken to complete training in weeks			
Age	**Less than one week (%)**	**4 weeks (1month) (%)**	**8 weeks (2months) (%)**	**12 weeks (3months) (%)**
18-19 years	50.0	25.6	10.0	10.4
20-26years	44.0	15.5	20.0	20.5
Above 30years	0	0	0	100

From the table, it is evident that participants in their teens completed the training faster than the above 30 years who took the longest time in the study. Livingstone et al., (2005) also confirms this when he concludes that young adults who were born into the computer age were introduced to it at an early age and started appreciating computers at a young age, have a positive attitude while older adults who were born during the text books era and libraries still appreciate them more than they do with computer-based learning.

4.3.2 Sex of participants

The participants were asked to give information on their sex and findings are presented in the table below.

Table 4.4 Percentage distribution of respondents by sex

Sex of participants	Lay healthcare category		Primary healthcare category	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Male	15	65.2	23	51.2
Female	8	34.8	21	48.8
Total	23	100	44	100

From Table 4, 4 above, the findings show that there were more males registered (65.2 percent of the lay health care worker category and 51.2 percent of the primary health care worker category) than females (34.8 percent of lay health care category and 48.8 percent of the primary health care category).

These findings are supported by the concept of the digital divide which was conceptualized by Cooper (2009) and Knight (2012). They claim that individual or group inequalities in technological knowledge and accessibility are due to sex.

Cooper (2009) also reports that high anxiety in girls leads to a negative attitude towards computers. He recorded that the gender differences towards computer learning come from socialization patterns, gender stereotypes, and all these lead to negative attitudes and poor performance. He continues to say that most computer software is targeted at the male, most software designers are male, the software inventors are male and computer programmers are male and most programs that are designed for children like computer games are either about cars, wars or football games which is popular with the male child. The target for female are mostly programs to do with fashion and colors which are few.

In an attempt to explain how women and girls have been left behind on the road to information technology, Cooper (2009) used four theories to explain this divide. They are:

- **The stereotype threat:** This refers to an individual being at risk of confirming as a self characteristic, a negative stereotype about one social group. In this case the female participants under-rated themselves and their ability to excel in the training. This could have led to the low interests.

- **Self-fulfilling prophecy (theory):** This directly or indirectly causes itself to become true due to belief and behavior. In his book *Social Theory and Structure*, Merton explains the self-fulfilling theory in the following sentence: "… when Roxana falsely believes that her marriage will fail, her fears of such failure actually cause the marriage to fail". In the case of this study, the participants feared that they could not complete the course because they are not good at computers or they could not pass and get a certificate. This affected their

enrollment rate and for those who enrolled, the fear of not making it made them to drop out.

- **Social comparison theory,** by Leon Festinger: It is centered on the belief that there is a drive within individuals to gain accurate self-evaluation, they explain their abilities by comparing themselves with others. In the case of this study the participants compared themselves with their male colleagues and saw that they are not good enough. This feeling of inadequacy made them not enroll in the course or withdraw

- **Attribution theory** which relates to how people explain their behavior, citing internal or external factors. In this study, the female participants could have attributed their lack of interest to lack of access to computers or slow internet in the campus.

Cooper (2009) goes ahead to recommend that parents and teachers can help girls and women overcome the digital divide.

4.3.3 Marital status

The respondents were asked to provide information on their marital status. The results are presented in the table below.

Table 4.5 Percentage Distribution of respondents by marital status

Marital status of participants	Lay health care workers		Primary health care workers	
	Frequency	**Percentage (%)**	**Frequency**	**Percentage (%)**
Single	16	69.6	33	74.4
Cohabit	6	21.7	9	18.6
Married	1	4.3	2	4.7
Total	**23**	**100**	**44**	**100**

From the table above, 74.4 percent of participants who enrolled for Primary health care training category were single compared to 69.6 percent of participants in the lay health care

category who were also single, Participants who said they were married accounted for 4.7 percent in the primary health care category and 4.3 percent in lay health care category. The cross tabulations done for this item is presented in the table below.

Table 4. 6 Percentage Distribution of respondents by Marital Status and completion of training

Marital status of participants	Less than one week (%)	1 month (%)	2 months (%)	3 months (%)
Single	60.5	25.9	13.6	0
Cohabiting	16.6	44.5	10.0	28.9
Married	0	0	0	100

The study links this to the availability of time for the single adults. Married people are believed to have family commitments and this is what hindered participants in this group from taking extra courses. The co-habiting couples were also not many, a factor that can also be attributed to family demands which includes spending time with the spouse, children and other family members. There are also other duties which include home making, cooking and babysitting. These are duties which the participants would do during their free time. The course on average was to take 48 hours of free time. This was spread over three months, within this time participants were allowed to finish at any time. This required them to put aside two or three hours daily after class to do the course in order for them to read the materials in the links, finish the modules, do the peer to peer activities and mentoring activities and the final exam. It is highly likely that participants who have families could not find enough time for the training (Knight 2012).

4.3.4 Residence of the respondents.

The participants were asked to provide information on where they lived, either within the campus or at home with their families.

Table 4.7 Percentage Distribution of respondents by residence

Participants Residence	Lay health care workers		Primary health care workers	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Campus Hostel	10	43.5	15	34.1
At home	13	56.5	29	65.9
Total	23	100	44	100

As reflected above, the study found out that 65.9 percent of primary health care category lived with their families compared to 56.5 percent of lay health care categories. This study found out that most participants at PUEA live outside the campus. The high enrolment by participant staying at home can be explained by the influence of the family members.

Table 4. 8 Percentage Distribution of respondents by residence and completion of training

Residence	Less than one week (%)	I Month (%)	2 Months (%)	Three Months (%)
Student hostel	0	40.0	10.0	50.0
At home	80.0	16.0	4.0	0

The cross tabulations above show that 80 percent of the participants who stayed at home finished the training within one week, another 16 percent finished within 1 month and only 4 percent took 2 months.

Difference in finishing time between participants who lived at home and those that lived in the hostel can be associated with family support, which is essential in any learning. The family provided social and emotional support to the participants. They also played a role in assisting the participants with computers or providing portable internet (modem) and air time. When compared to participants who lived in their homes, the study linked the late completion

to the negative influence of their colleagues who dropped out. The study also established that in PUEA, Free time for most young adults is used on social media and listening to music and watching movies, which is more attractive to them than reading.

4.3.5 Access to computer and internet

The participants were asked to provide information on how they accessed the computers that they used for the training. The results are presented in the table below.

Table 4. 9 percentage distribution of respondents by access to computer

Access to computer	Primary health care		Lay health care	
	Frequency	Percentage	Frequency	Percentage
Owned a computer	11	23.2	10	43.5
Borrowed a computer	4	9.3	5	19.3
My family owned a computer	3	7	0	0
University computer lab	26	60.5	6	28.5
No access to computer	0	0	2	8.7
Total	44	100	23	100

From the table above, the results show that 60.5 percent of the participants relied on the University computer lab and internet to do the training, while 11 percent owned computers. 4 per cent recorded that they borrowed while 7 percent used computers owned by their family members.

This finding is supported by Darkwa (2000) who concluded that computer availability and internet remain the major hurdles in CBL in Africa and need funding from partners. Computer-based learning is dependent on computer availability, without it, computer based learning is not possible. Even though some participants were able to access the course on their mobile phones, downloading the reading materials and peer activities not only made them spend a lot of money on airtime but was also impossible since it required a bigger screen. From the journal questions, the participants who logged in but did not complete the

course singled out lack of computers as a major cause of drop out.

The 60.5 percent who were using the University computer lab also found challenges. There several other participants in the campus who have access to the limited number of computers in the computer lab, coupled with slow internet, it slowed down their speed. The study also established that free time at PUEA is also used for assignments and personal reading, library and group discussions. This time was limited and there needed to be a direct access to a computer and internet if every participant who registered was to complete the training at the required time. This is one reason given by participants as a cause for a large number of trainees drop out.

The findings also showed that participants who recorded that they owned computers, borrowed computers from their friends or used computers owned by family members and their own internet source (modems) completed the course faster and had less technological challenges. And even though they recorded challenges with accessing the links, they recorded the highest number of those that completed.

4.4 Analyzing the goals and objectives of the study.

In this section, the study discusses the findings in relation to the specific objectives which were to compare the experience of trainees in the different categories, to determine the factors which influenced the course completion and utilization, to determine the appropriateness of computer based learning in mental health using the self-efficacy scales and to determine institutional factors that affect implementation of the program in primary health care facilities.

These objectives are discussed systematically in relation to the finding of the study. The table below shows the number of participants at different stages of the training.

Table 4.10 Percentage distribution of respondents at different stages of the training

Training category	Expressed interest	Enrolled	Percentage (%)	Completed training	Percentage (%)
Lay health care	48	23	47.9	10	20.8
Primary health care	72	44	61.1	11	15.2
Total	120	67	55.8	21	17.5

From the table above, there is a drop in the number of participants at every stage during the training period. At the beginning, 120 participants expressed interest and gave out their names and contact, but only 17.5 percent completed the course of which 20.8 percent were in the lay health care category and 15.2 percent in the primary health care category. This shows that there were challenges that made the participants drop out in large numbers which also affected the completion of the course, these factors which were expressed during the discussions and interviews are analyzed below as: Experience of participants, appropriateness of computer based learning (self efficacy of participants) and institutional factors affecting implementation of computer based learning.

4.4.1 Experience of participants in mental health training

From the journal questions, the participants who completed the course recorded a positive experience. They recorded a lot of anxiety and expectations during the first week of the training, but later got to like the training and had no difficulties in finishing. The analysis of the survey showed that participants who owned a computer, had previously used computers or who were computer literate and knew how to look for information on the internet had appositive learning experience and finished ahead of those who had no knowledge at all.

Participants who created time for the training also had a positive experience and finished faster than the others. However Participants who had not used computers before had a negative experience. They found it difficult logging in and they also found it difficult searching for information on the internet. Most of them dropped out in the initial stages. They recorded that whenever they opened the links, the information on the screen disappeared and they had to start all over again, this experience they said was frustrating and time consuming.

The participants who enrolled in the primary health care course, who had a medical background recorded in the journals that they found the modules and activities familiar, interesting and clear while the lay health care worker category who had no medical background had difficulties understanding some lessons and this made them consult friends and family members.

Most of the participants mentioned in the focus group discussions that the questions were relevant and engaging. They also said that what they learnt in the course would be of use during their practice in the future. They recommended the training for other health care workers who could be interested in mental health care.

The journals from the participants who did not complete the course indicated that they were confused at the point of logging into the website. This is because the web site had several courses. The participants also mentioned in the focus group discussions that some courses looked more attractive and interesting than the mental health course. They also recorded that instructions were not clear. They therefore spent a lot of time on the other courses, only to realize later from their colleagues, they were doing the wrong course. This they said was discouraging considering the time they had spent.

Results from the journal questions and focus group discussions also show that many participants felt overwhelmed by the workload from school work and could not finish within the project timeline. They requested to be left to finish at their own time. There were feelings of frustration with slow internet and crowded computer labs. Some participants indicated that the logging in process was difficult and that the passwords were too long, they either forgot or misspelt the password. This made them give up at the initial stages of the training.

Other challenging activities that were discussed in the groups included, downloading the reading materials which took longer time and ate into their class time and also the loss of a phone or forgetting ones an email address cut off communication with the research assistants and made the participant drop out.

> One participant said in the discussions: “When I started the course, I was very excited because I knew it will equip me further in delivering my skills in the field. Module one was good and very relevant to me, but as time went by I realized I cannot finish with in the three months you gave us. May be during holidays, right now we have a lot of work and exams. I cannot spare any more time to study. The peer to peer activities are big documents, downloading them takes a lot of time and internet here is a problem.”

Results also show that participants were frustrated with the peer to peer and mentoring activities. They wrote in the journals and in post training focus group discussion that they could not locate the activities and even if they did, they did not see where and how to type their essays on-line and submit. They attributed this unclear instructions and lack of close supervision.

The journal notes analysis and the post training focus group discussions also showed that most of the participants who recorded positive experience and recommended the course modules and lessons were from the primary health care category. This group also had the highest dropout numbers, and recorded a higher number of people who said they get frustrated with using computers. The lay health care worker trainees had the highest number of participants who owned personal computers, had the least challenges in using computers but recorded that they were not conversant with the course content.

4.4.2 Factors which influence completion and utilization of the course by the participants

From the group discussions and the journal entries, the respondents cited out the factors as:

Dropout rates: Overall, the total number of participants who expressed interest were 120, when questionnaires were issued, only 67 were returned, a return rate of 55.8 percent. Out of the 67, only 45 logged in a withdrawal rate of 32.9 percent. At the end of the project timeline only 21 participants had completed the course. This findings comes up with a retention rate of 17.5 percent. These findings are supported by a study in the UK on online learning undertaken in 2010, which found out that retaining online participants was a difficult task since it lacks the face to face aspect which usually monitors attendance in classrooms. The

high drop out rates were attributed to life happenings which force the participants to withdraw (Allen and Scama, 2010).

Availability of computers to the participants: From tables above, the results show that only 11 percent of the participants owned computers while 60.5 percent relied on the University's computer lab to undertake the course, the participants who withdrew were citing lack of access to computers as a big challenge. They did not have access to computers at the time they were ready to do the training and at all times, the computer lab was filled with other participants and it was frustrating for them to wait to use computers in turns because of the deadline.

Work- load: Participants who did not complete the course or dropped out recorded in their journal that they already had too many assignments, exams and intensive practicum sessions which was a hurdle to taking any other training. This group of participants said they were interested in the training, but could only do it at their own time

Lack of supervision: Both groups of participants who completed or did not complete the CBL recorded that they got confused when logging into the Next Gen U website. They also mentioned that they got lost while surfing the internet for information or got stuck in between the lessons and they had no one to assist them. Some of them felt lonely and dropped out while others sought support from colleagues and family members.

Access to internet connection: Internet availability is key to facilitating CBL and accessing online courses. In this study slow internet in PUEA which caused the download process to become slow and consumed a lot of time which ate into their class time. This made some of them drop out of the CBL. The participants also recorded that sometimes the institution stayed for a week without internet.

Computer illiteracy and problems with technology: Lack of prior knowledge of computer and surfing the internet made some of the participants to withdraw from the training, and some who did not withdraw sent their friends to do the course for them. This was a challenge to the research team because there was no way of knowing if the participant was assisted partially or fully in the CBL

> One of the respondents wrote in the journal: “I found it challenging to use the computer laboratory in our University. I always had to wait for people to finish their tasks before I do mine. At that time the internet is slow. I have assignments, have to go for the ward rounds; I feel tired and sometimes I got very frustrated.”

4.4.3 Appropriateness of Computer Based Learning (CBL) in substance use disorder training.

This study assessed appropriateness before and after the training in their clinical practice and also in CBL. High self efficacy meant that the participants had a lot of confidence in CBL and also in performing these duties in a clinic. Low self efficacy showed their confidence was low. The table below shows the self efficacy in CBL recorded by the participants before the training.

Table 4.11 Self-efficacy for computer-based learning before the training

Items of self efficacy scale for computer based learning	Not confident	Moderately confident	Highly confident	Total
I lack confidence in using CBL	38.8	29.7	31.5	100
I am unable to do the training on my own and have to rely on support from my family	34.8	27.2	38.0	100
I am unable to identify which input device to use to facilitate the training	41.0	23.4	35.6	100
I lack confidence when manipulating input devices to access the links provided	30.0	25.1	44.9	100
I lack confidence in the way to access information if the procedures are changed	38.1	28.0	33.9	100
When I look at information repeatedly on the net, I still struggle on how to go about it	44.4	24.1	31.5	100
I lack confidence when it comes to working out tasks in computers	43.6	16.7	39.7	100
I lack confidence in participating in peer to peer activities	19.1	12.7	68.2	100
I am confident in seeking advice from mentors	13.9	0	86.1	100
My cultural values do not allow me to work with people with SUD	48.9	11.1	40.0	100
My religious values do not allow me to work with people with SUD	51.3	19.1	29.6	100

Generally 30 percent of the participants who responded to this scale before the training said they were not comfortable using computers; 41 percent were not able to identify which input device to use while manipulating the computer and 44.4 percent struggled to look for information on computers. Another 40 percent of participants recorded that their cultural values interfered with their work with mental disorder patient's mental health while another 29.6 percent mentioned that their religious values hindered them from attending to people with mental disorders. These finding are supported by Clarke (2009) who argued that factors that determine learning in online environment included, learning material, and the electronic course environment:

Table 4.12. Self-efficacy for computer-based learning after the training

Items of the self efficacy scale for CBL	Not confident (%)	Moderately confident (%)	Highly confident (%)
I lack confidence using CBL.	81.0	0	19.0
I am unable to do the training on my own and always have to rely on support from family and friends	81.0	0	19.0
I am able to identify which input device to use to facilitate the training.	0	0	100
I lack confidence when manipulating input devices to access the links provided	61.0	33.0	6.0
I lack confidence in the way to access the information if the procedures are changed	33.7	33.3	33.0
When I look at information repeatedly on the net, I still struggle on how to go about it	42.0	38.0	20.0
I lack confidence when it comes to working out the tasks on computers	71.0	1.0	28.0
I lack confidence in participating in the peer to peer activities	85.7	0	14.3
I am confident in seeking advice from my mentor.	0	13.0	87.3
My cultural values do not allow me to work with people with substance use disorders	95.8	0.2	4.0
My religious values do not allow me to work with people with substance use disorders	52.0	14.7	33.3

The table above shows the self-efficacy of the participants after the training. The response rate increased and the self-efficacy also improved for all the items on the scale. Lack of confidence in using CBL reduced to 19.0 percent of participants after training while 81.0 percent were confident in using computers, this was compared to 31.0 percent and 38.0 percent respectively. Manipulating input devices rose by 50.0 percent, working out tasks in computers rose from 43.6 percent to 71.0 percent. The Influence of cultural values reduced from 30.0 percent to 4.0 percent. These findings show that the training helped to improve the computer skills of the participants and also improved their attitude towards mental health patients as compared to before the training when cultural values and religious values were a challenge.

Table 4.13 Self-efficacy in clinical practice before the training

Tasks on the clinical practice self efficacy scale	Not confident (%)	Moderately confident (%)	Highly confident (%)
Able to describe how to assess patients with mental disorders as taught in the modules	10.3	27.5	62.2
Able to distinguish types of mental disorders when a patient walks into the clinic	11.8	37.3	50.9
Able to identify the different stages of drug use.	2.3	27.3	40.9
Able to identify different complications in Mental disorders that may require urgent intervention.	0	41.4	58.6
Recognizing related complications in people with mental disorders.	7.0	34.4	58.6
Write a short comment to describe the interventions and benefits of treatment.	0	34.4	65.6
Assisting in appropriate identification of the treatment regimen for people with mental disorders	5.0	26	69.0
Identify , understand and interpret mental health care	0	25.5	74.5
Effectively communicate with people with mental disorders and their families	11.9	39.5	48.6
Perform effective screening and offer interventions	5.0	30.0	65.0
Perform these duties in any clinic	13.5	30.4	56.1

In Table 4.13, the response rate was quite low, so even if the findings show that above 50 percent of the respondents we moderately confident to highly confident in practical skills, quite a number of the participants did not respond to this scale, this shows that they were not sure of what to write.

Compared to self-efficacy in CBL, most of the participants had a higher self-efficacy in clinical practice. However, when the findings of the two different categories were compared, the lay health care category was less confident in clinical practice, this is linked to their career background. The primary health care category was less confident in computer-based learning before the training. Theses finding are supported by the research done by the Kenya Education Network (KENET) 2007 that participants in higher institutions of learning in the Arts faculties were more active in using computers compared to their counterparts in the medical departments in the same institutions

Table 4.14 Self-efficacy in clinical practice after the training

Items of the clinical practice self efficacy scale	Not confident (%)	Moderately confident (%)	Highly confident (%)
Able to describe how to assess patients with mental disorders as taught in the modules	0	29.2	71.8
Able to distinguish mental disorders when a patient walks into the clinic	0	23.8	76.2
Able to identify the different stages of drug use.	0	14.6	85.4
Able to identify different complications in mental disorders that may require urgent medical intervention.	0	23.8	76.2
Recognizing related complications in people with mental disorders.	4.9	0	95.1
Write a short comment to describe the interventions and benefits of treatment for different mental disorders	0	25.8	74.2
Assist in appropriate identification of the treatment regimen for people with mental disorders	0	14.3	85.7
Identify, understand and interpret mental health care	0	9.5	90.5
Effectively communicate with people with mental disorders and their families	0	4.8	95.2
Perform effective screening and offer interventions	0	0	100
Perform these duties in any clinic	0	19	81.0

From the findings in the table above, the self-efficacy in clinical practice among the primary healthcare workers has improved to 100 percent. Ability to assess patients with substance use disorder improved from 62.2 percent before the training to 71.8 percent after the training, ability to distinguish substance use disorders from other mental disorders rose from 60.8 percent to 71.3, ability to recognize related complications in people with substance use disorders rose from 58.6 percent to 95.1 percent; performing effective screening interventions improved from 65.0 percent to 100 percent. These findings show that computer-based learning is appropriate in skills training in substance use disorder.

According Bandura (1994), self-efficacy is the belief in one's abilities to organize and execute a course of action required to manage situations in this case the training. It is a person's belief in his or her ability to achieve certain goals in certain situations. Research demonstrated that self-efficacy can have an impact on everything a person does from behaviour to motivate. An individual's self-efficacy plays a major role in how goals, tasks, and challenges are approached. People with a strong sense of self-efficacy view challenging problems as tasks to be mastered. They develop a deeper interest in the activities in which they participate, form a stronger sense of commitment to their interests and activities and recover quickly from setbacks and disappointments.

However, people with a weak sense of self-efficacy avoid challenging tasks, as they believe that difficult tasks and situations are beyond their capabilities. They focus on personal feelings and negative outcomes and often lose confidence in personal abilities. It develops from early childhood as children deal with a wide variety of experiences, tasks, and situations. However, the growth of self-efficacy does not end during youth, but continues to evolve throughout life as people acquire new skills, experiences, and understanding, Bandura (1994).

From findings above, the initial low self-efficacy can be used to explain 83 percent withdrawal at the beginning of the course, most of the participants did not believe in their ability to complete the on-line computer-based training. Hence the high rate of withdrawals. These findings also explain the high enrolments from young adults compared to older adults.

According to the explanation, young people who are born during the computer age develop high self-efficacy of computer use at a young age compared to adults who were born before computers and therefore have no confidence or low self-efficacy in computer use. This finding can be linked to withdrawals and dropouts at the beginning of the course. The findings also explain seeking assistance from friends and relatives, which was mentioned a lot in the post training discussions, this was mentioned to have taken place at the beginning when there was a lot of confusion in the logging in and locating the website and reading material. Confidence in manipulating input devices, improved from 43.2 percent to 61 percent and cultural and religious values improved from 40-47 percent before the training to 52-95 percent after the training. This finding shows that computer-based learning is an appropriate way of training and can be used in mental health, especially when the challenges area taken care of, more participants can enrol.

4.4.5 How Institutional infrastructures affect the implementation of CBL

From the group discussions the respondents agreed that factors that deter institutions from implementing such programs include:

Structural costs of buying computers and providing internet: coupled with operational costs in an institution run into millions of shillings. This is prohibitive in low income countries where the health budget is below 10 percent, and even lower for mental health.

Low Computer literacy amongst the population: According to Consumer Insight Limited (2008), 82 percent of Nairobi residents can browse the internet using their phones compared to 57 percent in Lusaka, Zambia and 80 percent in Addis Ababa, Ethiopia. However, it is not known what percentage of rural and urban Kenyans who can use computers and the age group that is more likely to use computers more.

Lack of reliable electricity supply in towns and rural areas Computer operations need reliable supply of electricity. This is not available at the primary health care clinics which have frequent power black outs. This makes CBL difficult since most working people want to do the courses when they are free.

Participants also cited burglary and general insecurity as hurdles in implementation. Technological difficulties which include repairing the computers and upgrading the ever-changing consumer market of software in a population that is not computer literate

Lack of supervision and mentors: In this study, there was no goodwill from the lecturers who had agreed to mentor the trainees. Out of 13 lecturers from the medical faculty, only 2 were available. This was cited by the participants as reasons for drop out because there was no motivation.

The dilemma that comes with computer and internet connectivity: Cyber crime and addiction to pornography which has been linked to the internet has introduced fear in rural communities and the older population sometimes discourage young people from using internet.

CHAPTER FIVE: DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussions

The findings of this study show that there are several factors which are at play in a computer learning environment. This is supported by Moore (1993) who wrote that in the computer based learning environment, there are the people who use computer to interact, who create it, the content it represents, the infrastructure that supports it, the administrative mechanisms that surrounds it, all the people, concepts and structures that are part of the learning. These factors affect the outcome of the learning. In this case, these factors made most of the students to drop out of the training.

In other literature by Pintrich (1999) there is an argument that in computer based learning students' motivations and emotions change from learning task to learning, task (e.g., depending on their self-efficacy for performing the task, interest in the task and the ability to use computers etc.). Therefore, the extent to which students use self-regulatory behaviours may vary as well, depending on the nature of the online course and how the learning tasks within that course relates to them personally. Stated another way, students' subjective perceptions of the environment ultimately shape their cognitive, emotional, and behavioural engagement or disaffection in that environment. This explains why the respondents dropped out at different stages of the training.

The report also argues that the structure and coherence of the curriculum and the learning material are a major factor for facilitating CBL. The quality of the learning environment and the ease of using a learning management system contribute to the success and course satisfaction of an e-learning course and performance. Instructors in CBL in this case the computer performs a variety of tasks in the process of giving and processing information, e.g., provide a structure of the course contents, give feedback of accomplishments, stimulate the students' motivation to process and reflect on the content, and assist them to engage in learning activities.

5.2 Conclusion

Findings indicate that a combination of factors is likely to contribute to the success or failure of computer-based learning in Mental Health training. These include, access to computers, reliable internet, supervision of the trainees and adequate time allocated by the trainees. Other factors were difficulty with technology arising from computer illiteracy, knowledge of the participants and poor orientation to the training. The study, therefore, concludes that computer-based learning is an appropriate form of learning and can be used to pass knowledge and skills in mental health training. However, the role of the mentors must be highlighted to provide supervision to the participants.

5.3 Recommendations

Based on the findings and conclusions above, this project made recommendations at three different levels

a) Individual level

Every individual should be encouraged to be computer literate, this increase the chances of taking computer based courses which are now being offered by universities around the world and are beneficial to the community.

The course syllabi in computer based learning should be brief and given clear instructions to avoid dropouts by learners.

Courses targeting students should be done during holiday so that
learners have ample time.

b) At the institutional level

Learning institutions should encourage computer based courses, this will increase the number of people taking computer based courses. Computer classes should be made compulsory in these institutions so that students can be computer literate.

Institutions with computer based learning programs need to explore the concept of Online mentoring, its advantages and disadvantages and the attitude of students towards the same.

Institutions like hospitals should be encouraged to take advantage of CBL to capacity build their workforce and improve service delivery.

c) **At the Policy level**,

The Government should make computers and internet affordable to the Kenyan population, this will increase awareness and the interest of people in computer based courses

The Government through its education policies should introduce computer based learning in continuing education and capacity building for its work force in every sector, this way peoples interest in CBL will rise and the problem of shortage of personnel in areas like mental health will be solved.

The Government should create awareness to popularizing online courses. This will reduce the cost of education by eliminating the costs of accommodation and travelling making education affordable to many.

5.4 Suggested area of research

From the Knowledge and experience gained in this research, an interesting area for future research would be the interactions between sociology and mental health. How do people and social institutions contribute to mental illness and how can these institutions like the family work towards preventing mental illness?

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APPENDICES

APPENDIX I: FGD GUIDES AND QUESTIONNAIRE

Baseline Focused Group Guide

Indicate the reasons why it is important to talk about the clinical services implementation of alcohol, tobacco and other substance use disorders.

Core questions (45 minutes)

What is your motivation towards taking this training? (*Probe further*)

What is your understanding of SUD? *(Probe further*)

What do you expect to achieve at the end of this program?(*probe further*)

Summary and conclusion (10 minutes)

Identify key issues arising from the discussion and use them to direct the participants to summarize and the discussion

Ask if there are any other comments the participants which to make in relation to implementation of services to address tobacco, alcohol and other substance use disorders in their areas in Kenya.

Conclude the core discussion

Close the focused group discussion -Thank the participants for the participation **(5 minutes)**

End the tape recording.

Follow-up Focused Group Discussion Guide

What motivated you to complete the training (probe further)
What is your understanding of SUD? (probe for different views)
How have you achieved your expectations?

APPENDIX II: Journal Writing Instructions

You are being asked to take part in journal writing exercises as part of **The computer-based Drug and Alcohol Training Assessment in Kenya (e-DATA K)** study for which you have already agreed to participate in**.** In order to learn as much as we can from the project, we are interested in hearing about your experiences with the training activities you are taking part in as well as your experience translating what you have learned in the trainings into clinical practice. The purpose of these writings is to help us identify any parts of the training that can be improved or modified, and to identify the best ways to integrate services for alcohol and substance use disorders into Kenyan primary health care.

At the beginning, we will provide a number of guiding questions to help direct your writing. As the process unfolds the research team will send you updated questions to match where you and your team are in training and practice. There are no right or wrong answers. We are very interested in your experience and knowing what we are doing right and what we are doing wrong.

We ask that you write weekly reflections on how things are going for you, which you will submit confidentially by email to **berniceapondi@amhf.or.ke** After the project receives your submission all of your identifying information, including your name and email will be removed and replaced with your e-DATA K identification number. Your submission will be kept and only the project team will have access to them.

The team recognises you are very busy people and with the added workload of this project these journal writing exercises may easily be forgotten. As a result, in order to support you with your writings the research team can send you reminder emails containing guiding questions every two weeks. If you like to receive these reminders please provide your email address below. To keep this information confidential it will be kept in a password protected database with only your position. It will be kept apart from your signed consent and other identifying information. At no time will your email be used for anything other than contacting you about this project. It will not be shared with other participants or any third parties outside the research team.

Please check the appropriate box.

☐ No, I do not want to provide my email address

☐ Yes, I do want to provide my email address and receive email reminders

Email: _____

Position:_____

Journal writing questions

Week 1-2

What were your feelings when you started the training?

Are there any expectations you had for the training? Please explain

Are you having any difficulties in accessing the computer, the material and using it for the training?

What factors may hinder you from completing course?

What good things have you learned from this exercise?

Week 3-4

How do you compare this week with the past week?

Do you feel the competencies for the previous weeks were clear?

Is there anything you think should be removed from the training? Please explain.

Do you think the learning activities were able to guide you appropriately or were too difficult to follow?

What did you think of the resources? Were they appropriate or were they difficult?

How helpful are the mentors and peers in the learning process?

Week 5-6

Do you feel the competencies for the last few weeks have been clear?

Is there anything so far that you think should be removed from the training? Please explain

What do you think of the multiple choice questions?

What do you think was the most valuable thing you have learned since writing and submitting your last journal entry? Please explain

Do you think this training will impact your practice? What are some ways you can use what you have learnt in your clinical practice?

Week 6-7

Do you feel the competencies for the last few week were clear, Is there anything you think should be removed from the training? Please explain

Do you think your attitudes towards and beliefs about people with substance use or mental problems have changed since you began this course?

How do you think this will impact on your work or interactions in the community with these people?

Are there any obstacles or barriers to getting the most out of this training? Please explain.

Week 7-8

Do you feel the competencies for the last few weeks were clear, Is there anything you think should be removed or added to the training? Please explain

What had been the most helpful thing in this training? Is there anything you would like to see more in this training?

What changes do you suggest would help you get more out of this training? Please explain.

Are there any challenges you foresee may hinder the implementation of this protocol in the clinics.

Final week

When did you feel most engaged by the training? (Describe what was happening)

When did you feel most distanced during the training?

What actions by yourself or your team were most helpful? Puzzling?

What surprised you the most about this training?

What did you like the most about this training?

What changes would make the experience you went through during the training different?

APPENDIX III: QUESTIONNAIRE (primary healthcare worker course)

This questionnaire is part of the evaluation tools used in the E-DATA-K pilot project which you have taken part in. Please answer the questions correctly, provide only one answer per question, any information that you give will only be used for the purpose of this research and not any other. Thank you for participating.

(note- write the code given in your journaling questions)

1)NAME……2)**AGE**……3)**Gender**……

4)CODE……5)**course**…….…….....

6)Marital status single ☐ in a relationship ☐ Married ☐ Divorced or separated ☐

7)Children ……..

8)Training category Lay health worker ☐

Healthcare worker ☐

Practice support/Leader ☐

9) How many years have you been in the health profession? .....

…… …….

10) Where do you currently stay

Student's hostel ☐

At Home ☐

Other specify)……. ☐

11a) Did you complete the E-DATA-K training?

Yes ☐ No ☐

(b)If no explain……

…….

12)what was your first reaction towards computer based learning(CBL)?

Anxious ☐ excited ☐ disappointed ☐

13) How did you access the computer that you used for the training (tick all that apply)

I own one ☐ my family owns o ☐ I borrowed from a frie ☐

The university computer lab ☐ I had no access to a computer ☐

Other (specify)…….

14) How do you describe internet reliability where you took the training

reliable ☐ reliable but slow ☐ not reliable ☐

15) How many hours did you put in the training every day

More than two hours ☐

Less than an hour ☐

I did the training whenever I had time ☐

(16) Cumulatively, how long did you take to complete the entire training

……
…….

(17)How was your final score

Good ☐ average ☐ Poor ☐

18) Was there flexibility in obtaining time off for studies?

yes ☐ No ☐

10) Did you have any challenges using computers and accessing the URLs and the modules

Explain
…….

……
……

Part 11

<u>The SUD-CBL Self-Efficacy Scale for primary health care workers</u>

All answers are given using a 6-point Likert scale using one of the descriptors:

Rate your degree of confidence by recording a number form 0-100 on the scale below

0 10 20 30 40 50 60 70 80 90 100

Strongly disagree disagree	Slightly agree slightly disagree	Agree strongly agree

(1) Strongly disagree, (2) Disagree, (3)Slightly disagree, (4)Slightly agree, (5)Agree, (6)Strongly agree.

1. I lack confidence using CBL. ☐
2. I am unable to do the training on my own and always have to rely on support from family and friends ☐
3. I am able to identify which input device to use to facilitate the training. ☐
4. I lack confidence when manipulating input devices to access the links provided ☐
5. I lack confidence in the way to access the information if the procedures are changed ☐
6. When I look at information repeatedly on the net, I still struggle on how to go about it. ☐
7. I lack confidence when it comes to working out the tasks on computers ☐
8. I lack confidence in participating in the peer to peer activities ☐
9. I am confident in seeking advice from my mentor. ☐
10. My cultural values do not allow me to work with people with SUD ☐
11. My religious values do not allow me to work with people with SUD ☐

Part (iii): Practise rating

Answer all questions

Which of the scale below best describes your ability to practise the skills that you have learnt?

Indicate in the squares provided at the end of the each task 1,2 or 3

0 10 20 30 40 50 60 70 80 90 100

(1)Cannot do at all (2)Moderately can do (3)Highly confident can do

1. Able to describe how to assess patients with SUD as taught in the modules ☐
2. Able to distinguish between mental disorders and SUD disorders when a patient walks into the clin ☐
3. Distinguishing between SUD and other disorders. ☐
4. Able to identify the different stages of drug use. ☐
5. Able to identify different complications in SUD that may require urgent medical ☐ intervention.
6. Recognizing related complications in people with SUD when pathological appearances may be suspicious of Non-Accidental Injury ☐
7. Write a short comment to describe the interventions and benefits of treatment for different SUD ☐
8. Assisting a colleague in appropriate identification of the treatment regimen for people ☐ with SUD ☐

12. Identify , understand and interpret mental health care
13. Effectively communicate with people with SUD and their families ☐
14. Perform effective screening and offer interventions ☐
15. Perform these duties in any clinic ☐

QUESTIONNAIRE (Lay health care workers)

This questionnaire is part of the evaluation tools used in the E-DATAK pilot project which you have taken part in. Please answer the questions correctly, provide only one answer per question, any information that you give will only be used for the purpose of this research and not any other. Thank you for participating.

(note- write the code given in your journaling questions)

1)CODE ……2) **AGE**……3) **Gender**……

4) Year of study……5) **course** ……..……

6) Marital status single☐ Dating ☐ Married☐ separated or divorced☐

7) Children none☐ one-two☐ above three children ☐

8) Training category Lay health worker ☐

Healthcare worker ☐

Practice support/Leader ☐

9) How many years have you been in the health profession?

Less than one year ☐

1-2 years ☐

Above 3 years ☐

10) Where do you currently stay

Student's hostel ☐

At Home ☐

Other specify)…….

11a) Did you complete the E-DAT-K training?

Yes ☐ No ☐

(b)If no give reasons……

…….

12) what was your first reaction towards computer based learning(CBL)?

Anxious ☐ excited ☐ disappointed ☐

13) How did you access the computer that you used for the training

☐ ☐ ☐

I own one my family owns one I borrowed from a friend

The university computer lab ☐ I had no access to a computer ☐

14)How do you describe internet availability where you took the training

Available ☐ Available but unstable ☐ poor ☐

15) How many hours did you put in the training every day

Less than an hour ☐

1-2 hours ☐

I did the training whenever I had time ☐

16)How was your final score

Good ☐ average ☐ Poor ☐

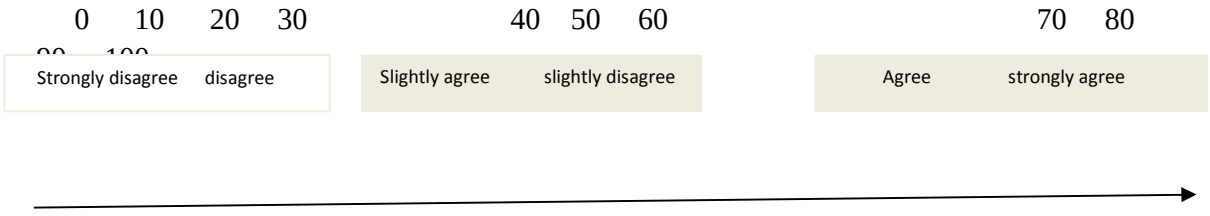
17)Was there flexibility in obtaining time off for studies?

yes ☐ No ☐

Q10)Did you have any difficulties using computers and accessing the URLs and the modu ☐ yes ☐ No

Part 11: The SUD-CBL Self-Efficacy Scale for Lay health care workers

All answers are given using a 6-point Likert scale using one of the descriptors: Rate your degree of confidence by recording a number form 0-100 on the scale below



(1)Strongly disagree, (2) disagree, (3)slightly disagree, (4)slightly agree, (5)agree, (6)strongly agree.

1. I struggle to adapt to computer techniques. ☐

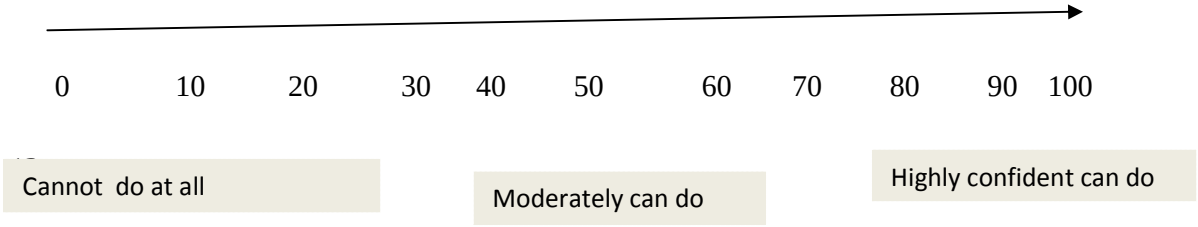
2. I am unable to do my training on my own and always had to rely on support from family and friends ☐
3. I am able to demonstrate which input device is used to locate the required information for the training. ☐
4. I lack confidence when manipulating the input devices to access the links ☐
5. I lack confidence if the procedures to access the information is changed ☐
6. When I look at information repeatedly on the net, I still struggle on how to go about it. ☐
7. I lack confidence when it comes to working out the tasks on computers ☐
8. I lack confidence when participating in the peer to peer activities ☐
9. I am confident in seeking advice from my mentor. ☐
10. My cultural values do not allow me to work with people with SUD ☐
11. My religious values do not allow me to work with people with SUD ☐

Part (iii) Practise rating

Answer all questions

On A scale of 1-100, Write below which one best describes your ability to practice the skills that you have learnt,

Indicate in the squares provided at the end of the each task



(1)Cannot do at all (2) moderately can do (3) highly confident can do

1. Include SUD in primary health care ☐
2. Distinguish between mental disorders and SUD disorders and how they affect people ☐
3. Distinguishing between SUD and other disorders. ☐
4. Understand legislation and policies regarding people with SUD ☐
5. Effectively communicate to people with SUD and their families ☐
6. Identify different complications in SUD that may require urgent medical intervention. ☐
7. Administering the ASSIST ☐
8. Write a short comment to describe the interventions and benefits of treatment for different SUD . ☐
9. Understand and interpret mental health care ☐
10. Observe evidence for self harm ☐
11. Perform these skills in a clinic ☐

APPENDIX IV: Memorandum of Understanding

The University of Nairobi

MEMORANDUM OF UNDERSTANDING

BETWEEN

AFRICA MENTAL HEALTH FOUNDATION

AND

THE UNIVERSITY OF NAIROBI

P.O.BOX 30197-00100

NAIROBI

Memorandum of Understanding

This memorandum of understanding (here in referred to as the MOU) executed this …….. day of ……. 2013 between **Africa Mental Health Foundation** P.O Box 48423 - 00100 Nairobi. Tel: 020 - 27 16 315, mail:info@amhf.or.ke in collaboration with Grand Challenges Canada, NextGenU and University of British Columbia and the University of Nairobi of P.O Box 30197-00100

Where as the University of Nairobi has inter alia as one of its objectives, to provide, directly or in collaboration with other institutions of higher learning facilities for university education and research, and participate in the discovery and transmission of knowledge, the stimulation of intellectual life and cultural development of Kenya.

Where as the African Mental Health Foundation seeks and provides scholarships to university students to perform mental health related research in collaboration with other institutions ,university and non university from across the world and in this case, University of British Columbia, Grand Challenge Canada and NextGenU

Now therefore the two parties have agreed to cooperate as follows

Joint supervision of

……

……..(Reg No ……(Department of

……) M.A research

dissertation entitled

"……

……

……

……

……" Dr.Veronic Clair

(MD,MSC,CCFP,FRCP) and Dr.Victoria Mutiso Msc.,PhD will co-supervise this project with another from the University of Nairobi

- That AMHF shall provide guidance, advice, and field support to the student to achieve in planning the research project and use of appropriate research techniques, literature and other relevant sources.

- AMHF shall Maintain regular contact with the student at appointed times through various means of communication such as mail,conferencing in addition to regular face to face meetings
- AMHF shall Review drafts of the student project at predetermined stages of the study which will be shared with the University
- AMHF shall ensure high academic and ethical standards are maintained throughout the study
- AMHF shall Provide mentorship for the student for career growth and development in scientific research
- The University of Nairobi shall apply the rules and regulations of the university examination council

Operational guidelines for each activity implemented under the MOU may be set down in a specific letter of agreement if found appropriate by the two parties (i.e AMHF and UON)

Mutual obligations

Management of the collaboration

The initial coordinators are Dr.Robinson Ocharo (UON) , Dr Clair Veronic MD, MSC, CCFP, FRC (UBC and NextGenU) and Dr Mutiso MSc., PhD (UON), Clinical Psychologist (AMHF)

Intellectual property rights

All rights created by patents as a result of joint activity shall be shared by UON,AMHF (the implementing institution) on behalf of the University of British Columbia (UBC), Grand challenges Canada (GCC) and NextGenU. Unless all parties agree, no party shall individually and without prior notice and consent of the others, file or obtain in Kenya or elsewhere and anywhere any intellectual property rights over any research materials or information under this memorandum including properties, derivatives or processes including those that may utilize the knowledge of local communities regarding any product or a process even such process has been modified to a more sophisticated level by synthetic or any other method. Such intellectual property shall be in any event jointly owned by both parties. Regarding authors' rights only Co investigators and other scientific staff that have contributed significantly to the study planning, field work, data analysis a write up, will be included as authors

Material Transfer Agreement

Any and all materials transferred between the parties shall be subject to an acceptable material transfer agreement signed by the parties and appended to the agreement of collaboration regarding the individual projects

Duration of the Memorandum

This memorandum of understanding shall come into effect from the date of signing and shall remain in force for three years

Implementation

All laws rules and regulations issued by all parties shall be strictly observed at all times

Dispute Resolution

Any dispute or disagreement relating to implementation of the memorandum shall be resolved by negotiation between the two parties, if however , the parties fail to arrive at an amicable resolution, the dispute shall be referred to an arbitrator agreed upon by the parties

Force Majeure

Either party shall promptly notify to the other party, in writing, of any situation or event arising from circumstances beyond their control which they could not have reasonably foreseen, and which make the performance of all parts of the parties' obligations under this contract impossible. Upon notification of the occurrence of such a situation or event the performance of this contract shall be deemed to be postponed for a period of time equivalent to that caused by the force mature and reasonable period of time as dictated by the circumstances thereafter shall be allowed for remobilisation to continue the performance of the contract.

Review and amendments

The memorandum may be terminated with immediate effect by mutual agreement between the parties or by either party giving the other not less than six (6) months notice in writing

In witness where of, the parties here to have executed this MOU this ….…… day of …… 2013

Signed for and on behalf of the University of Nairobi

……..

THE VICE CHANCELLOR
UNIVERSITY OF NAIROBI

SIGNED

……

Prof David M.Ndetei
MB. Ch.B (Nrb),DPM(Lond)
M.R.C.psych.FRCPsych.,MRC.(U.K)M.D9Nrb),certificate in psychotherapy(London)
Professor of Psychiatry, University of Nairobi
DirectorAfrica Mental Health Foundation