

**MENTAL HEALTH ISSUES AMONG MAMMOGRAPHIC PATIENTS OF HOSPITAL
SULTANAH AMINAH JOHOR BAHRU**

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DECLARATION

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I hereby declare that this Project Paper is the result of my own work, except for quotations and summaries which have been duly acknowledged.

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ABSTRACT

Assessment of mental health among the patients undergoing breast cancer examinations constitutes a very crucial aspect. In the present study, a total of 150 female patients were analyzed for depression, anxiety and stress based on their age, ethnicity, waiting period of the mammographic examination results and the mammographic results. On this basis, nine hypotheses were proposed for the following study. Robust analysis on each hypothesis was successfully performed using the data acquired from psychometric assessments of the female patients. The data includes the state of mental health ranging from a scale of 1 – 5 (Normal – chronic respectively), was analyzed using ONE – WAY ANOVA statistical tool. Dependent variables such as age, waiting period and mammographic results were compared against each of the factors depression, anxiety and stress. The research provided an overview of depression, anxiety and stress among the patients who were examined. Thus, hypothesis four, five and six were rejected, implying that there are significant differences between the occurrences of depression, anxiety and stress and its paramount correlation with the different age groups of patients. The middle-aged patients of the age group 41 – 50 years old suffered from mild to moderate levels of depression, anxiety and stress (mean value < 3) during the mammographic examinations, with more patients experiencing anxiety (2.30 ± 0.21) followed by stress (3.34 ± 0.24), and depression (2.68 ± 0.21).

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LIST OF ABBREVIATIONS

ABBREVIATION	EXPLANATION
BIRADS	Breast Imaging- Reporting and Data System
BSE	Breast Self- Examination
CBE	Clinical Breast Exam
DASS-21	Depression Anxiety Stress Scales version 21
DCIS	Ductal Carcinoma In-Situ
HBM	Health Beliefs Model
HOD	Head Of Department
HSAJB	Hospital Sultanah Aminah Johor Baru
IBM	International Business Machines
PTSD	Post-Traumatic Stress Disorder
SPSS	Statistical Package for the Social Sciences version 24
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Introduction

Mental health, although was vaguely given attention in the past, is now considered as important as physical health, in the big fold of general well-being. Mental health is not only confined to a mere lack of mental disorder. The positive dimension of

mental health is stressed in World Health Organization (WHO), as the definition of health includes mental well-being "Health is a complete physical, mental and social well-being and not merely the absence of disease or infirmity." Besides, WHO defines mental health as "a state of well-being in which the individual realizes his or her abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can make a contribution to his or her community" (World Health Organization: WHO, 2019).

Mental health can interfere and impact daily life, relationships, and even physical health. Mental health issues arise when a person is devoid of the abilities to enjoy their life, due to the failure in attaining a balance between life activities and efforts to achieve psychological resilience. Factors such as stress, loneliness, depression, anxiety, relationship problems, death of a loved one, grief, suicidal thoughts, addiction, various mood disorders as well as learning disabilities are triggers for mental health issues. Anxiety disorder, mood disorder, and schizophrenia disorders constitute some of the mental illness types.

Mental disorders affect more women than men. In that case, Joy *et al.* (2005) stressed that mammography procedure which requires compression on the breast in diagnosing breast cancer increases mental health problem among women. However, the severity of mental health problems varies according to women's age coming for either screening or diagnostic mammograms.

Researchers mentioned that mammograms result in a stressful experience for any woman regardless of her medical history. A study by Hachem *et al.* (2019) mentioned that women with a personal history of breast cancer linked mammograms with high levels of stress, although results showed negative. Pain due to compression, waiting period, false-positive results, and recall may induce mental health problems among women (Nelson *et al.*, 2017). Fear and worries about the death and recurrence of the disease, mental impairment, financial concerns, and family problems lead to the emergence and increase of severity of mental health problems (Jafari *et al.*, 2018).

1.2 Background of Research

Breast cancer is the most common forms of cancer that affect women on a global scale (Globocan Observatory, 2019). According to Yip *et al.* (2006), approximately 1 in 20 women in Malaysia develop breast cancer in their lifetime. The Malaysian National Cancer Registry reported that female breast cancer was the at highest occurrence among other cancers, accounting for 32.1% among females in Malaysia (Azizah *et al.*, 2015).

Breast cancer occurs at a large variation in its incidence and there is a wide variation in terms of the mortality and survival rates, which statistically differs in different continents, countries, and populations. Factors contributing to these variations include population structure, risk factor prevalence, socioeconomic status, lifestyle and

environment, stage of disease at diagnosis, ability to access high-quality care and treatments, and the use of mammography Yip *et al.* (2006).

Recent advancements in the medical treatment incorporating wider treatment options resulted in breast cancer care to be of increased complexity. However, the results of such treatments were promising. A study by Joshi *et al.* (2007) fortified the necessity for breast cancer patients to undergo adjuvant radiotherapy in order to refrain from the need of mastectomy, as well as to improve cosmesis. Treatments using radiotherapy has shown that post-operative radiotherapy, such as chest wall irradiation after breast conserving surgery, has aided in the significant reduction of the risk of local recurrence. Thus, is it highly recommended for breast cancer patients to undergo adjuvant radiotherapy after their breast conserving surgery (Matuschek *et al.*, 2017).

However, factors such as insufficient consultation duration with physicians, fears regarding the disease among patients, poor self-management skills upon the onset of breast cancer, significantly affects the patients' decision to adhere to the treatment processes (Taib *et al.*, 2018). A poor health literacy among Malaysian women in breast cancer, and breast cancer awareness also contributes to the prevalence of breast cancer cases (Taib *et al.*, 2018). A study by Mujar *et al.* (2018) revealed that the delay for women to present themselves as breast cancer patients in Malaysia are due to several reasons such as locality, sociocultural, patient's reciprocation towards this disease, and healthcare systems.

Women have been found to have undergone a negative psychological impact during mammographic screening (Bond *et al.*, 2013). A study by Weinstein (2010) mentioned that mammography patients experience prep-procedural anxiety and pain during screening; the level of worry on breast cancer and the pain which relates to the procedures are proportional to the risk of these patients developing breast cancer. Considering the fact that screening is an essential precursor in detecting any abnormal, malignant or cancerous tissues in the breasts prior to the sequential diagnosis such as chemotherapy, the whole process itself may contribute to the disturbance in the mental state or the sanity of the patient.

The psychological state of the patient would be determined by the fears induced regarding breast cancer, which includes induced anxiety, worry or concern, transient anxiety due to the exposure to medical procedures, or severe anxiety. This may refer to induced anxiety, worry, or concern about getting breast cancer, to transient anxiety experienced while undergoing an unfamiliar medical procedure, or to severe anxiety, which would jeopardize both physical and mental health (Brett *et al.*, 2005). The breakdown of mental health in mammographic patients was also reported by Williams *et al.* (2018), whereby breast cancer survivors are susceptible to an increased risk of depression, anxiety and stress which can lead to morally impeding decisions such as suicide; neurocognitive and sexual dysfunctions in breast cancer patients can impair their ability to make sane decisions in life.

1.3 Problem Statement

Healthy women and patients of breast cancer often find mammographic screening and the subsequent diagnostics stressful, which would lead to a possible breakdown in their mental health. When such disruptions occur to their mental wellbeing, it further leads to deeper mental health issues such as depression, anxiety and stress (Consedine *et al.*, 2004). Coupled with mental disturbances, these psychological issues may further induce other health issues with varying intensity. Although there are vast literatures on the various aspects of breast cancer in Malaysia (Yip *et al.*, 2014), such as breast cancer diagnosis, survival rates of patients (Ibrahim *et al.*, 2012) and health literacy of women regarding breast cancer, there is a gap in literature in reference to studies on the mental health of breast cancer patients in this country. Mental health of a breast cancer patient is of utmost importance as it would constitute the abilities of a patient to progress through the diagnosis and treatment period in order to be able to recover from the disease. Besides, a healthy mind can render in a positive outlook of life in mammographic patients who have to face adverse effects of the treatment procedures, should not be neglected (Harvey *et al.*, 2015). The cruciality of a patient abiding by the principles of mental wellbeing may correlate with their level of confidence in succeeding throughout the mammography period without negative attributes incorporated into their minds, such as being at a verge of giving up on the treatment, a feel of hopelessness, and utmost fear. Additionally, breast cancer patients undergoing mammographic screening may hail from different age groups, as the onset of breast cancer induction and proliferation can occur in most age groups, with an increasing

occurrence in mid- to old-aged women (Feng *et al.*, 2018). The receptivity of breast cancer patients of different ages toward the mammographic treatment may also differ in the context of affecting their mental wellbeing. Therefore, it is imperative to acknowledge whether a proper mental state can suppress or counterbalance the tremendous perceptions on mammography which will surround the patient's mind, and the pain endured by the patient during diagnosis (Guan *et al.*, 2019). Hence, are mammographic screening procedures a possible inducer of mental health issues among patients in Hospital Sultanah Aminah, Johor Bahru, HSAJB?

1.4 Research Objectives

In order to ensure that the goals of the study were achieved as planned, several specific objectives were served, including:

- 1.4.1 To identify the occurrence and levels of depression among mammographic patients in Hospital Sultanah Aminah, Johor Bahru
- 1.4.2 To identify the occurrence and levels of anxiety among mammographic patients in Hospital Sultanah Aminah, Johor Bahru
- 1.4.3 To identify the occurrence and levels of stress among mammographic patients in Hospital Sultanah Aminah, Johor Bahru
- 1.4.4 To identify the correlation between patients of different age groups and the occurrence of depression due to mammographic treatment, in Hospital Sultanah Aminah, Johor Bahru

- 1.4.5 To identify the correlation between patients of different age groups and the occurrence of anxiety due to mammographic treatment, in Hospital Sultanah Aminah, Johor Bahru
- 1.4.6 To identify the correlation between patients of different age groups and the occurrence of stress due to mammographic treatment, in Hospital Sultanah Aminah, Johor Bahru
- 1.4.7 To study the relationship between findings of the mammogram and waiting period on a patient's occurrence of depression, in Hospital Sultanah Aminah, Johor Bahru
- 1.4.8 To study the relationship between findings of the mammogram and waiting period on a patient's occurrence of anxiety, in Hospital Sultanah Aminah, Johor Bahru
- 1.4.9 To study the relationship between findings of the mammogram and waiting period on a patient's occurrence of stress, in Hospital Sultanah Aminah, Johor Bahru

1.5 Research Question

Some of the research questions that have surfaced in this study are as follows:

- 1.5.1 What are the occurrences and levels of depression among mammographic patients in Hospital Sultanah Aminah, Johor Bahru?

- 1.5.2 What are the occurrences and levels of anxiety among mammographic patients in Hospital Sultanah Aminah, Johor Bahru?
- 1.5.3 What are the occurrences and levels of stress among mammographic patients in Hospital Sultanah Aminah, Johor Bahru?
- 1.5.4 What is the correlation between patients of different age groups and the occurrence of depression due to mammographic treatment, in Hospital Sultanah Aminah, Johor Bahru?
- 1.5.5 What is the correlation between patients of different age groups and the occurrence of anxiety due to mammographic treatment, in Hospital Sultanah Aminah, Johor Bahru?
- 1.5.6 What is the correlation between patients of different age groups and the occurrence of stress due to mammographic treatment, in Hospital Sultanah Aminah, Johor Bahru?
- 1.5.7 What is the relationship between findings of the mammogram and waiting period on a patient's occurrence of depression, in Hospital Sultanah Aminah, Johor Bahru?
- 1.5.8 What is the relationship between findings of the mammogram and waiting period on a patient's occurrence of anxiety, in Hospital Sultanah Aminah, Johor Bahru?
- 1.5.9 What is the relationship between findings of the mammogram and waiting period on a patient's occurrence of stress, in Hospital Sultanah Aminah, Johor Bahru?

1.6 Hypothesis

- 1.6.1 There are differences in the depression levels of women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.
- 1.6.2 There are differences in the anxiety levels of women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.
- 1.6.3 There are differences in the stress levels of women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.
- 1.6.4 There is no relationship difference between susceptibility towards depression and the range of age of women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.
- 1.6.5 There is no relationship difference between susceptibility towards anxiety and the range of age of women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.
- 1.6.6 There is no relationship difference between susceptibility towards stress and the range of age of women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.
- 1.6.7 There is a significance difference between findings of the mammogram and waiting period, and the experience of depression by women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.
- 1.6.8 There is a significance difference between findings of the mammogram and waiting period, and the experience of anxiety by women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.

1.6.9 There is a significance difference between findings of the mammogram and waiting period, and the experience of stress by women undergoing mammography examination in Hospital Sultanah Aminah, Johor Bahru.

1.7 Research Contribution

This study would render in the possible reduction of depression, anxiety, and stress among mammography patients by identifying the root cause or trigger of these mental health issues. Furthermore, this study would serve as an improved framework for the current diagnostics of mammography with a particular emphasis on patient education and the positive effects of patient counselling as the outwork of delivering holistic care by the medical team in Malaysia.

The beneficiary of this study will be Malaysian women, regardless of the fact whether they are healthy, pre-diagnosed or breast cancer survivors. Since these mammography patients cannot be categorized as a homogenous entity with the same array of psychological needs, this study would also serve to highlight the wide tapestry of problems afflicting these patients.

As such, the findings of this study would then aid healthcare practitioners to incorporate integrative practices of healthcare delivery with the usage of effective communication as the means of delivering individualized care to mammography patients. The health care practitioner may practices less mentally invasive actions during treatments and better communication styles during consultation into their healthcare systems which can relieve their patients of the various symptoms of mental health breakdowns.

In addition, this study will also render the opportunity for organization managers and policy makers to foster and gain a better understanding of patients in the context of their views and perceptions, as well as the extent of their participation in improving the quality of care and services (Al-Abri and Al-Balushi, 2014). In conjunction to this, the endurance of patients during the whole process of mammography, in terms of mental resilience of facing any adversities can be improved when priority towards patients' mental health is taken into consideration by the respective representatives of the healthcare service.

Thus, the findings of this study will fill the gaps in literature on the psychological issues faced by women undergoing mammography, in a Malaysian context.

1.8 Research Scope

This study will focus on the troubleshooting of underlying factors which correlates the mammographic screening and diagnosis procedure, with the occurrence and severity of mental health issues among patients in HSAJB. The scope of this research is limited to female patients of Malaysian nationality. The number of participants in this research would be limited to 150 respondents. Data collection will be taken in a time frame of two months, from April to May 2020.

1.9 Conceptual Framework

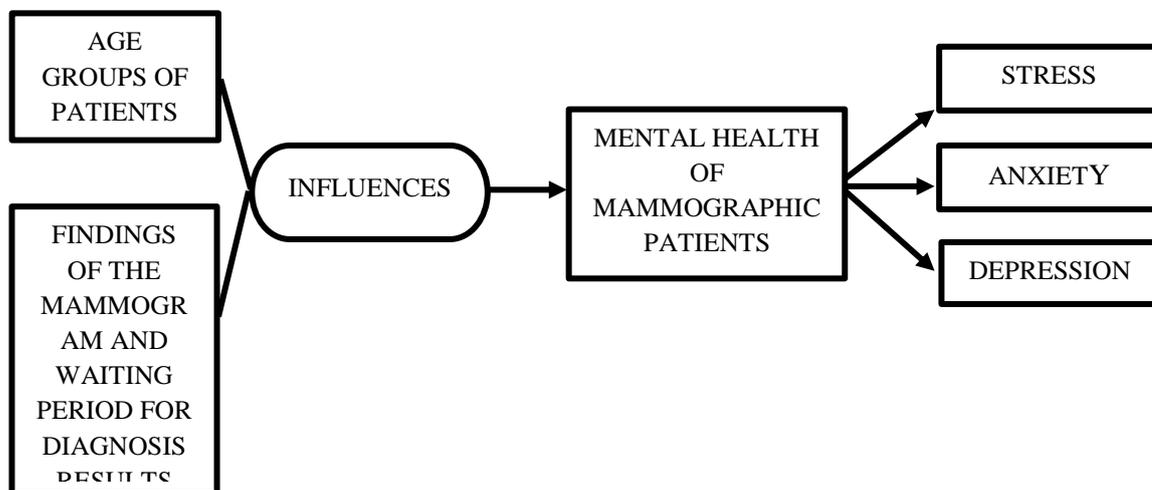


Figure 1.1: The Conceptual Framework and the Overview of the Factors Influencing the Disturbances of Mental Health among Mammographic Patients and the Resulting Mental Health Issues

The conceptual and theoretical framework is shown below to provide a clear map of this study that are linked to known theoretical constructs, ensuring clarity and direction during the undertaking of this study. The conceptual framework here provides a distinct overall image of the study, with the evaluation of the mental health of mammographic patients being the general objective, further diagnosed into common mental illnesses such as stress, anxiety, and depression, also taking into consideration the influence of significant variables such as age, the waiting period for diagnosis results, as well as the findings of the mammogram. According to Adom (2018), certain

theories will be applied such as the behavioural learning theory, the health belief model, as well as the theory of planned behaviour to strengthen the results of this study (Adom *et al.*, 2018). Study carrying out aid in the understanding of the patients' responses to the awareness and improvement of their mental health.

1.10 Operational Definition

According to Kerlinger, (1986), an operational definition is a definition that gives meaning to a variable by specifying the procedure carried out to measure it. It is the term process needed to determine the existence of an item or phenomenon and its properties such as duration, extension in space and quantity. In regards, the operational definition in this research will be the levels of stress, anxiety and depression in terms of the scales of severity, from least severe to extremely severe in mammographic patients of varying age groups and different durations of the waiting period for the screening results.

1.10.1 Mammographic Patients

Mammographic patients are patients undergoing mammography, a breast cancer diagnosis technique utilizing low energy X-rays to detect changes in breast tissues that could be cancerous (American Cancer Society, 2016). The patients can be symptomatic or asymptomatic who came for screening purpose has strongly related with family

history. Mammographic patients in this study are defined as 150 Malaysian females who are undergoing mammography screening and diagnosis in HSAJB.

1.10.2 Mental Health

World Health Organization, (2004) defined mental health as a state of well-being where the individual recognizes their own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can contribute to their community. In this study, mental health is defined as the psychological and emotional well-being of mammographic patients in the context of the prevalence of depression, anxiety and stress evaluated through the DASS-21 survey test taken.

1.10.3 Findings of the Mammogram

The study by Wolff et al. (2014) concluded that mammogram findings are results of a mammogram which shows palpable and non-palpable abnormalities in their breast to detect lesions and malignant masses indicated by microcalcification and soft-tissue density. Currently, in this study those findings of the mammogram will be based on the presence or absence of malignant tissues, tumors or any indications of breast cancer which will acquire the patient's acknowledgement and mental state to accept the results.

1.10.4 Waiting Period

Helono et al. (2015) mentioned that waiting period is generally defined as the period between the mammogram appointment and the date of the diagnosis. However, in this study, waiting period is defined as the number of days taken for mammographic patients to receive their screening and diagnosis report from the health practitioners.

1.11 Limitation of study

The study found suboptimal participation rate is the common weakness among mammographic patients. Some women are unable to participate because of language barriers. Difficulty in communicating in Malay or English was more frequent among older mammographic patients. The inability to communicate using a language makes the communication ineffective to collect the data from respondent. In addition, illiteracy impact the most by taking too much of time to understand and answer the provided questions. Besides, the physical and mental state of women coming for mammogram influences their mental health condition. Wide range of physical health conditions linked to depression and anxiety at twice the rate of the general population.

1.12 Conclusion

This research will be focused on the psychological aspects of patients undergoing mammography. The importance of identifying, acknowledging and analyzing the occurrence and prevalence of mental health issues in women undergoing mammographic procedures should not be neglected as it can render in these patients to undergo severe disruptions in their daily lifestyle, of which will further deteriorate their physical health, general function, and their thoughts on the purpose of living. Therefore, the introduction in this study has provided an overview of the background of the research, proposed outcomes of the study, and a detailed framework with regards to mental health issues among mammographic patients.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the concepts and theories that apply to the psychological situation encountered by mammographic patients during their diagnosis. A comprehensive literature review will be discussed to understand the various aspects of this research further.

2.2 Concepts and Theory

2.2.1 Mental Health

According to the WHO, when mental health is disturbed, it turns into mental illness, whereby, simultaneously running signs and symptoms can result in frequent stress, thus affecting ones' ability to function. Mental health is fundamentally interconnected with physical and social functioning and health outcomes (World Health Organization: WHO, 2019).

Traditionally, mental health problems have been classified as follows: organic or functional; neuroses or psychoses. Organic mental health problems are identifiable brain diseases, whereas functional mental health issues show that there is no obvious brain structural abnormality. Neurosis is the severe symptoms of a common emotional experience, such as depression, anxiety or stress. Modern forms of neuroses include the symptoms of phobias and obsessive compulsive disorder as well. However, psychoses which are a resultant of severe distortion of a person's ability to perceive reality, a loss of insight such as hallucination, schizophrenia and bipolar affective disorder, occurs less commonly among mental health patients (C. Scully, 2014).

An individual can suffer from a mental disorder but show no difficulties in excelling in one or more aspects of good mental health. This is due to the fact that good mental health and a lack of mental disorder can coexist on a continuum, even if they are interrelated (Fusar-Poli *et al.*, 2020).

Excellent mental health encompasses core empirical aspects, such as mental health literacy, attitude towards mental disorders, self-perceptions and values, cognitive skills, academic/ occupational performance, emotions, behaviours, self-management strategies, social skills, family and significant relationships, physical health, sexual health, the meaning of life, and quality of life (Fusar-Poli *et al.*, 2020).

2.2.2 Different Types of Mental Health Issues

Although mental health issues are generally categorised and characterised by an individual's cognitive level, there are instances of these issues involving physical symptoms and emotional wellbeing. Stress is a common inducer for mental health illnesses such as anxiety and depression (Hassan *et al.*, 2018).

2.2.2.1 Anxiety

Anxiety is the body's natural feedback mechanism towards stress, whereby the stress-induced could be inclusive of the notion of fear or apprehension about the future. Anxiety, which renders both physical and emotional symptoms, exist in a wide range of disorders which are unique from each other, on the basis of the factors that trigger or induce them. However, all ranges of anxiety disorders share a common ground in terms of an individual experiencing excessive anxiety and related behavioural disturbances (Mendlowicz and Stein, 2000).

2.2.2.2 Depression

Depression is a detrimental mental health illness that can negatively affect an individual's ability to feel, think and act. Depression triggers a series of negative emotions such as sadness, and a loss of interest in daily activities and can lead to various emotional and physical problems if the condition deteriorates. Depression, although not a physical health illness, is a leading cause of disability worldwide, besides being a significant contributor to the overall global occurrence of diseases. In the global context of depression based on gender, the female: male ratio is at 1.7: 1, signifying the prevalence of depression among females, as compared to males (Albert, 2015).

2.2.2.3 Stress

Stress can be defined as a feeling experienced by an individual who is physically and mentally overloaded due to the inability in coping with certain demands (Felman, 2017). In other words, the body's reaction to any challenge or demand which may be influenced and restricted by time and energy can lead to stress. The levels of stress are subjective as it is individual specific. Stress experienced for a long duration would result in chronic stress due to the fact that it would impair the normal functions of the body, causing jeopardising health problems which include mental health issues (Felman, 2017).

2.2.3 Behavioural Learning Theory

Behaviourism by John Watson, 1913 is a psychological approach which emphasizes scientific and objective methods of investigation. Unfortunately, he rejected introspective methods and sought to restrict psychology to experimental laboratory methods. B. F. Skinner, sought to give ethical grounding to behaviourism, relating it to pragmatism. Skinner focuses on the environment and the teaching of the skills in order to manage adherence. The theory uses the principles of antecedents and consequences, and the influences of these principles on an individual's behaviour. Generally, antecedents are either thoughts or environmental cues, whereas consequences would be the rewards or punishments resulting from a certain type of behaviour (World Health Organization, 2003). The external environment shapes an individual's behaviour, according to this theory. This theory measures situations with observable results, whereby it relies on elements such as stimuli, elements that induce a reaction and responses as a reaction towards the stimuli. The general assumption of this theory is that when the right stimulus is rendered, the response will be of the expected outcome. Women's habit towards health screening programs might affect their health behaviour such as mammography screening. The behavioural learning theory appears to have been widely used in attempting to understand women's behaviour towards mammography in many different settings. The stimuli include waiting time, findings of mammogram and patient's age might induce reaction according to environment. In this study, this theory is applied when the mammographic patients are provided questionnaires to evaluate their mental health (stimuli) which will increase their awareness on the matter, and their

actions to improve their mental health (response) will be observed to understand how patients of different age groups learn about mental health.

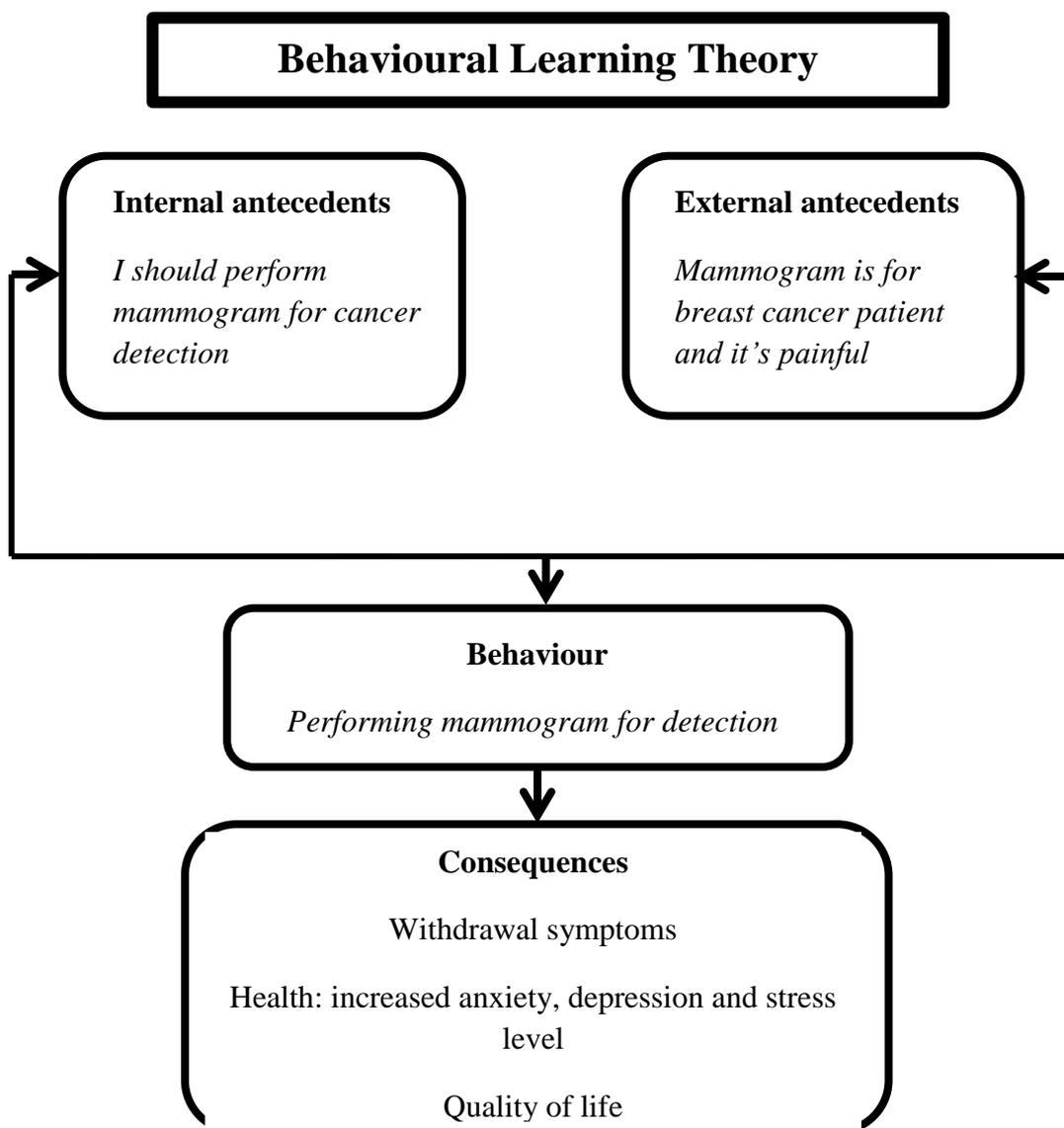


Figure 2.1: The Conceptual Framework and the Overview of Behavioural Learning Theory of consequences on negative outcomes of internal and external antecedents.

2.2.4 Health Belief Model

The health belief model (HBM: Rosenstock, 1966) is a health-specific social cognition model, which approaches health behaviour change based on a rational appraisal of the balance between the barriers to and benefits of action. Theory of health behaviour, the HBM was developed in the 1950s by social psychologists Irwin M. Rosenstock, Godfrey M. Hochbaum, S. Stephen Kegeles and Howard Leventhal at the U.S. Public Health Service. This model relates to the patient's perceived threat of disease via the influence of perceived severity of disease and the perceived susceptibility of a disease. The similar trend can be applied to a patient's perception of the effectiveness of health behaviour, whereby perceived benefits and perceived barriers are the influential factors. The health belief model renders specific primary concepts which functions to predict as to why people take action to prevent, to screen for, or to control conditions of an illness, which includes susceptibility and seriousness regarding the illness, benefits and barriers to a behaviour which may influence the outcome of the illness, cues to action, and self-efficacy (Champion and Skinner, 2008). In addition, demographic and socio-psychological measures can influence the mentioned factors, resulting in a perceived threat following an action (World Health Organization, 2003).

This theory further explains that when individuals perceive that they are susceptible to a condition or illness, a believe that the condition would have potentially serious consequences, a course of action that is available would render to be beneficial to reduce either their susceptibility to or severity towards the condition or illness, and that the believe in the presumed benefits of taking action will outweigh the barriers and

cost action; resulting in the individual to take action to complete their presumption that their action will thereby reduce their risks. In the event of a well-established disease, such as breast cancer, elements such as acceptance of diagnosis, individual estimation of susceptibility towards the consequences of the illness, and the susceptibility to the illness, are incorporated into this dimension (Champion and Skinner, 2008).

In this study, perceived susceptibility occurs when the mammographic patients become aware that they are at risk of developing mental illnesses from their breast cancer treatment. Once they accept this, they will attempt to perceive the severity of these illnesses, which will be made easier through the mental health evaluation provided in the questionnaires. Subsequently, they will try to perceive the benefits of a certain action to treat the mental illness according to its severity, and if these benefits outweigh the perceived barriers, they will carry out that particular action to reduce their risk of mental illness.

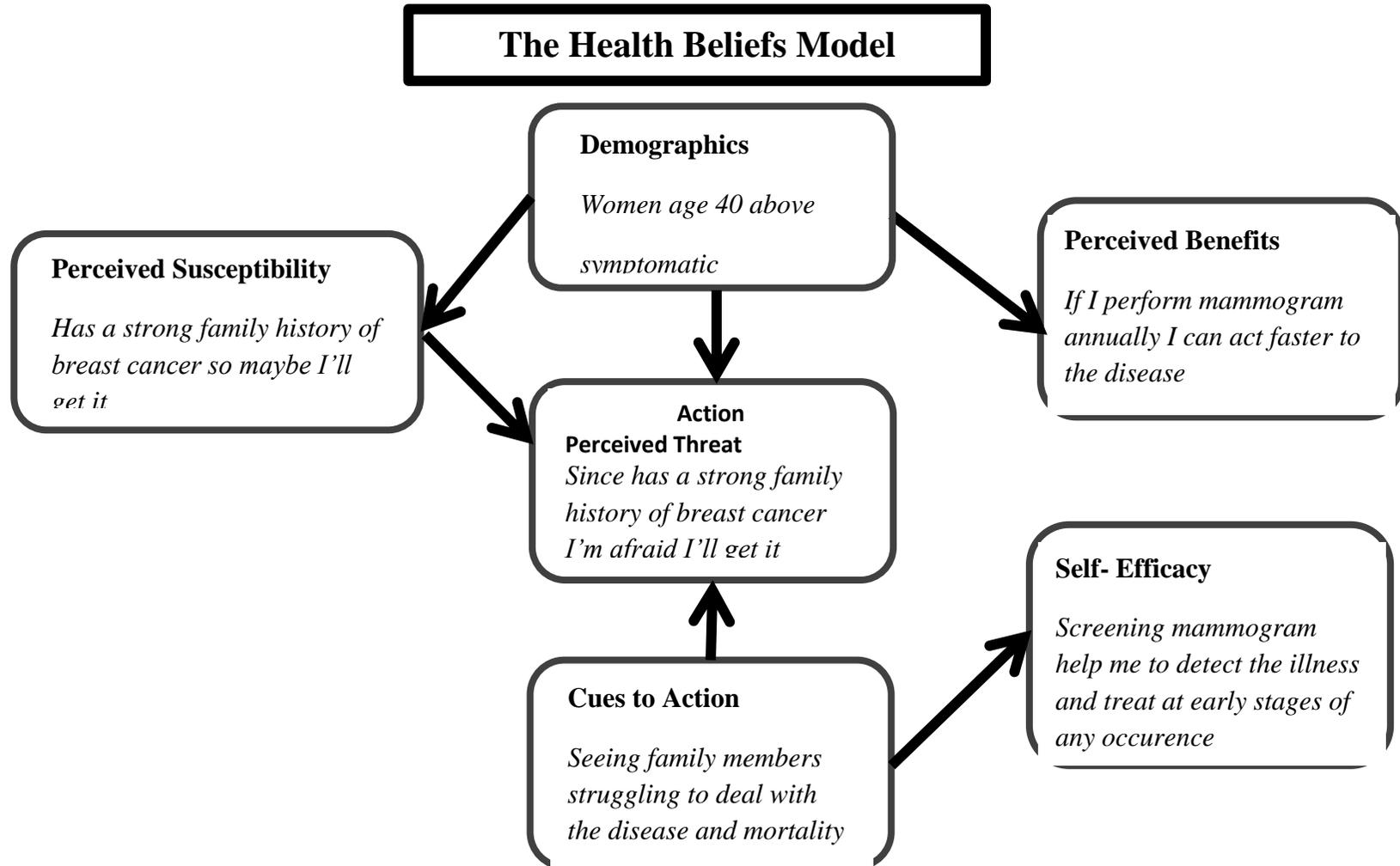


Figure 2.2: The Conceptual Framework and the Overview of health Belief Model.

2.2.5 Theory of Planned Behaviour

The theory of planned behaviour mentions that volitional control governs most socially relevant behaviours and that an individual's desire to carry out a particular behaviour is both the immediate determinant and the single best predictor of that behaviour. The concept of the theory was proposed by Icek Ajzen (1985), to improve on the predictive power of the theory of reasoned action by including perceived behavioural control. According to Sommer (2011), the theory of planned behaviour functions to predict human rational decision-making behaviour, and is recognised as the mostly widely used field of social psychology (as cited in Lung-Guang, 2019). The variables in this theory such as attitude, norms, and controls significantly influence the attitude and perception systems. Nevertheless, it is difficult to be able to differentiate between beliefs and attitudes or perception systems (Lung-Guang, 2019).

The theory further adds that the intention or the idea to carry out behaviour will be influenced by attitudes rendered towards the action, which includes any positive or negative beliefs, and the evaluation of the result of that particular behaviour by the individual. Besides, subjective norms such as the perceived expectations of significantly important people on the individual's behaviour, and the willingness or motivation of that particular individual to act with regards to these expectations, also influences behaviour (Sutton, 2015). The theory further strengthens the fact that each person may possess different capacities to act on a planned behaviour, therefore, the fact that different pre-variables can affect the consideration of a planned behaviour should be acknowledged (Lung-Guang, 2019).

In order to predict the patients' response to the mental health awareness triggered by this study, the theory of planned behaviour can be applied to evaluate their

subsequent responses. Firstly, their intention to diagnose and further treat a mental illness strongly depends on their intention, which may vary for each individual. This intention will depend on their attitude and personal opinions on mental health, subjective norms such as the perceptions and judgement of others towards mental illnesses, as well as their perceived control of the mental illness if they believe they are capable of handling and treating it.

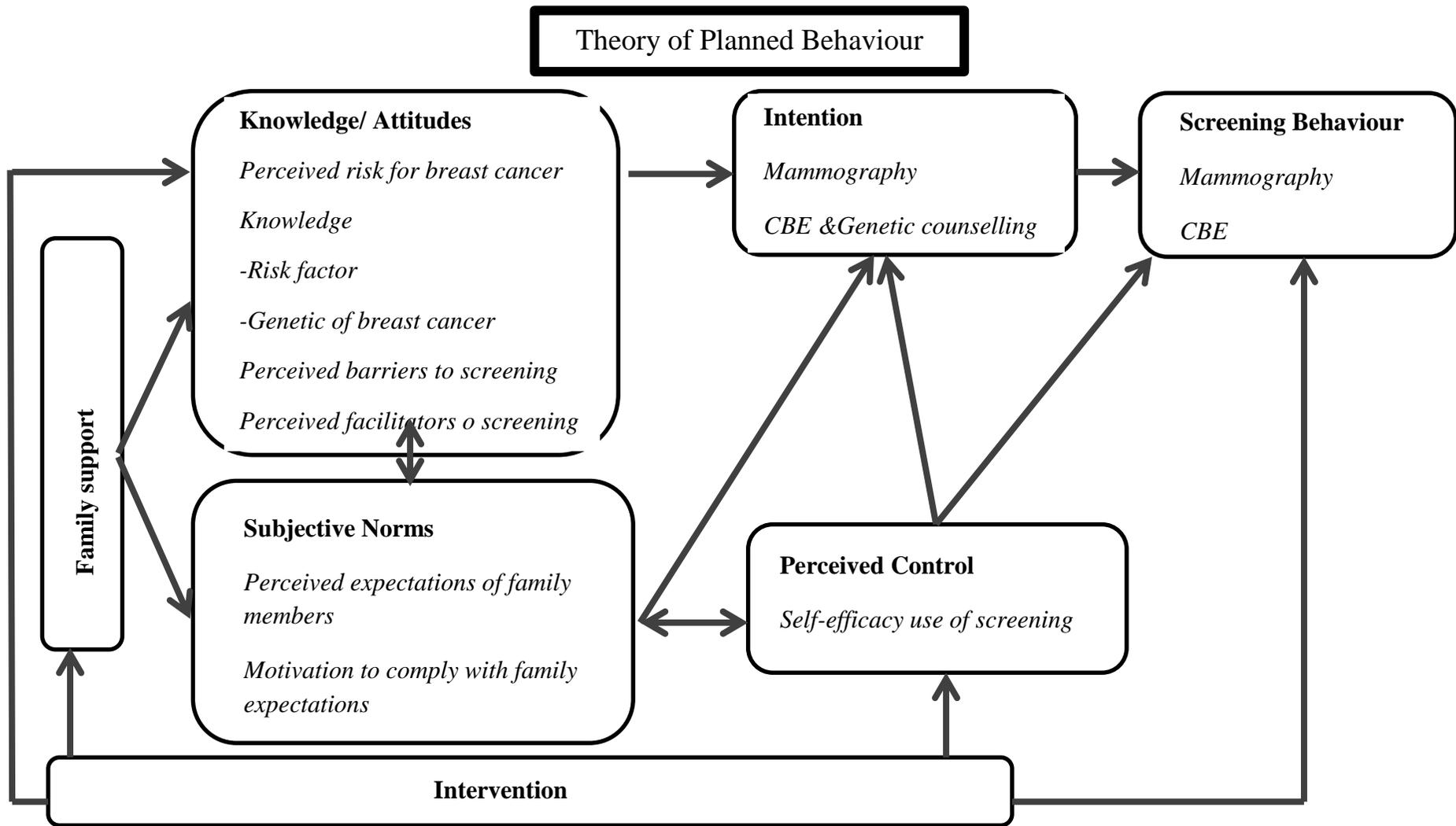


Figure 2.3: The Conceptual Framework of expanded Theory of Planned Behaviour.

2.3 Factor and Element Related to Research

Depression, anxiety and stress are mental health issues which can be characterised by a variety of neuroendocrine, neurotransmitter, and neuroanatomical disruptions. The reason why such issues occur in a patient can be related to the disruption in the chemical activity balance in the emotional centres of the brain, instead of the cognitive centres (Martin *et al.*, 2009). This highly correlates with the exposure of patients to the whole process of mammographic treatments; such environmental changes induce primary alterations in the brain structure or function, or the alteration in the neurotransmitter signalling. Besides, severe or constant stress which occurs due to periodic check-ups or the constant need to undergo mammographic treatment can result in a hyperactive anxiety reaction in patients. As the diagnosis and treatments intensify, mammographic patients might begin to develop depressive symptoms, which will most likely affect their cognitive ability to think and make a mental effort to endure the treatments.

2.4 Literature Review

Previous studies have associated breast cancer with the occurrence of mental health issues. A study by Hufner *et al.* (2015) found that 30 % of breast cancer patients are diagnosed with depression as a comorbid symptom, indicating that there might be a pathophysiological link between these two diseases. Besides, the symptoms of depression, anxiety and stress are evidently associated with elements such as patient perception of the disease as a whole, prognosis, possible side effects of treatment, and the fear of the recurrence of breast cancer (Pudkasam *et al.*, 2018). Di Giacomo *et al.*

(2019) reported that younger breast cancer patients have more resilience in handling breast cancer, enabling them to relapse into normal lives. Whereas, frailty symptoms such as mental health issues in older breast cancer patients might render more difficulty in coping and overcoming the treatments before, during and after (Jauhari *et al.*, 2020). However, a research conducted by Lan *et al.* (2020) mentioned that younger breast cancer patients have a greater risk of the occurrence of psychological problems as compared to older patients. In addition, Breast cancer patients with severe mental illness have a higher rate of mortality, as compared to patients with a sound mental health (Ahlgrén-Rimpiläinen *et al.*, 2020). Therefore, it is evident that previous literatures have a solid background on the association of breast cancer patients and the treatment procedures, with the occurrence of mental illnesses.

2.4.1 Mammography

According to Christensen and Marck (2017), breast cancer has been known to be the most prevalent type of cancer among females globally, as 1 in 8 women experiences susceptibility and diagnosed to be positive to breast cancer in their lifetime (as cited in Tsaras *et al.*, 2018). World Health Organization (2017) mentioned that early symptoms of breast cancer are: breast lumps or irregular breast consistency; enlarged, fixed and/or hard lumps and; other problems such as ulceration and unilateral nipple discharge.

Mammography is a breast cancer detection technique; whereby low energy X-rays are used to examine the human breast in order to detect any changes in the breast

tissues which may be cancerous, for further diagnosis (American Cancer Society, 2016). Mammography has been known to be the most verified approach that is used to detect and reduce breast cancer mortality. The World Health Organisation has mentioned that deaths due to breast cancer can be reduced by 25 % via mammography (Magario *et al.*, 2019). Magario *et al.* (2019) also inferred that the increase in screening coverage leads to a higher number of cases in which early tumours can be diagnosed, therefore decreasing mortality due to breast cancer. Screening and diagnosis are two components of mammography, whereby there are medical and economic differences between the two. The prime goal is to prevent deaths from breast cancer.

2.4.2 Mammography and Mental Health Issues

Women undergoing mammographic examinations can experience negative emotions and psychological distress. An abnormal finding turns a healthy woman into a patient, and many feel unprepared for this outcome. The intensity of mental health disturbance increases when patients are subjected to invasive procedures such as surgery, rather than imaging (Brett *et al.*, 2005).

Mammographic procedures that use compression to diagnose breast cancer lead to stress among women. Therefore, patients are prone to experience fatigue, depression or anxiety due to continuous strain to the body from stress. Studies have examined outcomes of the general mammography experience, such as anxiety, distress, depression, excessive fear of cancer, the subsequent practice of breast self-exam (BSE)

and adherence to recommended mammography schedules or follow up procedures. The intensity of mental health disturbance increases when patients are subjected to invasive procedures such as surgery, rather than imaging (Brett *et al.*, 2005). An abnormal mammogram during the first screening may cause severe anxiety and distress, which would contribute as a negative precursor, that would deter patients from the subsequent mammogram.

Survivors of breast cancer find mammography to be more stressful than newly diagnosed or non-patients. According to Domar *et al.* (2005), pain and anxiety associated with a mammogram are one of the main factors motivating women to abstain from following proper screening guidelines. Patients who experience mammography report anxiety and pain; however, a minority (10-15 %) experienced moderate or severe distress (Domar *et al.*, 2005).

Anxiety while tolerating compression pain during mammographic procedures, increases as patients wait for the screening results, which would days to a few weeks (Clark and Reeves, 2015). The reason behind the increase in anxiety may be due to the fact that patients undergo severe distress when their breasts are flattened due to the diagnosis process, which results in pain. Nevertheless, anxiety, worry and distress were also evident among patients who were diagnosed with negative results (non-cancerous).

Patients who have been diagnosed with suspicious abnormal mammograms were reported to have rising levels of distress, and when their mammography results indicated signs of breast cancer, their mood and general functioning were interrupted.

Their mammography, which caused anxiety and breast cancer worries interfered with their moods and functioning (Keyzer-Dekker *et al.*, 2012).

2.4.3 The Benefits of Mammography on Patients

Mammography screening has led to an increase in the number of early-stage invasive breast cancer or ductal carcinoma in- situ (DCIS). However, the reduction of advanced breast cancer rates, as well as deaths, signifies the importance of screening (Barratt, 2015). Besides, patients who have undergone mammography enjoyed an improved quality of life, negating mental health issues due to the fact that less aggressive treatments would be needed for early-stage breast cancer thereby lowering the necessity of mastectomy, chemotherapy, endocrine therapy and radiotherapy (Broeders *et al.*, 2016).

2.4.4 The Effects of Mammography on Patients

2.4.4.1 Over diagnosis and Overtreatment

Over diagnosis occurs when early, non-invasive forms of breast cancer, such as Ductal Carcinoma In Situ (DCIS) persist. The DCIS, although it is a primitive form of breast cancer, poses no threat to the patient's life (Brennan and Houssami, 2016). This is due to the fact that an increase in the diagnosis of DCIS did not result in the reduction of the number of invasive breast cancer rates. Therefore, the assumption that the

presence of DCIS indicating DCIS as a precursor lesion for invasive cancer can be negated (Kao *et al.*, 2011).

Estimates of over diagnosis range greatly from one over diagnosed case for every two breast cancer deaths prevented as a result of screening to 10 over diagnosed cases for each death prevented (Barratt, 2015). However, this usually results in overtreatment – a woman receives a cancer diagnosis and has the associated treatments including surgery, radiotherapy, endocrine therapy (and sometimes chemotherapy), all with long-term consequences and potential hazards (Brennan and Houssami, 2016).

2.4.4.2 False-negatives and False-positives

A false-negative result occurs when a patient is reassured of not having any signs of breast cancer due to misdiagnosis, which would cause further treatments or diagnosis to be delayed even if the symptoms have already developed in the patient (Brennan and Houssami, 2016). A false-positive diagnosis can result in a patient experiencing anxiety, as much as three times higher than that of women that were diagnosed negative from the beginning (Hachem *et al.*, 2019).

2.5 Theoretical Framework

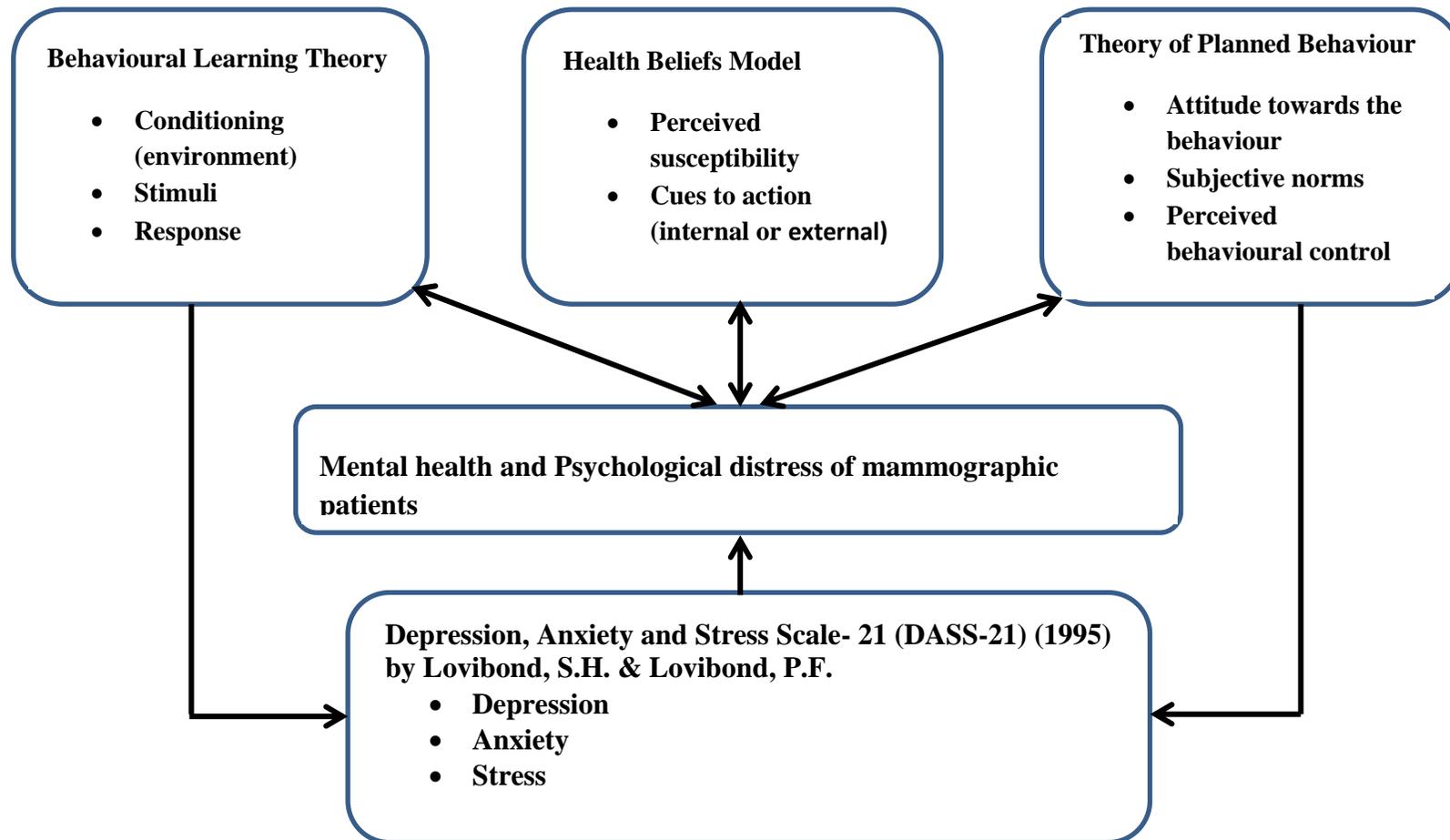


Figure 2.4: Theoretical Framework of mental health issues among mammographic patients of Hospital Sultanah Aminah Johor Bahru

The theoretical framework is shown above to provide a clear outline of this study that are linked to known theoretical constructs, ensuring clarity and direction during the undertaking of this study. According to Adom (2018), certain theories will be applied such as the behavioural learning theory, the health belief model, as well as the theory of planned behaviour to strengthen the results of this study (Adom *et al.*, 2018). The theoretical framework here postulates that individual health beliefs influence the likelihood of practicing preventive health behaviour. The purpose of the study is to determine the influence and correlation of responses towards environmental stimuli. Evaluation also focused on mammographic patient's cues to action based on their beliefs about health problems. The stimulus expected to be present in order to trigger the health-promoting behaviour. Mammographic patient's intention to engage in behaviour for breast screening studied based on Theory of Planned Behaviour. Thence, behavioural intention which is influenced by the attitude about the likelihood that the behaviour will have the expected outcome and subjective evaluation of the risks and benefits of that outcome are measured. DASS-21 by Lovibond, S.H & Lovibond P.F. that designed to measure the negative emotional state of depression, anxiety and stress used in this study to evaluate patient's responses according to their beliefs, responses to stimuli and intention. The principle value of the DASS in a clinical setting with non-clinical samples used to clarify the locus of emotional disturbance, as part of the broader task of clinical assessment.

2.5 Conclusion

An all-inclusive literature review was discussed, thus enabling a broader understanding on the field of healthcare sciences, particularly on breast cancer screening, diagnosis, and treatment, and the field of psychology which involves the mental health state, issues and behavioural effects of patients whom are undergoing mammography.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter in the research proposal will discuss on the methodology which will be used in achieving the objectives of the study in finding the correlation between the factors studied in mammographic patients.

3.2 Research Design Method

The research method that will be used is a quantitative method. A cross-sectional survey will be conducted through a questionnaire consisting of probing questions. Quantitative methods are objective, focusing on numerical data to explain a specific phenomenon occurring across a large number of samples (Babbie, 2012). Cross-sectional studies are observational methods commonly used in medical research to analyse the effects of diseases among populations, and a questionnaire is a simple, unbiased form of it that can be easily prepared, understood, and analysed. At the beginning of the questionnaire, an introduction to this study as well as written instructions will be present to inform and assist the participants. This method was adapted from (Singh *et al.*, 2015).

3.3 Population and Sampling

Stratified random sampling, one of probability sampling technique based on the theory of probability will be used in this research. Stratified random sampling, by William Feller involves a method where a larger population divided into smaller groups that usually don't overlap but represent the entire population together. While sampling those groups can be organized and then draw a sample from each group separately

(Robert B. Ash, 2008). In this study sample will be 150 patients who are undergoing mammography screening and diagnosis, and they were informed regarding the purpose of the study. They will arrange or classify according to age, ethnicity and data clinical. The patients' participation in this study survey is voluntary and anonymous in nature, over the course of the study (inclusive of the data collection and the data analysis procedures). There will be no exclusion criteria for the participants, with the only exception being every participant should be a patient undergoing mammography procedures currently. As for the ethical consent, the approval to conduct this study survey will be obtained from the Head of Department (HOD) of the Radiology Department at HSAJB.

3.4 How the Study Will Be Conducted

With the approval and the assistance of the Radiology Department, the questionnaires will be issued to every patient currently undergoing mammography, when they attend for screening, diagnosis or treatments in the radiology department. The reason why printed questionnaires will be distributed instead of emails were due to the consideration that patients of older age groups might not have technology literacy, therefore, traditional approach such as issuing printed questionnaires will be a better way to involve participants for this research. The participants will spend an estimated average of 15 minutes to complete the questionnaire form, in the radiology department. Due to the unknown number and frequency of these patients attending for

mammographic procedures, a one-month time frame will be given. With the aid of the radiology department staffs, the questionnaires will be issued to the patients, collected and kept, and upon completion of the one-month time frame, the questionnaires will be collected by the researcher for data analysis, from the radiology department.

3.5 Research Instrument

The research will be conducted via the survey research method. The survey will have two sections: (a) Patient background; (b) and Depression Anxiety Stress Scales (DASS) version 21. Personal information of the patients such as their age, health status, and current stage in mammography diagnosis will be taken. The Depression Anxiety Stress Scales (DASS), which is a test developed in order to find out and quantify the symptoms of depression, stress and anxiety will be used as the main component in this study survey. Some sentences in the DASS test will be modified to suit the Malaysian context. The version of the DASS test used will be DASS-21 (Lovibond and Lovibond, 1995), which is a shorter version of the original DASS. DASS-21 has 21 elements in which participants should answer to evaluate the occurrences of depression, anxiety, and stress while undergoing mammography. Every mental health subscale will constitute 7 each out of the 21 elements, respectively.

The Depression Anxiety Stress Scales (DASS) is a test developed in order to detect and measure the symptoms of depression, stress and anxiety. Initially, the mental health test was only based on the tripartite model of depression and anxiety, which later

included the third construct of stress (E. H. Lee *et al.*, 2019). The test was developed to increase the purity of standalone measures of depression and anxiety, via reducing the measurement overlap between these two issues (Norton, 2007). These mental health subcategories were distinguishable from each other as each trait consists of 14 symptoms, totalling up to 42 (Lee *et al.*, 2019). Owing to its adequate psychometric properties in terms of convergent, discriminant, and structural validities, DASS has been widely used in psychometric studies (Wardenaar *et al.*, 2018 ; Lee *et al.*, 2019). Antony *et al.* (1998) mentioned a newer version, DASS-21, which is a shortened version of the original DASS and it renders advantages such as fewer items, cleaner factor structure and smaller inter-factor correlations (as cited in Teo *et al.*, 2019).

MENTAL HEALTH ISSUES	DASS – 21 QUESTIONS	EXPLANATION
DEPRESSION	1) I couldn't seem to experience any positive feeling at all 2) I found it difficult to work up the initiative to do things 3) I felt that I had nothing to look forward to 4) I felt down-hearted and blue 5) I was unable to become enthusiastic about anything 6) I felt I wasn't worth much as a person 7) I felt that life was meaningless	These questions cover major symptoms of depression such as dysphoria, hopelessness, devaluation of life, low self-esteem, lack of interest or participation, anhedonia, and inactivity.
ANXIETY	1) I was aware of dryness of my mouth 2) I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion) 3) I experienced trembling (eg, in the hands) 4) I was worried about situations in which I might panic and make a fool of myself 5) I felt I was close to panic 6) I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat) 7) I felt scared without any good reason	These questions cover common anxiety symptoms linked to autonomic arousal, skeletal muscle effects, situational anxiety, and irrational fear.

<p>STRESS</p>	<ol style="list-style-type: none"> 1) I found it hard to wind down 2) I tended to over-react to situations 3) I felt that I was using a lot of nervous energy 4) I found myself getting agitated 5) I found it difficult to relax 6) I was intolerant of anything that kept me from getting on with what I was doing 7) I felt that I was rather touchy 	<p>These questions cover main stress symptoms such as difficulty relaxing, nervous arousal, eases of getting upset or agitated, irritability, overreaction, and impatience.</p>
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Table 3.1: A breakdown on the DASS – 21 questions based on (Lovibond and Lovibond, 1995)

The depression subscale will contain seven questions about dysphoria, hopelessness, devaluation of life, self-depression, lack of interest or involvement, anhedonia, and inertia. The anxiety subscale will contain seven items related to autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. Whereas, the stress subscale is comprised of seven questions about difficulty relaxing, nervous arousal, easily feeling upset/agitated, quickly being irritable/over-reactive, and impatience. A four-point Likert scale is used. Participants will be able to choose either one of the four rating choices which are as follows: ‘never applied to oneself’ (0 points), ‘some degree/some of the time’ (1 point), ‘considerable degree/a good part of time’ (2 points), and ‘very much/ most of the time’ (3 points). The score of the seven elements in each subscale will be totalled up

collectively. The manual of DASS-21 by Lovibond and Lovibond (1995) will be used to determine each participants' levels of depression, anxiety, and stress based on the total points obtained from each subscale. For Depression, the nominations were as follows: normal (0–9 points); mild (10–13 points); moderate (14–20 points); severe (21–27 points); and extremely severe (28+ points). For Anxiety, the standards were: normal (0–7 points); mild (8–9 points); moderate (10–14 points); severe (15–19 points); and extremely severe (20+ points). Whereas for stress, the criteria were: normal (0–14 points); mild (15–18 points); moderate (19–25 points); severe (26–33 points); and extremely severe (34+ points). In order to create a consistency in the severity standards for the mental health subscales, the current study adopted the method of Lee (2019), whereby, the five nominations of mental health subscale score are converted into numeric, such as: normal = 1; mild = 2; moderate = 3; severe = 4; and extremely severe = 5.

3.6 Research Procedure

This research will be completed as outlined in the methodology, and the research progress will be conducted based on the study plan created, as follows:

Tasks	2020							
	January	February	March	April	May	June	July	August
Project Proposal Writing and Compilation								
Data collection at Hospital Sultanah Aminah								
Data Tabulation, Analysis, Interpretation								
Compilation of Project Paper								

Table 3.2: Study Plan (Gantt Chart)

3.7 Data Analysis

Data analysis will be performed by using IBM Statistical Package for the Social Sciences (SPSS) version 24. The data were screened for normality, missing values and accuracy prior to conducting the analysis. In order to make sure that there is data accuracy during the data entry process, 10 % of participants will be selected in a random manner, and the data obtained will be cross-checked with the original data. Skewness and kurtosis of data distribution will be checked by performing the test of normality of data. Visual observation of the histograms and the normal Q-Q plots generated from the analysis will be used to ensure that all the variables analysed in this study will be within the acceptable criteria for normality.

3.8 Conclusion

This chapter began with an introduction, with a constructive description of the research design formulated to be used in this study. The population size and sample study were also discussed prior to explaining on the research methodology that will be employed in this study. In terms of data collection, the survey research method will be used. Data obtained will be analysed through the SPSS software, and the whole duration of the study was tabulated into a Gantt chart to indicate the process of executing the research procedures mentioned in this chapter.

CHAPTER 4

FINDINGS AND DISCUSSIONS

4.1 Introduction

The scale of analysis of the mental health of the female patients who underwent mammographic examinations ranges from normal to chronic, where 1 is normal, 2 is mild, 3 is moderate, 4 is severe and 5 is chronic. There was a total of 150 female

patients. The stages of cancer are based on BIRADS (Breast Imaging – Reporting and Data System) which reveals the different stages (1 to 6) which are the representatives of the spread or severity of the cancer cells. The stages are denoted as follows; Stage I, stage II, stage III stage IV, stage V and stage VI. The last stage of cancer is depicted as VI which is considered to be the most harmful. Based on the stages of the breast cancer, age groups, waiting period and ethnicities the patients under examination for mental health imbalances, such as depression, anxiety and stress were analysed. There were a few patients who refrained from revealing their ethnicity or age groups but statistical analysis for depression, anxiety and stress were still performed on all patients. Parameters such as age, waiting period for the test results to arrive and mammographic test results were all compared against the dependent variables (depression, anxiety and stress). The data acquired from 150 female patients was analysed using One – Way ANOVA statistical analysis tool. For convenience each parameter such as the age, waiting period and mammographic results was analysed separately. The demographic profile of all the patients is as follows;

4.2 Demographic Profile

I] Table 4.2.1: Ethnicity Vs. Number of Patients

Ethnicity	Number of patients
Malay	85
Chinese	42
Indian	22
Others	1

Out of the 150 female patients 85 were Malay, 42 were Chinese and 22 were Indian. 1 female patient refrained from revealing her ethnicity therefore they were grouped in the others category.

II] Table 4.2.2: Age group Vs. Number of Patients

Age group (Years)	Number of patients
0 – 10	0
11 – 20	0
21 – 30	0
31 – 40	5
41 – 50	50
51 – 60	42
61 – 70	38
71 – 80	12
Other	3

Age of the 150 female patients was bifurcated cumulatively as 0 – 10, 11 – 20, 21 – 30, 31 – 40, 41 – 50, 51 – 60, 61 – 70 and 71 – 80 years. Patients below the age of 30 years were not examined for breast cancer therefore the number of patients is indicated as 0. 3 patients did not comply with revealing their age hence they are categorized as ‘Other’

III] Table 4.2.3: Waiting Period Vs. Number of Patients

Waiting Period (Minutes)	Number of patients
0 – 10	0
11 – 20	8
21 – 30	53
31 – 40	56
41 – 50	24
51 – 60	7
Other	2

Female patients were also analysed for depression, anxiety and stress according to the waiting period they had to undergo till they received the mammographic results. Waiting period was cumulated for every 10 minutes as, 0- 10, 11 – 20, 21 – 30, 31 – 40, 41 – 50 and 51 – 60 minutes. Minimum waiting period to receive the test results was more than 10 minutes hence the number of patients under 0 – 10 minutes of waiting period is 0. The waiting period for 2 patients was not confirmed therefore they were categorized under ‘Other’.

IV] Table 4.2.4: Mammographic results (BIRADS) Vs. Number of Patients

Mammographic results (BIRADS)	Number of patients
I	21
II	70
III	32
IV	15
V	8
VI	4

BIRADS (Breast Imaging – Reporting and Data System) is a data system which represents the stages of breast cancer which are Stage I, II, III, IV, V and VI. Aforementioned table represents the number of patients received a positive test for breast cancer and which stage they belong to.

4.3 Evaluation of the occurrence of the depression, anxiety and stress among the patients who underwent mammographic examinations.

The results of the analysis of mental health in 150 female patients depicted as 9 hypothesis. The average levels of depression, anxiety and stress of the female patients after knowing the results of the breast cancer examinations (mammography) are represented in the table given below (Hypothesis 1, 2 and 3). On an average all the female patients who were detected with breast cancer showed signs of depression, anxiety and stress. One-way ANOVA technique revealed that all the female patients were undergoing some form of mental health issue. Conclusive diagnosis about the severity of the mental illness is still farfetched based on the cumulative data that is available but a solid interpretation of such data can be rendered. There is a high risk of development of psychiatric disorders such as depression, anxiety and stress among breast cancer patients. The hypothesis are mentioned as follows;

4.3.1 Hypothesis 1

Evaluation of occurrence of depression among the patients who received positive results for mammographic examinations

Table 4.3.1.1: Mammographic Results vs. Depression

Mammographic Results (BIRADS)	Depression
I	1.29 ± 0.20 ^a
II	1.39 ± 0.10 ^a
III	2.03 ± 0.28 ^a
IV	1.27 ± 0.19 ^a
V	1.75 ± 0.37 ^a
VI	1.75 ± 0.75 ^a

Stages of breast cancer (BIRADS): I, II, III, V & VI. The table shows mean ± the standard error. Means followed by the different letter within column are significantly different ($P < 0.05$). Mean values followed by the letter 'a' are said to be the most significant according to the Duncan's multiple range test.

As confirmed from the data acquired from the patients who underwent mammographic examinations and received positive results it can be determined that the patients experienced some mild to moderate levels of depression (ranging from a scale of 1.27 ± 0.19 to 2.03 ± 0.28). The severity of depression, among the patients detected with III stage breast cancer was moderately high (at 2.03 ± 0.28). The hypothesis is rejected indicating that the patients did not suffer from depression after receiving the

mammographic test results, since the data does not show significant values for depression.

4.3.2 Hypothesis 2

Evaluation of occurrence of anxiety among the mammographic patients who received positive results for mammographic examinations

Table 4.3.2.1: Mammographic Results vs. Anxiety

Mammographic Results (BIRADS)	Anxiety
I	1.95 ± 0.30 ^a
II	2.26 ± 0.19 ^a
III	2.44 ± 0.31 ^a
IV	2.07 ± 0.40 ^a
V	1.75 ± 0.56 ^a
VI	2.00 ± 1.00 ^a

Stages of breast cancer (BIRADS): I, II, III...VI. The table shows mean ± the standard error. Means followed by the different letter within column are significantly different (P<0.05). Mean values followed by the letter 'a' are said to be the most significant according to the Duncan's multiple range test.

From the data acquired from the patients who underwent mammographic examinations and received positive results it can be determined that the patients experienced some

mild to moderate levels of anxiety (ranging from a scale of 1.75 ± 0.56 to 2.44 ± 0.31). Moderate levels of anxiety was observed among patients who received positive test results for stage II, III and VI (2.26 ± 0.19 , 2.44 ± 0.31 and 2.00 ± 1.00 respectively). Although, all the values are significant, since the values of anxiety are near the scale of moderately anxious, the hypothesis is rejected.

4.3.3 Hypothesis 3

Evaluation of occurrence of stress among the mammographic patients who received positive results for mammographic examinations

Table 4.3.3.1: Mammographic Results vs. Stress

Mammographic Results (BIRADS)	Stress
I	1.52 ± 0.23^a
II	1.57 ± 0.13^a
III	2.13 ± 0.25^a
IV	1.60 ± 0.29^a
V	2.00 ± 0.50^a
VI	1.75 ± 0.75^a

Stages of breast cancer (BIRADS): I, II, III...VI. The table shows mean \pm the standard error. Means followed by the different letter within column are significantly different ($P < 0.05$). Mean values followed by the letter 'a' are said to be the most significant according to the Duncan's multiple range test.

From the data acquired from the patients who underwent mammographic examinations and received positive results it can be determined that the patients experienced some mild to moderate levels of stress (ranging from a scale of 1.52 ± 0.23 to 2.13 ± 0.25). A few patients detected with I and II stages of breast cancer and also a few patients with stage V and VI of breast cancer showed mild levels of stress (between 1.52 ± 0.23 and 2.00 ± 0.50). All the values depicted in the table are significant but since the range scale is between mild to moderate the hypothesis is rejected.

4.4 Evaluation of the occurrence of the depression, anxiety and stress among the patients of different age groups who underwent mammographic examinations.

The below depicted tables describe the average probability of depression, anxiety and stress amid a group of population between the ages 31 – 80 years. The statistical analysis using One-way ANOVA technique revealed that patients within the age of 41 - 50 showed high probability of depression, anxiety and stress. Patients under the age less than 40 years and more than 51 years did not show significant signs of depression, anxiety and stress. Lowered mental health among the patients within the ages 41 – 50

might be due to the apprehensive nature of the mammographic tests for the female patients. The hypothesis are mentioned as follows;

4.4.1 Hypothesis 4

Evaluation of occurrence of depression among the different age groups of the mammographic patients

Table 4.4.1.1: Age Groups Vs. Depression

Age Group (Years)	Depression
31 – 40	1.40 ± 0.40 ^b
41 – 50	2.30 ± 0.21 ^a
51 – 60	1.71 ± 0.09 ^b
61 – 70	1.08 ± 0.06 ^b
71 – 80	1.17 ± 0.11 ^b

Cumulative age groups: 31 – 40, 41 – 50...71 – 80 years. The table shows mean ± the standard error. Means followed by the different letter within column are significantly different ($P < 0.05$). Mean values followed by the letter 'a' are statistically significant according to the Duncan's multiple range test.

The aforementioned table depicts the depressed state of mind of female patients of different age groups. According to the statistical analysis female patients within the age group of 41 – 50 years showed higher signs of depression (2.30 ± 0.21) during their

mammographic tests than the other age groups. The signs of lowered mental health in female patients of the age groups less than 40 years and more than 50 years although remained unfazed, but there were slight signs of depression (ranging between 1.17 ± 0.11 and 1.71 ± 0.09) among these patients. The above mentioned hypothesis is accepted on the basis that the mean value for depression among the female patients within the age group 41 – 50 is significant than the mean values for other age groups. This indicates that age is a factor for depression among breast cancer patients.

4.4.2 Hypothesis 5

Evaluation of occurrence of anxiety among the different age groups of the mammographic patients

Table 4.4.2.1: Age Groups Vs. Anxiety

Age Group (Years)	Anxiety
31 – 40	2.00 ± 0.78^b
41 – 50	3.34 ± 0.24^a
51 – 60	1.93 ± 0.21^b
61 – 70	1.31 ± 0.13^b
71 – 80	1.42 ± 0.34^b

Cumulative age groups: 31 – 40, 41 – 50...71 – 80 years. The table shows mean \pm the standard error. Means followed by the different letter within column are significantly different ($P < 0.05$). Mean values followed by the letter ‘a’ are statistically significant according to the Duncan's multiple range test.

The aforementioned table depicts the state of anxiety among the female patients of different age groups. According to the statistical analysis female patients within the age group of 41 – 50 years showed moderately high signs of depression (3.34 ± 0.24) during their mammographic tests than the other age groups. Patients of the age group 31 – 40 years were also mildly anxious (2.00 ± 0.78). The signs of lowered mental health in female patients of the age groups more than 50 years were normal to mild (1.31 ± 0.13 to 1.93 ± 0.21). The above mentioned hypothesis is accepted on the basis that the mean value for anxiety among the female patients within the age group 41 – 50 is significant than the mean values for other age groups. This indicates that age is a factor for anxiety among breast cancer patients.

4.4.3 Hypothesis 6

Evaluation of occurrence of stress among the different age groups of the mammographic patients

Table 4.4.3.1: Age Groups Vs. Stress

Age Group (Years)	Stress
31 – 40	1.80 ± 0.37^b
41 – 50	2.68 ± 0.21^a
51 – 60	1.19 ± 0.09^b
61 – 70	1.21 ± 0.09^b
71 – 80	1.25 ± 0.25^b

Cumulative age groups: 31 – 40, 41 – 50...71 – 80 years. The table shows mean \pm the standard error. Means followed by the different letter within column are significantly different ($P < 0.05$). Mean values followed by the letter 'a' are statistically significant according to the Duncan's multiple range test.

The aforementioned table depicts a state of stress among the female patients of different age groups. According to the statistical analysis female patients within the age group of 41 – 50 years showed moderately high signs of depression (2.68 ± 0.21) during their mammographic tests than the other age groups. The signs of stress in female patients of the age groups less than 40 years and more than 50 years are almost mildly high (ranging between 1.19 ± 0.09 and 1.80 ± 0.37) among these patients. The above mentioned hypothesis is accepted on the basis that the mean value for stress among the female patients within the age group 41 – 50 is significant than the mean values for other age groups. This indicates that age is a factor for stress among breast cancer patients.

4.5 Evaluation of the occurrence of the depression, anxiety and stress among the patients waiting to receive their mammographic examinations' results

There is a comparison of the variables mainly depression, anxiety and stress against the parameter 'waiting period' where the female patients were questioned for their levels of stability or instability of mental health when they had to wait for the results of their mammographic examinations. The waiting period was accumulated into minutes and the range for grouping the patients varied by 10 minutes. The statistical analysis using One – Way ANOVA technique revealed that all patients who had to undergo a waiting period after the exams were performed showed significant signs of anxiety and stress. None of the patients showed signs of depression. Patients who are wait for 30 minutes or more showed higher levels of anxiety rather than depression or stress. Heightened anxiousness and stress levels are an indicator for a cohort thought process that goes in the minds of the patients before the exam. The hypothesis are mentioned as follows;

4.5.1 Hypothesis 7

Evaluation of occurrence of depression among the mammographic patients who had different waiting period

Table 4.5.1.1: Waiting Period Vs. Depression

Waiting Period (Minutes)	Depression
11 – 20	1.25 ± 0.25 ^{ab}
21 – 30	1.30 ± 0.11 ^{ab}
31 – 40	1.57 ± 0.14 ^{ab}
41 – 50	2.04 ± 0.30 ^b
51 – 60	1.14 ± 0.14 ^b

Cumulative waiting period: 11 – 20, 21 – 30...51 – 60 minutes. Means followed by the different letter within the column are significantly different ($P < 0.05$). The values in the table denotes mean \pm the standard error. Mean values followed by the letter 'a' are statistically significant according to the Duncan's multiple range test.

The above table represents the levels of depression among the female patients who had to wait for a few minutes before receiving their mammographic test results. The depression levels among the patients who had to wait for 41 – 50 minutes before receiving their mammographic examination results was mildly higher (2.04 ± 0.30) as compared with the patients who had to wait for less than 40 minutes and more than 50 minutes (ranging between 1.14 ± 0.14 and 1.57 ± 0.14). All the mean values are not significant according to the statistical data acquired in the analysis. Thus the hypothesis is rejected. This indicates that the patients who had to wait for some minutes before receiving the test results did not suffer from depression.

4.5.2 Hypothesis 8

Evaluation of occurrence of anxiety among the mammographic patients who had different waiting periods

Table 4.5.2.1: Waiting Period Vs. Anxiety

Waiting Period (Minutes)	Anxiety
11 – 20	1.63 ± 0.32 ^a
21 – 30	1.92 ± 0.20 ^a
31 – 40	2.32 ± 0.22 ^a
41 – 50	2.58 ± 0.36 ^a
51 – 60	2.43 ± 0.72 ^a

Cumulative waiting period: 11 – 20, 21 – 30...51 – 60 minutes. Means followed by the different letter within the column are significantly different ($P < 0.05$). The values in the table denotes mean \pm the standard error. Mean values followed by the letter 'a' are statistically significant according to the Duncan's multiple range test.

The above table represents the levels of anxiety among the female patients who had to wait for a few minutes before receiving their mammographic test results. Although the scale range did not exceed beyond severity, most of the patients were mild to moderately anxious (ranging between 1.63 ± 0.32 and 2.43 ± 0.72) about their test

results. Patients with a waiting period of more than 30 minutes were observed to be more anxious (between 2.32 ± 0.22 and 2.43 ± 0.72). All the mean values for anxiety among the female patients versus the waiting period were observed to be significant with respect to the statistical analysis performed using the ONE – WAY ANOVA tool. Thus, the hypothesis is accepted which indicates that the female patients were moderately anxious to receive their mammographic test results.

4.5.3 Hypothesis 9

Evaluation of occurrence of stress among the mammographic patients who had different waiting periods

Table 4.5.3.1: Waiting Period Vs. Stress

Waiting Period (Minutes)	Stress
11 – 20	1.38 ± 0.26^a
21 – 30	1.49 ± 0.13^a
31 – 40	1.89 ± 0.19^a
41 – 50	1.83 ± 0.26^a
51 – 60	1.71 ± 0.36^a

Cumulative waiting period: 11 – 20, 21 – 30...51 – 60 minutes. Means followed by the different letter within the column are significantly different ($P < 0.05$). The values in the table denotes mean \pm the standard error. Mean values followed by the letter 'a' are statistically significant according to the Duncan's multiple range test.

The above table represents the levels of stress among the female patients who had to wait for a few minutes before receiving their mammographic test results. Although the scale range did not exceed beyond severity, most of the patients were normal to mildly stressed (ranging between 1.38 ± 0.26 and 1.89 ± 0.19) about their test results. Patients with a waiting period of more than 30 minutes were observed to be more stressed (between 1.71 ± 0.36 and 1.89 ± 0.19). Patients who had a waiting period of 31 – 40 minutes were mildly stressed (1.89 ± 0.19) about their test results. All the mean values for stress among the female patients versus the waiting period were observed to be significant with respect to the statistical analysis performed using the ONE – WAY ANOVA tool. Thus, the hypothesis is accepted which indicates that the female patients were mildly stressed to receive their mammographic test results.

4.6 Findings and Discussions

In the 1700s treating mental health disorders constituted to a wide process of reform undertaken by authorities. Such attempts were made to improve the moral and social problems. The mental health and its management used to be a huge propaganda till the masses began to undermine the patients therefore leading to a decline in the admission of such issues. The causes of mental health issues are varied ranging from any traumatic experience, brain injury, biological factors such as bacteria and viruses,

genetic factors and toxic chemicals (AAC, 2019; Durisko *et al.*, 2016; Hartling and Wozney, 2017).

A leading cause of mental health disorders is deliberated to be cancer. The impact of any form of cancer on the mental health of a person is very severe. Despite the immense physical trauma that an individual has to undergo due to the progression of cancer, it renders a negative psychosis on the individual. The patient constantly evaluates his or her body positively or negatively which eventually deteriorates the wellbeing of the mind. The stigma surrounding mental health stops many males and females from seeking help during such crises (Anthony *et al.*, 2005; Zhu *et al.*, 2017). Resolving mental health issues in Malaysia is a large problem. Lack of understanding and strong societal prejudice associated with mental illnesses, a cultural backlash surrounded with misconceptions and superstitions altogether forces the patients to remain undiagnosed. Such type of a negative perception leads to suffering and loneliness, which ultimately results in depression, anxiety and stress (Tsuey *et al.*, 2013).

Disorders such as anxiety, behavioural and emotional disorders, bipolar defects, dissociative and eating disorders, obsessive compulsive disorders, stress, paranoia, phobias, grief, shame, panic – all of these are the critical aspects of mental health illnesses (Hyman *et al.*, 2011). To the society, the patients might physically appear perfect, nevertheless, their mental health is consistently being jeopardised, due to its gradual persistence. Mental health occurs due to disappointments and affects the psychological aspects of patients (Dogra and Cooper, 2017).

Diagnosis of cancer in any patient is a fearsome experience. The patients immediately start to think about their future and undergo a panic mode. The thought of undergoing a painstaking process of therapies or recovery and any kind of physical changes that would happen creates a feeling of loneliness and undesirability. Both the males and females are equally affected by such a trauma (Lawrence *et al.*, 2015).

Breast cancer is considered to be the second most common cancer in women. The diagnosis of breast cancer is difficult since the cancer cells remain undetected till they spread to nearby tissues. The milk producing alveoli constantly undergo division and apoptosis during the menstrual cycle. This perpetuates a highly unpredictable state of the cells which can undergo negative mutations to cause breast cancer. The *in situ* carcinoma situated in the basement membrane of the alveoli which fabricates the reasons for the cancer to remain undetected. Localised inflammation, damage to the ligaments and ducts, effects on the nearby tissues such as the pectoral muscles and lymphatic vessels and also can be dangerous to the spinal cord if the tumour cells spread (Alteri and Kalidas, 2017). Depending on the size of the tumour and the degree of the metastasis, the stages of the cancer is determined. Detection and diagnosis of cancer can be a really stressful business. Based on the type and stage of the cancer the treatments are advised. Surgery, radiation therapy, chemotherapy and hormonal therapy are the types of treatments that are suggested. Surgery involves partial or complete mastectomy which means removal of the breast tissues. Intensive radiation therapy, chemotherapy and hormonal therapy can have adverse physical effects such as hair loss, weight loss,

dull physical appearance, infection, anaemia and neurological issues (Smoot *et al.*, 2009).

The concept of body esteem and self – image is a significant part of most of the individuals. The consequences occurring during and after the breast cancer treatments and surgery are heart wrenching. Physical appearances are drastically altered in the female patients undergoing mastectomy which in turn leads to a heavy burden on the mental health. Female patients undergoing the diagnosis and treatment have to follow through a tremendously traumatic experience. The self – perception of a female patient who goes through this agonising journey is disturbing with every step. The sense of hopelessness and an absent and perplexed mind are very common issues that such patients have to fight along with the cancer (Heidari and Ghodusi, 2015; Lakhtakia, 2014). The prospects of the body deformity after breast cancer surgery is a major contributing factor towards the depression, anxiety and stress experienced by women. Body confidence is something that women deal with on a daily basis. There is an incredible sense of appearance and the need to have an ideal body image among most women. Thus, the upcoming physical and mental challenges that the patients diagnosed with breast cancer, have to undergo are tremendously weighted (Rezaei *et al.*, 2016).

The stages of breast cancer refer to the extent of the disease. The cancer stage is based on several factors including the size of the tumour, involvement of lymph nodes, invasive and non – invasive nature of the tumour and the metastasis stage. Initial stage of the cancer is considered to be the non – invasive stage. In this stage there is no evidence of the spread of the cancer cells to the neighbouring cells. The next stage is an

early stage of an invasive breast cancer. This stage also does not provide evidence for the spread of the tumour cells to the neighbouring breast tissue. It is therefore very difficult to diagnose breast cancer during these stages. During the next stages of breast cancer the tumour is gradually spreading through the blood vessels to the lymph nodes and there are high possibilities of metastasis of the tumour cells in other parts of the body. This is a stage of the breast cancer which can be diagnosed. During final stages of the breast cancer is termed as a locally advanced cancer and the tumour cells are larger (almost 5 cm in diameter). This causes lumps and swelling of the breast. In this stage the tumour cells can spread to the rib bones and also spread to other parts of the body (Al-Naggar, 2015; Kaplan, 2013).

Statistical analysis of 150 female cancer patients who were being examined for breast cancer using mammographic examinations provided a comprehensive summary of the mental health of such patients. Depression, anxiety and stress among such patients are the most common issues and were carefully analysed. Patients were compared and analysed based on their age, waiting period for the exams and the post result mental state. Most of the patients showed signs of anxiety and stress. A few displayed the signs of depression. It was seen that the female patients between the age group 41 – 50 were highly affected by the diagnostic journey. These patients showed mild signs of anxiety and stress as they were anticipating for the results of the mammography and also after receiving the mammographic results. This can be attributed to the uncertainty of the test results which causes a stress reaction.

Age is a factor which will determine the levels of stress experienced by the female patients. It is observed that the younger generation is more free spirited than their counter. However, the age is a contextual matter with regards to cancer and cancer related to mental health problems. (Tsaras *et al.*, 2018).

Stress can cause intense and dangerous effects on the body. If an individual is unsure about any future prospects it can trigger a negative nerve impulse which generates a potential panic state of mind. Anxiety during such situations can also be pathological to the neurobiological health of a person. The amygdala which is located in the brain will be activated during such responses. The amygdala sends a trigger response to the hypothalamus, this generates a mobilizing response in the nervous system. The results of all of these chain processes are increased heart rates due to constriction of blood vessels, indigestion due to improper functioning of the intestines by limiting the gastro intestinal activity and also the glands secrete a hormone called cortisol as a response to the lateral cortical regions of the brain. Constriction of blood vessels will lead to high blood pressure. This biochemistry occurring in the brain and the body is termed as anxiety (Grupe and Nitschke, 2013).

There is immense focus of early detection and treatments of the breast cancer that the one may divulge from the thought about emotional impacts that are caused due to breast cancer on women. Patients diagnosed with breast cancer respond with a number of emotions. Stress, anxiety and fear are the most common emotional imbalances that women experience during such times. Cancer impacts the self – image of such female patients (Heidari and Ghodusi, 2015; Smoot *et al.*, 2009). When the

physical health of a woman is compromised it renders a worrisome state of mind that leads to heavy mental health disorders. To suffice the emotional needs of such patients social workers and counsellors are employed. These professionals have a goal to relax the female patients through their journey of cancer and help them overcome their fear and possible depression. Encouragement of such female patients to avail such help is also very crucial. Acceptance of the disease and moving forward without the melancholy associated with it is the first step towards a healthy mind. Engaging in self – care and support from the friends and family significantly helps to overcome depression (AAC, 2019; Rodgers *et al.*, 2007).

4.7 Conclusion

Women undergoing mammography, breast cancer worry was not sufficiently severe to advocate limitation of this screening modality. Theoretically, these women's concern might produce the beneficial effect of encouraging compliance with cancer risk reduction and cancer screening strategies. However this study does not demonstrate that screening mammography raises the ongoing level of anxiety in the population of women. Women at higher risk for developing breast cancer harbour more anxiety. Women are believed to experience and express discrete emotions such as fear, disgust and sadness more than men. The level of anxiety was found to be higher in young

women as the waiting period for results increases. This difference was found to be statistically significant. The BIRADS category of the mammographic results likely to report higher level of worry about breast cancer as the BIRADS classification number increases. Nevertheless, as the number of mammogram done increased the anxiety level increases because women think there was a suspicion of cancer despite their present symptoms.

CHAPTER 5

CONCLUSION

5.1 Summary

The diagnosis of cancer can have a substantial impact on the mental health of the patients. The current research was carried out in order to determine the mental health among female patients undergoing mammographic examinations for breast cancer detection. Mental health issues such as depression, anxiety and stress were hypothesised against the variables such as age, ethnicity, waiting period and

mammographic test results, and analysed using ONE –WAY ANOVA statistical tool. Mammographic examinations were carried out using BIRADS (Breast Imaging – Reporting and Data System). The aim of this study was separated into 9 objectives and each objective was thoroughly analysed. The acceptance or rejection of each hypothesis was based on the significance of the mean values acquired through the statistical analysis of the data obtained from the female patients. If the mean value is significant according to the Duncan’s test then the hypothesis is accepted, if not then the hypothesis is rejected. Based on this information an inference is made for each hypothesis.

5.2 Research Contribution

Depression, anxiety and stress are considered to be the most common mental health problems faced by cancer patients especially the breast cancer patients. The PTSD (Post Traumatic Stress Disorder) among the cancer survivors is often elaborately discussed but the pre – cancer detection phase among the female patients is equally important and needs to be evaluated. Evaluation of mental health of the patients who undergoing mammographic examinations is vital and their emotional well-being is directly proportional to the physical well-being. Determining the state of depression, anxiety and stress is usually done via assessing the patient based on a series of questions during the examinations. Treatment options or treatment plans for such mental health issues can be prepared using the data acquired from such assessment studies. The results observed from this study also open a platform for psychological analysis of patients

undergoing other types of cancer examinations and would be beneficial to better determine the probabilities of mental health disorders among such patients.

5.3 Limitations

Along with early detection, the cause and nature of breast cancers is highly unpredictable due to complex carcinogenic risk factors. There are bio- statistical and epidemiological limitations to the study mental health of such cancer patients. The patients being examined during such studies play a very important role in determining the accuracy of the interpretations of the data acquired from such patients. In the aforementioned study there were a total of 150 female patients being examined for their mental health during the mammographic examination. Psychometric analysis technique was used to determine the state of their mind depending upon the age, waiting period for the test results to arrive and after the results have arrived. The truthfulness about the answers given by the patients is a very crucial factor in concluding the study, thus it becomes a weakness in order to comprehensively conduct and infer the experiment. Another limiting factor for the present study was observed to be the willingness of the patients to reveal the required information about their mental state. Some female patients did not reveal their age. This becomes a disadvantage in clearly inferencing the mental state during the examinations.

5.4 Recommendation

The inference presented after each hypothesis is a vital phenomenon for the present research. This inference can be used as a pivotal information to carry out future analysis such as the prevention and treatments of the co – morbid mental health issues such as depression, anxiety and stress. This assessment can also be used to plan and organise the psychometric analysis questions to be asked, based on the experience and data acquired from the current research.

5.5 Implication

150 female patients were thoroughly analysed in the present research for signs of depression, anxiety and stress during mammographic examinations for breast cancer. A throughput analysis of the parameters such as age, waiting period and the mammographic results was successfully performed. Varied mental states of such patients were observed ranging from Normal to chronic. Most of the female patients exhibited mild levels of anxiety and stress (A range scale where 1 represents normal level and 5 represents Chronic, the average data was not above the range scale of 2). It can be interpreted from the result tables that majority of the female patients between the ages 41 – 50 are affected by the examinations. This can be attributed to the possible future threats that are associated with the onset of breast cancer. Thus, from the present study it can be concluded that detection of breast cancer can possibly lead to mental health issues such as depression, anxiety and stress among the female patients.

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BORANG SOAL SELIDIK**TAJUK KAJIAN: MASALAH KESIHATAN MENTAL DI KALANGAN PESAKIT
MAMMOGRAFI HOSPITAL SULTANAH AMINAH JOHOR BARU**

Penyelidikan ini adalah bertujuan untuk memenuhi sebahagian daripada syarat penganugerahan Ijazah Projek Sarjana Muda di Fakulti Psikologi, Open University Malaysia, Johor Bahru, Johor.

ARAHAN:

- Soal selidik ini mengandungi 3 bahagian iaitu Bahagian 1, 2, 3 dan 4. Responden diminta hanya menjawab soalan bahagian 1, 2 dan 3 dengan membulatkan pilihan yang sesuai..
- Adalah diharapkan agar para responden dapat memberikan jawapan kepada soalan yang dikemukakan dengan jujur dan ikhlas.
- Segala maklumat responden dijamin sulit dan hanya akan digunakan bagi tujuan kajian ini sahaja.
- Kerjasama yang anda berikan didahului dengan ucapan terima kasih. Semoga kerjasama ini akan mempertingkatkan lagi kesahihan kajian ini.

Disediakan Oleh:

Shaliny

Shaliny Serigarang

Sarjana Muda Psikologi

SARINGAN MINDA SIHAT

Bahagian 1

Nama : _____
 No KP : _____
 Jantina : _____
 Umur : _____
 Bangsa : _____
 Pekerjaan : _____
 No. Telefon : _____
 Tarikh : _____

Ceraikan keratan ini untuk disimpan oleh klien.

KEPUTUSAN SARINGAN MINDA SIHAT

Nama : _____ Tarikh : _____
 Jantina : Lelaki / Perempuan Umur : _____

Ujian	Keputusan		
	Stres	Anzieti	Kemurungan
DASS			

SARINGAN MINDA SIHA T

SOAL SELIDIK DASS

- LANGKAH 1 : Sila baca dan jawab soal selidik DASS
- LANGKAH 2 : Masukkan skala markah jawapan ke dalam ruangan kosong di bahagian 2, mengikut soalan (S) bagi setiap kategori (Stres, Anzieti dan Kemurungan).
- LANGKAH 3 : Jumlahkan skala markah bagi setiap kategori bagi mengetahui tahap status kesihatan mental anda.
- LANGKAH 4 : Sila isikan keputusan dalam bahagian 3 dan isikan dalam keratan di muka hadapan

Bahagian 2

Sila baca setiap kenyataan di bawah dan bulatkan jawapan anda pada kertas jawapan berdasarkan jawapan 0, 1, 2 atau 3 bagi menggambarkan keadaan anda sepanjang minggu yang lalu. Tiada jawapan yang betul atau salah. Jangan mengambil masa yang terlalu lama untuk menjawab mana-mana kenyataan.

Please read each statement and circle number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

- 0- **Tidak Langsung** menggambarkan keadaan saya
Did not apply to me at all
- 1- **Sedikit atau jarang-jarang** menggambarkan keadaan saya
Applied to me to some **degree or some of the time**
- 2- **Banyak atau kerap kali** menggambarkan keadaan saya
Applied to me to a **considerable degree or a good part of time**
- 3- **Sangat banyak atau sangat kerap** menggambarkan keadaan saya
Applied to me **very much or most of the time**

1	Saya mendapati diri saya sukar ditenteramkan I found it hard to wind down	0	1	2	3
2	Saya sedar mulut saya terasa kering I was aware of dryness of my mouth	0	1	2	3
3	Saya tidak dapat mengalami perasaan positif sama sekali I couldn't seem to experience any positive feeling at all	0	1	2	3
4	Saya mengalami kesukaran bernafas (contohnya pernafasan laju, tercungap-cungap walaupun tidak melakukan senaman fizikal) I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	Saya sukar untuk mendapatkan semangat bagi melakukan sesuatu perkara I found it difficult to work up the initiative to do things	0	1	2	3
6	Saya cenderung untuk bertindak keterlaluan dalam sesuatu perkara I tended to over-react to situations	0	1	2	3
7	Saya rasa menggeletar (contohnya pada tangan) I experienced trembling (e.g. in the hands)	0	1	2	3
8	Saya rasa saya menggunakan banyak tenaga dalam keadaan cemas I felt that I was using a lot of nervous energy	0	1	2	3
9	Saya bimbang keadaan di mana saya mungkin menjadi panik dan melakukan perkara yang membodohkan diri sendiri I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	Saya rasa saya tidak mempunyai apa-apa untuk diharapkan I felt that I had nothing to look forward to	0	1	2	3
11	Saya dapati diri saya semakin gelisah I found myself getting agitated	0	1	2	3
12	Saya rasa sukar untuk relaks I found it difficult to relax	0	1	2	3
13	Saya rasa sedih dan murung I felt down-hearted and blue	0	1	2	3
14	Saya tidak dapat menahan sabar dengan perkara yang menghalang saya meneruskan apa yang saya lakukan I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	Saya rasa hampir-hampir menjadi panik/cemas I felt I was close to panic	0	1	2	3
16	Saya tidak bersemangat dengan apa jua yang saya lakukan I was unable to become enthusiastic about anything	0	1	2	3
17	Saya rasa tidak begitu berharga sebagai seorang individu I felt that I wasn't worth much as a person	0	1	2	3
18	Saya rasa saya mudah tersentuh I felt that I was rather touchy	0	1	2	3

19	Saya sedar tindak balas jantung saya walaupun tidak melakukan aktiviti fizikal (contohnya kadar denyutan bertambah, atau denyutan jantung berkurangan) I aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20	Saya berasa takut tanpa sebab yang munasabah I felt scared without any good reason	0	1	2	3
21	Saya rasa hidup ini tidak bermakna I felt that life was meaningless	0	1	2	3

SARINGAN MINDA SIHAT

BAHAGIAN 3

Panduan Mengira Skor :-

Masukkan skala markah jawapan bagi soalan (S) bagi setiap kategori.

STRES								
Soalan	S1	S6	S8	S11	S12	S14	S18	Jumlah
Markah								

ANZIETI								
Soalan	S2	S4	S7	S9	S15	S19	S20	Jumlah
Markah								

KEMURUNGAN (DEPRESSION)								
Soalan	S3	S5	S10	S13	S16	S17	S21	Jumlah
Markah								

Selepas dijumlahkan, sila rujuk kepada petak skor saringan dan terjemahkan jumlah skor untuk mengetahui tahap status kesihatan mental anda.

SKOR SARINGAN			
	Kemurungan	Anzieti	Stres
Normal	0 – 5	0-4	0-7
Ringan	6 - 7	5-6	8-9
Sederhana	8-10	7-8	10-13
Teruk	11-14	9-10	14-17
Sangat Teruk	15+	11+	18+

BAHAGIAN 4

Isikan keputusan (**normal, ringan, sederhana, teruk atau sangat teruk**) dalam jadual di bawah.

KEPUTUSAN UJIAN DASS

Ujian	Tahap
Stres	
Anzieti	
Kemurungan	

SKOR DASS

-TAMAT -

Attachment B

Age group (Years)	Depression	Anxiety	Stress
31 – 40	1.40 ± 0.40^b	2.00 ± 0.78^b	1.80 ± 0.37^b
41 – 50	2.30 ± 0.21^a	3.34 ± 0.24^a	2.68 ± 0.21^a
51 – 60	1.71 ± 0.09^b	1.93 ± 0.21^b	1.19 ± 0.09^b
61 – 70	1.08 ± 0.06^b	1.31 ± 0.13^b	1.21 ± 0.09^b
71 - 80	1.17 ± 0.11^b	1.42 ± 0.34^b	1.25 ± 0.25^b

Waiting period (minutes)	Depression	Anxiety	Stress
11 – 20	1.25 ± 0.25^{ab}	1.63 ± 0.32^a	1.38 ± 0.26^a
21 – 30	1.30 ± 0.11^{ab}	1.92 ± 0.20^a	1.49 ± 0.13^a
31 – 40	1.57 ± 0.14^{ab}	2.32 ± 0.22^a	1.89 ± 0.19^a
41 – 50	2.04 ± 0.30^b	2.58 ± 0.36^a	1.83 ± 0.26^a
51 - 60	1.14 ± 0.14^b	2.43 ± 0.72^a	1.71 ± 0.36^a

Mamographic results (Birad)	Depression	Anxiety	Stress
I	1.29 ± 0.20 ^a	1.95 ± 0.30 ^a	1.52 ± 0.23 ^a
II	1.39 ± 0.10 ^a	2.26 ± 0.19 ^a	1.57 ± 0.13 ^a
III	2.03 ± 0.28 ^a	2.44 ± 0.31 ^a	2.13 ± 0.25 ^a
IV	1.27 ± 0.19 ^a	2.07 ± 0.40 ^a	1.60 ± 0.29 ^a
V	1.75 ± 0.37 ^a	1.75 ± 0.56 ^a	2.00 ± 0.50 ^a
VI	1.75 ± 0.75 ^a	2.00 ± 1.00 ^a	1.75 ± 0.75 ^a