UNIVERSITY OF CAPE COAST

INFLUENCE OF PERSONALITY TRAITS AND DEPRESSION ON EATING HABITS OF PATIENTS WITH BREAST CANCER IN CAPE COAST TEACHING HOSPITAL

ALFRED ESSEL

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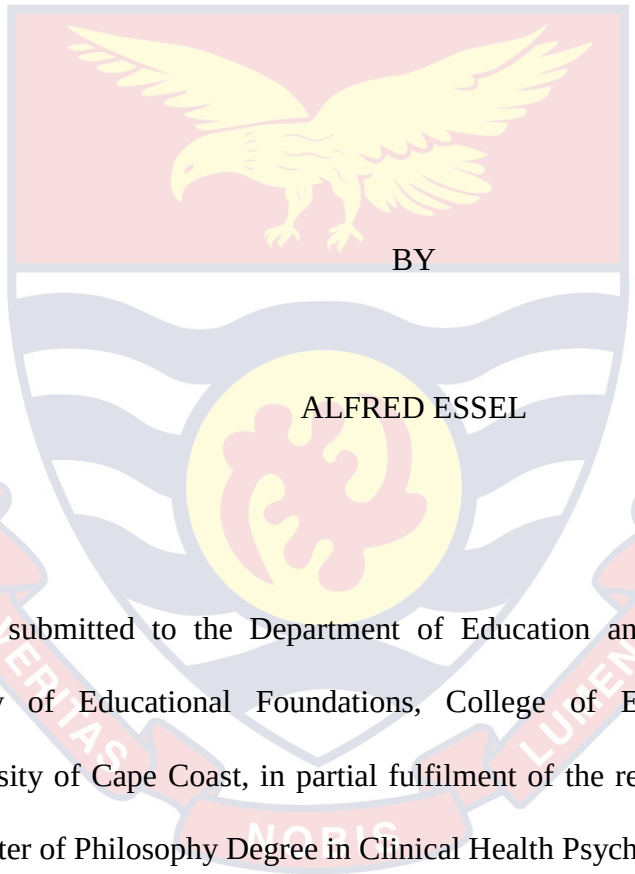

BY

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JULY, 2020

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: ..... Date: .....

Name: …….

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature: ..... Date: .....

Name: ……

Co-Supervisor's Signature: ..... Date: .....

Name: ……..

ABSTRACT

This study examined the influence of personality traits and depression on the eating habits of patients with breast cancer in the Cape Coast Teaching Hospital. A descriptive survey design approach was used for the study. Using convenience sampling technique, patients with breast cancer were contacted with 164 participants responding to a structured questionnaire. Statistical procedures adopted in the data analysis were mainly frequencies and percentages, multiple regression and mediation analysis using the Haye's PROCESS. The study found extraversion, consciousness and neuroticism to be the prevailing personality traits among patients with breast cancer. The results revealed that majority of the patients with breast cancer had bad/poor eating habits with above half of them having severe depression. The results of the regression indicated that the model significantly explained 81.2% of the variance. The results also revealed that depression significantly partially mediated the effect of extraversion, conscientiousness and neuroticism on the eating habits of patients with breast cancer. Based on the findings, it is recommended that there should be a holistic approach to the diagnosis and treatment of patients with breast cancer. Treatment should not be limited to only the physicians who look basically at the biological aspect neglecting the psychological and social aspect. Ghana Health Service and Ministry of Health could consider conscientising the various hospitals to adhere to the WHO's recommendation of the biopsychosocial approach instead of the biomedical approach to the diagnosis and treatment of patients with breast cancer.

KEY WORDS

Biopsychosocial

Breast Cancer

Cape Coast Teaching Hospital

Depression

Eating Habits

Personality Traits

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DEDICATION

To Mr and Mrs Essel and my entire family.

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LIST OF ACRONYMS

16PF	Sixteen Personality Factor Questionnaire
ACS	American Cancer Society
APA	American Psychological Association
ASCO	American Society of Clinical Oncology
BDI-II	Beck Depression Inventory-II
BFI	Big Five Inventory
BPS	Biopsychosocial
CCTH	Cape Coast Teaching Hospital
CES–D	Center for Epidemiologic Studies – Depression
CRI	Cancer Research Institute
DSM	Diagnostic and Statistical Manual
EAT	Eating Among Teens
EHQ	Eating Habits Questionnaire
ER	Estrogen Receptors
FFM	Five Factor Model
GHS	Ghana Health Service
GLOBOCAN	Global Burden of Cancer
GSS	Ghana Statistical Service
HADS	Hospital Anxiety and Depression Scale
HER	Human Epidermal growth Receptor
HIV/AIDS	Human Immunodeficiency Virus Infection/Acquired Immune Deficiency Syndrome
IARC	International Agency for Research on Cancer
IPIP	International Personality Item Pool

KATH	Komfo Anokye Teaching Hospital
KBTH	Korle Bu Teaching Hospital
MoH	Ministry of Health
NCI	National Cancer Institute
NCI	National Cancer Institute
NIMH	Institute of Mental Health
SSA	Sub-Saharan Africa
TB	Tuberculosis
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UCC	University of Cape Coast
UCCSMS	University of Cape Coast School of Medical Science
UICC	Union for International Cancer Control
WHEL	Women's Healthy Eating and Living
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

The National Cancer Institute (NCI) defines cancer as a collection of diseases in which abnormal cells can divide without control and can invade nearby tissues. This suggests that cancers can arise in many parts of the body leading to a range of cancer types including breast cancer. (Roser & Ritchie, 2018). The World Health Organisation (WHO) (2018) estimates that globally, more than 11 million people are diagnosed with cancer every year. Cancer causes 7 million deaths every year which is 12.5% of the 58 million deaths worldwide. This is more than the combined total deaths from Human Immunodeficiency Virus Infection/Acquired Immune Deficiency Syndrome (HIV/AIDS), Tuberculosis and malaria. The Global Burden of Cancer Study (GLOBOCAN) estimates that 16,600 cases of cancer occur annually in Ghana. The most frequent cancers in women are the cervix, breast and liver. Despite the progress against many other causes of deaths, the total number of cancer deaths continues to increase (Roser & Ritchie, 2018). Some factors have been implicated as putting people at risk of developing various forms of cancer as well as its development and treatments. One factor that is prominent in Ghana is lifestyle including the foods consumed (MoH, 2012). This research sought to investigate the role of personality and depression on the eating habits of patients with breast cancer in Cape Coast Teaching Hospital (CCTH).

Background to the Study

In the past century, interest in cancer has increased as infectious diseases have been increasingly controlled as a result of improved sanitation, vaccination and antibiotics (Dasari & Shaik, 2018). Although this interest is relatively recent, cancer is not a new disease. It has been in existence since the era of the Greeks and has afflicted many people throughout the world. The word cancer came from the Greek word *karkinos* to describe carcinoma tumors by Hippocrates (460-370 B.C) who was a physician (Sudhakar, 2010). However, he was not the first or the only person to have discovered the disease as some of the earliest evidence of human bone cancer was found in mummies in ancient Egypt. The world's oldest recorded case of breast cancer hails from ancient Egypt in 1500 (Sudhakar, 2010). However, it was not until the end of the 18th century that cancer began to be studied systematically and intensively. Ever since, pathologists and clinicians have considered cancers in the various organs of the body as being in many respects completely different diseases with distinct morphologies, clinical manifestations and prognoses. But only during the past few decades has it emerged that their causes also differ enormously (Bourgey & Letourneau, 2015). However, there have been some controversies surrounding some of these causes including personality traits and eating habits (Nakaya, Tsubono, Hosokawa, Nishino, Ohkubo, Hozawa, Shibuya, Fukudo, Fukao, TsujiI & Hisamichi, 2003).

Cancer can be defined as a disease in which a group of abnormal cells grow uncontrollably by disregarding the normal rules of cell division. In fact, almost 90% of cancer-related deaths are due to tumour spreading – a process called metastasis. Cells in nearly any part of the body can become cancerous

and can spread to other areas leading to a variety of cancer types (American Cancer Society (ACS), 2016). However, according to the cancer incidence and mortality statistics reported by the American Cancer Society (2018), the most common types of cancer on the list is breast cancer with the next most common cancers being lung cancer and prostate cancer.

Cancer has become more imperative to study globally and in Ghana because the burden of cancer has been on the increase over the past few decades. A 2012 study in The Lancet Oncology predicted that from 2008-2030, cancer incidence will rise 75 percent globally and would double in the least developed countries. In 2012, there were an estimated 14.1 million cancer cases around the world according to the World Cancer Research Fund International and 8.2 million people worldwide were estimated to have died from cancer with more than two thirds of these deaths occurring in low- and middle- income countries including Ghana (WHO, 2017; Dana-Farber Cancer Institute, 2015). This number of deaths increased in 2015 being responsible for 8.8 million deaths making it the second leading cause of death globally. Nearly 1 in every 6 deaths is due to cancer and the number of new cases is expected to rise by about 70% over the next 2 decades (WHO, 2018). Again, it is globally estimated that 42 million people across the world suffered from any of the forms of cancer in 2016 and this number has more than doubled since 1990 when an estimated 19 million people had cancer (Roser & Ritchie, 2018). About 1.7 million new cancer cases are expected to be diagnosed in 2018 in the USA alone and about 609,640 Americans are expected to die of cancer in 2018 which translates to about 1,670 deaths per day (ACS, 2018).

Breast cancer is the most common cancer in women both in the

developed and less developed world. It is estimated that globally over 508, 000 women died in 2011 due to breast cancer (Global Health Estimates, WHO, 2013). In 2012, it was estimated that 1,671,149 new cases of breast cancer were identified and 521,907 cases of deaths due to breast cancer occurred in the world (Ghoncheh, Pournamdar, & Salehiniya, 2016). The WHO therefore describes breast cancer as the most frequent cancer among women, accounting for 25.1% of all cancers, impacting on 2.1 million women each year, and also causes the greatest number of cancer-related deaths among women. In 2018, it was estimated that 627,000 women died from breast cancer – that is approximately 15% of all cancer deaths among women (WHO, 2019).

The final decades of the 20th century saw worldwide increases in the incidence of breast cancer, with the highest rates reported in the Western countries (Chalasani, 2019). Although breast cancer is thought to be a disease of the developed world, almost 50% of breast cancer cases and 58% of deaths occur in less developed countries (WHO, 2015). While breast cancer rates are higher among women in more developed regions, rates are increasing in nearly every region globally. Incidence rates vary greatly worldwide from 19.3 per 100,000 women in Eastern Africa to 89.7 per 100,000 women in Western Europe. In most of the developing regions the incidence rates are below 40 per 100,000 (WHO, 2015). WHO continued to say that though lowest incidence rates are found in most African countries, breast cancer incidence rates are also increasing.

With an increase in global cancer deaths from 5.7 to 8.9 million since 1990 (an increase of 56 percent), and similar trends in the number of absolute deaths across most countries, it may seem reasonable to assume that cancer

death rates are on the rise (Roser & Ritchie, 2018). Africa is not left out. WHO (2013) estimated that by 2025 over 19.3 million women, with the majority from SSA, will be suffering from breast cancer. A five-year survival rate of breast cancer in SSA was less than 40% compared with countries like the US, with survival rates of 86%. It was therefore concluded that breast cancer was a leading cause of cancer death in Africa and had the highest incidence of all cancers. Recent incidence data from registries in Kampala, Harare, the Gambia and Mali-Bamako provide substantial support for the notion of an increasing breast cancer incidence in sub-Saharan Africa. The Gambia and Mali reported the greatest rate of increase for women under age 55 years (Clegg-Lamptey, 2017). It is emerging as a major public health problem in Sub-Saharan Africa (SSA) with approximately 33% of global cancer cases with breast cancer leading (ACS, 2018). The International Agency for Cancer Research (2015) estimated that the incidence of breast cancer ranged from 27 per 100 000 women in central Africa to 39 per 100 000 women in southern Africa in 2012. Clegg-Lamptey (2017) reported that breast cancer is responsible for 28% of all cancers and 20% of all cancer deaths in women in Africa. These incidence and mortality rates suggest that while significant progress has been made in halting the spread of communicable diseases in Africa, rates of non-communicable illnesses, especially cancers, are rising (Stefan, 2015).

In Ghana, the GLOBOCAN project estimates that 16,600 cases of cancer occur annually, yielding an age-standardised rate of 109.5 cases per 100,000 persons MoH, (2012) making it the fourth most common cause of death in the country (Graphic Online, 2016). In an interview with the New

Crusading Guide, Dr Sudha Rao, specialist pediatrician at the Department of Child Health at the Korle- Bu Teaching Hospital indicated that 1,300, children had cancer in 2010. The number continues to increase every year and this annual figure increased to 1,500 (Health News, 2017). In a study conducted by Laryea and his colleagues in 2014, the majority of cancers recorded in Ghana were among females accounting for 69.6% of all cases. The commonest cancers were breast cancer (33.9%), among females and prostate (13.2%), among the males. The Global Burden of Cancer Project (2018) reported 4,645 breast cancer cases which contributed 20.4% of all cancer cases making it the leading cause of cancer death in Ghana. Dedey (2018) concluded that the number of women getting breast cancer in Ghana continues to increase and is expected to increase even the more with changing lifestyles of individuals.

There are about 200 known types of cancer and as with most illnesses cancer is multifactorial, meaning there is no single cause for any one type of cancer (Union for International Cancer Control (UICC, 2013). As UICC says there is not a single cause, on the other hand, Dr. Akwasi Anyanful, a senior lecturer at the University of Cape Coast School of Medical Science (UCCSMS) at the third annual Oguaa breast cancer awareness campaign week reported that the root causes of cancers are not yet known but hereditary and the lifestyle of individuals have been identified by doctors as some of the causes of the disease (Ghana Business News, 2015). However, these factors can be grouped into internal and external or environmental factors (UICC, 2013; Roser & Ritchie, 2018). The internal factors include cancer causing substances (carcinogens), genetics, immune system whereas the external factors include certain lifestyles and environmental factors such as overweight

or obesity, lack of physical activity, alcohol, tobacco, work place hazards and infections (UICC, 2013). Among the 7 million global deaths from cancer, an estimated 2·43 million (35%) were attributable to the joint effect of risk behavioural factors (overweight and obesity, low fruit and vegetable intake, physical inactivity, smoking and alcohol use) and in Ghana most of the cancer risk factors are lifestyle dependent (MoH, 2012). Majority of the studies on the causes and risk factors as well as the treatment of cancer have focused on genetic factors and lifestyle and behaviour whilst there is a widespread perception that psychological factors, such as certain personality traits, depression, and major life events, cause or aggravate cancer (Hansen, Floderus, Frederiksen, & Johansen, 2005).

The American Psychiatric Association (2013) describes the concept of personality as enduring patterns of perceiving, relating to, and thinking about the environment and oneself. Thus psychologically, it is the set of enduring behavioural and mental traits that distinguish individual humans. Many approaches have evolved on the study of personality, including biological, cognitive, learning and trait based theories, as well as psychodynamic, and humanistic approaches divided among theorists, such as Sigmund Freud, Alfred Adler, Gordon Allport, Hans Eysenck, Abraham Maslow, and Carl Rogers. Personality traits are prominent aspects of personality that are exhibited in a wide range of important social and personal contexts. This means that our personality could also influence or dictate how we interact with everything around us including what, when, where and how we eat which is our eating or habit (Allom & Mullan, 2012; Brummett, Siegler, Day, Costa, 2010; Mõttus, Realo, Allik, Deary, Esko, & Metspalu, 2012; Keller & Siegrist,

2015; Lahti, Blomstedt, Lahti, Tiainen, & Ma, 2013; Mcneill, Jia, Craig, Starr, & Deary, 2013). Personality traits have also been implicated to have influence on depression levels (Siafaka et al., 2008; Hakulinen, et al, 2015; Deimling et al., 2017).

Depression is a state of low mood and aversion to activity that can affect a person's thoughts, behaviour, tendencies, feelings, and sense of well-being (Serna & Moisés, 2018). A depressed mood is a normal temporary reaction to life events such as loss of a loved one. It is also a symptom of some physical diseases and a side effect of some drugs and medical treatments. Depressed mood is also a symptom of some mood disorders such as major depressive disorder or dysthymia (DSM V). Personality has been known to be implicated in depression. For example, high scores on the personality domain neuroticism make the development of depressive symptoms as well as all kinds of depression diagnoses more likely, (Jeronimus Riese, Sanderman & Ormel, 2016). Depression is reported to be associated with low extraversion (Kotov, Gamez, Schmidt, & Watson, 2010). Though one's personality type might make him or her prone to depression, a relationship between depression and the development of breast cancer has not been convincingly shown in the research conducted over the past three decades (Pössel, Adams, & Valentine, 2012). Again, though our understanding of psychological factors and vulnerability to cancer is hampered by limitations of previous research (Pudrovska, 2010), there is still a longstanding interest of depression and other psychological factors on the development of cancer (Pössel,et al., 2012). The direct causal relationship between depression and cancer might not be well established, its influence after diagnosis of cancer cannot be toyed with as it

aggravate its development and hampers treatment (Pudrovska, 2010). However, Pudrovska (2010) identified that males with cancer experience more psychological distress like depression more than their female counterpart with cancer. Depression effects could be temporary but rapid mood changes, short term hopelessness, loss of interest in activities that used to be a part of one's life, sleep disruption, withdrawal from previous social life, appetite changes, and difficulty concentrating (DSM V). This implies that depression could have effect on one's food intake (eating habits) which is an essential aspect of the lives of patients with cancer.

The food we eat, how and why we eat could go a long way to affect our health status including being overweight or obese which increases the risk of developing several cancers (Grimmett, Bridgewater, Steptoe, & Wardle, 2018; Mcneill et al., 2013; MoH, 2012). For example according to WHO, dietary factors that convincingly increase risk are overweight and obesity; excess alcohol consumption; some forms of salting and fermenting fish; very hot (thermally) salty drinks and food; and aflatoxins (fungal contaminants sometimes found on foods such as grains, peanuts, tree nuts, and cottonseed meal). The consumption of red and processed meat increases while intake of fish decreases colorectal cancer risk (MoH, 2012).

Several evidences prove that one's personality could influence his or her eating habits (Allom & Mullan, 2012; Brummett et al., 2010; Mõttus, et al., 2012; Keller & Siegrist, 2015; Lahti et al., 2013; Mcneill et al., 2013). Again, one's eating habits could put him/her at risk of developing a cancer or aggravate when it has already developed (Grimmett et al., 2018; Mcneill et al., 2013; MoH, 2012). Therefore, it could be inferred that directly or indirectly,

personality traits could put one at risk of developing a cancer. Also, personality trait is very essential to study as it has been implicated in depression which also affects one's eating habit. Thus, this research seeks to look into the role of personality traits and depression in the eating habits of patients with breast cancer.

Statement of the Problem

In Ghana, cancer has become one of the leading causes of morbidity and mortality with breast and prostate cancer prevailing as the commonest ones among both sexes (Health News, 2015, 2017; Obu, 2014; Ghana Business News, 2015; MoH, 2012; Adoma & Yendaw, 2014; Abdullah & Arkoh, 2019). The rising burden of cancer across the world and Ghana specifically has necessitated that much attention be given to it. As part of the effort to curb this cancer menace, several researches have been conducted to find out the possible causes and risk factors that might play a role in the development of cancer especially breast which is the leading cancer deaths (Grimmett et al., 2018; Prevost, & Grach, 2012; Buck, Vrieling, Flesch-Janys, and Chang-Claude, 2011; Asobayire and Barley, 2015). In Ghana, Cancer registry, particularly population-based ones, remain rare and only some few researches centred on some aspects have been conducted (Laryea et al., 2014).

Some previous researches were focused on finding out if one's diet or nutrition could play a role or put one at risk of the development of cancer in general (Grimmett, et al., 2018; Mcneill, et al., 2013; MoH, 2012 Buck, et al., 2011). Majority of these research findings reveal that there are some associations between the food we eat and the risk of developing cancer (Grimmett et al., 2018; Prevost, & Grach, 2012). However, these researches

focused on the kind of food that was eaten. The entire eating habits were not considered. Evidences also show that what food is eaten at what time and how it is eaten could be influenced by one's personality trait and depression (Brummett et al., 2010; Mõttus, et al., 2012; Goldberg & Strycker, 2002; Keller & Siegrist, 2015; Lahti et al., 2013; Mcneill et al., 2013). However, the combined effect of personality traits and depression on eating habits is yet to be established.

Personality has long been hypothesised to play a causal role in the development and progression of cancer. However, this causal role of personality is still inconsistent, controversial and unclear (Bleiker, Hendriks, Otten, Verbeek, & Ploeg, 2018; Hansen et al., 2005; Jokela, Batty, Hintsa, Elovainio, Hakulinen, & Kivimäki, 2014; Nakaya et al., 2003; Nakaya, Bidstrup, Saito-Nakaya, Frederiksen, Koskenvuo, Pukkala, & Johansen, 2010). For instance Bleiker, et al. (2018) in their studies reported that none of the personality factors were statistically significantly associated with an increased risk of breast cancer. Nakaya et al. (2010) also found no significant association between personality traits and the hazard ratio for cancers at all sites, and they do not support the hypothesis that extraversion and neuroticism are direct risk factors for cancer or survival after cancer. Again, Hansen et al. (2005) found no significant association between neuroticism, extroversion, their joint effects and the risk for any cancer group. Thus, their results also did not support the hypothesis that certain personality traits are associated with cancer risk. On the contrary, Jokela et al. (2014) supported the hypothesis that certain personality traits are associated with cancer risk. It has therefore given more room for further ongoing studies to help establish whether or not there is

any relationship.

Some studies have been done in the area of cancer, most especially, breast cancer in Ghana (Asobayire & Barley, 2015; Clegg-Lamptey, Dakubo, & Attobra, 2010; Clegg-lamptey & Hodasi, 2010; Mena et al., 2014; O'Brien et al., 2012, 2013; Obiri, Dodoo, Essumang, & Armah, 2010; Obrist, 2014; Opoku, Benwell, & Yarney, 2012; Williams & Amoateng, 2012; Arthur Yeboah, Sedudzi, & Boateng, 2005; Laryea et al., 2014; Naku-Ghartey, Anyanful, Eliason, Mohammed Adamu & Debrah, 2016). However, these studies seem to have focused on incidences, screening and awareness. Hence, there are other areas worth considering such as psychological factors like personality and depression that could be implicated in the lives of cancer patients including their eating habits. Again, most of these studies conducted in Ghana also concentrated on Korle Bu Teaching Hospital (KBTH), Accra and Komfo Anokye Teaching Hospital (KATH) (Asobayire & Barley, 2015; Clegg-Lamptey et al., 2010; Clegg-lamptey & Hodasi, 2010; Mena et al., 2014; O'Brien et al., 2012, 2013; Obiri et al., 2010; Obrist et al., 2014; Opoku et al., 2012; Williams & Amoateng, 2012; Naku-Ghartey et al, 2016). Only one study on breast cancer was conducted by Ofori (2015) at CCTH. Although Naku-Ghartey, et al (2016) purported that characteristics in Central Regions are similar to those of Ashanti region, some differences in cultural context like their food types may make Cape Coast worthy of researching. With incidence rates relatively high in Ghana where research seems to be silent on breast cancer in Cape Coast, it is important that attention be given to breast cancer in Cape Coast where Adoma and Yendaw (2014) reported breast cancer as one of the leading cause of death at Cape Coast Teaching Hospital.

A study conducted in CCTH by Adoma and Yendaw (2014) on the prevalence of chronic diseases revealed cancer as one of the leading burden diseases that were reported at the hospital. In 2004, a total of 16 males and 19 females reported cancer as compared to 53 males and 91 females in 2009. Out of this number, breast cancer tagged 32.1% in 2004 and 33.6% in 2009. This indicated that breast cancer prevalence was steadily on the increase as compared to other cancers and chronic diseases (Adoma & Yendaw, 2014). Dr. Kwesi Anyanful, a member of Breast Screening Services in Cape Coast disclosed that out of the number of women screened, 15 were found to have lumps in their breast Health News (2017). Dr Anyanful said seven of the cases had reached stage three while the rest were stages one and two with the youngest being 25 and the oldest 72 years which indicated that people with lower ages were now developing lumps in their breast. Recently, Abdullah and Arkoh (2019) reported that according to Dr. Martin Morna, Head of Department at the Surgical Sub-BMC at CCTH, on the average, the hospital records 50 cases of new breast cancer annually, a situation he described as worrying considering the population of Cape Coast and its environs. He added that 37 new cases of breast cancer had been recorded between just January and August.

Thus, it has become necessary that studies be done in this area to identify the possible relationship between personality traits and depression and their influence on the eating habits of patients with breast cancer. This study therefore sought to investigate the influence of personality traits and depression on the eating habits of patients with breast cancer in CCTH as previous works was concentrated in Accra and Kumasi.

Purpose of the Study

The main purpose of the study was to examine the influence of personality traits and depression on the eating habits of patients with breast cancer in CCTH.

Research Objectives

The specific objectives of the study were to:

1. Identify the personality traits of patients with breast cancer in CCTH.
2. Identify the eating habits of patients with breast cancer in CCTH.
3. Determine the depression levels of patients with breast cancer in CCTH.
4. Explore the relationships among personality traits, depression and eating habits of breast cancer patients in CCTH.
5. Examine how depression levels mediate personality traits to affect the eating habits of breast cancer patients in CCTH.

Research Questions

The study sought to answer the following research questions:

1. What are the personality traits of patients with breast cancer?
2. What is the eating habit of patients with breast cancer?
3. What are the depression levels of patients with breast cancer?

Research Hypotheses

The following hypotheses were tested

1. H_0: There is no relationship between personality traits, depression and eating habits of breast cancer patients in CCTH.

   H_1: There are relationships among personality traits, depression and eating habits of breast patients in CCTH.

2. H_0: Depression levels will not mediate personality traits to affect the eating habits of breast cancer patients in CCTH.

   H_1: Depression levels will mediate personality traits to affect the eating habits of breast cancer patients in CCTH.

Significance of the Study

The findings of the study will assist to provide insight to the need for consideration of the personality traits and depression levels and how they are likely to influence the eating habits of patients with breast cancer. Relevant information from this study would be shared with the hospital and participants (patients with breast cancer) to educate them on the importance of knowing their personality traits and depression levels as both go a long way to influence their eating habits and treatment. This will help the caretakers including doctors and nurses to consider this in their treatment plans and regimen.

The information generated, will help in policy formulation by the Ministry of Health (MOH) to promote the consideration of the psychological aspect of the diagnosis and treatment of chronic diseases including breast cancer. Again, this will help in the promotion of the biopsychosocial (spirituality) model of the diagnosis and treatment of diseases as advocated by the WHO rather than focusing solely on the biomedical approach of diagnosis and treatment. This will help both physicians and patients with cancer to view diseases holistically and thus, use holistic approach to treatment involving all stakeholders including medical doctors, nurses, dieticians and nutritionists, counselors and clinical health psychologists and families who provide social support.

Finally, this study will contribute to knowledge with regards to factors

that contribute to the increasing rate of breast cancer mortality in CCTH for which very little information is available thus adding up to knowledge. This may provide further information on the promotion of proper eating habits as they help in the treatment of cancer rather than focusing solely on medications as improper eating habits could cause cancer and aggravate its development.

Delimitation

Data for the study was drawn from CCTH specifically the breast cancer unit which is a referral unit in the Hospital. Also, participants were drawn from patients who have been diagnosed with having breast cancer. Breast cancer was selected because it is the leading cause of cancer mortality globally and in Ghana specifically (MOH, 2012; Dana-Farber Cancer Institute, 2015; Graphic Online, 2016; WHO, 2017; Roser & Ritchie, 2018). Again, the variables of interest were delimited to personality traits, depression and eating habits.

Limitations of the Study

The study covered women with breast cancer visiting CCTH and therefore results may not be generalisable to the breast cancer population in the whole country. Also, survey method captured one time study data which may not represent phenomena over a long period of time. Additionally, participants might have given information they thought the researcher wanted rather than real and actual information which might have affected the authenticity of the results. Finally, majority of the participants had low or no formal education and thus the questionnaire had to be interpreted in the local language to them. This might have also affected the response and results of the study.

Definition of Terms

The following terms are the definitions used in the work.

Cancer: a disease in which a group of abnormal cells grow uncontrollably by disregarding the normal rules of cell division (Topcul, & Cetin, 2014).

Breast cancer: is a malignant tumor that starts in the cells of the breast and the ability of these tumor cells to grow and spread uncontrollably throughout the body (Breastcancer.org, 2018).

Personality traits: is the set of enduring behavioural and mental traits that distinguish individual humans (APA, 2013).

Eating Habits: is what, when, and where people eat.

Depression: extreme worries about having the disease of cancer.

Cancer mortality: deaths as a result of cancer.

Organisation of the Study

This study is divided into five chapters. Chapter one presents an introduction to the entire study including the background to the study, statement of problem, purpose, objectives, research questions and hypotheses, significance, delimitations and limitations of the study. Chapter two presents review of related literature taking into consideration the theoretical and conceptual as well as the empirical base of the study. Chapter three presents the methodology of the study which includes the research design, study area, the population of the study, sampling procedure, data collection instruments, data collection procedures and data processing and analysis. Chapter four presents the results and the discussion. Finally, chapter five presents the summary, conclusions and recommendations as well as suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

The previous chapter captured the background of the study, statement of the problem, purpose of the study, research questions, research hypotheses, and significance of the study, delimitations and limitations of the study. This chapter presents the theoretical underpinning of the study, the proposed conceptual model together with review of literature related to the study. The literature review is structured under various headings to facilitate reading.

Theoretical Framework

The theoretical framework of a study is the structure that can hold or support a theory of a particular research study (Swanson, 2013). The theoretical framework introduces and describes the theory that explains why the research problem under study exists. This study utilised the Big Five Personality Theory, Beck's Theory of Psychopathology explaining depression and the Theory of Planned Behaviour to explain the theoretical relationships between the variables in the study. These theories are considered appropriate for this study because of their theoretical relatedness to the variables under consideration in the study. These theories have been expatiated below.

The big five personality theory

Personality has been conceptualised from a variety of theoretical perspectives, and at various levels of abstraction or breadth. Each of these levels has made unique contributions to our understanding of individual differences in behaviour and experience. However, the number of personality

traits, and scales designed to measure them, escalated without an end in sight (Goldberg, 1993). Personality is an easy concept to grasp for most people. It is what makes you "you". It encompasses all the traits and characteristics that set you apart from everyone else and how you will react to different situations at different times. According to Revelle (2013), personality is the coherent pattern of affect, cognition, and desires (goals) as they lead to behaviour. The American Psychological Association (APA) (2017) defines personality as the individual differences in characteristic patterns of thinking, feeling, and behaving. A personality trait is a characteristic pattern of thinking, feeling, or behaving that tends to be consistent over time and across relevant situations (Soto, 2018). Whichever way personality is described, it's clear that personality has a big impact on life. In fact, personality has been found to correlate strongly with life satisfaction (Boyce, Wood, & Powdthavee, 2013). A considerable body of research has examined personality stability and change across the life span, as well as the influence of personality traits on important life outcomes. With such a large potential impact on life, it's important to have a reliable way to conceptualise and measure personality.

The Big Five, or the five-factor model of personality is known to be the most prevalent personality framework. Not only does this theory of personality apply in multiple countries and cultures around the world (Schmitt et al., 2007), there is a valid and reliable assessment scale for measuring the five factors. However, to understand how we got to the Big Five, we have to go back to the beginning of personality research.

Multiple Personality Traits- the road to the" big five"

Early research into personality might have followed the *trait theory* - the idea that a person's temperament and behaviour can be understood in terms of individual traits (for example, *self-confidence*, *friendliness* or *melancholy*). Trait theory takes a *lexical approach/hypothesis* to personality: personality characteristics that are most important in people's lives will eventually become a part of their language and, secondly, that more important personality characteristics are more likely to be encoded into language as a single word which assumes that traits can be described using single adjectives or descriptive phrases. If enough people regularly exhibit a form of behaviour and no term exists in a given language to describe it, then according to the lexical hypothesis, a term will be created so that the trait may be considered and discussed with others. At least four sets of researchers have worked independently within lexical hypothesis in personality theory for decades on this problem and have identified generally the same five factors: Cattell (1949) at the University of Illinois was first, followed by Tupes and Christal (1961), Costa and McCrae (1987) and Goldberg (1993) at the Oregon Research Institute.

In 1936, psychologists Gordon Allport and Henry Odbert extracted approximately 4,500 terms from Webster's *New International Dictionary* which described types of behaviour or personality traits. Many of these terms could be grouped under superordinate factors, and so later work focused on the production of more concise trait inventories, which would be more practical in the field of personality research (Allport & Odbert, 1936).

In the 1940s, psychologist Hans Eysenck built off Jung's dichotomy of introversion versus extroversion. He hypothesized that there were only two

defining personality traits: extroversion and neuroticism. Individuals could be high or low on each of these traits, leading to four key types of personalities. Eysenck (1967) also connected personality to the physical body in a much more extensive way than most previous personality researchers and philosophers. He posited that differences in the limbic system resulted in differences in hormones and hormonal activation. Those who were already highly stimulated (introverts) would naturally seek out less stimulation while those on the lower end (extroverts) would search for greater stimulation. This could be used to explain why introverts are more prone to depression. Eysenck's thoroughness in connecting the body to the mind, or personality, pushed the field towards a more scientific exploration of personality based on objective evidence rather than solely philosophical introspection (Ackerman, 2019). In the same 1940s, Raymond Cattell developed a 16-item inventory of personality traits and created the Sixteen Personality Factor Questionnaire (16PF) instrument to measure these traits. It was followed by Donald W. Fiske, a University of Chicago psychologist whose research taught scholars how to measure a person's abilities and personality (Fiske, 1949). Tupes and Christal (1961) advanced the initial model, based on work done at the U.S. Air Force Personnel Laboratory in 1961 but failed to reach an academic audience until the 1980s. Costa and McCrae later in 1987 developed a model which describes personality in terms of five broad factors which they christened ''the five-factor model'' and confirmed the validity of this model. J.M. Digman proposed his five factor model of personality in 1990 (Digman, 1990) and Goldberg extended it to the highest level of organizations in 1993 (Goldberg, 1993). Goldberg referred to these as the 'Big Five' factors of personality, and

developed the International Personality Item Pool (IPIP) - an inventory of descriptive statements relating to each trait. Within each factor, a set of individual traits relate to more specific aspects of personality.

Goldberg (1993) may be the most prominent researcher in the field of personality psychology as his groundbreaking work reduced Raymond Cattell's 16 "fundamental factors" of personality into five primary factors, similar to the five factors found by fellow psychology researchers in the 1960s. The five factors Goldberg identified as primary factors of personality are: Extroversion, Agreeableness, Conscientiousness, Neuroticism and Openness to experience. The Big Five brings us up to about the current era in personality research.

These sets of researchers in the above history used somewhat different methods in finding the five traits, and thus each set of five factors has somewhat different names and definitions. However, all have been found to be highly inter-correlated and factor-analytically aligned (Grucza & Goldberg, 2007). These five factors do not provide completely exhaustive explanations of personality, but they are known as the "Big Five" because they encompass a large portion of personality-related terms. The five factors are not necessarily traits in and of themselves, but factors in which many related traits and characteristics fit (Ackerman, 2019). By implication, this means these five personalities are not distinct traits but a broad term under which other related characteristics are found. For instance when one is termed to be an extrovert, it means that there are certain related specific characteristics that the person exhibits such as being outgoing, being active and energetic.

OCEAN, the Five Factors Explained

Openness to Experience

The openness to the experience aspect of personality is defined by a willingness to try new activities. It is the depth and complexity of an individual's mental life and experiences. Openness to experience concerns an individual's willingness to try new things, to be vulnerable, and the ability to think outside the box (Ackerman, 2019). Compared to closed people, they tend to be, more creative and more aware of their emotions. They are also more likely to hold unconventional beliefs (Achiaw, 2019). People with higher levels of openness are amenable to unconventional ideas and beliefs, including those which challenge their existing assumptions (Lebowitz, 2016). In relation to this study, such people may be able to alter some behaviours and habits that they might be having including their eating habits. Unlike people with low levels of openness who are closed to experience and are wary of uncertainty and the unknown, they are more suspicious of beliefs and ideas which challenge their status quo. They probably prefer routine over variety, stick to what they know (Lebowitz, 2016). Thus, such people may find it very difficult to change some eating habits should they be asked to.

Conscientiousness

Conscientiousness is a trait that can be described as the tendency to control, regulate, and direct impulses, display self-discipline, act dutifully, and in socially acceptable ways and behaviours that facilitate goal-directed behaviour (Achiaw, 2019). Conscientious people excel in their ability to delay gratification, work within the rules, and plan and organize effectively (Ackerman, 2019). High scores on conscientiousness indicate a preference for

planned rather than spontaneous behaviour (Aprea, Wuttke, Breuer, Koh, Davies, Greimel-Fuhrmann, & Lopus, 2016). This means that such people are more likely to plan their lives well and thus may have really good eating habits. According to the Big Five personality traits, conscientiousness also predicts positive health outcomes. Jokela, Hintsanen, Hakulinen, Batty, Nabi, Singh-Manoux, and Kivimäki, (2013) found that in already obese individuals, higher conscientiousness is associated with a higher likelihood of becoming non-obese over a 5-year period. This means higher conscientiousness is associated with lower obesity risk. This is likely so because of the ability of the conscientiousness person to plan well about his/her eating habits. According to this theory, conscientiousness positively correlates with adjustment to life's challenges and the maturity of one's defensive responses, indicating that those high in conscientiousness are often well-prepared to tackle any obstacles like diseases such as breast and prostate cancer that may come their way.

Extroversion

This factor has two familiar ends of the spectrum: extroversion and introversion. It concerns where an individual draws their energy and how they interact with others. This trait is marked by pronounced engagement with the external world. In general, extroverts draw energy or "recharge" from interacting with others, while introverts get tired from interacting with others and replenish their energy from solitude. Extroverts enjoy interacting with people, and are often perceived as full of energy. They tend to be enthusiastic, action-oriented individuals (Aprea et al, 2016). Introverts on the other hand, have lower social engagement and energy levels than extraverts. They tend to

seem quiet, low-key, deliberate, and less involved in the social world. Their lack of social involvement and quietness might seem to put them at risk of depression and other emotional instabilities, according to the theory, it should not be interpreted as shyness or depression; instead they are more independent of their social world than extroverts (Rothmann, & Coetzer, 2003). Introverts need less stimulation and more time alone than extroverts. This does not mean that they are unfriendly or antisocial; rather, they are reserved in social situations (Rothmann & Coetzer, 2003). People are generally a combination of extroversion and introversion, as personality psychologist Eysenck (1967) suggests that these traits are somehow linked to our central nervous system. He said differences in the limbic system led to differences in hormones and hormonal activation. Naturally, those who were already highly stimulated (introverts) would seek less stimulation while those at the lower end (extroverts) would seek greater stimulation.

Agreeableness

The agreeableness trait reflects individual differences in general concern for social harmony. It is a construct that rests on how people generally interact with others. While extroversion concerns sources of energy and the pursuit of interactions with others, agreeableness concerns your orientation to others. They are generally considerate, kind, generous, trusting and trustworthy, helpful, and willing to compromise their interests with others (Rothmann & Coetzer, 2003). Agreeable people also have an optimistic view of human nature. Disagreeable individuals place self-interest above getting along with others. They are usually unconcerned about the well-being of others, and are less likely to help others. Often their skepticism about the

intentions of others makes them seem cynical, unfriendly and uncooperative (Bartneck, Van Der Hoek, Mubin, & Al Mahmud, 2007). By application, agreeable people could take advantage of their ability to interact with others and develop a strong and good social support system that could help them in their treatment process. On the contrary, disagreeable people are likely not to cooperate with doctors and nurses and their treatment regimen.

Neuroticism

Neuroticism is the tendency to experience negative emotions, such as anger, anxiety, or depression (Jeronimus, Riese, Sanderman & Ormel, 2014). Neuroticism is the one Big Five factor in which a high score indicates more negative traits. Neuroticism is not a factor of meanness or incompetence, but one of confidence and being comfortable in one's own skin (Ackerman, 2019). It encompasses one's emotional stability and general temper. It is sometimes called emotional stability and emotional instability (Aprea et al, 2016). According to Eysenck's (1967) theory of personality, neuroticism is interlinked with low tolerance for stress or aversive stimuli. Those high in neuroticism will generally give in to anxiety, sadness, worry, and low self-esteem. They may be temperamental or easily angered, and they tend to be self-conscious and unsure of themselves (Lebowitz, 2016). Individuals who score on the low end of neuroticism are more likely to feel confident, sure of themselves, and adventurous. They may also be brave and unencumbered by worry or self-doubt. Also, high neuroticism is related to added difficulties in life, including addiction, and unhealthy adjustment to life's changes. In relation to this study, people with high neuroticism may be prone to depression as well as other diseases and may also have bad eating habits due

to their addictive behaviour. Khan, Jacobson, Gardner, Prescott and Kendler (2005) found that having high scores of neuroticism significantly increases one's risk for developing a common mental disorder such as depression, anxiety and substance use disorders.

On the whole, the Big Five can help you to learn more about your unique personality and help you decide where to focus your energy and attention. The first step in effectively leveraging your strengths is to learn what your strengths are. Knowing your strengths will help you to effectively capitalize on to your advantage most especially against illnesses. Additionally, knowing your weakness will help you to find ways and means to reduce its effect. One common criticism is that the Big Five does not explain all of human personality (Paunonen, Haddock, Forsterling, & Keinonen, 2003), Though some psychologists have criticised this model precisely because they feel it neglects other domains of personality (Paunonen, et al., 2003), it still remains one of the most widely used personality inventories (Ackerman, 2019).

The Theory of Depression

APA (2013) defines depression as a common and serious medical illness that negatively affects how you feel, the way you think and how you act. Depression is mood disorder characterised by prolonged periods of deep sadness, despair, feeling of worthlessness and hopelessness, low self-esteem, social withdrawal, and cognitive and physical sluggishness (Kassin, 2006; Krause & Corts, 2012). At some point in time, anyone could feel some form of sadness which is considered to be normal. Sadness may also come about as a result of loss of loved ones, family member or loss of some valuable items.

Being diagnosed with some form of chronic illnesses such as breast or prostate cancer could also make one feel sad. Some individuals may even feel sad without any particular reasons of which some people suggest might be as a result of the individual's personality make up or traits. Life events, such as bereavement, produce mood changes that can usually be distinguished from the features of depression. Sadness, feeling down, having loss of interest or pleasure in daily activities are familiar symptoms. But, if these symptoms persist and affect life substantially, then depression might have occurred. It is a persistent problem, not a passing one, lasting on average 6 to 8 months (National Institute of Mental Health (NIMH), 2018). However, it is clear from the definitions that depression involves more than just a feeling sadness for a long period of time- how one thinks and act becomes depressed as well. This means that individuals have difficulty concentrating and making decisions while memories shift towards unpleasant and unhappy events. Physiologically, affected individuals may be lethargic and sleepy, yet experience insomnia. They may experience a change in appetite and onset of digestive problems such as constipation. People who are feeling so sad do not necessarily experience all of these cognitive and biological symptoms, so depression is clearly a distinct psychological disorder (Krause & Corts, 2012). NIMH (2018) has given some of the signs and symptoms of depression to include:

1. reduced interest or pleasure in activities previously enjoyed
2. loss of sexual desire
3. unintentional weight loss (without dieting) or low appetite
4. insomnia (difficulty sleeping) or hypersomnia (excessive sleeping)
5. psychomotor agitation, for example, restlessness, pacing up and down

6. delayed psychomotor skills, for example, slowed movement and speech
7. fatigue or loss of energy
8. feelings of worthlessness or guilt
9. impaired ability to think, concentrate, or make decisions
10. recurrent thoughts of death or suicide, or attempt at suicide

The causes of depression are not fully understood but are likely to be a complex combination of genetic, biological, environmental, and psychosocial factors (NIMH, 2018). Different authors and researchers have proposed various theories to try and explain depression ranging from the behaviourists, the psychodynamic, the cognitivists and the humanists approaches. For the purposes of this study, Beck's cognitive approach was used.

Beck's Cognitive Theory of Depression

The cognitive theory of depression was propounded by Aaron Temkin Beck (1967). He is one of the major cognitive theorists. He studied people suffering from depression and found that they appraised events in a negative way. Beck contributed to the growth of cognitive psychology in many ways. His theory opened the door for many new ideas in the world of psychology. From his original theory, many other theories have been created by other professionals in the field. He is thus recognized as the father of Cognitive Therapy (Kirby, 2018). During his work as a psychiatrist, Beck began to see that his depressed patients tended to have negative thoughts. This is what set him on the path to discovering how a person's thoughts impact their behaviour.

Beck describes depressive disorders as being characterized by people's dysfunctional negative views of themselves, their life experience (and

the world in general), and their future. This means that negative thoughts, generated by dysfunctional beliefs are typically the primary cause of depressive symptoms. Beck identified three mechanisms that he thought were responsible for depression:

1. The cognitive triad (of negative automatic thinking)
2. Negative self schemas
3. Errors in Logic (that is faulty information processing)

The cognitive triad

The cognitive triad, also known as the negative triad was used by Beck to explain depression or depressive disorders. The cognitive triad is an irrational and pessimistic view of the three key elements of a person's belief system present in depression (Gross, 2015). The triad involves negative thoughts about:

1. The self (that is, I am useless and worthless)
2. The world/environment (that is, people will shun me because of this cancer)
3. The future (that is, my future is hopeless).

These thoughts tend to be automatic in depressed people as they occur spontaneously (McLeod, 2015). This means that they do not choose to think them, but they are also not choosing to challenge the thought to see if it was true (Kirby, 2018). They think about whatever thought comes into their head. Depressed individuals tend to view themselves as helpless, worthless, and inadequate. They interpret events in the world in an unrealistically negative and defeatist way, and they see the world as posing obstacles that cannot be handled. Finally, they see the future as totally hopeless because their

worthlessness will prevent their situation improving. Boury, Treadwell and Kumar, (2001) reported in their study that individuals who are depressed misinterpret facts and experiences in a negative fashion, limiting their focus to the negative aspects of situations, thus feeling hopeless about the future. A direct relationship is postulated between negative thoughts and severity of depressive symptoms. Beck believed that people that are more likely to struggle with depression had different thoughts than those that did not. Therefore, he concluded that if you change the thoughts, you change the behaviour as well.

Bringing this triad in application to our context, an instance could be when an individual is diagnosed with breast cancer. This is an event that becomes very crucial in an individual's life. According to Beck, it might not be the cancer that will directly cause the depression, but how the individual perceives the situation and thinks about having cancer. The individual will now identify herself as worthless and useless and someone who cannot do anything better with her life again. She now begins to think about why only she could get the cancer. She tells herself that this world is unfair. She begins to think that her friends will reject her. Such a person will now have no hope for the future because she thinks there is no cure and will eventually die. She might even consider taking her life to end it and save costs. They may have a very difficult time viewing themselves as people who could ever succeed, be accepted, or feel good about themselves and this may lead to withdrawal and isolation, which further worsen the mood and aggravate and hinder the treatment process.

Negative self-schemas and faulty information processing

Beck also believed that depression prone individuals develop a negative self-schema. They possess a set of beliefs and expectations about themselves that are essentially negative and pessimistic (McLeod, 2015). Beck (1967) claimed that negative schemas may be acquired in childhood as a result of a traumatic event. Experiences that might contribute to negative schemas include death of a parent or sibling; being diagnosed with a chronic or terminal illness (cancer, diabetes, and hypertension), parental rejection, criticism, overprotection, neglect or abuse and bullying at school or exclusion from peer group. Beck suggests that people with negative self-schemata are liable to interpret information presented to them in a negative manner, leading to errors in logic (that is, faulty information processing). The pessimistic explanatory style, which describes the way in which depressed or neurotic people react negatively to certain events, is an example of the effect of these schemata on self-image. This explanatory style involves blaming oneself for negative events outside of their control or the behaviour of others (personalisation), believing that such events will continue forever and letting these events significantly affect their emotional wellbeing. Beck asserted that depressed people pay selective attention to aspects of their environments that confirm what they already know and do so even when evidence to the contrary is right in front of their noses. For example, a cancer patient who has already heard and conceived in his mind that getting cancer is a death sentence will find it difficult to accept that proper eating habits could help prolong her life even when there is clear evidence of someone who has done that and succeeded. This is as a result of the negative schemata that she

has already formed and the faulty processing of the whole situation of developing cancer. All of these which happen unconsciously, function to help maintain a depressed person's core negative schemas in the face of contradictory evidence, and allow them to remain feeling hopeless about the future even when the evidence suggests that things will get better

Without the work of Aaron Beck, so many people might not have received the treatment that they needed to become well. His theory was not only effective but powerful. When individuals are taught the skills that they need to control their thinking, they become responsible for their mental health. They learn that on days when they are struggling, they have the power to make a positive change in their thought process (Kirby, 2018).

However, Beck's theory is not devoid of criticisms. People believe that the theory ignores the fact that a depressed person may be experiencing legitimately difficult situations in life. They do not believe that just teaching someone to control their thinking is enough to correct every situation (Kirby, 2018). Despite these criticisms, it continues to be one of the recognised theories explaining depression.

Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) is a theory that predicts an individual's intention to engage in a behaviour at a specific time and place. It posits that individual behaviour is driven by behaviour intentions, where behaviour intentions are a function of three determinants: an individual's attitude toward behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991). The TPB was proposed by Icek Ajzen (1985) through his article "From intentions to actions: A theory of planned behaviour." The

theory emanated from the theory of reasoned action, which was proposed by Fishbein and Ajzen (1980). The theory of reasoned action was in turn grounded in various theories of attitude such as learning theories, expectancy-value theories, consistency theories (such as Heider's balance theory, Osgood and Tannenbaum's congruity theory, and Festinger's dissonance theory) and attribution theory (Fishbein & Ajzen, 1975). Ajzen and Fishbein formulated the TRA after trying to estimate the discrepancy between attitude and behaviour. This TRA was related to voluntary behaviour. Later on behaviour appeared not to be 100% voluntary and under control, this resulted in the addition of perceived behavioural control. With this addition the theory was called the theory of planned behaviour (TpB). The theory of planned behaviour is a theory which predicts deliberate behaviour, because behaviour can be deliberative and planned. The theory of planned behaviour suggests that people are much more likely to intend to enact certain behaviours when they feel that they can enact them successfully. The theory tries to explain that not only do individuals perform certain behaviours and form certain habits just for doing sake but they intentionally perform certain behaviours and form certain habits because they have control over it, they know the benefits of performing that behaviour and can perform it successfully. This could mean that an individual plans to deliberately do certain things. In relation to this study, an individual with breast cancer could also plan her behaviour. This can happen when she thinks that she has control over the behaviour, the importance of that behaviour and can perform them successfully. One of such behaviours includes her eating habits. If the patient with breast cancer knows that how, when and what she eats plays a role in her treatment process then

she will know the essence of changing her eating habits. This will help her to deliberately plan her behaviours concerning her eating habits.

The most recent addition of a third factor, perceived behavioural control, refers to the degree to which a person believes that they control any given behaviour. Increased perceived behavioural control is a mix of two dimensions: self-efficacy and controllability. Self-efficacy refers to the level of difficulty that is required to perform the behaviour, or one's belief in his/her own ability to succeed in performing the behaviour. Controllability refers to the outside factors, and one's belief that they personally have control over the performance of the behaviour, or if it is controlled by externally, uncontrollable factors. If a person has high perceived behavioural control, then they have an increased confidence that they are capable of performing the specific behaviour successfully. This means if a patient with breast cancer perceives changing her eating habits to be difficult, she is likely not to change. However, many people have control over and choose what they want to eat and at what time they choose to eat. The difficulty comes in when they have already formed a habit of eating some particular food at some particular time and would have to change from that particular habit. Notwithstanding this difficulty, knowing the benefits and importance of changing her eating habits will propel her to adapt in order to aid her treatment. It is also important to know that the ability to change could be influenced by certain factors including ones personality traits. For instance, there are some personality traits that are always ready for new experiences and willing to change. Such personality traits could be more willing to change as compared to the conservative personality traits.

One other important aspect or core assumption of this theory is intention. The theory suggests that the best predictor of behaviour is intention. Intention is the cognitive representation of a person's readiness to perform a given behaviour, and it is considered to be the immediate antecedent of behaviour (Ajzen, 2002). This intention is determined by three things: their attitude toward the specific behaviour, their subjective norms (beliefs) and their perceived behavioural control. The theory of planned behaviour holds that only specific attitudes toward the behaviour in question can be expected to predict that behaviour (Ajzen, 2002). In addition to measuring attitudes toward the behaviour, we also need to measure people's subjective norms – their beliefs about how people they care about will view the behaviour in question. This means that one's cognition and beliefs play a very important role in habit formation just as they are important in depression as explained by Beck (1967). Beck (1967) explains that people with depression tend to have negative cognition and beliefs which influence how they view themselves and the world. As most breast cancer patients may have depression, these negative cognitions or intentions may influence her eating habits. A depressed cancer patient may see herself as not worthy and useless and therefore no need to live. Such a patient with such a belief might not see the essence of changing her eating habits to help prolong her life. On the other hand there may still be some depressed cancer patients who may have strong personality and positive intentions and beliefs. This will make it easy for her to change her eating habits. A general rule, the more favorable the attitude and the subjective norm, and the greater the perceived control the stronger should the person's intention to perform the behaviour in question.

Several studies found that the TPB would help better predict health-related behavioural intention than the theory of reasoned action given that the TPB has improved the predictability of intention in various health-related fields such as condom use, leisure, exercise and diet (Conner, Kirk, Cade, & Barrett, 2003) where the attitudes and intentions to behave in a certain way are mediated by goals rather than needs. For example, there is a goal to prolong one's life even after being diagnosed with breast cancer or even to treat it completely, therefore a positive attitude and intention towards dieting (good eating habits). The theory of planned behaviour model is thus a very powerful and predictive model for explaining human behaviour. That is why the health and nutrition fields have been using this model often in their research studies. In one study, utilizing the theory of planned behaviour, the researchers determined obesity factors in overweight Chinese Americans (Liou & Bauer, 2007). It is important that nutrition educators provide the proper public policies in order to provide good tasting, low-cost, healthy food.

Despite its usefulness and applicability, some scholars claim that the theory is based on cognitive processing, and they have criticised the theory on those grounds. More recently, some scholars criticised the theory because it ignores one's needs prior to engaging in a certain action, needs that would affect behaviour regardless of expressed attitudes.

Biopsychosocial (Spiritual) (BPS) Model

This model was proposed by George L. Engel in 1977 and developed at Rochester by Drs. George Engel and John Romano for understanding health and illness. The biopsychosocial model is a model of health that includes biological, psychological, and social factors. It was proposed to better

reflect the development of illness through the complex interaction of biological factors (genetic, biochemical, amongst others), psychological factors (mood, personality, behaviour, amongst others), and social factors (cultural, familial, socioeconomic amongst others) (Engel, 1977). Initially, health was traditionally equated to the mere absence of a disease. A lack of a fundamental pathology was thought to define one's health as good, whereas biologically driven pathogens and conditions would render an individual with poor health and the label "diseased". Such a narrow scope on health limited the understanding of wellbeing, thwarted treatments efforts, and perhaps more importantly, suppressed prevention measures (Lakhan, 2006). This was referred to as the biomedical model. The biomedical model of health and disease dominates in our current medical practice. The model attributes key role to biological determinants and explains disease as a condition caused by external pathogens or disorders in the functions of organs and body systems. Such an approach has its historic justification and has proved effective in the control of massive infectious diseases. However, now that chronic non-infectious diseases prevail, its efficacy has not only become questionable, but also the issue has been raised of its economic justification (Havelka, Lucanin, & Lucanin, 2009). This means that when people were sick physicians only did their diagnosis based on only biological determinants like cellular or organic disorders and malfunctions. Based on this diagnosis, the only treatment that they gave was medicine. This is a reductionist model as it reduces the cause of sicknesses to only biological dysfunctions and its treatment to only medicine.

However, with the introduction of the biopsychosocial model, the biomedical approach was extended to give equal importance to psychological as well as social factors that have become imperative in the improvement of treatment efficacy and disease control, together with humanisation of relations between health staff and patients. Recently, ones spirituality or spiritual background has been incorporated as it also influences treatment process. It does not diminish the significance of biological factors, but extends a rather narrow approach. With the biopsychosocial approach, diagnosis and treatment of diseases will not focus only on the biological make up of the individual but will have a holistic view of the individual covering every aspect. According to Havelka et al (2009), the biopsychosocial model served as incentive for many studies of how psychological and social factors influence the development, course and outcome of a disease, giving rise to the development of interdisciplinary field-particularly the fields of health psychology and psychoneuroimmunology. Their contribution to better understanding of the impact of psychosocial factors on health stimulates greater interest of medical theory and practice in more holistic approach to a patient. The biopsychosocial model also looks at the interrelationship between these three factors. As an individual is diagnosed with a particular disease, it affects the individual psychologically as well as her social life. On the other way round, an individual who is affected psychologically or socially is likely to develop biological or physical sicknesses like hypertension.

In relation to this study, the biopsychosocial model is very applicable as it tries to look at the breast cancer patient holistically. As an individual is diagnosed with the breast cancer, she is more likely to develop other

psychological problems like depression and social problems like withdrawal from social functions and might stop eating. It is therefore imperative that in the treatment process, these factors be considered. This study also looked at other psychological factors such as the influence ones personality traits could have on the patient. Therefore in the diagnosis and most especially the treatment of the patient with breast cancer, it would be very critical that not only the physician or the medical doctor but also the professionals from other disciplines be involved and collaborate to ensure the holistic wellbeing of the patient. As the medical doctors take her through medications, radiations, chemotherapy and surgeries, psychologist would be looking at the depression levels as well as using the patient's personality strength to help her effectively. Again, nutritionists and dieticians would be called upon to help shape the eating habits of the patients. As she knows what to eat and what not to eat and at what time to eat, it would help with the treatment effectively.

In sum, the biopsychosocial model rightly comprehends that early life influences (genetics and environment, both physical and social) affect individuals psychosocially and biologically. They influence behaviours, the way people function, and their health. They could be key contributors to being symptomatic. While the biopsychosocial model is complex, what's important to understand is that everybody is complex therefore, the breast cancer patients should be looked at in all her complexities (Salt, 2019).

Conceptual Framework

Cancer

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body (WHO, 2018). The

National Cancer Institute (NCI) (2018) similarly defines it as a collection of related diseases in which some of the body's cells begin to divide without stopping and spread into surrounding tissues. They form a subset of neoplasms. A neoplasm or tumor is a group of cells that have undergone unregulated growth and will often form a mass or lump, but may be distributed diffusely (NCI, 2018). Cancer contrasts with benign tumors, which do not spread. Possible signs and symptoms include a lump, abnormal bleeding, prolonged cough, unexplained weight loss and a change in bowel movements. While these symptoms may indicate cancer, they could also have other causes. Over 100 types of cancers affect humans (NCI, 2018).

The WHO (2018) identified tobacco use as the cause of about 22% of cancer deaths. Another 10% are due to obesity, poor diet, lack of physical activity or excessive drinking of alcohol. Other factors include certain infections, exposure to ionizing radiation and environmental pollutants (Anand, et al., 2008). Many cancers can be prevented by not smoking, maintaining a healthy weight, not drinking too much alcohol, eating plenty of vegetables, fruits and whole grains, vaccination against certain infectious diseases, not eating too much processed and red meat and avoiding too much sunlight exposure (Kushi, et al, 2012; Parkin, Boyd & Walker, 2011).

How cancer begins and spreads

Cells are the basic units that make up the human body. Cells grow and divide to make new cells as the body needs them. Usually, cells die when they get too old or damaged. Then, new cells take their place. Cancer begins when genetic changes interfere with this orderly process. Cells start to grow uncontrollably. These cells may form a mass called a tumor. A tumor can be

cancerous or benign. A cancerous tumor is malignant, meaning it can grow and spread to other parts of the body. A benign tumor means the tumor can grow but will not spread. Some types of cancer do not form a tumor. These include leukemias, most types of lymphoma, and myeloma (American Society of Clinical Oncology, ASCO, 2018). As a cancerous tumor grows, the bloodstream or lymphatic system may carry cancer cells to other parts of the body. During this process, known as metastasis, the cancer cells grow and may develop into new tumors. One of the first places a cancer often spreads is to the lymph nodes. Lymph nodes are tiny, bean-shaped organs that help fight infection. They are located in clusters in different parts of the body, such as the neck, groin area, and under the arms (NCI, 2017). Cancer may also spread through the bloodstream to distant parts of the body. These parts may include the bones, liver, lungs, or brain. Even if the cancer spreads, it is still named for the area where it began. For example, if breast cancer spreads to the lungs, it is called metastatic breast cancer, not lung cancer (ASCO, 2018).

Types of cancer

According to ASCO (2018), doctors divide cancer into types based on where it began. Four main types of cancer are:

1. Carcinomas. A carcinoma begins in the skin or the tissue that covers the surface of internal organs and glands. Carcinomas usually form solid tumors. They are the most common type of cancer. Examples of carcinomas include prostate cancer, breast cancer, lung cancer, and colorectal cancer.

2. Sarcomas. A sarcoma begins in the tissues that support and connect the body. A sarcoma can develop in fat, muscles, nerves, tendons, joints, blood vessels, lymph vessels, cartilage, or bone.
3. Leukemias. Leukemia is a cancer of the blood. Leukemia begins when healthy blood cells change and grow uncontrollably. The four main types of leukemia are acute lymphocytic leukemia, chronic lymphocytic leukemia, acute myeloid leukemia, and chronic myeloid leukemia.
4. Lymphomas. Lymphoma is a cancer that begins in the lymphatic system. The lymphatic system is a network of vessels and glands that help fight infection. There are two main types of lymphomas: Hodgkin lymphoma and non-Hodgkin lymphoma.

Breast Cancer

The term breast cancer refers to a malignant tumor that has developed from cells in the breast (NCI 2018). Usually breast cancer either begins in the cells of the lobules, which are the milk-producing glands, or the ducts, the passages that drain milk from the lobules to the nipple. Less commonly, breast cancer can begin in the stromal tissues, which include the fatty and fibrous connective tissues of the breast. Over time, cancer cells can invade nearby healthy breast tissue and make their way into the underarm lymph nodes, small organs that filter out foreign substances in the body. If cancer cells get into the lymph nodes, they then have a pathway into other parts of the body (Breastcancer.org, 2018).

According to the Cancer Research Institute (CRI) (2014), breast cancers mostly arise from either the epithelial lining of ducts or the epithelium

of the terminal ducts of the lobules. They are called ductal carcinoma and lobular carcinoma respectively. A carcinoma can be in situ (meaning in its original place) or invasive. In situ or non-invasive breast cancer is when the cancer is still inside its place of origin and has not broken out. Invasive breast cancer, on the other hand, is a breast cancer that has spread from where it began in the breast ducts or lobules to surrounding normal tissues (Purdy, 2008). Global Health Estimates, (WHO 2013) estimated that one out of every eight women would develop breast cancer at some point during her life.

Anatomy and Physiology of the Breast

The breast or mammary glands are accessory glands of the female reproductive system. They exist also in the male but in only a rudimentary form. In the female the breast is immature until puberty. Thereafter they grow and mature under the influence of estrogen and progesterone. The mammary gland consists of glandular tissues, fibrous tissue and fatty tissue. Each breast is made up of about 20 lobes of glandular tissue, each lobe being made up of a number of lobules that radiate around the nipple. The lobules consist of a cluster of alveoli that open into small ducts, and these unite to form large excretory ducts, called the lactiferous ducts. The nipple is a small conical eminence at the centre of the breast surrounded by a pigmented area, the areola. On the surface of the areola are numerous sebaceous glands (Montgomery's Tubercles), which lubricate the nipple during lactation. The mammary glands are only active during late pregnancy and after child birth when they produce milk (ACS, 2016). The breasts are supplied with blood from the thoracic branches of the axillary arteries and from the internal mammary and intercostal arteries. Venous drainage is formed by anastomotic

circle round the base of the nipple from which branches carry the venous blood to the circumference, and end in the axillary and mammary veins. Lymph drainage is into the superficial axillary lymph vessels and nodes and through the internal mammary nodes if the superficial route is obstructed.

Causes/Risk Factors of Breast Cancer

Though the exact aetiology of breast cancer is unknown, however, some studies have shown that the aetiopathogenesis of breast cancer involves multiple factors, some of which a woman may have absolutely no control over (Ahuja, & Chakrabarti, 2009). This makes it an even more traumatic disease for a woman and her family (Ahuja, & Chakrabarti, 2009). There are several risk factors for breast cancer that have been documented. It is however, not possible to identify specific risk factors for the majority of women presenting with breast cancer (International Agency for Research on Cancer (IARC), 2008; Lacey, et al., 2009).

According to Hayes, Ricahrdson, and Frampton (2013) risk factors can be divided into two categories:

1. *modifiable* risk factors (things that people can change themselves, such as consumption of alcoholic beverages), and
2. *fixed* risk factors (things that cannot be changed, such as age and biological sex).

The primary risk factors for breast cancer are being female and older age (Reeder, & Vogel, 2008). Simply being a woman is the main risk factor for developing breast cancer. Although women have many more breast cells than men, the main reason they develop more breast cancer is because their breast

cells are constantly exposed to the growth-promoting effects of the female hormones estrogen and progesterone (ACS, 2011).

Modifiable Risk Factors

Dietary intake

A number of dietary factors have been linked to the risk for breast cancer. Drinking alcoholic beverages increases the risk of breast cancer, even at relatively low and moderate levels (one to three drinks per week). The risk is highest among heavy drinkers (Shield, Soerjomataram & Rehm, 2016). Dietary factors which may increase risk include a high-fat diet and obesity-related high cholesterol levels (Kaiser, 2013). Dietary iodine deficiency may also play a role. Evidence for fiber is unclear. However, a 2015 review found that studies trying to link fiber intake with breast cancer produced mixed results (Mourouti, Kontogianni, Papavagelis & Panagiotakos, 2015). In 2016, a tentative association between low fiber intake during adolescence and breast cancer was observed (Aubrey, 2016).

Smoking

Smoking and second hand smoking has also been associated with breast cancer disease according to National Toxicology Program (United States Department of Health and Human Services, 2010). The United States (U.S.) Environmental Protection Agency, U.S. National Toxicology Program, U.S. Surgeon General, and the International Agency for Research on Cancer have all classified smoking and second hand smoke as a known human carcinogen (U.S. Department of Health and Human Services, 2010). Smoking tobacco appears to increase the risk of breast cancer, with the greater the amount smoked and the earlier in life that smoking began, the higher the risk.

In those who are long-term smokers, the risk is increased 35% to 50% (Johnson et al, 2011).

Overweight or obesity

Post-menopausal obesity and overweight women may also have a higher risk of developing breast cancer (IARC, 2008). Obesity has been associated with increased mortality from hormone dependent cancers such as breast cancer which is the most prevalent cancer in women. The link between obesity and breast cancer can be attributed to excess estrogen produced through aromatization in adipose tissue (Esfahlan, et al., 2011).

Taking hormones

Exogenous hormones have a higher risk for breast cancer as in cases of oral contraceptive and hormone replacement therapy users. Some forms of hormone replacement therapy (those that include both estrogen and progesterone) taken during menopause can raise risk for breast cancer when taken for more than five years. Certain oral contraceptives (birth control pills) also have been found to raise breast cancer risk (ACS, 2011).

Fixed or non-modifiable risk factors

Age

The risk for breast cancer increases with age as most breast cancers are diagnosed after age 50. The older a woman gets, the higher is her risk of developing breast cancer as age has also been implicated as a risk factor (ACS, 2011). About 1 out of 8 invasive breast cancers are found in women younger than 45, while about 2 of 3 invasive breast cancers are found in women age 55 or older. Over 80% of all female breast cancers occur among women aged 50 years or more.

Genetics

Genetics is believed to be the primary cause of 5–10% of all cases (Gage, Wattendorf & Henry, 2012). Women who have a close relative who has/had breast or ovarian cancer are more likely to develop breast cancer (IARC, 2008). Some genetic mutations, particularly in BRCA1, BRCA2 and TP53 result in a high risk for breast cancer (IARC, 2008). A woman's chance of developing breast cancer increases if her mother, sister, and/or daughter (first-degree relative) have been diagnosed with the disease, especially if they were diagnosed before age 50 (Cybulski, Wokołorczyk, & Jakubowska, 2011). Similarly, Colditz, Kaphingst, Hankinson, and Rosner (2012) found out that women whose mother was diagnosed before age 50 have an increased risk of 1.7 and those whose mother was diagnosed at age 50 or after has an increased risk of 1.4.

Reproductive History and Dense Breasts

Early menstrual periods before age 12 and starting menopause after age 55 expose women to hormones longer, raising their risk of getting breast cancer (Breastcancer.org, 2018). Post-menopausal obese and overweight women may also have a higher risk of developing breast cancer (IARC, 2008).

Also, having dense breasts has been known to be a risk factor for breast cancer. Dense breasts have more connective tissue than fatty tissue, which can sometimes make it hard to see tumors on a mammogram. Women with denser breasts are more likely to get breast cancer as compared to women with less dense breast tissues (Schetter, 2014).

On the other way round, women can reduce their risk of breast cancer by maintaining good eating habits, healthy weight, reducing alcohol use,

increasing physical activity, and breast-feeding (cancer.org, 2018). Breastfeeding has a protective effect against breast cancer. This is because it can delay the onset of the disease by 10 years – but only among women who do so for over six months and do not smoke, new research has found (Kim, et al., 2007). It is therefore confirmed that lactation has an apparent dose-dependent protective effect against breast cancer.

These lifestyle modifications mentioned above might prevent 38% of breast cancers (cancer.org, 2018). The benefits with moderate exercise such as brisk walking are seen at all age groups including postmenopausal women (Eliassen, Hankinson, Rosner, Holmes, & Willett, 2010). On good eating habits, high intake of citrus fruit has been associated with a 10% reduction in the risk of breast cancer (Song & Bae, 2013). Marine omega-3 polyunsaturated fatty acids, high consumption of soy-based foods may reduce risk (Zheng, Hu, Zhao, Yang, & Li, 2013).

Management of Breast Cancer

Breast cancer management may depend on various factors, including the stage of the cancer and the person's age. Treatment of breast cancer is mostly patient-centred, taking into account patients' individual needs and preferences. Treatments are more aggressive when the cancer is more advanced or there is a higher risk of recurrence of the cancer following treatment. Management of breast cancer involves multidisciplinary treatment planning involving at least a breast surgeon, radiologist, pathologist, medical and radiation oncologists, psychologist, nutritionist and dietician so as to integrate local and systemic therapies and their sequence (ACS, 2011). The

treatment modalities that may be available include surgery, medications (chemotherapy, hormonal therapy) and radiotherapy.

Surgery

Surgery involves the physical removal of the tumor, typically along with some of the surrounding tissue. One or more lymph nodes may be biopsied during the surgery; increasingly the lymph node sampling is performed by a sentinel lymph node biopsy. Standard surgeries include: Mastectomy: Removal of the whole breast. Quadrantectomy: Removal of one-quarter of the breast. Lumpectomy: Removal of a small part of the breast. Once the tumor has been removed, if the person desires, breast reconstruction surgery, a type of plastic surgery, may then be performed to improve the aesthetic appearance of the treated site.

There is also pre-emptive surgery. This is the removal of both breasts before any cancer has been diagnosed or any suspicious lump or other lesion has appeared (a procedure known as "prophylactic bilateral mastectomy" or "risk reducing mastectomy") which may be considered in people with BRCA1 and BRCA2 mutations, which are associated with a substantially heightened risk for an eventual diagnosis of breast cancer.

Medications

Medications used after and in addition to surgery are called adjuvant therapy. Chemotherapy or other types of therapy prior to surgery are called neoadjuvant therapy. Aspirin may reduce mortality from breast cancer when used with other treatments (Leite, Macedo, Jorge & Martins, 2018). There are currently three main groups of medications used for adjuvant breast

cancer treatment: hormone-blocking agents, chemotherapy, and monoclonal antibodies.

Hormone-blocking agents/hormonal therapy

Some breast cancers require estrogen to continue growing. They can be identified by the presence of estrogen receptors (ER+) and progesterone receptors (PR+) on their surface (sometimes referred to together as hormone receptors). These ER+ cancers can be treated with drugs that either block the receptors, e.g. tamoxifen, or alternatively block the production of estrogen with an aromatase inhibitor, e.g. anastrozole or letrozole.

Chemotherapy

Chemotherapy is predominantly used for cases of breast cancer in stages 2–4, and is particularly beneficial in estrogen receptor-negative (ER-) disease. Chemotherapy is the use of drugs to destroy cancer cells, which work by stopping the ability of the cancer cells to grow and divide. Systemic chemotherapy is delivered through the bloodstream to reach cancer cells throughout the body (NCI, 2015). The chemotherapy medications are administered in combinations, usually for periods of 3–6 months. Chemotherapy may be given before surgery to shrink a large tumor and may also be given after surgery to reduce the risk of recurrence.

Monoclonal antibodies

Trastuzumab, a monoclonal antibody to Human Epidermal growth Receptor (HER2), has improved the 5-year disease free survival of stage 1–3 HER2-positive breast cancers to about 87% (overall survival 95%) (Jahanzeb, 2008). Monoclonal antibodies help reduce disease recurrence and worse prognosis. Trastuzumab, however, is very expensive, and its use may cause

serious side effects (approximately 2% of people who receive it develop significant heart damage).

Radiation/radiotherapy

Radiation therapy is the use of high-energy x-rays or other particles to kill cancer cells. A radiation therapy regimen usually consists of a specific number of treatments given over a set period of time (NCI, 2015). Radiotherapy is given after surgery to the region of the tumor bed and regional lymph nodes, to destroy microscopic tumor cells that may have escaped surgery. It may also have a beneficial effect on tumor microenvironment (Belletti, et al. 2008).

Stages of Breast Cancer

According to ACS (2011), the stage describes the size of the cancer and how far it has spread when it is diagnosed. Breast cancer stage describes the extent of the cancer within the body. The stage of the breast cancer helps plan the treatment. Breast cancer stage is the most important factor for prognosis. In general, the earlier the stage, the better the prognosis will be. Pathologic staging (the standard way to stage breast cancer) is based on a pathologist's study of the tumor tissue and any lymph nodes removed during surgery. According to ACS (2011), the stages of breast cancer range from 0 to IV (0 to 4). Each stage is expressed in Roman numerals from stage I (the least advanced stage) to stage IV (the most advanced stage). Non-invasive cancer is listed as stage 0.

Stage 0

Also known as the noninvasive, carcinoma in situ, there is no evidence of cancer cells breaking out of the part of the breast in which they started or of

getting through to or invading neighboring normal tissue. It is the earliest breast cancer stage and sometimes interpreted as a precancerous condition. Many stage 0 breast cancers do not require treatment but when they do, the approach is generally very successful. Stage 0 breast cancer is difficult to detect because there may not be a lump that can be felt during self-examination, and there may be no other symptoms. However, breast self-exams and routine screening are always important and can often lead to early diagnosis, when the cancer is most treatable.

Stage I

This breast cancer is the earliest stage of invasive breast cancer. It is small and only in the breast tissue or it might be found in lymph nodes close to the breast. This means the cancer cells have spread beyond the original location and into the surrounding breast tissue. This stage is divided into two groups as stage IA and stage IB.

Stage IA: This means the tumor measures 2 cm or smaller and has not spread outside the breast.

Stage IB: Small clusters of cancer cells measuring no more than 2 mm, are found in the lymph nodes close to the breast, and that either there is no tumour found in the breast or the breast tumour is 2cm or smaller.

Stage II

This stage means that the cancer is either in the breast or in the nearby lymph nodes or both. It is also known as invasive breast cancer whereby the tumor measures between 2cm to 5cm, and the cancer has spread to the lymph nodes under the arm on the same side as the breast cancer. Stage II breast cancer indicates a slightly more advanced form of the disease. At this stage,

the cancer cells have spread beyond the original location and into the surrounding breast tissue, and the tumor is larger than in stage I disease. However, stage II means the cancer has not spread to a distant part of the body. Stage II breast cancer is divided into two categories; stage IIA and stage IIB.

Stage IIA means that there is no tumour or a tumour 2 centimetres (cm) or smaller in the breast and cancer cells are found in 1 to 3 lymph nodes in the armpit or in the lymph nodes near the breastbone.

Stage IIB means that the tumour is larger than 2cm but not larger than 5cm and there are small areas of cancer cells in the lymph nodes.

Stage III

Also called locally advanced breast cancer, this stage means that the cancer has spread from the breast to lymph nodes close to the breast or to the skin of the breast or to the chest wall. At this stage, the cancer cells have usually not spread to more distant sites in the body, but they are present in several axillary (underarm) lymph nodes. Stage 3 breast cancer is divided into 3 groups

Stage IIIA

Stage IIIA means one of the following:

1. No tumour is seen in the breast or the tumour may be any size and cancer is found in 4 to 9 lymph glands under the arm or in the lymph glands near the breastbone.
2. The tumour is larger than 5cm and small clusters of breast cancer cells are in the lymph nodes.

3. The tumour is more than 5cm and has spread into up to 3 lymph nodes in the armpit or to the lymph nodes near the breastbone.

Stage IIIB: The tumor may be any size, and the cancer has spread to the chest wall and/or skin of the breast; may have spread to axillary lymph nodes that may be attached to each other or to other structures, or cancer may have spread to lymph nodes near the breastbone.

Stage IIIC: The tumor is any size (or can't be found), and cancer has spread to 10 or more axillary lymph nodes.

Stage IV

It is also known as metastatic breast cancer and can be any size and may or may not have spread to nearby lymph nodes. The cancer in this stage might have spread beyond the breast, underarm and internal mammary lymph nodes to other parts of the body near to or distant from the breast. It has spread to distant organs or to lymph nodes far from the breast. The most common sites of spread are the bone, liver, brain, or lung.

Eating Habits

Food gives our bodies the energy we need to function. Food is also a part of traditions and culture. This can mean that eating has an emotional component as well. For many people, changing eating habits is very hard. You may have had certain eating habits for so long that you do not realize they are unhealthy. Or, your habits have become part of your daily life, so you do not think much about them (Wax & Zieve, 2019). Rodriguez (2019) refers to eating habits as why and how people eat, which foods they eat, and with whom they eat, as well as the ways people obtain, store, use, and discard food. Some people may have good/healthy eating habits whilst others too may have

bad/poor eating habits. This may be due to the intentions people have for eating. This is because some people do not know why, how and when they should eat what. Some people are not even aware of whether they have good eating habits or poor eating habits. Bad eating habits include eating too little, eating irregularly and eating food of poor quality (Sun, 2010).

Why and How People Eat

All humans eat to survive. They also eat to express appreciation, for a sense of belonging, as part of family customs, and for self-realization. For example, someone who is not hungry may eat a piece of cake that has been baked in his or her honor. People eat according to learned behaviours regarding etiquette, meal and snack patterns, acceptable foods, food combinations, and portion sizes (Rodriguez, 2019). A meal is usually defined as the consumption of two or more foods in a structured setting at a set time. A common eating pattern is three meals (breakfast, lunch and dinner) per day. In between these three meals, some people eat what is called snacks. Some people eat because it is time to eat. Some also eat because they think they feel hungry and some people eat based on how they feel. For instance some people eat more when depressed whilst others eat less. Some eat more when they are happy.

What can influence eating habits?

Eating habits could be influenced by many factors including psychological states, individual, social, cultural, religious, economic, environmental, and political factors (Rodriguez, 2019) and some other variables like age and gender (Meyer, 2016).

1. **Age** – The younger you are, the more likely you are to select foods based on hunger/thirst signals and taste, often eating until your stomach reaches maximum capacity and your fullness cues are triggered. Lower age is also associated with eating meals somewhere other than home, typically in front of a computer or TV. Older adults tend to put more focus on their meals during the preparation and selection phase, opting for healthy, nutrient-dense food options. As we get older, we also tend to eat less, which puts us at greater risk for health problems as a result of micronutrient and macronutrient deficiencies. They consume the traditional three meals per day at home with family (Meyer, 2016).
2. **Gender** – Men tend to seek food and drink purely for sustenance whereas women seek foods that taste good (Meyer, 2016).
3. **Individual Preferences** - Every individual has unique likes and dislikes concerning foods. These preferences develop over time, and are influenced by personal experiences such as encouragement to eat, exposure to a food, family customs and rituals, advertising, and personal values. For example, one person may not like certain foods, despite the fact that they are a family favorite.
4. **Cultural Influences** - A cultural group provides guidelines regarding acceptable foods, food combinations, eating patterns, and eating behaviours. Compliance with these guidelines creates a sense of identity and belonging for the individual. For example in Ghana, different ethnic groups are associated with some particular dishes and delicacies. This may be as a result of foods that are commonly and

easily grown within a specific region which frequently become a part of their local cuisine.

5. **Religious Influences** - Religious proscriptions range from a few to many, from relaxed to highly restrictive. This will affect a follower's food choices and behaviours. For example, in some religions specific foods are prohibited, such as pork among Jewish and Muslim adherents. Within Christianity, the Seventh-day Adventists discourage "stimulating" beverages such as alcohol, which is not forbidden among Catholics.

Eating habits are thus the result of both external factors and internal factors, such as values. These habits are formed, and may change, over a person's lifetime as a result of the development of some chronic disease like cancer, diabetes and hypertension that may require a change in one's eating habits. However, these influences in addition to one's personality traits and psychological state like depression may make it very difficult to alter one's eating habits.

Empirical Review

Personality Traits of Patients with Cancer

A cohort study was conducted in Finland by Lillberg, Verkasalo, Kaprio, Helenius and Koskenvuo (2002) to examine breast cancer risk in relation to extroversion (measured on Eysenck Personality Inventory), Type A behaviour (Bortner scale) and hostility (author-constructed measure). Out of 12,009 women who were 18 years or more of age (mean age 36.2 years, standard deviation 14.9 years), thirty-two percent (32%) reported a low level of extroversion (scores 0-2), 49% reported an intermediate level (3-6) and

19% a high level (7-9). Neither type A behaviour nor hostility was related to the risk of breast cancer in either the age-adjusted or multivariable-adjusted models. Another cross-sectional study was conducted by Grov, et al. (2009) in Norway among testicular cancer survivors, with sample size of 1,428. Out of 1,428 participants, 176 (12%) were identified with 'high neuroticism' compared to the 1,252 (88%) ones with 'low neuroticism'. Significant differences were observed between the 'high' and 'low' neuroticism groups. On the contrary, Lai, Tang and Chung (2010) conducted a longitudinal study among 184 Chinese women with gynecologic cancer with a mean age of 54 (SD = 10.7). High neuroticism was recorded. The study further concluded that neuroticism is a salient personality trait and women with gynecological cancer should be the target for intervention to reduce negative effects during the course of recovery. These studies above came out with different outcomes due to the use of different instruments which are applied in different contexts. People have different background and therefore the same instrument may produce different results in different places. The use of different research designs may also be a reason for the differences in the findings. The studies above employed different research designs like cross-sectional and longitudinal studies which produced different results. Though there maybe differences in these results above, they seem to support the long hypothesized cancer-prone personality traits that predispose individuals to cancer initiation or progression.

Eating Habits of Cancer Patients

A case-control study by Buck, Vrieling, Flesch-Janys & Chang-Claude (2011) on Dietary Patterns and The Risk of Postmenopausal Breast Cancer in

Germany found two major dietary patterns; healthy pattern (high fruit, fruiting, leafy and other vegetables, garlic, onion, vegetable oils, and mayonnaise intake) explaining 42.8% of the variance and unhealthy pattern (high processed and red meat, garlic/onion and deep-frying fat intake) explaining 29.8% of the variance which means that majority of the patients had good eating habits. The study consisted of 3,464 cases with ages from 50-74 years. Similarly, a study by Velentzis et al. (2011) on Significant changes in dietary intake and supplement use after breast cancer diagnosis in a UK multicentre study came out with similar food intake pattern. In a cohort of 1,560 breast cancer patients participating in the study, intake of fruit and vegetables, whole grains and lean sources of protein increased significantly post-diagnosis ($P < 0.05$, each). Conversely, after diagnosis consumption of high-fat, high-sugar products, red meat, coffee, some alcoholic drinks and refined grains significantly decreased ($P < 0.05$, each). Post-diagnostic changes in diet were accompanied by changes in the intake of macronutrients and a number of vitamins and minerals. Templeton et al. (2013) supported the above results with their study among patient with breast cancer in Eastern Switzerland. The study was conducted with a sample size of 342 and mean age of 61 with ages ranging from 29-94. Patients had stage I, IIA, IIB, and IIIA/B in 29%, 35%, 20%, and 16%, respectively. Out of the 342 participants, 299 (87%) patients reported paying attention to their eating habits. More vegetables/fruit (80%) consumption, “balanced” and (61%), low-fat diet (60%), and organic products (46%) were the most popular. The patients also reported interest in more information and willingness to go for additional consultation focusing on their eating habits. However, one factor that is

predicted to have accounted for paying special attention to their eating habits was their education level with majority of them having university degrees. Interest in information concerning eating habits was confirmed by Shaharudin, Sulaiman, Shahril, Emran, and Akmal (2013) with their study on Dietary Changes among Breast Cancer Patients in Malaysia. Out of 116 patients with ages ranging from 22 to 70 years, 72 subjects considered diet as a contributing factor to breast cancer, and 67 subjects changed their dietary habits after breast cancer diagnosis. The reasons for changes in diet were physician and dietician advice and desire to cure cancer. The sources of information were derived from their physician, mass media, and family members. Total energy, protein, total fat, fatty acids, and vitamin E intake were significantly decreased after diagnosis. Meanwhile, the intake of β-carotene and vitamin C increased significantly after diagnosis. The changes included reduction in red meat, seafood, noodles, and poultry intake. An increased consumption of fruits, vegetables, fish, low-fat milk, and soy products was observed. The subjects tended to lower high-fat foods intake and started to eat more fruits and vegetables.

However, a cross-sectional study Mohammadi, Sulaiman, Koon, Amani, and Hosseini (2013) among Iranian breast cancer survivors with the aim of determining their eating habits provided contrary results. A total of 100 Iranian women, aged between 32 to 61 years participated in the study. Eating practices were evaluated by a validated questionnaire modified from the Women's Healthy Eating and Living (WHEL) study. Approximately 29% of the cancer survivors were categorized as having healthy eating practices, 34% had moderate eating practices and 37% had poor eating practices based on

nutrition guidelines, though the study found positive changes in the decreased intake of fast foods (90%), red meat (70%) and increased intake of fruits (85%) and vegetables (78%). Similarly the results of a study conducted by Celik, Yılmaz, Özden, Kotan, and Okut (2015) in Van Lake Region of Turkey on the eating habits and lifestyle among esophageal and gastric cancer patients also revealed a poor or bad eating habits. The participants for the study consisted of 113 patient groups with a mean age 59 ranging from 32-83 years. Herby cheese consumption (a component of eating habits) and smoking were significantly higher in the patients ($p < 0.001$). The study concluded that high consumption of herby cheese, cooking bread on tandoor, and heavy smoking were seen to be important risk factors for esophageal and gastric cancers. Again, Li, Tse, Chan, Kwok, Leung, S. L., Wu, and Vermeulen (2017) conducted a study on Night time eating and breast cancer among Chinese women in Hong Kong. It was a hospital-based case-control study that was conducted with a total of 922 patients with incident of breast cancer with a mean age of 56 years. The results indicated that eating at night after 10 pm was significantly associated with breast cancer with an adjusted OR of 1.50 (95% confidence interval (CI) 1.06–2.12, P = 0.02), and the associations were stronger in women who had the longest duration of nighttime eating (≥20 years) (adjusted OR = 2.28 (95% CI 1.13–4.61, P = 0.02) and who ate late (midnight to 2 a.m.) (adjusted OR = 2.73, 95% CI 1.01–6.99, P = 0.04). Interestingly, nighttime eating was only associated with breast cancer among women who consumed staple foods (OR = 2.16, 95% CI 1.42–3.29, P < 0.001) but not those who ate vegetables or fruits as nighttime meals. The significant association between nighttime eating and breast cancer was observed among

women with body mass index (BMI) < 25 (OR = 2.29, 95% CI 1.48–3.52, P < 0.001) but not among women with BMI ≥ 25. There are differences in eating habits in different context which might be as a result of differences in cultural background. It is imperative research is also done in the Ghanaian context.

Depression Levels of Cancer Patients

A cross-sectional study was conducted by Brintzenhofe-Szoc, Levin, Li, Kissane, and Zabora (2009) on Mixed Anxiety/Depression Symptoms in a Large Cancer Cohort among 8,265 patients in Baltimore. Mixed anxiety/depression symptoms were seen in 12.4% of patients; overall depression symptoms in 18.3%, overall anxiety symptoms in 24.0%, pure anxiety symptoms in 11.7%, and pure depression symptoms in 6.0%; 70% had neither. Higher rates of mixed anxiety/depression symptoms were seen with stomach, pancreatic, head and neck, and lung cancers, but lower rates were seen in those with breast cancers. The mixed anxiety/depression phenotype occurs in two-thirds of depressed cancer patients.

Another prospective study of anxiety and depression in breast cancer patients was also conducted in Imam Khomeini hospital by Vahdaninia, Omidvari, and Montazeri (2010), the biggest teaching hospital in Tehran. Anxiety and depression were measured using the Hospital Anxiety and Depression Scale. Altogether 167 patients were diagnosed with breast cancer. The mean age of breast cancer patients was 47.2 (SD = 13.5) years, and the vast majority underwent mastectomy (82.6%). The results showed that though anxiety and depression improved over time ($P < 0.001$), 38.4% and 22.2% of the patients presented with severe anxiety and depression, respectively. The study further concluded that although the findings indicated that the levels of

anxiety and depression decreased over time, a significant number of women had elevated anxiety and depression. This suggests that all women should be routinely screened for psychological distress and that quality of cancer care include processes to treat that 30% of women who have elevated psychological distress.

Karakoyun-Celik, Gorken, Sahin, Orcin, Alanyali, and Kinay (2010) conducted a study on Depression and anxiety levels in woman under follow-up for breast cancer: relationship to coping with cancer and quality of life in Dokuz Eylu¨l University Medical Faculty, Turkey. The Beck Depression and the State-Trait Anxiety inventories were used in the evaluation of depression and anxiety levels. There were 23 (19%) patients with depression; 3 (2.5%) with grade I anxiety, 94 (77%) grade II, and 23 (19%) grade III anxiety, respectively. However, depression and anxiety levels were affected by the following parameters: being unaccompanied by spouse for hospital follow-ups ($P < 0.0001$); request to get help by a psychologist ($P = 0.02$); presence of a person to share their problems ($P < 0.0001$); and using an alternative treatment ($P = 0.04$).

Hinz, et al. (2010) compared anxiety and depression in cancer patients with the general population in Germany using the Hospital Anxiety and Depression Scale (HADS). Participants were 1529 cancer patients and 2037 persons from the German general population. In the cancer patients, the risk of psychiatric distress was nearly twice that of the general population. While for older age groups (61 years and above) there were only small differences between cancer patients and the general population, the differences in both scales were high for young persons. There were differences between the

HADS mean scores of the patients with different tumour localisations, with high values for brain cancer and low scores for prostate cancer. The influence of the tumour stage on anxiety and depression was weak. However, depression scores of patients with a survival time less than 1 year were elevated.

Hong and Tian (2014) conducted a study aimed to obtain information on the levels of anxiety and depression among cancer patients in China. Using Hospital Anxiety and Depression Scale (HADS), the anxiety and depression prevalence rates were 6.49 and 66.72 %, respectively. The prevalence rates of depression were 60.62 % for head and neck cancer, 77.19 % for lung cancer, 57.9 % for breast cancer, 75.81 % for esophagus cancer, 63.40 % for stomach cancer, 68.42 % for liver cancer, 54.37 % for colorectal cancer, and 71.13 % for cervix cancer. The factors influencing depression of patients were performance status, pain, age, and education level. The risk factors of anxiety were performance status, age, and gender. Compared with 3.8 % of the prevalence of depression in normal population, depression level was high among Chinese cancer patients. Depression was seen to be a more important psychological problem than anxiety in cancer patients.

Relationships among Personality Traits, Depression and Eating Habits of Cancer Patients

Research has shown that three personality traits—Neuroticism, Extraversion, and Conscientiousness—moderate one another in a three-way interaction that predicts depressive symptoms in healthy populations. However, Allen, et al. (2018) tested the hypothesis that this effect is driven by three lower-order traits: withdrawal, industriousness, and enthusiasm and then replicated the interaction within a clinical population for the first time. Sample

1 included 376 healthy adults. Sample 2 included 354 patients diagnosed with current major depressive disorder. Personality and depressive tendencies were assessed via the Big Five Aspect Scales and Personality Inventory for DSM-5 in Sample 1, respectively, and by the NEO-PI-R and Beck Depression Inventory-II in Sample 2. The results confirmed that withdrawal, industriousness, and enthusiasm interacted to predict depressive tendencies in both samples.

A Swedish Longitudinal, Population-Based Twin Study was conducted on Personality and Major Depression by Kendler, Gatz, Gardner, and Pedersen (2006) with a total of 20,692 members of same-sex twin pairs from the population-based Swedish Twin Registry who completed a self-report questionnaire assessing neuroticism and extroversion. The results indicated that levels of neuroticism strongly predicted the risks for both lifetime (_21=520.3; *P*_.001; OR, 1.49; 95% CI, 1.44-1.55) and new-onset (_21=199.5; *P*_.001; hazard ratio [HR], 1.31; 95% CI, 1.26-1.36) of major depression. However, twin modeling indicated that the association between neuroticism and major depression resulted largely from shared genetic risk factors, with a genetic correlation of -0.46 to -0.47. Levels of extroversion were weakly and inversely related to the risks for lifetime and new-onset MD.

A meta-analysis of 10 cohort studies was done by Hakulinen, Elovainio, Pulkki-Råback, Virtanen, Kivimäki, and Jokela (2015) with 117,899 participants (mean age 49.0 years; 54.7% women). In cross-sectional analysis, low extraversion (pooled standardized regression coefficient (B) = –.08; 95% confidence interval = –0.11, –0.04), high neuroticism (B = .39; 0.32, 0.45), and low conscientiousness (B = –.09; –0.10, –0.06) were associated

with depressive symptoms. Similar associations were observed in longitudinal analyses adjusted for baseline depressive symptoms (n = 56,735; mean follow-up of 5.0 years): low extraversion (B = –.03; –0.05, –0.01), high neuroticism (B = .12; 0.10, 0.13), and low conscientiousness (B = –.04; –0.06, –0.02) were associated with an increased risk of depressive symptoms at follow-up. In turn, depressive symptoms were associated with personality change in extraversion (B = –.07; 95% CI = –0.12, –0.02), neuroticism (B = .23; 0.09, 0.36), agreeableness (B= –.09; –0.15, –0.04), conscientiousness (B = –.14; –0.21, –0.07), and openness to experience (B = –.04; –0.08, 0.00).

A longitudinal study by Deimling, Albitz, Monnin, Renzhofer Pappada, Nalepa, Boehm, and Mitchell (2017) in Cleaveland among 275 cancer examined how personality (Five-Factor Model) is related to cancer-related worry and depression. Regression analyses identified neuroticism as the strongest predictor of cancer-related worry (β= -0.30; $p < 0.01$) along with continuing cancer-related symptoms. For depression, three personality dimensions (neuroticism (β= 0.42), conscientiousness, (β= 0.26) and agreeableness (β= 0.21) $p < 0.01$) were significant predictors. Findings thus suggest the importance of considering the central role that personality characteristics play in understanding cancer-related worries and depression.

Brummett, Siegler, Day, and Costa (2010) conducted a study in North Carolina to evaluate the NEO Personality Inventory-Revised (NEO-PI-R) as a predictor of dietary quality in 850 married couples, focusing on associations among each participant's personality as a predictor of their own dietary quality and their spouses' dietary quality. Diet was based on a modified version of the US Department of Agriculture Healthy Eating Index. Openness was associated

with self-ratings of dietary quality for wives (r = .28) and husbands (r = .27). Wives' levels of the characteristic openness were also related to their spouses' ratings of dietary quality (r = .22). The primary facets of openness accounting for the domain-level findings were O2–aesthetics and O4–actions. The remaining personality domains (neuroticism, extraversion, agreeableness, and conscientiousness) were not associated with self or spousal ratings of dietary quality (rs = .08–.09). Openness was associated with healthy eating habits—findings that may affect disease prevention during midlife.

Mõttus, et al. (2012) also conducted a study to examine the associations between dietary habits and personality traits in a large sample of Estonians (N =1,691) aged between 18 and 89 years. Dietary habits were measured using 11 items, which grouped into two factors reflecting (a) health aware and (b) traditional dietary patterns. Personality was assessed using the NEO Personality Inventory-3, which measures the Five-Factor Model personality broad traits of Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. The result revealed that Higher scores on the health aware diet factor were associated with lower Neuroticism, and higher Extraversion, Openness and Conscientiousness (effect sizes were modest: r = .11 to 0.17 in self-ratings, and r = .08 to 0.11 in informant-ratings, $p < 0.01$ or lower). Higher scores on the traditional diet factor were related to lower levels of Openness (r = -0.14 and -0.13, $p < .001$, self- and informant-ratings, respectively).

Tiainen, et al. (2013) explored the associations between food and nutrient intake, personality traits and resilience among 1,681 subjects in Helsinki. A validated semi-quantitative food frequency questionnaire was used

to measure diet and the NEO-personality inventory to assess personality. Adjusting for age, education and energy intake, and applying Bonferroni corrections, openness in men was associated with higher vegetable (14.9 g/d for 1 SD increase in the personality score, P_{Bonf}, .01) and lower confectionery and chocolate (22.8 g/d, P_{Bonf}, .01) intakes. In women, neuroticism was associated with lower fish (24.9 g/d, P_{Bonf}, .001) and vegetable (218.9 g/d, P_{Bonf}, .01) and higher soft drink (19.9 g/d, P_{Bonf}, .001) intakes. Extraversion, in women, associated with higher meat (5.9 g/d, P_{Bonf} , 0.05) and vegetable (24.8 g/d, P_{Bonf}, .001) intakes, openness with higher vegetable (23.4 g/d, P_{Bonf}, .001) and fruit (29.5 g/d, P_{Bonf}, .01) intakes. Agreeableness was associated with a lower soft drink (216.2 g/d, P_{Bonf}, .01) and conscientiousness with a higher fruit (32.9 g/d, P_{Bonf}, .01) intake in women.

In a random sample (N = 951) from the general population, direct and indirect effects of the Big Five personality traits on eating styles and food choices were examined by Keller and Siegrist (2015) in Switzerland. Path models revealed that high openness to experience were associated with higher fruit, vegetable and salad and lower meat and soft drink consumption. High agreeableness was associated with low meat consumption. Neuroticism, conscientiousness and extraversion significantly and directly influenced eating styles and significantly indirectly influenced food choices. Conscientiousness mainly promoted fruit consumption by promoting restrained eating and prevented meat consumption by reducing external eating. Conscientiousness prevented consumption of sweet and savory foods and of sugar-sweetened soft drinks by promoting restrained eating and reducing external eating, and consumption of sweet and savory foods also by reducing emotional eating.

Neuroticism promoted consumption of sweet and savory foods by promoting emotional and external eating. Extraversion promoted sweet and savory, meat and soft drink consumption via promoting external eating. Results suggest that neurotic and emotionally unstable individuals seem to adopt counter-regulatory external or emotional eating and eat high-energy dense sweet and savory foods. Highly conscientious individuals adopt regulatory dietary restraint and practice counter-regulatory emotional or external eating less, resulting in more consumption of recommended and less consumption of not recommended food. The higher sociability of extraverted people, which is basically a health beneficial psychological resource, seems to have health-averse effects. In all, personality traits are stable; however, the resulting more proximal, counter-regulatory eating styles such as emotional or external eating might be more successfully addressed in interventions to prevent worsening the plight of cancer patients.

Akbaraly, et al. (2009) conducted a study to examine the association between dietary patterns and depression using an overall diet approach in London. The study included 3,486 participants (26.2% women, mean age 55.6 years) from which two dietary patterns were identified: 'whole food' (heavily loaded by vegetables, fruits and fish) and 'processed food' (heavily loaded by sweetened desserts, fried food, processed meat, refined grains and high-fat dairy products). Self-reported depression was assessed using the Center for Epidemiologic Studies – Depression (CES–D) scale. The result showed that after adjusting for potential confounders, participants in the highest tertile of the whole food pattern had lower odds of CES–D depression (OR = 0.74, 95% CI 0.56–0.99) than those in the lowest tertile. In contrast, high consumption of

processed food was associated with an increased odds of CES–D depression (OR = 1.58, 95% CI 1.11–2.23).

Another study was conducted by Konttinen, Männistö, Sarlio-Lähteenkorva, Silventoinen, and Haukkala (2010) in Helsinki, Finland. They examined the associations of emotional eating and depressive symptoms with the consumption of sweet and non-sweet energy-dense foods and vegetables/fruit, also focusing on the possible interplay between emotional eating and depressive symptoms. The participants were 25–64-year-old Finnish men (n = 1,679) and women (n = 2,035). The Three-Factor Eating Questionnaire-R18, Center for Epidemiological Studies Depression Scale, and a 132-item Food Frequency Questionnaire were used. Emotional eating and depressive symptoms correlated positively (r = 0.31 among men and women). Emotional eating was related to a higher consumption of sweet foods in both genders and non-sweet foods in men independently of depressive symptoms and restrained eating. The positive associations of depressive symptoms with sweet foods became non-significant after adjustment for emotional eating, but this was not the case for non-sweet foods. Depressive symptoms, were related to a lower consumption of vegetables/fruit; men (b = 0.04, p = 0.001) and women (b = 0.04, p < 0.001). These findings suggest that emotional eating and depressive symptoms both affect unhealthy food choices. Emotional eating could be one factor explaining the association between depressive symptoms and consumption of sweet foods, while other factors may be more important with respect to non-sweet foods and vegetables/fruit.

Park, You, and Chang (2010) in their study found out that the average intakes of vitamin A ($p<0.05$), β-carotene ($p<0.01$), vitamin C ($p<0.05$), folic

acid ($p<0.05$) and fiber ($p<0.05$) of depression patients were significantly lower compared to control group. The average total dietary habit score of depression patients (47.2) was significantly lower than that of control group (51.3) ($p<0.01$). The average dietary habit scores of "eating meals at regular times" ($p<0.05$), "eating adequate amount of meals" ($p<0.05$), "having meals with diverse foods" ($p<0.05$), "avoiding eating spicy foods" ($p<0.01$) and "eating protein foods such as meat, fish, eggs, beans more than 2 times a day" ($p<0.05$) were significantly lower in depression patients compared to control group. The result of the study thus sought to suggest that depressed people tend to have bad eating habits. However, with such a small sample size, it might have affected the results and thus render it not very much generalizable. The study included 65 patients with depression and 65 controls without depression. The CES-D (Center for Epidemiologic Studies Depression) and the dietary habits questionnaire were the scales used for depression measure and eating respectively.

A cross-sectional study by Fowles, Stang, Bryant and Kim (2012) also produced similar results as the previous reviewed studies by confirming that depression affect one's eating habits. Seventy-one (71) low-income women from Austin Texas completed validated instruments measuring depression and eating habits. The Edinburgh Postnatal Depression scale and Eating Habits subscale from the Project EAT (Eating Among Teens) Survey were used to measure depression and eating habits respectively. After comparative and correlational analyses were done, women with diet quality scores below the median (n=35) had more depression (9.6_5.1 vs 6.7_5.1) than did women with high diet quality scores (n=36). Diet quality was negatively related to

depression (r = -0.41), which means that women with low diet quality had high depression and vice versa. However, many factors might have contributed to the result. Firstly, the sample size was too small making it hard to generalize. Again, considering the fact that the researchers considered women with low income background could have affected the results in the sense that being a low income woman in itself is somehow depressing which affect their eating habits. More so, being a low income woman could also mean that they could not afford proper meals which affect the quality of their diet.

Depression as a Mediator

Research works examining the mediation effect of depression on the relationship between personality traits and eating habits were hard to come by. Notwithstanding that, depression has been found to be a mediator in some other relationships.

A study by Stover, Urdahl, and Easton (2012) showed depression as a significant mediator of the relationship between the severity of fathers' drug use and hostile-aggressive parenting behaviours. The study was conducted among 87 men who were fathers of a child under the age of 18. The mean age of the sample was 35.4 years (SD = 9.74). Beck Depression Inventory was used to measure their depression levels. Bootstrap mediation modeling was conducted to determine the role of depression on the association between SA and negative parenting. The bootstrap results indicated that the total effect of fathers' drug-abuse (DA) severity on their hostile-aggressive parenting behaviours (total effect = .17, p = .01) became non-significant when fathers' depression as measured by the BDI was included as a mediator in the model

(direct effect of DA = .07, *p* = .41). Though the result was significant and depression mediated the effects, it might have been influenced by the small size of the sample used.

Puff, Kolomeyer, McSwiggan, Pearte, Lauer, and Renk (2016) conducted a study among four hundred twelve (412) emerging adults (300 females and112 males) who were attending a large southeastern university with a mean age of 20 years (SD 3.08 years). Beck Depression Inventory-II (BDI-II) was used to measure their depression levels. The mediation value of female emerging adults' depressive symptoms was confirmed with a significant Sobel test ($z = 4.68$, $p < .001$). Thus, female emerging adults' depressive symptoms served as a mediator in the relationship between familial criticism and college adaptation. This was not the case for male emerging adults as was confirmed by an insignificant Sobel test ($z = 1.61$, $p < .11$). Though the sample size was relatively large as compared to the study by Stover, Urdahl, and Easton (2012), the mediation analysis procedure (Baron and Kenny's method for determining mediation) used might have affected the results.

Conceptual Framework

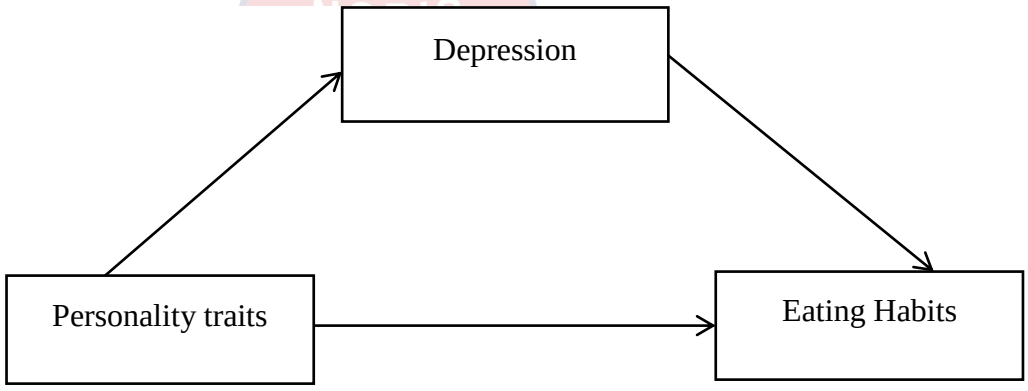

Figure 1: Conceptual framework showing the interaction among the independent variable, mediator variable and the dependent variable
Source: Researcher

Literature Summary

In this literature, the researcher explored certain aspects of breast cancer. Literature on the Big Five personality traits model, the theory of planned behaviour, Beck's cognitive theory of depression as well as biopsychosocial model provided the frame work to explain the connection that exists between the various variables used in the study.

In the review it was realized that majority of the studies conducted had used NEO-PI as the major tool in assessing personality traits of cancer patients from different contexts. There were also inconsistencies regarding their findings. However, Neuroticism, Extraversion and Conscientiousness were the prevailing traits that were dominant. This study employed the Big five personality inventory to assess the personality types of breast cancer patients in the Ghanaian context. Different tools have been used to measure eating habits and majority of these instruments focused on identifying the food types. The results indicated that majority of patients with cancer were following almost the same dietary pattern which was a bad eating habits. The few ones who had good eating habits attributed it to forehand knowledge and advice received from physicians, dieticians and other sources. Using a different Eating Habits Questionnaire, the eating habits of patients with breast cancer in CCTH was assessed. Results from literature reviewed on depression revealed that almost all cancer patients were depressed. Thus, it has become imperative that the depression levels of patients with breast cancer in CCTH be known.

Personality trait correlated well with both depression and eating habits though with different coefficients. The most common personality traits that were implicated in both depression levels and eating habits were neuroticism,

extraversion and conscientiousness. Depression levels also correlated with eating habits thus implying that depression levels affect one's choice of food and the eating habits of the individual. In conclusion, the findings revealed that personality traits affect depression levels as depression levels also affect eating habits. Personality traits also directly affect eating habits. Depression also seemed to be a good mediator in some studies. However, it is yet to be established how depression could mediate the effect of personality traits on eating habits of patients with breast cancer and that is what this study sought to explore.

CHAPTER THREE

RESEARCH METHODS

This study seeks to examine the influence of personality traits and depression on eating habits of patients with breast cancer in CCTH. This chapter gives a description of the procedure employed in conducting the study. Again, this chapter includes information on the research design used, and how the participants were selected for the study, information on the research instruments, data collection procedure and data analysis method considered.

Research Design

Research design refers to the overall structure or plan of the study (Singleton & Straits, 2010) and the overall strategy to integrate the different components of the study in a coherent and logical way thereby ensuring to effectively address the research problem (Labaree, 2009). It constitutes the blueprint for the collection, measurement and analysis of data. Morse and Niehaus (2009), define research designs as procedures for collecting, analysing, interpreting, and reporting data in research studies which guide the methods and decisions that researchers must make during their studies and set the logic by which they make interpretations at the end of their studies. Rockinson-Szapkiw (2012), also indicated that research design guides decisions that the researcher needs to make about the conduct of the research, for instance, when and how often to collect data, what data to gather and from whom, how to analyse the data. There are three research paradigms or approaches namely quantitative, qualitative, and mixed method with various

types of research designs. Quantitative research is a structured way of collecting and analysing data obtained from different sources and involves the use of computational, statistical, and mathematical tools to derive results (Goertzen, 2017). Qualitative research inquires deeply into specific experiences, with the intention of describing and exploring meaning through text, narrative, or visual-based data, by developing themes exclusive to that set of participants (Glesne, 2011). Thus qualitative research aims to describe and interpret social rules, cultures, and human experiences. There are various types of qualitative research including ethnography, narrative, phenomenological, and grounded theory. The third paradigm is the mixed method which combines both quantitative and qualitative methodologies, thus using both statistical and exploratory approaches (Cohen, Manion & Morrison, 2011).

This study employed the descriptive research design which is a quantitative design. Other quantitative research designs include correlational design, experimental design, and quasi-experimental design (Creswell, 2013). Descriptive research design is a scientific method which involves observing and describing the behaviour of a subject without influencing it in any way (Shuttleworth, 2008). Thus, descriptive research is used to describe characteristics of a population or phenomenon being studied. There are three main types of descriptive methods: observational methods, case-study methods and survey methods (Jackson, 2009).

Descriptive survey is the research design that is used to explore a situation, or to seek explanation and provide data for testing hypotheses (Ofori & Dampson, 2011). Descriptive surveys are carried out with the goal of gathering facts about or learning more about the demographic characteristics,

behaviours, and attitudes of students, employees, patients and clients (Andres, 2012). Descriptive surveys gather data at a particular point in time with the intention of describing the nature of existing conditions, or identifying standards against which existing conditions can be compared, or determining the relationships that exist between specific events (Cohen et al, 2011). A descriptive survey involves collecting data in order to answer research questions concerning the subject of study. In a descriptive survey, the collection of information typically involves one or more of the following data gathering techniques: structured or semi structured interview, self-completion or postal questionnaire and attitude scales (Polit & Beck, 2008).

Quantitative was chosen because the researcher wanted to investigate the relationships among some variables of interest. This study was also quantitative in nature because the researcher wanted to measure outcomes and measure the numbers involved in some category of interest. Quantitative studies do not depend heavily on the individual skills of the researcher and thus results are not influenced by the researcher's personal biases and idiosyncrasies (Anderson, 2010).

Descriptive survey design was appropriate for the study because it helps to find factors associated with certain occurrences, outcomes, conditions or types of behaviours (Labaree, 2009). Therefore, it would be helpful in identifying the relationships that exist among personality types, depression and eating habits of breast cancer patients. More so, descriptive survey design was chosen because it has the advantage of providing a high level of general capability in representing a large population as it helps in rich data that is collected in large amounts. As compared to other methods of data gathering,

surveys are able to extract data that are near to the exact attributes of the larger population (Creswell, 2013). Again, because descriptive survey is highly representative, it is often easier to find statistically significant results and yields higher validity and reliability than other research designs (Creswell, 2013). Multiple variables can be effectively analysed using descriptive survey design and is more objective because the researcher would have no emotional involvement with the participants (Bernard, 2017). Descriptive research may be a pre-cursor to future research because it can be helpful in identifying variables that can be tested (Bernard & Bernard, 2013). The findings may point out specific variables that may be impacting or mediating that warrant further study. However, it is important to emphasise that descriptive research methods can only describe a set of observations or the data collected. It cannot draw conclusions from that data about which way the relationship goes (Jackson, 2009). Descriptive surveys can also result in unreliable data if the questions to be answered are misleading and not clear and again the participants may not answer honestly, due to the poor control over the relatively large sample size thus written responses may not be truly representative of actual behaviour (Punch, 2013). However, measures were put in place to reduce reactivity and also use questionnaires that are very clear and not misleading. Some of these measures included reverse statements and further probing into some of the responses that were given.

Study Area

The study was carried out in the Central Region of Ghana, specifically, Cape Coast Metropolis which is one of the seventeen (17) districts of the Central Region. The population of Cape Coast Metropolis, according to the

2010 Population and Housing Census, is 169,894 representing 7.7 percent of the total population of the Central Region but it is projected to be 183,937 (Ghana Statistical Service (GSS), 2018). The number of males in Cape Coast Metropolis constituted 48.7 percent while females represented 51.3 percent. The city has a number of health centres both private and public including CCTH which was the researcher's specific study setting. CCTH is a referral hospital for the Central Region of Ghana. CCTH is a referral hospital where chronic diseases including breast cancer are being referred to. CCTH has a Breast Clinic which is a referral point for breast cases. It was thus imperative to use the teaching hospital where most breast cases are referred to.

Population

A research population is generally a large collection of individuals or objects that is the main focus of a scientific query. A research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common, binding characteristic or trait (Creswell, 2013). It is for the benefit of the population that researches are done. However, due to the large sizes of populations, researchers often cannot test every individual in the population because it is too expensive and time-consuming. This is the reason why researchers rely on sampling technique. There are two types of population in research namely the target population and accessible population (Saha, & Paul, 2016). Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics and it is also known as the theoretical population (Shuttleworth, 2008), whilst the

accessible population is the population in research to which the researchers can apply their conclusions. This population is a subset of the target population and is also known as the study population (Saha, & Paul, 2016). It is from the accessible population that researchers draw their samples. Accessible population may be limited to region, state, city, county, or institution**.** In this study, the target population was all women with breast cancer whilst the accessible population was women diagnosed with breast cancer seeking care at CCTH. The information received from CCTH Records, indicated that, the number of clients attending Breast Clinic was 400.

Sampling Procedure

A population commonly contains too many individuals to study conveniently, so an investigation is often restricted to one or more samples drawn from it and this is done through sampling using various sampling techniques. In statistics and survey methodology, sampling is the selection of a subset (a statistical sample) of individuals from within a statistical population to estimate characteristics of the whole population (Lance & Hattori, 2016). The purpose of sampling is to focus on a number of participants in the research study area within a large population (Creswell, 2013). The sample refers to the selected elements (people or objects) chosen for participation in a study; people are referred to as subjects or participants. Using sample size determination by Krejcie and Morgan (1970), the sample size for this study was 196. However, to cater for non-return rate, a sample size could be approximately increased (Cohen, Manion & Morrison, 2011). Thus, the sample size was approximated to 200 participants. The sample was approximated to only 200 because of the clinical nature of their condition. The

sample comprised women with breast cancer from the Central region who were referred to the regional hospital for treatment. The sample largely consisted of women between the ages of 18 – 60 and above with majority in their fifties. The popular dialect of the sample was Fante and English. Though records show high numbers of breast cancer, majority of the patients are hard to come by and not willing to give out information. Due to the nature of the population, a non-probability sampling procedure was used. Convenient sampling method was used to select women with 2nd to 4th stage breast cancer symptoms. Convenient sampling was used because patients with breast cancer attending CCTH have their clinic days based on their appointment dates. Per their clinic days at any particular time, patients that were available were contacted to participate in the study.

The participants selected for this study included women diagnosed with breast cancer for at least six (6) months. However, patients who had already been diagnosed with psychological distress before the onset of the cancer were excluded.

Data Collection Instruments

Structured questionnaires were the main instruments for this study. A questionnaire is an instrument or tool which consists of a written list of questions for collecting data. It requires respondents to read and interpret and then write down answers to satisfy the objective of the study (Howitt & Cramer, 2010). The dependent variable in this study was eating habits, and the independent variables were personality traits and depression. These variables were measured using the adapted questionnaires described below.

Beck's Depression Inventory 2 (BDI-II)

The Beck Depression Inventory (BDI-II), created by Aaron T. Beck, is a 21-question multiple-choice self-report inventory, one of the most widely used psychometric tests for measuring the severity of depression. Its development marked a shift among mental health professionals, who had until then, viewed depression from a psychodynamic perspective, instead of it being rooted in the patient's own thoughts. In its current version, which is used in this study, the BDI-II is designed for individuals aged 13 and over, and is composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex (Beck, 1972).

The BDI-II was a 1996 revision of the BDI, developed in response to the American Psychiatric Association's publication of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, which changed many of the diagnostic criteria for Major Depressive Disorder (Beck, Steer, Ball & Ranieri, 1996).

Items involving changes in body image, hypochondriasis, and difficulty working were replaced. Also, sleep loss and appetite loss items were revised to assess both increases and decreases in sleep and appetite. All but three of the items were reworded; only the items dealing with feelings of being punished, thoughts about suicide, and interest in sex remained the same. Finally, participants were asked to rate how they have been feeling for the past two weeks, as opposed to the past week as in the original BDI.

Like the BDI, the BDI-II also contains 21 questions, each answer being scored on a scale value of 0 to 3. Higher total scores indicate more severe depressive symptoms. The standardized cutoffs used differ from the original:

1. 0–14: minimal depression
2. 15–20: mild depression
3. 21–29: moderate depression
4. 30–63: severe depression.

One measure of an instrument's usefulness is to see how closely it agrees with another similar instrument that has been validated against information from a clinical interview by a trained clinician. In this respect, the BDI-II is positively correlated with the Hamilton Depression Rating Scale with a Pearson r of .71, showing good agreement. The test was also shown to have a high one-week test–retest reliability (Pearson r = .93), suggesting that it was not overly sensitive to daily variations in mood (Beck, Steer & Brown, 1996) The test also has high internal consistency (α=.91) (Beck, Steer, Ball & Ranieri, 1996).

In sum, the Beck Depression Inventory is a well-established questionnaire used to screen for depression which has been validated for use in non- psychiatric patients including college students and medical students. It correlates well with a diagnosis of clinical depression in non-psychiatric patients (Dyrbye, Thomas, & Shanafelt, 2006). The BDI-II has the advantage of providing a quantitative assessment of the intensity of depression. Because it is designed to reflect the depth of depression, it can monitor changes over time and provide an objective measure for judging improvement and the effectiveness or otherwise of treatment methods (Beck, Ward, Mendelson,

Mock, & Erbaugh, 1961). However, the BDI has a limitation just like other self-report inventories, in that scores can be easily exaggerated or minimized by the person completing them. Like all questionnaires, the way the instrument is administered can have an effect on the final score (Bowling, 2005). However, in this study, this limitation was checked by probing further in order to detect exaggeration.

Big Five Personality Inventory

The Big Five personality trait, also known as the five-factor model (FFM), and the OCEAN model, is taxonomy for personality traits (Rothmann, & Coetzer, 2003). The five factors have been defined as openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism, often represented by the acronyms *OCEAN* or *CANOE*. Beneath each proposed global factor, there are a number of correlated and more specific primary factors. For example, extraversion is said to include such related qualities as gregariousness, assertiveness, excitement seeking, warmth, activity, and positive emotions (Matthews, Deary & Whiteman, 2003). The initial model was advanced by Ernest Tupes and Raymond Christal in 1961 (Tupes & Christal, 1961) but failed to reach an academic audience until the 1980s. In 1990, J.M. Digman advanced his five-factor model of personality, which Lewis Goldberg extended to the highest level of organization (Goldberg, 1993). These five overarching domains have been found to contain and subsume most known personality traits and are assumed to represent the basic structure behind all personality traits (O'Connor, 2002).

The Big Five Inventory (BFI) is a 50-item inventory that measures an individual on the Big Five Factors (dimensions) of personality (Goldberg,

1993). Each of the factors is then further divided into personality facets. It is a five point likert scale questionnaire that ranges from 1 (*Strongly disagree*) to 5 (*Strongly agree*). The researcher adopted these measures because they were short instruments and easy to understand by the respondents. In addition, BFI also shows high convergent validity with other self-report scales and with peer ratings of the Big Five (Gosling, Rentfrow & Swann, 2003). Previous tested reliability of the BFI was typically ranged from .79 to .88. The reliability coefficient (Cronbach's Alpha) for each factor of the personality traits was .779 (openness to experience), .727 (conscientiousness), .725 (extraversion) and .716 (neuroticism). The Big Five has provided support for the existence of the Five Factor Model (FFM) and its universal application. The Big Five factors were found positively associated with distinct aspects of contextual performance as accordance to meta-analytic research studies. The validity of the Big Five is strongly supported by empirical evidence specifically when it represents taxonomy to describe human personality (Hogan & Holland, 2003). One common criticism is that the Big Five does not explain all of human personality. Some psychologists have dissented from the model precisely because they feel it neglects other domains of personality, such as religiosity, manipulativeness/machiavellianism, honesty, sexiness/seductiveness, thriftiness, conservativeness, masculinity/femininity, snobbishness/egotism, sense of humour, and risk-taking/thrill-seeking (Paunonen, & Jackson, 2000). However, these left out personality domains were not of interest and would not affect this study in anyways.

Eating Habits Questionnaire

The Eating Habits Questionnaire (EHQ) is a 21-item self-report inventory used to assess cognitions, behaviours, and feelings related to healthy eating. The questionnaire was created by Graham (2005). It is a 4 point likert scale ranging from 1(false, not true) to 4(very true). The items of the EHQ capture: 1) problems associated with healthy eating, 2) knowledge of healthy eating, and 3) feeling positively about healthy eating. The EHQ was categorized into bad and good eating habits. Participants who scored from 0-32 had bad eating habits and participants who scored 33 and above had good eating habits. The EHQ displayed good internal consistency ranging from .82 to .90 and test-retest reliability ranging from .72 to .81. The EHQ correlated with measures of eating pathology, (r = .79 with EAT-26 and r = .62 with BULIT-R).

In sum, the entire questionnaire comprised of four (4) sections totaling 95 items. The section A covered the demographic characteristics of the participants; the section B measured depression; section C measured personality traits and the section D measured eating habits of the participant.

Pilot Testing of Instruments

Creswell (2008) pointed out that when an instrument is modified or combined with other instruments in a study, the original validity and reliability may be distorted and therefore becomes imperative to re-establish validity and reliability. The questionnaires were not modified in this study, however, they were pilot tested to see its practicability in the Cape Coast context. Thus, the questionnaires for this study were pilot tested before collecting the main data

for the study. This was to ensure that the research instruments were authenticated.

The questionnaires were pilot tested at Oak Tree Clinic in Cape Coast. The Oak Tree hospital was chosen because compared to other hospitals; it had facilities similar to CCTH. Again, the doctor who offered chemotherapy treatment at CCTH was the same doctor who offered chemotherapy at Oak Tree. The questionnaires were tested on 10 women with breast cancer. This enabled the researcher to clarify all ambiguous questions, identified possible challenges likely to be encountered in the actual exercise and how to address them. For instance participants did not understand some statement like "I feel blue" and thus I had to change it to "I feel sad". The pilot test also provided data for the researcher to determine the reliability of the instrument. After pilot testing, the questionnaire was analysed to report the reliability coefficient (Cronbach alpha coefficient reliability). The Cronbach alpha measures the internal consistency and according to Nunnally (1970), a Cronbach alpha value of .70 and above is considered reliable. After the pilot test, BDI-II had a chronbach alpha of .861. The Cronbach alpha for the sub scales of the BFI were .942 for extraversion, .869 for agreeableness, .952 for conscientiousness, .894 for neuroticism and .925 for openness. BFI had an overall Cronbach alpha of .875. The EHQ had a Cronbach alpha of .947. In all, the Cronbach alphas predicted good internal consistencies.

Data Collection Procedures

Ethical considerations refer to procedures that are followed to protect the rights of the institution and the respondents and to ensure scientific integrity (Polit & Beck, 2008). Ethics approval for the study was obtained

from the University of Cape Coast Institutional Review Board and CCTH. (See appendices C and E).

The purpose or objectives of the study were clearly presented. All aspects of the study were fully explained. These included telling potential participants where and when the study would take place, stressing on the participants' time involvement and all activities participants would perform. Participants were told of any possible discomfort, either physical or psychological that might occur as a result of participation. The Clinical Psychologist of the hospital was informed of the nature of the data to be collected. Therefore in case of any emotional or psychological discomfort, they would be referred to him. However, the researcher was fortunate enough not to have encountered any serious emotional or psychological discomfort. Any invasion of privacy was also discussed. Potential benefits were described. Consent was sought from participants by participants signing of a consent form (see appendix A). Anonymity and confidentiality was assured. Due to ethical considerations, names of respondents were not sought nor recorded. Participants were made aware they could withdraw from the study any time they wished to do so without any penalty.

The data for the study were collected personally within two months, using the set of questionnaires. The questionnaires were distributed to respondents who could read and understand the questions. For those who could not fill the questionnaires on their own because they could not read and understand, the questionnaires were administered to them in the form of interpreting the questionnaires in the Fante and twi to about 10 participants who spoke twi. Participants took about 45 minutes to an hour to complete the

questionnaire. Out of 200 questionnaires given out, a total of 164 questionnaires representing 82% return rate were used for analysis. This return rate was considered sufficient for analysis for this type of study (Saunders, Lewis & Thornhil, 2007).

Data Processing and Analysis

The data collected through the administered questionnaires were coded and scored before responses were coded into numerical data for further analysis using the Statistical Package for Social Sciences (SPSS) version 22 software. For instance the BDI was summed up into a composite score. This composite showed the level of depression of the participants. The scores were thus categorized into 1-14, 15-20, 21-29 and 30-63 for minimal, mild, moderate and severe depressions respectively. They were then coded into 1, 2, 3, and 4 for data entry. The total composite scores were also entered as they were. The same composite scores were calculated for the subscales of the BFI and coded into 1 for low and 2 for high of the personality type. Low scores indicated low of that particular trait and high scores indicated high of that trait. Composite eating habits scores were also calculated and coded into 1 for bad and 2 for good eating habits. The entered data were screened and cleaned to make sure all probable errors were corrected. Some of the errors corrected included missing items and typographical errors in typing the numbers. Data on research questions 1-3 were analysed using descriptive statistics (percentages, and frequencies). Research questions 1-3 sought to describe and report the levels of depression, personality and eating habits thus percentages and frequencies were appropriate to report these numbers. Research hypothesis 1 was tested using multiple regression analysis. Multiple regression

analysis is used to find out relationships as well as predictions and how variables interact to have effect on the other. Thus it was the appropriate tool to find the interactions and relationships that exist among depression, personality and eating habits variables. Lastly, research hypothesis 2 was tested using mediation analysis using the Hayes PROCESS. According to Nitzl, Roldan and Cepeda (2016), the core of mediation is that it assumes a sequence of relationships in which an antecedent variable affects a mediating variable, which in turn affects a dependent variable. Mediation process is one way that researchers can explain the process of, or mechanism by which one variable affects another (MacKinnon, Fairchild & Fritz, 2007). One of the popularly used tools for mediation analysis is the Hayes PROCESS and thus was found appropriate to use to explain the process by which personality trait interact with depression to affect eating habits of patient with breast cancer.

Chapter Summary

This chapter looked into the methods involved in carrying out this study. The descriptive survey design was used. The sample was chosen from breast cancer patients who have been diagnosed for at least 6 months and are undergoing treatment at CCTH. A questionnaire consisting of BDI measuring depression, BFI for personality traits and EHQ measuring eating habits were used in collecting data for the study. Data were analysed both descriptively and inferentially according to the research questions and hypotheses of the study. Limiting the study to only breast cancer patients in CCTH may make the final results not generalisable to the entire population in the country. Additionally, participants might have not given real and actual information which might have affected the authenticity of the results.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

Introduction

The previous chapter dealt with the research methodology that guided the study. This chapter presents the results of the data collected from the field and discusses the findings from 164 questionnaires completed by patients with breast cancer at CCTH. The purpose of this study was to examine the influence of personality traits and depression on the eating habits of patients with breast cancer at CCTH. The study employed descriptive survey design.

The results are presented in sections according to demographics, research questions and hypotheses. The first section deals with the demographics of the study. The second section covers the personality traits of patients with breast cancer. The third and fourth sections deal with the eating habits and depression levels of patients with breast cancer respectively. The fifth section deals with the relationships that exist among personality traits, depression and eating habits of patients with breast cancer. The last section covers how depression levels mediate personality traits and eating habits of patients with breast cancer.

SECTION 1: Analysis of Demographic Information

This section covered the respondents' age range, level of education and marital status. Table 1 presents the analysis of the responses on the age range of the respondents.

Table 1- *Age Range of Respondents*

Age	**Frequency**	**Percentage**
18-29	7	4.3
30-39	23	14.0
40-49	31	18.9
50-59	69	42.1
60-70	34	20.7
Total	**164**	**100**

Source: Field survey, (2019)

Table 1 shows that of the 164 respondents, 69 representing 42.1% were between the ages of 50-59 years while only 7 respondents representing 4.3% were between the ages of 18-29 years with an overall mean age of 50.17 years. Averagely, majority of the respondents (62.8%) were 50 years and older.

This section covered the respondents' level of education. Frequencies and percentages were used to analyse responses on the level of education. Table 2 presents the analysis of the responses on the level of education of the respondents.

Table 2- *Level of Education of Respondents*

Level of Education	**Frequency**	**Percentage**
No formal education	60	36.6
Basic	30	18.3
Secondary	42	25.6
Tertiary	32	19.5
Total	**164**	**100**

Source: Field survey, (2019)

Table 2 shows that majority of the respondents (60) representing 36.6% had no formal education while only 32 (19.5%) had tertiary education. This means that majority of the women who have breast cancer had little or no formal education.

This section covered the marital status of the respondents. Responses on the marital status was analysed using frequencies and percentages. Table 3 presents the analysis of the responses on the marital status of the respondents.

Table 3- *Marital Status of Respondents*

Marital Status	**Frequency**	**Percentage**
Single	25	15.2
Married	93	56.7
Divorced	35	21.3
Widowed	11	6.7
Total	**164**	**100**

Source: Field survey, (2019)

Table 3 shows that 93 respondents representing 56.7% were married and 11 respondents representing 6.7% were widowed. This implies that majority of the women with breast cancer were married with very few whose husbands have passed out leaving them widowed.

Research Question One: What are the personality traits of patients with breast cancer?

This research question aimed to find out the types of personality traits that were dominant among patients with breast cancer. Data on this question was collected using the BFI and analysed using frequencies and percentages.

Table 4 shows the analysis of the responses on prevalence of the personality traits of patients with breast cancer.

Table 4- *Prevalence of Personality Traits of Patients with Breast Cancer*

Personality traits	**High** **Freq (%)**	**Low** **Freq (%)**
Extraversion	72 (43.9)	92 (56.1)
Agreeableness	20 (12.2)	144 (87.8)
Conscientiousness	78 (47.6)	86 (52.4)
Neuroticism	94 (57.3)	70 (42.7)
Openness	39 (23.8)	125 (76.2)

Source: Field survey, (2019) n=164

Table 4 shows the level of personality traits that the respondents had. Respondents had either low or high level of a particular trait. Ninety-four (94) representing 57.3% of the respondents were high in neuroticism, followed by high conscientiousness with 78(47.6%) and high extraversion with 72(43.9%). On the other hand, 144(87.8%) of the respondents were low in agreeableness followed by openness and extraversion with 125(76.2%) and 92(56.1%) respectively. These figures imply that majority of patients with breast cancer mostly may not be the outgoing type but rather the moody type and may be the hot tempered type of persons. This is because per the figures in the table, majority of the people were high in neuroticism and low in agreeableness.

Research Question Two: What is the eating habit of patients with breast cancer?

This research question aimed to find out whether patients with breast cancer had either good or bad eating habits. Data on this question was

collected using the EHQ and analysed using frequencies and percentages. Table 5 shows the prevalence of eating habits of patients with breast cancer.

Table 5- *Eating Habits of Patients with Breast Cancer*

Eating Habit	**Frequency**	**Percentage**
Bad eating habits	100	61.0
Good eating habits	64	39.0

Source: Field survey, (2019) *n* = 164

Table 5 shows that 100(61%) had bad or poor eating habits whilst only 64(39%) had good eating habits. These figures clearly show that majority of patients with breast cancer did not have any knowledge of the essence of altering the eating habits.

Research Question Three: What are the depression levels of patients with breast cancer?

This research question explored the depression levels of patients with breast cancer. Data on this question was collected using the BDI-II and analysed using frequencies and percentages. Table 6 shows the prevalence of depression of patients with breast cancer.

Table 6- *Prevalence of Depression levels of Patients with Breast Cancer*

Depression level	**Frequency**	**Percentage**
Minimal Depression	22	13.4
Mild	27	16.5
Moderate	27	16.5
Severe	88	53.7

Source: Field survey, (2019) *n* = 164

Results from Table 6 show that only 22(13.4%) of the 164 respondents had minimal depression while 88(53.7%) were severely depressed. These results indicate that persons living with breast cancer became severely depressed which is very much understood because some persons with breast cancer perceived the illness as a death warrant and thus think about it all the time.

Research hypothesis one

***H_0*: There is no relationship among personality traits, depression and eating habits of patients with breast cancer in CCTH.**

***H_1*: There is a relationship among personality traits, depression and eating habits of patients with breast cancer in CCTH.**

This hypothesis was tested to find the relationship that exists among personality traits, depression and eating habits. The hypothesis also tested how personality traits and depression predict eating habits. Multiple regression analysis was used to test this hypothesis to establish the relationship as well as the extent of prediction among these variables. After checking for and meeting all assumptions, Table 7 below displays the relationship among the personality traits, depression and eating habits of patients with breast cancer.

Table 7- *Multiple Regression Analysis for the Relationship among Personality Traits, Depression and Eating Habits*

Variables	*B*	*SE B*	β	*t*	*p*
Total depression score	-.322	.110	-.197	-2.921	.004
Extraversion	.713	.071	.539	9.992	.000
Agreeableness	-.106	.085	-.044	-1.243	.216
Conscientiousness	-.052	.086	-.036	-.604	.547
Neuroticism	.259	.081	.218	3.176	.002
Openness	.110	.068	.057	1.622	.107
R^2	.812				
F	113.096				

Dependent Variable: Total Eating habits score
Predictors: (Constant), Openness, Agreeableness, Extraversion, Conscientiousness, Total depression score, Neuroticism

Multiple regression analysis was conducted to investigate the relationship among eating habits, depression and personality traits. The results of the regression indicated that the model explained 81.2% of the variance and that the model was a significant predictor of eating habit, $F(6,157) = 113.096$, $p < .001$. It was found that extraversion significantly made the largest contribution ($\beta = .539$, $p<.001$), followed by neuroticism ($\beta = .218$, $p=.002$) and depression ($\beta = -.197$, $p=.004$). Agreeableness, conscientiousness and openness made only small and not significant contributions as presented in table 7. These results indicate that one's depression levels and personality traits predicted their eating habits. This implies that the depression levels of patients with breast cancer had some form of influence on their eating habits. Again, patients with high extraversion and high neuroticism could also had some influence on their eating habits.

Table 8- *Correlations among Eating Habits, Depression and Personality Traits*

		1	2	3	4	5	6	7
Pearson Correlation	Eating habits	1.00	-.786	.855	-.032	-.703	.792	-.053
	Depression		1.00	-.718	.080	.771	-.812	101
	Extraversion			1.00	.054	-.650	.731	-.111
	Agreeableness				1.00	.054	.022	-.070
	Conscientiousne					1.00	-.777	.131
	Neuroticism						1.00	-.131
	Openness							1.00
Sig.(1-tailed)	Eating habits							
	Depression	.000						
	Extraversion	.000	.000					
	Agreeableness	.342	.155	.247				
	Conscientiousne	.000	.000	.000	.246			
	Neuroticism	.000	.000	.000	.389	.000		
	Openness	.249	.099	.078	.185	.047	.047	

Source: Field survey, (2019)

Table 8 describes the correlations among eating habits, depression and personality traits of patients with breast cancer. From the Table, there is a significant negative correlation between depression levels and eating habits ($r = -.786$, $p < 0.05$). This means that as the score of depression increases, that of eating habits decreases and vice versa. This implies that as the depression levels of patients with breast cancer become severe, the quality of their eating habits reduces. Thus severe depression levels might have led to poor and bad eating habits.

Similarly, extraversion correlated significantly and negatively with depression levels ($r = -.718$, $p < 0.05$) and significantly correlated positively with eating habits ($r = .855$, $p < 0.05$). This means that as the depression levels increases, extraversion decreases and vice versa and as levels of extraversion increases, eating habits increases. This implies that as persons with breast

cancer experience increased levels of depression, it influenced their social integration and they became less outgoing and more introverts and as they became more introvert, the quality of their eating habits also reduced.

On the other hand, conscientiousness significantly correlated positively with depression ($r = .771$, $p < 0.05$) and significantly correlated negatively with eating habits ($r = -.703$, $p < 0.05$) indicating that as depression levels increase, level of conscientiousness also increases and as levels of conscientiousness increases, eating habits decreases and vice versa. This implies that patients with high levels of conscientiousness became more depressed which also significantly affect their eating habits negatively. This means as high conscientious patients had severe levels of depression, they might have poor or bad eating habits.

Again, from Table 8, neuroticism correlated significantly and negatively with depression ($r = -.812$, $p < 0.05$) and significantly and positively with eating habits ($r = .792$, $p < 0.05$). This means that as levels of neuroticism increased, depression levels decreased and vice versa but conversely as levels of neuroticism increased, quality of eating habits decreased. This implies that patients with high levels of neuroticism tend to have lower levels of depression, however on the other hand, this high level of neuroticism rather affected their eating habits thus leading to bad or poor eating habits.

Research hypothesis two

***H_0*: Depression levels will not mediate personality traits to affect the eating habits of breast cancer patients in CCTH.**

***H_1*: Depression levels will mediate personality traits to affect the**

eating habits of breast cancer patients in CCTH.

This hypothesis was tested to examine whether depression mediated the relationship between personality traits and eating habits. A mediation analysis was used to test this hypothesis to establish the mediating role of depression on the effect of personality traits on eating habits. The predictor variable was personality traits, the mediator was depression and the outcome variable was eating habits. Andrew F. Hayes PROCESS was used to conduct the mediation analysis using 1000 bootstrap samples. The tables below display the mediation results.

Table 9 shows the mediating role of depression in the relationship between extraversion and eating habits. The mediation analysis satisfied assumptions such as normality, continuous measurement, independence and linearity. In order to confirm a mediating variable and its significance in the model, the analysis tested the significance of the relationship between the initial IV and DV (X → Y), the significance of the relationship between the initial IV and the mediator (X → M), the significance of relationship between the mediator and the DV in the presence of the IV (M|X → Y) and the insignificance (or the meaningful reduction in effect) of the relationship between the initial IV and the DV in the presence of the mediator (X|M → Y). The result of the mediation analysis is presented in Table 9 below.

Table 9- *Mediating Role of Depression in the Relationship between Extraversion and Eating Habits*

	Coeff	BootSE	t-value	p	BLLCI	BULCI
X→ Y	1.130	.0539	20.958	.000	1.0235	1.2365
X→ M	-.5805	.0442	-13.12	.000	-.6679	-.4932
M/X→ Y	-.5833	.0843	-6.917	.000	-.7498	-.4168
X|M → Y	.7914	.0682	11.603	.000	.6567	.9261
	Effects					
Total effect of X on Y	1.1300	.0539	20.958	.000	1.0235	1.2365
Direct effect of X on Y	.7914	.0682	11.603	.000	.6567	.9261
Indirect effect of X on Y	.3386	.0745			.2200	.0285

X- Personality trait (extraversion), Y- eating habits, M- depression

The results from Table 9 show that extraversion was a significant predictor of eating habits, *b* = 1.13, t(1,163) = 20.958, p = <.001. Again, extraversion was a significant predictor of the mediator (depression) *b* = -.58, t(1,163) = 13.12, p = <.001. Again, the mediation process showed that the mediator (depression), controlling extraversion, was significant, *b* = -.58, t(2,162) = -6.917, p = <.001. And the analyses revealed that, controlling for the mediator (depression), extraversion was a significant predictor of eating habits, *b* = .79, t(2,162) = -11.603, p = <.001 which confirm that there is a partial mediation effect. A measure for the indirect effect of X on Y revealed a significant indirect effect of extraversion on eating habits, *b* = .3386, 95%CI (.2200, .0285). The results indicate that the effect extraversion had on eating habits of patients with breast cancer may be explained partially by the presence of depression. This could mean that when a patient with high

extraversion had good eating habits, it could be as a result of the patient having mild or no depression at all.

Table 10 shows the mediating role of depression in the relationship between agreeableness and eating habits. The mediation analysis satisfied assumptions such as normality, continuous measurement, independence and linearity. In order to confirm a mediating variable and its significance in the model, the analysis tested the significance of the relationship between the initial IV and DV (X → Y), the significance of the relationship between the initial IV and the mediator (X → M), the significance of relationship between the mediator and the DV in the presence of the IV (M|X → Y) and the insignificance (or the meaningful reduction in effect) of the relationship between the initial IV and the DV in the presence of the mediator (X|M → Y). The result of the mediation analysis is presented in Table 10.

Table 10- *Mediating Role of Depression in the Relationship between Agreeableness and Eating Habits*

	Coeff	BootSE	t-value	p	BLLCI	BULCI
X→ Y	-.0766	.1885	-.4064	.6850	-.4488	.2956
X→ M	.1172	.1150	1.0193	.3096	-.1099	.3443
M/X→ Y	-1.289	.0797	-16.178	.0000	-1.447	-1.132
X|M → Y	.0746	.1170	.6370	.5250	-.1566	.3057
	Effects					
Total effect of X on Y	-.0766	.1885	-.4064	.6850	-.4488	.2956
Direct effect of X on Y	.0746	.1170	.6370	.5250	-.1566	.3057
Indirect effect of XonY	-.1512	.1554			-.4683	.1386

X- Personality trait (agreeableness), Y- eating habits, M- depression

The results from Table 10 show that agreeableness was not a significant predictor of eating habits, *b* = -.77, t(1,163) = -.406, p = >.05. Again, agreeableness was not a significant predictor of the mediator (depression) *b* = .12, t(1,163) = 1.02, p = >.05. However, the mediation process showed that the mediator (depression), controlling agreeableness, was significant, *b* = -1.29, t(2,162) = -16.178, p = <.001. And the analyses revealed that, controlling for the mediator (depression), agreeableness was not a significant predictor of eating habits, *b* = .075, t(2,162) = .637, p = >.05 which confirm that there is no mediation effect. A measure for the indirect effect of X on Y revealed a non-significant indirect effect of agreeableness on eating habits, *b* = -.151, 95%CI (-.4683, .1386). The results indicated that the effect agreeableness had on eating habits of patients with breast cancer was not explained by the presence of depression.

Table 11 shows the mediating role of depression in the relationship between Conscientiousness, and eating habits. The mediation analysis satisfied assumptions such as normality, continuous measurement, independence and linearity. In order to confirm a mediating variable and its significance in the model, the analysis tested the significance of the relationship between the initial IV and DV (X → Y), the significance of the relationship between the initial IV and the mediator (X → M), the significance of relationship between the mediator and the DV in the presence of the IV (M|X → Y) and the insignificance (or the meaningful reduction in effect) of the relationship between the initial IV and the DV in the presence of the mediator (X|M → Y). The result of the mediation analysis is presented in Table 11.

Table 11- *Mediating Role of Depression in the Relationship between Conscientiousness and Eating Habits*

	Coeff	BootSE	t-value	p	BLLCI	BULCI
X→ Y	-1.01	.0807	12.574	.0000	-1.174	-.8558
X→ M	.6813	.0442	15.408	.0000	.5940	.7686
M/X→ Y	-.9859	.1211	-8.1406	.0000	-1.2251	-.7467
X|M → Y	-.3435	.1070	-3.209	.0016	-.5545	-.1321
	Effects					
Total effect of X on Y	-1.01	.0807	12.574	.0000	-1.174	-.8558
Direct effect of X on Y	-.3435	.1070	-3.209	.0016	-.5545	-.1321
Indirect effect of XonY	-.671	.0960			-.8612	-.4846

X- Personality trait (Conscientiousness), Y- eating habits, M- depression

The results from Table 11 show that Conscientiousness was a significant predictor of eating habits, *b* = -1.01, t(1,163) = 12.574, p = <.001. Again, Conscientiousness was a significant predictor of the mediator (depression) *b* = .681, t(1,163) = 15.41, p = <.001. Again, the mediation process showed that the mediator (depression), controlling Conscientiousness, was significant, *b* = -.99, t(2,162) = -8.141, p = <.001. And the analyses revealed that, controlling for the mediator (depression), Conscientiousness was a significant predictor of eating habits *b* = -.343, t(2,162) = -3.209, p=.0016 which confirm that there is a partial mediation effect. A measure for the indirect effect of X on Y revealed a significant indirect effect of Conscientiousness on eating habits, *b* = -.671, 95%CI (-.8612, -.4846). The results indicate that the effect Conscientiousness had on eating habits of patients with breast cancer may be explained partially by the presence of depression. This could mean that when a patient with high Conscientiousness

had bad eating habits, it could be as a result of the depression level of the patient.

Table 12 shows the mediating role of depression in the relationship between neuroticism and eating habits. The mediation analysis satisfied assumptions such as normality, continuous measurement, independence and linearity. In order to confirm a mediating variable and its significance in the model, the analysis tested the significance of the relationship between the initial IV and DV (X → Y), the significance of the relationship between the initial IV and the mediator (X → M), the significance of relationship between the mediator and the DV in the presence of the IV (M|X → Y) and the insignificance (or the meaningful reduction in effect) of the relationship between the initial IV and the DV in the presence of the mediator (X|M → Y). Table 12 presents the results of the mediating role of depression in the relationship between neuroticism and eating habits.

Table 12- *Mediating Role of Depression in the Relationship between Neuroticism and Eating Habits*

	Coeff	BootSE	t-value	p	BLLCI	BULCI
X→ Y	.9391	.0569	16.504	.000	.8267	1.0514
X→ M	-.5890	.0333	-17.70	.000	-.6547	-.5233
M/X→ Y	-.6886	.1233	-5.582	.000	-.9321	-.4450
X|M → Y	.5335	.0895	5.961	.000	.3568	.7102
	Effects					
Total effect of X on Y	.9391	.0569	16.50	.0000	.8267	1.0514
Direct effect of X on Y	.5335	.0895	5.961	.0000	.3568	.7102
Indirect effect of XonY	.4056	.0857			.2173	.5544

X- Personality trait (Neuroticism), Y- eating habits, M- depression

The results from Table 12 show that Neuroticism was a significant predictor of eating habits, *b* = .939, t(1,163) = 16.504, p = <.001. Again, Neuroticism was a significant predictor of the mediator (depression) *b* = -.589, t(1,163) = -17.70, p = <.001. Again, the mediation process showed that the mediator (depression), controlling for Neuroticism, was significant, *b* = -.688, t(2,162) = -5.582, p = <.001. And the analyses revealed that, controlling for the mediator (depression), Neuroticism was a significant predictor of eating habits, *b* = .534, t(2,162) = 5.961, p = <.001 which confirm that there is a partial mediation effect. A measure for the indirect effect of X on Y revealed a significant indirect effect of Neuroticism on eating habits, *b* = .554, 95%CI (.2173, .4056). The results indicate that the effect Neuroticism had on eating habits of patients with breast cancer may be explained partially by the presence of depression. This could explain why patients with high Neuroticism had good eating habits instead of having bad or poor eating habits. It could be as a result of the depression level of the patient because there was a negative correlation between depression levels and eating habits which means that as their depression levels reduced they had good eating habits.

Table 13 shows the mediating role of depression in the relationship between openness and eating habits. The mediation analysis satisfied assumptions such as normality, continuous measurement, independence and linearity. In order to confirm a mediating variable and its significance in the model, the analysis tested the significance of the relationship between the initial IV and DV (X → Y), the significance of the relationship between the initial IV and the mediator (X → M), the significance of relationship between

the mediator and the DV in the presence of the IV (M|X → Y) and the insignificance (or the meaningful reduction in effect) of the relationship between the initial IV and the DV in the presence of the mediator (X|M → Y). Table 13 presents the results of the mediating role of depression in the relationship between neuroticism and eating habits.

Table 13- *Mediating Role of Depression in the Relationship between Openness and Eating Habits*

	Coeff	BootSE	t-value	p	BLLCI	BULCI
X→ Y	-.1026	.1513	-.6779	.4988	-.4014	.1963
X→ M	.1194	.0922	1.293	.1975	-.0628	.3015
M/X→ Y	-1.290	.0799	-16.145	.0000	-1.4478	-1.132
X|M → Y	.0514	.0943	.5448	.5866	-.1348	.2376
	Effects					
Total effect of X on Y	-.1026	.1513	-.6779	.4988	-.4014	.1963
Direct effect of X on Y	.0514	.0943	.5448	.5866	-.1348	.2376
Indirect effect of XonY	-.1540	.1109			-.3797	.0576

X- Personality trait (Openness), Y- eating habits, M- depression

The results from Table 13 show that openness was not a significant predictor of eating habits, *b* = -.103, t(1,163) = -.678, p = >.05. Again, openness was not a significant predictor of the mediator (depression) *b* = .119, t(1,163) = 1.29, p = >.05. However, the mediation process showed that the mediator (depression), controlling openness, was significant, *b* = -1.29, t(2,162) = -16.14, p = <.001. And the analyses revealed that, controlling for the mediator (depression), openness was not a significant predictor of eating habits, *b* = .051, t(2,162) = .545, p = >.05 which confirm that there is no mediation effect. A measure for the indirect effect of X on Y revealed a non-significant indirect effect of openness on eating habits, *b* = -.1540, 95%CI (-

.3797, .0576). These results indicated that the effect openness had on eating habits of patients with breast cancer was not explained by the presence of depression.

In sum, the results revealed that depression significantly partially mediated the effect of extraversion, conscientiousness and neuroticism on the eating habits of patients with breast cancer, but did not mediate the effect of agreeableness and openness on the eating habits of patients with breast cancer.

Discussion

This section interpreted and compared the findings of this current study in reference to the literature and previous findings. Each finding is evaluated and their implications with respect to current theoretical positions as well as their practical applications are also examined. The findings are discussed according to the research questions and hypotheses. First, the findings on personality traits of patients with breast cancer were discussed. Findings on the eating habits of patients with breast cancer were also discussed followed by the discussion of the findings on the depression levels of patients with breast cancer. Findings on the relationship among personality traits, depression and eating habits of patients with breast cancer were discussed. Finally, discussion of the findings on depression as a mediator in the relationship between personality traits and eating habits of patients with breast cancer was also done. These are expatiated and discussed below.

Personality Traits of Patients with Breast Cancer

The results of the study found high neuroticism followed by high conscientiousness and high extraversion. The majority of the patients were low in agreeableness. This finding is consistent with a study conducted by Lai,

et al., (2010) who also recorded high neuroticism among women with gynecological cancer in China and continues to say that neuroticism is a salient personality trait that needs to be given much attention. However, the finding is inconsistent with the findings of Grov, et al (2009). Out of 1,428 participants, only 176 (12%) were identified with high neuroticism and compared to 1,252 (88%) with low neuroticism. Patients with breast cancer scored high in neuroticism because they may be very emotional about their sicknesses (Aprea et al., 2016). Already nature had put them to have high tendency of experiencing negative emotions such as anger, anxiety and depression (Jeronimus, et al., 2014). This means that with the slightest trigger, they may be emotionally unstable. Again, being a trait means that it may be inherent in the individuals, however, the high rate in patients with breast seem to support the long hypothesized assertion that neuroticism is a cancer prone personality type. The findings of this study on high extraversion also contradict that of Lillberg, et al. (2002) who reported that 32% of the participants had a low extraversion compared to 19% who had high level of extraversion. The inconsistencies in these results may be accounted for due to different research designs, different measurement tools and different contexts. Notwithstanding these inconsistences, it is very important that much attention is given to neuroticism as suggested by Lai, et al. It should be given maximum attention because studies have found that having high scores of neuroticism significantly increases one's risk for developing a common mental disorder such as depression, anxiety and substance use disorders (Khan, et al., 2005; Lebowitz, 2016).

Eating Habits of Patients with Breast Cancer

This study found that majority of the patients with breast cancer had bad or poor eating habits. This could be as a result of the patients having no or less knowledge of the need to check their diet and have good eating habits. Similar to this finding, Mohammadi, et al. (2013) also found that 37% of Iranian women with breast cancer had poor eating habits as compared to 29% with good eating habits. Celik, et al. (2015), also found bad or poor eating habits among esophageal and gastric cancer patients and concluded that high consumption of cheese, bread and high smoking are important risk factors for cancer. Again, Li et al (2017) similarly found bad eating habits among patients with breast cancer in Hong Kong. They found night time eating or eating late in the night among patients with breast cancer. Findings of the current study corroborate Li et al.'s study which reported that patients engage in eating anytime they wanted most especially at night.

In contrast to these findings is the result of Buck, et al. (2011) who reported good eating habits among patients with postmenopausal breast cancer in Germany. Patients involved in the study reported that they engaged in healthy dietary pattern (high fruit, fruiting, leafy and other vegetables, garlic, onion, vegetable oils, and mayonnaise intake) as compared to patients visiting CCTH who reported that they hardly ate fruits and vegetables. However, this difference could be due to different context and different cultural background. Velentzis, et al. (2011), also reported good dietary changes after patients were diagnosed with breast cancer. Patients had increased intake of fruits and vegetables, whole grains and lean sources of protein and a reduction in high fat, high sugar products, red meat, coffee, alcohol and refined grains after

diagnosis. Another contrast to the findings of this study is that of Templeton et al. (2013) and Shaharudin, et al. (2013) who reported good eating habits among patients with breast cancer in Eastern Switzerland and Malaysia respectively. These two studies further reported that their good eating habits were attributed to their interest in seeking more information and their willingness to seek for consultation on their eating habits from professionals like physicians and dietitians. This is in sharp contrast with the findings of this current study where patients reported that they lack knowledge and information on eating habits from professionals like dieticians and nutritionists. Patients also reported that after diagnosis, physicians did not refer them to the nutritionists and dieticians. Due to the low level of education of patients visiting CCTH, they may not be able to search for information and read on their own unlike patients from Eastern Switzerland who had high levels of education with majority of them having university degrees.

These findings point to the fact that there is the need for a holistic approach to the management of breast cancer as posited by the biopsychosocial model. The theory of planned behaviour explains that not only do individuals perform certain behaviours and form certain habits just for doing sake but they intentionally perform certain behaviours and form certain habits because they know the benefits of performing that behaviour and can perform it successfully. This theory confirms the importance of giving information on the benefits of good eating by physicians, dieticians and nutritionists to patients diagnosed with breast cancer. This will help them to form proper eating habits that aid their treatment process.

Depression Levels of Patients with Breast Cancer

The findings of this study found that more than 50% of the patients with breast cancer reported of severe depression. Only a few reported that they had no depression. This finding contradicts that of Brintzenhofe-Szoc, et al. (2009) which reported lower rate of depression among patients with breast cancer in Baltimore. However, the finding of this current study supports that of Vahdaninia, et al. (2010), Karakoyun-Celik, et al. (2010), Hinz, et al. (2010) and Hong and Tian (2014) which found elevated levels of depression among cancer patients. Majority of the patients had breast cancer. These studies found similar results though they were conducted with different instruments and at different contextual settings. They concluded that depression seems to be a more important psychological problem than anxiety in cancer patients. According to Becks concept of depression, sadness may come about as a result of loss of loved ones, family member or loss of some valuable items and being diagnosed with some form of chronic or terminal illness. The majority of the breast cancer patients who had severe levels of depression were therefore anticipated. The NIMH (2018) gave some signs and symptoms of depression to include loss of sexual desire, insomnia, feelings of guilt and worthlessness and attempts at suicide and upon interactions with the patients and per their responses to the questionnaires, these symptoms were very prominent. These severe levels of depression could also be one of the reasons why patients with breast cancer have very bad or poor eating habits as majority of them reported low appetite and their inability to eat as they keep thinking about their illness.

Karakoyun-Celik, et al. (2010) reported that high levels of depression were as a result of factors such as patients not being accompanied by spouse for hospital follow-ups, request to get help by a psychologist, lack of persons to share their problems with, and using an alternative treatment. These points are not far-fetched as similar issues were raised by the patients attending CCTH. From the results, it could be seen that more than 50% of the patients were married, however only very few of them came with their husbands or a family member and some of the patients complained bitterly about this. When patients were asked whether they have heard of the psychologist, they responded no but requested to see one when they heard of the benefit of the psychologist.

This implies that the treatment process of patients with breast cancer should not be centred on only the doctor and medications as some patients even complained of their inability to raise funds for some of the medications. This means that there is the need for a greater social support system that involves the family members to be more supportive rather than leaving the patients to fend for themselves. This stresses the need for a holistic approach to the diagnosis and treatment of illnesses as proposed by Engel (1977).

Relationships among Personality Traits, Depression and Eating Habits of Cancer Patients

The overall finding indicated a significant interactions or relationships among some personality traits (extraversion, conscientiousness and neuroticism), depression and eating habits of patients with breast cancer. Extraversion was the largest predictor of eating habits followed by neuroticism and depression. There were significant associations between personality traits

and depression, between personality traits and eating habits and between depression and eating habits. These findings are supported by some other findings discussed below. The study found that extraversion, conscientiousness and neuroticism were associated with depression. This finding is supported by Hakulinen, et al. (2015) who also reported extraversion, conscientiousness and neuroticism as being associated with depressive symptoms. The finding is again supported by Kendler, et al. (2006) who found that a strong association between neuroticism and a weak inverse association with depression. However, Deimling, et al. (2017) rather found neuroticism, conscientiousness and agreeableness to be significant predictors of depression with neuroticism as the strongest predictor. Though different researches may find different personalities predicting depression based on the instrument used and the context, these findings still point out the importance of considering the central role that personality characteristics play in understanding cancer-related worries and depression.

In all, the findings including that of this current study, neuroticism is found to be the strongest predictor of depression. However, this association was negative which is in contradiction to the theoretical position of the BFI. The BFI posit that persons high in neuroticism may generally give in to low self-esteem, anxiety and depression which predict that there is a positive association. However, this was not the case in this study as patients with high neuroticism were rather low in depression. By implication this means that it is not always that a person with high neurotic personality would also have severe depression. Some people are able to control their emotions such that it does not lead to depression. This is the same with conscientiousness as people with

high conscientiousness are severely depressed. According to the BFI, conscientious people have the tendency to control, regulate, and direct impulses, display self-discipline, act dutifully, and in socially acceptable ways. They are able to take good care of themselves and so when they are diagnosed with breast cancer, they may wonder why after doing everything right, they still got such a disease. Thus, they get depressed. However, the inverse relationship between extraversion and depression indicated that as people become more outgoing and interact with people, they tend to have no or mild depression as supported by the BFI theory. In sum, whether negative or positive associations, the underlying factor is that personality traits could in one way or the other contribute to the depression levels of patients with breast cancer.

Regarding personality traits and eating habits, this study found that again, extraversion, conscientiousness and neuroticism significantly correlated with and predicted eating habits of patients with breast cancer. This finding is in contradiction with the finding of Brummett, et al. (2010) where all but agreeableness had no association with eating habits. Mõttus, et al. (2012) on the other hand found associations between eating habits and all but agreeableness personality trait, whereby Tiainen, et al. (2013) and Keller and Siegrist (2015) found associations between eating habits and all the personality traits. Though there may be differences in findings which may be mainly due to different tools used and in different context, personality traits still prove to have some links with the choices of food we eat. Extraversion, conscientiousness and neuroticism were the prevalent traits that are mostly reported. Per the BFI, extraversion is the outgoing type, engages in social

functions and interact with lots of people, therefore the connection with eating habits and choices of food could be influenced as they move from place to place and interact with different people. Such people may end up eating virtually everything for which Keller and Siegrist (2015) suggested that it may have health-averse effects. Conscientiousness people are very critical about whatever they do and follow rules. Thus, such people are very critical and selective about what they eat. The BFI predict that high conscientiousness people are likely to have good eating habits which is opposite to what this study found that people high in conscientiousness are likely to have a poor eating habits. Neuroticism also predicted good eating habits which also contradicts the prediction of the BFI. Reasons such as cultural background and differences in respondents may account for such a report. Whilst the prediction of the BFI is among normal people with conscientiousness, that of this study was among patients with breast cancer and this could be a reason for the poor eating habits. This implies that it may not matter how critical and careful one may be and how resilient one may be, when she is diagnosed with any form of chronic diseases, it may affect eating habits.

Finally on the associations, the study found a significant negative association between depression and eating habits which means that as the depression levels of patients with breast cancer become severe, it may have an adverse effect on their eating habits. This finding is consistent with the findings of Akbaraly, et al. (2009), Konttinen, et al. (2010), Park, et al. (2010) and Fowles, et al. (2012). Though these studies were conducted at different places among different people with different instruments, they all found that people with severe depression levels tend to have bad or poor eating habits.

Such a finding was much expected because one of the signs and symptoms and results of depression by the NIMH was unintentional weight loss as a result of low appetite and improper dieting. This implies that severe depression levels may have adverse effect on the choice of food people take in.

Depression as a mediator

The findings of this study found depression as playing a significant mediating role on the effect extraversion, conscientiousness and neuroticism had on the eating habits of patients with breast cancer. This result is supported by Stover, et al. (2012) and Puff, et al. (2016) who also reported that depression played a significant mediating role between various variables. This means that the patient's depression level could partially explain why extraversion could have good eating habits. Again, depression could explain why patients high in conscientiousness have poor eating habits and why high neurotic patients have good eating habits. This implies that depression is one psychological factor that has significant effect on patients and therefore should be given critical attention. From the findings, it means that though one's personality type may play a role in the eating habits of patients, this role played by the traits may be as a result of how depressed the patient may be. Under normal circumstances, according to the BFI, high conscientiousness may predict good eating habits, whereas high neuroticism may predict bad eating habits. However, in this study, conscientiousness predicted bad eating habits whereas neuroticism predicted good eating habits. This inverse relationship could be explained by the role that depression levels play in the lives of the patients with breast cancer.

Summary of the Key Findings

Patients with breast cancer reported to be high in three distinct personality traits which were extraversion, conscientiousness and neuroticism. Patients also had bad or poor eating habits and reported of severe depression levels.

Regarding their interactions and associations, depression significantly correlated with eating habits. Extraversion significantly correlated negatively with depression and positively with eating habits. Conscientiousness significantly correlated positively with depression and significantly correlated negatively with eating habits. Finally, neuroticism correlated significantly and negatively with depression and significantly and positively with eating habits.

Depression levels played a significant partial mediating role on the effect of extraversion, conscientiousness and neuroticism personality traits on eating habits of patients with breast cancer. In conclusion, from all the results, it was realised that both personality traits and depression had significant influences on the eating habits of patients with breast cancer.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study, conclusions and recommendations of the study.

Overview

The study sought to examine the influence of personality traits and depression on eating habits of patients with breast cancer in CCTH. A descriptive survey design approach was used for the study. Using a convenience sampling technique, patients with breast cancer were contacted at CCTH with 164 participants responding to a structured questionnaire. Statistical procedures adopted in the data analysis were mainly frequencies and percentages, multiple regression and mediation analysis using Haye's PROCESS. The following were the key findings of the study:

1. On the personality traits of patients with breast cancer, the findings revealed that patients reported to be dominant in three distinct personality traits. These personality traits were extraversion, conscientiousness and neuroticism.
2. Examining patients' eating habits revealed that majority of the patients with breast cancer had bad or poor eating habits
3. On the depression levels, majority of the patients with breast cancer had severe depression.
4. Regarding their interactions and associations, depression significantly correlated with eating habits. Extraversion

significantly correlated negatively with depression and positively with eating habits. Conscientiousness significantly correlated positively with depression and significantly correlated negatively with eating habits. Finally, neuroticism correlated significantly and negatively with depression and significantly and positively with eating habits.

5. Finally, depression levels played a significant partial mediating role on the effect of extraversion, conscientiousness and neuroticism personality traits on eating habits of patients with breast cancer.

Conclusions

This research examined the influence of personality traits and depression on eating habits of patients with breast cancer in CCTH. It is deduced that some personality traits are predominant among persons with breast cancer. Mostly, these personality traits are not given much attention during the treatment process. However, personality is one factor that may play a significant role in our daily activities including eating habits just as the popular adage goes that "we are what we eat". Another factor that should be given much attention in the lives of the terminally ill like breast cancer patients is their depression levels as they were found to be with severe depression levels. Patients with breast cancer were having bad eating habits which could be attributed to their personality traits and depression levels. Bad eating habits could be attributed to personality traits and depression levels because they were found to be significantly related. However, there were some unexpected relationships between some personality traits and eating habits.

For instance conscientious persons are expected to have good eating habits, however patients with breast cancer who were conscientious had bad eating habits. Mediation analysis showed that depression could explain why there were some unexpected findings. This means that though some personality traits may predict good eating habits, when the person is depressed, it may affect the good eating habits. This implies that depression is one factor that should not be underestimated in the treatment process of persons with breast cancer.

This study has raised some concerns about some aspect of persons living with breast cancer that are mostly not considered during diagnosis and treatment of patients with breast cancer. Physicians mostly consider only the biological aspect of illnesses disregarding the psychological and social aspects. Severe depression levels and bad eating habits reported in this study indicate that they should be given much attention as they may have the capacity to hamper the treatment process.

Recommendations

In view of the findings resulting from the study, the following recommendations are made:

1. Clinical health psychologists should help patients to understand the strengths and weaknesses of their personality traits most especially patients with high neuroticism. It will help them work to capitalise on their strengths and improve on their weaknesses. This will help them better understand themselves. This means that patients should regularly visit the clinical health psychologists. Clinical health psychologists

have a role to play in helping patients to understand their personality traits.

2. Dieticians and nutritionists should help patients to have good knowledge of their eating habits. Patients should be conscientised on what to eat, when to eat and how to eat. This will help them have a good eating habit which will in turn help in the treatment process and not aggravate their illnesses. Interactions with some patients revealed that they did not have any knowledge about the fact that their choice of food may have negative implications on their health. This means that dieticians and nutritionists should on regular basis educate patients on the various foods and their health benefits. It was observed at CCTH that early in the mornings as patients wait to see the doctor, the nurses usually gave them education on their illnesses. It is therefore recommended that during these times psychologists and dieticians are invited to give education on their eating habits.
3. Treatment of the terminally ill should not be left in the hands of the physicians alone. With the reported high numbers of severe depression it implies that not only do the patients need medications but a clinical health psychologist to help them deal with the psychological aspects of the illnesses including depression. It is recommended that in the process of managing the terminally ill, both the physician and the clinical health psychologist should ensure that the patients are given regular check-ups and assessment of their psychological state including their depression level. This will help aid in the treatment process.

4. Finally, with the evidence of the significant interactions among eating habits and personality and with the role depression plays in such relationships, it implies that the impact of the psychological component of patients with breast cancer should not be overlooked. Therefore, the Ministry of Health, Ghana Health Services and the directors of the various hospitals in Ghana should encourage and promote the use of the biopsychosocial model of diagnosis and treatment of illnesses as proposed by WHO rather than focusing solely on the reductionist biomedical approach. This means that when an individual presents a particular illness, the various expertise are consulted to work hand in hand during the diagnosis as well as the treatment process. This will help view the illness holistically from all lenses instead of addressing only the biological aspect of it. Again, as some patients reported of not being aware of the essence of the clinical health psychologists and the dietician, physicians should try as much as possible to recommend to the patients where necessary.

Suggestions for Further Research

In view of the delimited scope of this study, it is recommended that future research focuses on the following areas:

1. Future research should focus on using a larger sample from a larger context as well as using different illness condition.
2. Further research should try to explore the direct causal effect of personality on cancer. This means that further research should find out whether one's personality put him or her at risk of developing any cancerous disease.

3. As this study looked at the mediation effect of depression, other studies can also focus on the moderation effect of other psychological factors.
4. This study used a descriptive survey but further studies can use other research designs like longitudinal approach and other exploratory methods.

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APPENDICES

APPENDIX A: INFORMED CONSENT FORM

CONSENT FORM

Title: Influence of Personality Traits and Depression on Eating Habits of Patients with Breast Cancer in Cape Coast Metropolis

Principal Investigator: Alfred Essel

Department of Education and Psychology

University of Cape Coast

0249690749

alfred.essel@stu.ucc.edu.gh

Address: University of Cape Coast

PURPOSE OF STUDY

The purpose of this study is to examine the influence of personality traits and depression on the eating habit of patients with breast cancer in the Cape Coast Metropolis.

Possible Benefits

There will be no direct benefit to you for your participation in this study. However, we hope that the information obtained from this study may be shared with the hospital and participants (patients with breast cancer) to educate them on the importance of knowing their personality traits and depression levels as both go a long way to influence their eating habits and treatment. This will help the caretakers including doctors and nurses to consider this in their treatment plans and regimen. The information generated, will help in policy formulation by the Ministry of Health (MOH) to promote the consideration of the psychological aspect of the diagnosis and treatment of chronic diseases including breast cancer.

Confidentiality

Your responses to this survey will be anonymous. Every information about you will be protected and you will not be named in any reports or journal or magazine. Every effort will be made by the researcher to preserve your confidentiality including assigning code names/numbers for participants that will be used on all research notes and documents.

Contacts for Additional Information

If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the researcher through mobile number 0249690749. The following people can also be contacted for further information about the research. Dr. Krafona 0541078770 and Dr. Irene Vanderpuye 0507652689.

Voluntary Participation and Right to Leave the Research

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any particular point in time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

CONSENT

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I understand that I will be given a copy of this consent form. I voluntarily agree to take part in this study.

Participant's signature _____ Date _____

Investigator's signature _____ Date _____

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered, and the volunteer has agreed to take part in the research.

_____ _____

Date Name and signature of witness

APPENDIX B: QUESTIONNAIRE

UNIVERSITY OF CAPE COAST

FACULTY OF EDUCATION FOUNDATION

DEPARTMENT OF EDUCATION AND PSYCHOLOGY

This questionnaire seeks to elicit information on the influence of personality traits and depression on the eating habits of patients with breast cancer in the Cape Coast Metropolis. Participation is voluntary and respondents are assured of confidentiality of any information given. Information given is solely for academic purposes. Thank you.

SECTION A

DEMOGRAPHIC INFORMATION

Respondents are required to please tick the appropriate responses.

1. **Age**…….....
2. **Marital Status**

   Single [ ] Married [ ] Divorced [ ] Widowed [ ]

3. **Level of Education**

   No formal education [ ]

   Basic education [ ]

   Secondary education [ ]

   Tertiary education [ ]

SECTION B

DEPRESSION

Participants are required to select the extent to which the following statements are true about them

Not At all = 0; Mildly but it didn't bother me = 1; Moderately - it wasn't pleasant at times = 2;

Severely – it bothered me a lot = 3

Statements	0	1	2	3
1. I am sad all the time				
2. I feel my future is hopeless and will only get worse				
3. As I look back, I see a lot of failures				
4. I can't get any pleasure from the things I used to enjoy				
5. I feel quite guilty most of the time				
6. I feel I am being punished				
7. I am disappointed in myself				
8. I blame myself for everything bad that happens				
9. I would like to kill myself				
10. I feel like crying, but I can't				
11. I am so restless or agitated that it's hard to stay still				
12. It's hard to get interested in anything				
13. I have much greater difficulty in making decisions than I used to				
14. I don't consider myself as worthwhile as useful as I used to				
15. I don't have enough energy to do very much				
16. I sleep most of the day				
17. I am irritable all the time				
18. My appetite is much greater than usual				
19. I find I can't concentrate on anything				
20. I am too tired or fatigued to do a lot of the things I use to do				

21. I have lost interest in sex completely					

SECTION C

PERSONALITY TEST

In the table below, for each statement 1-50 mark how much you agree with on the scale 1-5, 1=disagree, 2=slightly disagree, 3=neutral, 4=slightly agree and 5=agree,

	Statements	1	2	3	4	5
1	I am the life of the party.					
2	I feel little concern for others.					
3	I am always prepared.					
4	I get stressed out easily.					
5	I have a rich vocabulary.					
6	I don't talk a lot.					
7	I am interested in people.					
8	I leave my belongings around.					
9	I am relaxed most of the time.					
10	I have difficulty understanding abstract ideas.					
11	I feel comfortable around people.					
12	I insult people.					
13	I pay attention to details.					
14	I worry about things.					
15	I have a vivid imagination.					
16	I keep in the background.					
17	I sympathize with others' feelings.					
18	I make a mess of things.					
19	I seldom feel blue/worried/sad.					
20	I am not interested in abstract ideas.					
21	I start conversations.					

22	I am not interested in other people's problems.					
23	I get chores done right away.					
24	I am easily disturbed.					
25	I have excellent ideas.					
26	I have little to say.					
27	I have a soft heart.					
28	I often forget to put things back in their proper place.					
29	I get upset easily.					
30	I do not have a good imagination.					
31	I talk to a lot of different people at parties.					
32	I am not really interested in others.					
33	I like order.					
34	I change my mood a lot.					
35	I am quick to understand things.					
36	I don't like to draw attention to myself.					
37	I take time out for others.					
38	I shirk my duties.					
39	I have frequent mood swings.					
40	I use difficult words.					
41	I don't mind being the center of attention.					
42	I feel others' emotions.					
43	I follow a schedule.					
44	I get irritated easily.					
45	I spend time reflecting on things.					
46	I am quiet around strangers.					
47	I make people feel at ease.					
48	I am exacting in my work.					
49	I often feel blue/worried/sad.					
50	I am full of ideas.					

SECTION D

EATING HABIT

Please answer the following questions by circling the response that best fits your current eating habits. 0 = False, not at all true; 1 = Slightly true; 2 = Mainly true; 3 = Very true

Statements	0	1	2	3
1. I am more informed than others about healthy eating.				
2. I turn down social offers that involve eating unhealthy food.				
3. The way my food is prepared is important in my diet.				
4. I follow a diet with many rules.				
5. My eating habits are superior to others.				
6. I am distracted by thoughts of eating healthily.				
7. I only eat what my diet allows.				
8. My healthy eating is a significant source of stress in my relationships.				
9. I have made efforts to eat more healthily over time.				
10. My diet affects the type of employment I would take.				
11. My diet is better than other people's diets.				
12. I feel in control when I eat healthily.				
13. In the past year, friends or family members have told me that I'm overly concerned with eating healthily.				
14. I have difficulty finding restaurants that serve the foods I eat.				
15. Eating the way I do gives me a sense of satisfaction.				
16. Few foods are healthy for me to eat.				
17. I go out less since I began eating healthily.				
18. I spend more than three hours a day thinking about healthy food.				
19. I feel great when I eat healthily.				
20. I follow a health-food diet rigidly.				
21. I prepare food in the most healthful way.				

APPENDIX C: ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: CES-ERB/ucc.edu/v3/19-39

Date: March 4, 2019

Your Ref: .....

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

The bearer, Alfred Essel ....., Reg. No EF/GHP/17/0020 is an M.Phil. / ~~Ph.D~~. student in the Department of Education and Psychology ..... in the College of Education Studies, University of Cape Coast, Cape Coast, Ghana. He / ~~She~~ wishes to undertake a research study on the topic:

Influence of personality traits and depression on the eating habits of patients with breast cancer in the Cape Coast Metropolis

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed his/~~her~~ proposal and confirm that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his/~~her~~ study. The ERB would be grateful if you would give him/~~her~~ the necessary assistance to facilitate the conduct of the said research.

Thank you.
Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)

Chairman, CES-ERB
Prof. J. A. Omotosho
jomotosho@ucc.edu.gh
0243784739

Vice-Chairman, CES-ERB
Prof. K. Edjah
kedjah@ucc.edu.gh
0244742357

Secretary, CES-ERB
Prof. Linda Dzama Forde
lforde@ucc.edu.gh
0244786680

APPENDIX D: LETTER OF INTRODUCTION

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone: 233-3321-32440/4 & 32480/3
Direct: 033 20 91697
Fax: 03321-30184
Telex: 2552, UCC, GH.
Telegram & Cables: University, Cape Coast
Email: edufound@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

27th February, 2019

Your Ref:

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
LETTER OF INTRODUCTION
MR. ALFRED ESSEL

We introduce to you Mr. Alfred Essel, a student from the Department of Education and Psychology, University of Cape Coast. He is pursuing Master of Philosophy degree in Clinical Health Psychology and is currently at the thesis stage.

Mr. Essel is researching on the topic:

"Influence of Personality Traits and Depression on Eating Habits of Patients with Breast Cancer in Cape Coast Metropolis"

He has opted to conduct a pilot testing at your institution/establishment for the Thesis work. We would be most grateful if you could provide him the opportunity for the study. Any information provided would be treated strictly as confidential.

Thank you.

Yours faithfully,

Theophilus Amuzu Fiadzomor (Mr.)
Senior Administrative Assistant

APPENDIX E: CAPE COAST TEACHING HOSPITAL

In case of reply the reference number and the date of this Letter should be quoted

Our Ref.: CCTH

Your Ref.:

P. O. Box CT.1363
Cape Coast
CC-071-9967
Tel: 03321-34010-14
Fax: 03321-34016
Website: www.ccthghana.org
email: info@ccthghana.com

16th April 2019

Alfred Essel
Department of Education and Psychology
University of Cape Coast
Cape Coast

Dear Sir/Madam,

ETHICAL CLEARANCE – REF: CCTHERC/EC/2019/038

The Cape Coast Teaching Hospital Ethical Review Committee (CCTHERC) have reviewed your research protocol titled, ***"Influence of Personality Traits and Depression on Eating Habits of Patients with Breast Cancer in Cape Coast Metropolis"*** which was submitted for Ethical Clearance. The ERC is glad to inform you that you have been granted povisional approval for the implementation of your research protocol.

The CCTHERC requires that you submit periodic review of the protocol and a final full review to the ERC on completion of the research. The CCTHERC may observe or cause to be observed procedures and records of the research during and after implementation.

Please note that any modification of the project must be submitted to the CCTHERC for review and approval before its implementation.

You are required to report all serious adverse events related to this study to the CCTHERC within ten (10) days in writing. Also note that you are to submit a copy of your final report to the CCTHERC Office.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours sincerely

Prof. Ganiyu Rahman
Chairman, ERC