INFLUENCE OF STRESS ON FALSE MEMORIES AMONG ADULT OUPATIENTS ATTENDING PSYCHATRIC CLINIC AT MERU LEVEL FIVE HOSPITAL, MERU COUNTY, KENYA

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DECLARATION AND APPROVAL

Declaration by Candidate

This project is my original work and has never been presented for any academic award in any institution.

Signature:  **Date:** 05/07/2025

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Approval by Supervisor

This project is being submitted for examination with my approval as University Supervisor

Signature:  **Date:** 5-07-2025

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DEDICATION

I dedicate this work to my beloved family members in appreciation of their unending prayers, hard work, and support.

ACKNOWLEDGMENT

The ultimate success of this assignment would not have been feasible without the general guidance provided by my supervisor. **Dr Mokua Gilbert Maroko**. Mount Kenya University, particularly the Department of Psychology, has been extremely supportive. For their inspiration and moral support, I thank all of my lecturers and course colleagues. My family and many friends deserve special appreciation for their unwavering love, patience, encouragement, and support during the project development process. God bless you all.

ABSTRACT

Worldwide, approximately 3.9 percent of individuals have encountered PTSD during their lives, while around 5.6 percent of those who have faced traumatic events subsequently develop the condition. The prevalence rises notably to 15.3 percent for people who have been subjected to violent conflict or warfare. The purpose of this study was to examine how stress influences false memories among adult outpatients visiting the psychiatric clinic at Meru Level 5 Hospital in Meru County, Kenya. The research was structured around several objectives: to assess the effect of acute stress on false memories in adult outpatients at the psychiatric clinic; to determine how episodic acute stress influences false memories; to explore the effect of chronic stress on false memories; to identify the prevalence of false memories; and to propose strategic stress interventions aimed at reducing the incidence of false memories among adult outpatients at Meru Level 5 Hospital. A descriptive approach was utilized for this investigation. The study's target population consisted of 1,800 adult outpatients and five psychiatrists. The Yamane formula was used to calculate a sample size of 332 participants. Data collection involved the use of questionnaires and interviews. Quantitative data were processed using SPSS, whereas qualitative data were analyzed using thematic analysis. The questions were assessed through the Pearson Product-Moment Correlation (r) at a 95% confidence level. The study achieved a 90.4% response rate, with 300 out of 332 questionnaires returned fully completed. Findings revealed that 43.3% of participants frequently experienced insomnia, 41.7% had recurring panic attacks, and 46.7% reported frequent headaches key indicators of stress-related cognitive distortion. Additionally, 43.3% acknowledged often forgetting things they had just been told, while 38.3% expressed doubts about the accuracy of their memories. Memory lapses such as forgetting names of acquaintances (40%) and recent thoughts (43.3%) were commonly reported. The study concluded that acute, episodic, and chronic stress significantly influenced the formation of false memories. Chronic stress, marked by symptoms such as inability to concentrate and persistent fatigue, showed the strongest link to cognitive impairment. The high prevalence of stress-related false memories among psychiatric outpatients calls for urgent clinical attention. The study recommends implementation of evidence-based stress approaches such as cognitive-behavioral therapy (CBT) and mindfulness-based stress reduction (MBSR), resilience training, and regular psychiatric counseling. These interventions should be integrated into routine mental health care to enhance memory accuracy and overall psychological well-being among adult psychiatric patients.

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LIST OF ABBREVIATIONS AND ACRONYMS

ASD : Acute stress Disorder

ICU : Intensive Care Unit

PTSD : Post Traumatic Stress Disorder

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

An individual's memory doesn’t serve as a precise account of reality; it can be shaped by additional information and prior knowledge. The ability to extract the "gist" is an impressive characteristic of human memory and stands out as one of its most fascinating elements. After learning specific examples of a category, people are likely to vividly recall the concept of that category's precursor, even if it was never presented during the learning process (Diekelmann, Wilhelm, Wagner & Born, 2011).

Typically, "false memory" describes instances where individuals assert, they remember events that never occurred. While such "false" memories can be problematic in situations where accurate recollection is critical, like in eyewitness testimony, they can also be helpful for grasping the essence or overall idea of an experience rather than remembering every detail.

False memories work to modify and extract general information or the gist from a single learnt event, and thus making it undesirable (Diekelmann et al., 2011).

Changes that occur within people both physically and emotionally towards situation or an event is regarded as stress. The reaction is determined by one's perception of an event or scenario. Singh (2016), on the other hand, defines stress as a multifaceted, complicated phenomenon involving a variety of factors that trigger events and cause the brain to respond. The responses can be emotional, physical or biological, and they vary from person to person due to genetic and environmental factors. They frequently alter eating behavior.

There are three various kinds of stress. The first is a condition known as acute stress disorder. Intrusive memories, poor mood, detachment, avoidance, and/or hyperarousal are all

symptoms of acute stress disorder (ASD), which occurs within the first month after a possibly traumatic experience (Wenzel, 2017). The episodic acute stress is the second type of stress. As a result of episodic acute stress, people are more likely to take on more responsibilities and efforts than they are able to handle when they are stressed. Such people are frequently late, disorganized, and have uncontrollable anger, as well as recurring dreams and flashbacks (Shields et al., 2017). Chronic stress is the third stage of stress. Chronic stress, as per Wenzel (2017), is a reaction to long-term emotional pressure. Inability to concentrate, weariness, problems sleeping, and headaches are some of the symptoms.

Globally, stress has one of the biggest health challenges and this is due to the millions of people, and more so adults who are affected by it. Approximately 20% of employed population is estimated to experience stress at any given moment. Over 40 million Americans are estimated to have a mental health condition, with 4-5 million people worldwide being categorized as severely mentally ill because of the stress they are under (Imperatori et al., 2020).

Posttraumatic stress disorder (PTSD) and depression are both known for their memory problems. Individuals with these illnesses, for example, tend to remember emotionally bad events more vividly than emotionally happy events, and can show a preference for specific memories over general recollections (Ono, Devilly, & Shum, 2016). Brennen, Dybdahl, and Kapidi (2007), on the other hand, have suggested that there is grounds to suspect that PTSD patients may have a specific deficit in source-monitoring, and hence a predisposition to produce more false memories, as a result of a link between the

condition and dissociation. There is a relationship between war-related PTSD and dissociation, for example. Susceptibility to false memories was found to be positively connected with dissociative symptoms.

Studies done globally have indicated that stress and false memories are related. According to Linden and Rutkowski (2013), a young woman in psychiatric care in Northern Germany accused two men of sexual assault and rape over a period of several years during her youth. The men, the woman's father and uncle, was charged and sentenced to four and a half and seven years in prison, respectively. A journalist looked into the matter and discovered inconsistencies. The case was eventually revisited, and the two men was released due to their proven innocence.

Patihis and Pendergrast (2019) examined survey results from a significant population in the US and discovered that 8-9% of the total sample had discussed the potential for false memories with their therapist, while 4-5% had accessed memories of childhood abuse during therapy. They projected that this could impact between 9 and 12 million people in the United States after projecting to the entire US population (those aged 20 and up). When just those who had had therapy was considered, the percentages were around 20% and 11%, respectively.

In Africa, cases of false memories being reported by psychiatric patients are not new. Studies that have been done have indicated that there are cases of false memories due to various

aspects of stress faced by people. For instance, in a study done in Rwanda, it was noted that the traumatic events caused by the genocide made some of the genocide survivors to have false memories. Some of the adult victims was suffering from distorted memories while others reported incidences that never happened (Dominique et al., 2012). Furthermore, it has been noted by White et al., (2018) that among some of the Sudanese

refugees who have PTSD based on the experiences that they had created some memories of events that never happened. Such memories were associated with the stress caused by the fear that they had regrading experiencing what they had gone through again in life.

Sub-Saharan Africa is home to a substantial number of adults who are facing various life challenges. In Kenya, several studies have been conducted related to PTSD prevalence among adults and this is in terms of the encounters that they face when it comes to the effects that it has on their memory. It is noted that some of the people who are having the psychiatric care due to various types of stress are having memory related challenges such as trivial details, delusions and few cases of acquisition of new identities among others (Marangu et al., 2014).

Stress disorder is frequent in Kenya, with major mental illness prevalence rates of 4.7 percent, which is equivalent to rates recorded in high-income nations. Poverty, unemployment, internal disputes, displacement, and HIV all contribute to the weight of stress. In Kenya, mental health services for persons suffering from stress are primarily sponsored by the government, with only a few privately funded programs and facilities. Mathari Hospital is the world's largest mental hospital, with its headquarters in Nairobi (Marangu et al., 2014). Additionally, In Kenya, there is a high case of PTSD within the general adult population within poor rural area of Kisumu County as noted by Jenkins et al. (2015).

In Meru County, there are cases of adult stress that have been studied. Muigai, Moguche and Mutea (2018) noted that some of the causes of stress included work environmental conditions and individual differences. Additionally, Ekabu, Kalai and Nyagah (2018) noted that in Meru County, most of the adults who are attending the psychiatric clinic are suffering from stress related disorders such as anxiety and dispossession among others. In light of this context, the research aims to explore the influence of stress on false

memories among adult outpatients attending psychiatric clinic at Meru Level 5 Hospital, Meru County, Kenya.

1.2 Statement of the Problem

Stress is common globally among adults. According to previous research, stress-related disorders are prevalent over the world, particularly among adults. More people suffer from stress-related disorders when they are asked about the worst event they have ever experienced (Park et al., 2020) than when they are asked about an unspecified or random event. For example, the rate of stress-related disorders in South Korea ranges from 1.7% to 9.2%, while the rate in Canada is 9.2%. (Stelnicki & Carleton, 2021).

The prevalence of stress has become a global health concern based on the negative impacts that it has on the memory stability of stressed individuals. Stress has been linked to false memory development. People who are under stress may be more likely to experience cases of false memories because of a lack of source-monitoring abilities, according to Brennen et al. (2007). Additionally, it has noted by Linden and Rutkowski (2013) that cases of false memory due to stress have serious effects because in some cases it can put the life of the patient at risk as they can have a flashback that is not real regarding something that might severely stress them such as memories of being raped among others.

In Kenya, stress among adults has been a serious issue based on the studies. That have been done. Marangu et al. (2014) in their study have indicated that at least 4% of the Kenyan adult population is stressed by some aspects of their life or environment. Jenkins et al. (2015) in their study found out a 10.6% prevalence rate of probable PTSD among adults. Such findings indicate that indeed, stress is a serious public health concern in Kenya.

Studies done in Meru have also indicated that there are serious cases of stress that are faced by adults. Mburugu (2020) in his study done in Meru County indicated that over 30% of adults who experienced loss or grief was stressed. Mugambi (2021) in his study in Meru County indicated that most retiree teachers face various challenges that make them live a stressful life. Thus, the studies indicate that stress is a serious health issue in Meru County based on its prevalence among adults.

The studies done in Kenya and Meru County have captured the prevalence of stress among adults; however, they have not captured the effects of stress in development of false memories and thus creating a literature gap that the study aims to fulfil. Thus, it is against this problem that study aims to investigate the influence of stress on false memories among adult outpatients attending psychiatric clinic at Meru Level 5 Hospital, Meru County, Kenya.

1.3 Purpose of the Study

The research sought to examine the influence of stress on false memories among adult outpatients attending the psychiatric clinic at Meru Level 5 Hospital, Meru County, Kenya.

1.4 Objectives of the Study

These objectives formed the foundation of the study:

i. To assess the influence of acute stress on false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital.
ii. To establish the influence of episodic acute stress on false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital.

iii. To elucidate the effect of chronic stress on false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital.

iv. To find out the prevalence of false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital.

v. To highlight strategic stress interventions to minimize occurrence of false memories

1.5 Research Questions

i. What is the influence of acute stress on false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital?

ii. What is the influence of episodic acute stress on false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital?

iii. What is the influence of chronic stress on false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital?

iv. What is the prevalence of false memories among adult outpatients attending psychiatric clinic at Meru level 5?

v. What strategic stress interventions can be used to minimize occurrence of false memories?

1.6 Significance of the Study

This work is significant based on the prevalence rates of stress. For instance, in Kenya Marangu et al. (2014) in their study have indicated that at least 4% of the Kenyan adult population is stressed by some aspects of their life or environment. Within Meru County, it has been noted that there are cases of stress facing adults (Mburugu, 2020; Mugambi, 2021).

Hence, there is the need to execute the study with the aim of assessing the levels of prevalence of stress in Meru which is key in the formulation of better interventions and policies.

False memories have not been significantly studied in Kenya and thus creating a literature gap. This study is significant as it will eliminate the existing gap. It was also used by future scholars and academicians a point of reference.

The study will also come up with strategies that can be used to manage stress or eliminate it. The strategies that were suggested and the recommendations was crucial when it comes to policy makers within Meru County and National Level on better ways of preventing, diagnosis and management of stress in order to avoid cases of false memories.

1.7 Scope of the Study

The research concentrated on exploring the influence of stress on false memories among adult outpatients attending the psychiatric clinic at Meru Level 5 Hospital, Meru County, Kenya. A descriptive study design was employed. The study targeted adult outpatients attending the psychiatric clinic at Meru Level 5 Hospital. Data for the study were collected through the use of questionnaires and interview guides. The data were analyzed using SPSS. The study was conducted in the month of January 2025.

1.8 Limitations of the Study

The study was limited in terms of the unit of study. It targeted only Meru Level 5 Hospital, and thus the findings might not have been representative of the situation within Meru County or the country as a whole. A further impediment arose from a lack of cooperation among respondents in sharing information considered to be private, as indicated in the questionnaire. To mitigate this issue, the researcher guaranteed

participants that their answers would only contribute to the research and would not be utilized for any other purposes. Additionally, delays occurred in respondents completing the research tool. To address this, the researcher conducted follow-ups through phone calls and text messages to prompt and motivate respondents to improve the response rate.

1.9 Assumptions of the Study

The study was based on various assumptions. These were:

i. Psychiatric outpatients have varying degrees of stress.

ii. Psychiatric outpatients experience false memories

iii. There were adult outpatients who are visiting the health facility during the week of data collection.

iv. The study assumes that the study respondents will give accurate and honest responses to the questions that was asked.

1.10 Operational Definition of Key Terms

Acute stress - Stress whose symptoms occur suddenly and they don't last long

Chronic stress - Stress that is long lasting with feelings of being under great pressure

Episodic acute stress - Frequent occurrence of acute stress

False memories - recollection that seems real in the mind but is a fabrication

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter provides an in-depth exploration of the theories influencing both stress and false memories among adult outpatients attending psychiatric clinic, drawing insights from empirical investigations conducted in corresponding study areas. Subsequently, a conceptual framework was created to visually represent the study variables.

2.2 Theoretical Literature

This study was anchored under Transactional Model of Stress and Coping (1984).

2.2.1 Transactional Model of Stress and Coping

This model views stress as a continuous relationship that is there between the environment and an individual, in which the individual's interpretations and perceptions of their immediate surroundings play a key part in the development of psychological stress. When perceived expectations in the environment surpass a person's perceived resources over time, stress results. The repercussions of environmental stressors will differ amongst individuals, according to transactional theory (Lazarus, & Folkman, 1984). First, the person interprets and evaluates their surroundings based on his or her own values and views. This is referred to as primary appraisal, and the outcomes will vary depending on the individual, as some would view work conditions as more challenging and unfavourable than others (Biggs, Brough, & Drummond, 2017).

Second, people will look for and analyse own resources and strengths in order to cope with stressful situations; this is referred to as secondary appraisal. Following that, the individual will adopt a coping strategy based on these assessments Lazarus, & Folkman, 1984). The coping behaviours and resulting psychological stress will flow back to the

evaluation processes, changing views of both the environment and individual resources, according to transactional theory. So, time plays an important role in theory as people's views and assessments of the work environment might change over time due to their coping efforts, and hence stress (Edwards, 1992; Lazarus, 1990).

According to the concept, stress may be lessened by assisting stressed persons in changing their perceptions of stressors, giving them with coping skills, and increasing their confidence in their inability to deal. To do this, psychiatrists use psychological support, counselling, meditation and relaxation etc. reduce the negative impact of stress on patients. Because it helps understand how people experience stress and how they assess and cope with it, the transactional model of how stress happens can be used to investigate how stress might be intervened and reduced by the psychiatrists in order to eliminate cases of false memories. Thus, the theory is applicable to the current study.

2.3 Empirical Literature Review

2.3.1 Acute Stress on False Memories among Adults

Acute stress has a diverse effect on memory development. The majority of evidence suggests that the consequences of acute stress are stage-dependent (acquisition, consolidation, and retrieval). Each component of the memory complex appears to have its own neurobiological profile, implying that stress caused by the release of cortisol or cortisone might well have various impacts on the distinct steps of the memory process and, as a result, on the interconnected memory systems associated with these phases (Lindau, Almkvist & Mohammed, 2016).

Pitampati (2021) points out that some people, particularly those who are anxious, have false memories when reliving a terrible event. Memory distortions are notable aspects of PTSD and depression, according to the study; patients with these conditions, for example,

tend to recall emotionally unpleasant events better than emotionally happy events and can expose over general recollections. According to the findings, those who have experienced trauma are more likely to have false memories generated by treatment that are considerably more intense than the scenarios they are likely to face in real life. Restoring the brain to almost the same level of awareness as when the memory was encoded is the greatest approach to recall or remember the memories in these kinds of situation.

Frequent unpleasant emotions have been connected to false memory, which is a component of a person's false memory. In their study, Bookbinder and Brainerd (2017) found that false memories have a wide range of applications in high-stakes scenarios in the real world when negative emotion is prominent. A prominent example is eyewitness recollection in judicial situations. Even in capital cases, the decisive evidence in criminal procedures is mainly based on witness recollection memories, and such reports revolve around experiences that are loaded with negative emotion. According to Bookbinder and Brainerd (2017), such situations increase the risk of witness memory recollections of events that did not occur, such as when a witness wrongly reports events that had already occurred due to their emotional reactions to the incident.

The reliability of emotional memory and social decision-making is influenced by insomnia as part of acute stress. According to Li et al. (2018), the link between sleep and memory has gotten a lot of attention, and various studies have proved that sleep is crucial for memory processing. Furthermore, the study found that napping can improve memory, supporting the idea that even short-term sleep is beneficial for remembrance consolidation.

Additionally, Li et al. (2018) have noted that memory impairment is regarded to be the most common sign of sleep loss-related cognitive decline, and it can include both

working memory and encoding of new memory material. Memory impairment in individuals with stress may be linked to impaired functions of the brain and more so when it comes to temporal cortex and fronto-parietal network and thus causing occurrence of false memories.

In their study, Streb et al. (2016) found that most individuals suffer from intrusive recollections after a traumatic event. Controlling these invasions is critical for the well-being of survivors. Retrieval suppression can be used to exercise memory control. Poor retrieval suppression, on the other hand, should be linked to distressing intrusions that persist and PTSD. The study found that patients who have intrusive memories frequently have erroneous memories, such as distorted memories, and in some cases, delusional memories.

Strange and Takarangi (2015) investigated the effect of mental imagery in memory distortion for traumatic occurrences. People's memories of traumatic situations, like their memories of more mundane occurrences, are easily corrupted, according to the study. Amplification of traumatic memories tends to follow a specific pattern: tend to recall more than they actually witnessed. An unfortunate side effect of increased memory amplification is a higher incidence of "re-experiencing" symptoms including intrusive thoughts and images, which are often connected with PTSD.

Those who have been traumatized, according to Mulwa, Odera, and Simiyu (2021) who conducted a study at Dadaab refugee camp in Kenya, suffer from acute stress reactions and sadness. It was found that out of the 400 refugees that participated, a majority (n = 163; 67.1%) of the respondents believed that insomnia/lacks of sleep was an indicator for trauma, which can lead to false recollections in certain circumstances.

2.3.2 Episodic Acute Stress and False Memories among Adults

Howe and Knott (2015) investigated how judicial processes are affected by the fallibility of memory. The study found that panic attacks was linked to a person's inability to remember things. Such cases of memory fallibility include not only the loss of facts from the original event, but also mistakes of commission, such as the formation of memory illusions. There are many different types of memory illusions, from misremembering whether a stop sign or a yelp sign was seen at a junction to misremembering entire occurrences and establishing a chain of false recollections.

Gagnon and Wagner (2016) in their study found out that episodic retrieval makes individuals to use past memories to inform their present-day judgments and thinking. In many real-world settings, retrieval takes place in the midst of high levels of stress, whether the task at hand necessitates it or not. Acute stress can cause a cascade of neuro-modulatory changes that might impede episodic retrieval, making memory more difficult in these situations.

Otgaar, Muris, Howe and Merckelbach (2017) found out that groups' false memory levels rise in comparison to those in relevant comparison groups when emotional association material was delivered to them. Associative and non-associative material did not consistently produce this difference. Studies that used either emotionally associative or neutral, non-associative material was shown to have similar effect sizes, which supports the study's findings. Patients with PTSD or depression are likely to create false memories if they have a history of trauma or traumatic experiences, according to the research.

In some cases of false memory, victims report having rapid, disorganized thoughts as a symptom of episodic acute stress. According to Crespo and Fernández-Lansac (2016), PTSD patients' traumatic narratives are generally disordered thinking, which can lead to delusions or distorted recollections. That was further evidenced by the findings of the

study. An individual may find it difficult to remember events accurately if their thoughts are disorganized, as they display disturbances in the likelihood that the past event can be able to occur again to them.

Episodic acute stress manifests itself as chronic headaches. Individuals who suffer from frequent headaches are more likely to struggle with their memory. Feleppa, Fucci and Bigal (2017) found that people who was frequently stressed had headaches that made it difficult for them to maintain a stable memory process because of the discomfort and confusion they felt. The study also found that, if the headaches continue to occur, a person is able to remember events incorrectly, and thus give inaccurate recollections of them. According to the findings of the study, an individual may require psychiatric assistance in such instances.

Mutiso, Mbwayo, Khasakhala and Ndetei (2011) in their study done in Kenya reported that 20 to 30 percent of patients who had cancer, diabetes, HIV and cardiovascular illness displayed symptoms of general anxiety disorder. The high prevalence of anxiety disorders in this cohort was connected to the chronicity of medical illnesses. In such a condition, patients tend to have episodic stress which forces them to be forgetful of events that they have gone through and so, they would encounter cases of distorted recollections.

2.3.3 Chronic Stress and False Memories among Adults

Chronic stress syndrome is a devastating and life-altering disorder. Despite this, no diagnostic methods other than symptom detection and non-curative treatments available at the moment. Nearly 90% of persons who have the illness report cognitive issues such as poor concentration, memory loss, failure to absorb information, and a general decline in cognitive capacity (Robinson et al., 2019).

Chronic stress, as evidenced in psychologically stressful experiences (e.g., being an eyewitness to an accident) or protracted mental overload, can have both beneficial and

negative impacts on memory by changing specific parts of memory (e.g., time pressure and high task demands). In these cases, recall is frequently faulty, especially in terms of details (Lindau et al., 2016).

Children who are subjected to chronic stress as children are at risk for a variety of behavioral and cognitive issues, including memory impairment. Cortisol increase that is caused by stress, for example, have been found to have a deleterious impact on declarative memory. Individuals who have experienced early childhood abuses and have been diagnosed with chronic stress-related mental disorders have demonstrated that maltreatment is linked to a wide range of cognitive difficulties, including decreased working memory performance and difficulties reporting autobiographical facts from childhood (Baugerud, Howe, Magnussen & Melinder, 2016). This shows that some components of a maltreated child's memory may be more prone to forces that distort what is remembered than non-maltreated children's memory.

The elevated plus maze (EPM) paradigm was used to assess memory losses in a study by Bhatia et al., (2011). Corticosterone levels rose as a result of prolonged stress and persistent, unpredictable stress, hyperglycemia, and creatine kinase levels while decreasing cholesterol levels, according to the study. Furthermore, continuous and unpredictable stress caused severe memory loss, as well as adrenal enlargement, weight loss, and stomach ulcers.

Many of the refugees in Kakuma refugee camp are young individuals who have fled their home countries owing to civil war and planned violence, according to Inyang, Gitau, and Osoro (2020). Therefore, individuals are at risk for acquiring mental health issues. If trauma- based, psychological, and social support services are not made available, memory intrusion symptoms of stressful events in young people can occur.

2.3.4 Stress Interventions among Adults

Stress reduction interventions are a type of activity used to promote individuals' well-being and reduce stress, mostly by treating the sources of stress or lowering the effect of stress on people (Pignata, Winefield, Boyd & Provis, 2018). Hilton et al. (2018) A systematic review and meta-analysis of randomized controlled trials was conducted to assess the efficacy and safety of meditation therapies for individuals with PTSD. A total of ten trials involving various meditation therapies for PTSD, comprising 643 participants, met the predefined criteria for inclusion. When compared to control groups, additional meditation therapies such as mindfulness-based stress reduction, yoga, and the mantram repetition program were found to improve symptoms of PTSD and depression. However, these advantages are derived from data of low to moderate quality. To enhance confidence in these results, further high-quality research is necessary on meditation as an adjunct therapy in sufficiently large samples of patients diagnosed with PTSD to identify significant differences in outcomes.

The feasibility and effectiveness of a psychomotor relaxation program on nurses' psychological (burnout symptoms, affective moods) and physiological stress markers was examined by Veiga et al. (2019). A total of fifteen nurses participated in an 8-week psychomotor relaxation program, which involved two 20-minute sessions each week, while an additional fifteen nurses continued with their usual routines. The psychomotor relaxation program was found to be feasible and well-received by the study participants. Those in the relaxation group showed reduced levels of emotional fatigue, sadness, and salivary cortisol compared to the control group. These results suggest that relaxation techniques are effective methods for alleviating the everyday stress experienced by nurses, and that a psychomotor relaxation approach could serve as a valuable resource for health professionals.

Resilience is a concept that represents a person's ability to retain psychological and/or physical well-being in the face of adversity. In populations with severe illness, resilience is characterized as a sequence of skills that people can call on to facilitate coping and adaptation, and also to optimize outcomes (Christopher et al., 2018). In their study, Kaboudi et al. (2018) found that women who was educated in resilience skills made considerable progress in enhancing their coping style and minimizing parental stress when compared to moms in the control group.

Wango, Wairire and Odiemo (2018) have noted that law enforcement officers in Kenya may be suffering from psychological morbidity, such as worry and depression, which can lead to a variety of occurrences, such as an increase in marital discord. The study found that counselling psychological interventions in the police department must be tailored to the needs of the clients, in this case police officers and in some cases their families. A further conclusion of the study was that the practitioners (counsellors, clinical psychiatry, psychologists, and social workers) assisting police services must thus be selected, nominated, and appointed on the basis of standard spiritual, intellectual, and professional factors.

2.3.5 False Memories among Adults

In their study, Brewin and Andrews (2016) claim that only 15% of people, if that, are susceptible to misleading childhood memories. They show that false memories can emerge even after a few briefs, low-pressure interviews, and that they become richer, more convincing, and more plausible with each subsequent interview. According to the study, people exhibit misleading memories such as mistaken recognition and delusional memories. Furthermore, according to O tgaar, Howe, and Patihis (2021), research has demonstrated that roughly 30% of examined participants generate false memories of historical experiences.

Patients hospitalized to the ICU may experience memory loss and delusional recollections connected with incidences in the ICU as a result of intense pain, heavy sedation, or the acute beginning of their condition, according to Fukuda et al. (2015). Furthermore, many patients recollect incidents that occurred while they were delirious after being discharged from the ICU. These so-called distorted memories can cause Acute Stress Disorder (ASD), which includes anxiety and sadness, as well as an increased risk of PTSD. In fact, individuals discharged from the ICU have a 21 percent-35 percent chance of developing PTSD, which is ten times higher than the rate for people who live regular lives.

According to Sanchez and Naylor (2018), misremembering occurs even under perceptually normal situations, and the risk of forming false memories increases by a factor of approximately under less sensory salient conditions. This could be especially troublesome in situations where the accuracy of conveyed information is essential (such as eyewitness accounts), studies indicate that when sensory conditions are subpar, individuals tend to remember details that were never actually present.

In a study of mothers who was abused and mistreated during child labor, Afulani et al. (2020) found that caregivers directly and indirectly highlighted emotional exhaustion as a reason for their stress. Some providers used terminology like stress and burnout, while others used words like fatigue and exhaustion. Stress was linked to amnesia by providers. According to the study, most women who have been mistreated and insulted experience distorted memory a result of their stress, with the most prevalent kind of forgetfulness being the inability to remember where they had kept their clinic cards, among other things.

2.4 Conceptual Framework

The conceptual framework demonstrates how the independent variable (stress) relates to the dependent variable (false memory). The independent variables include acute stress, episodic acute stress, chronic stress, and stress interventions. The dependent variable is made up of distorted memories, false recognition, delusional memories, spontaneous false memories and acquisition of new identity. The intervening variables were religious beliefs, drug abuse and alcoholism. The interrelationships are presented in Figure 1.

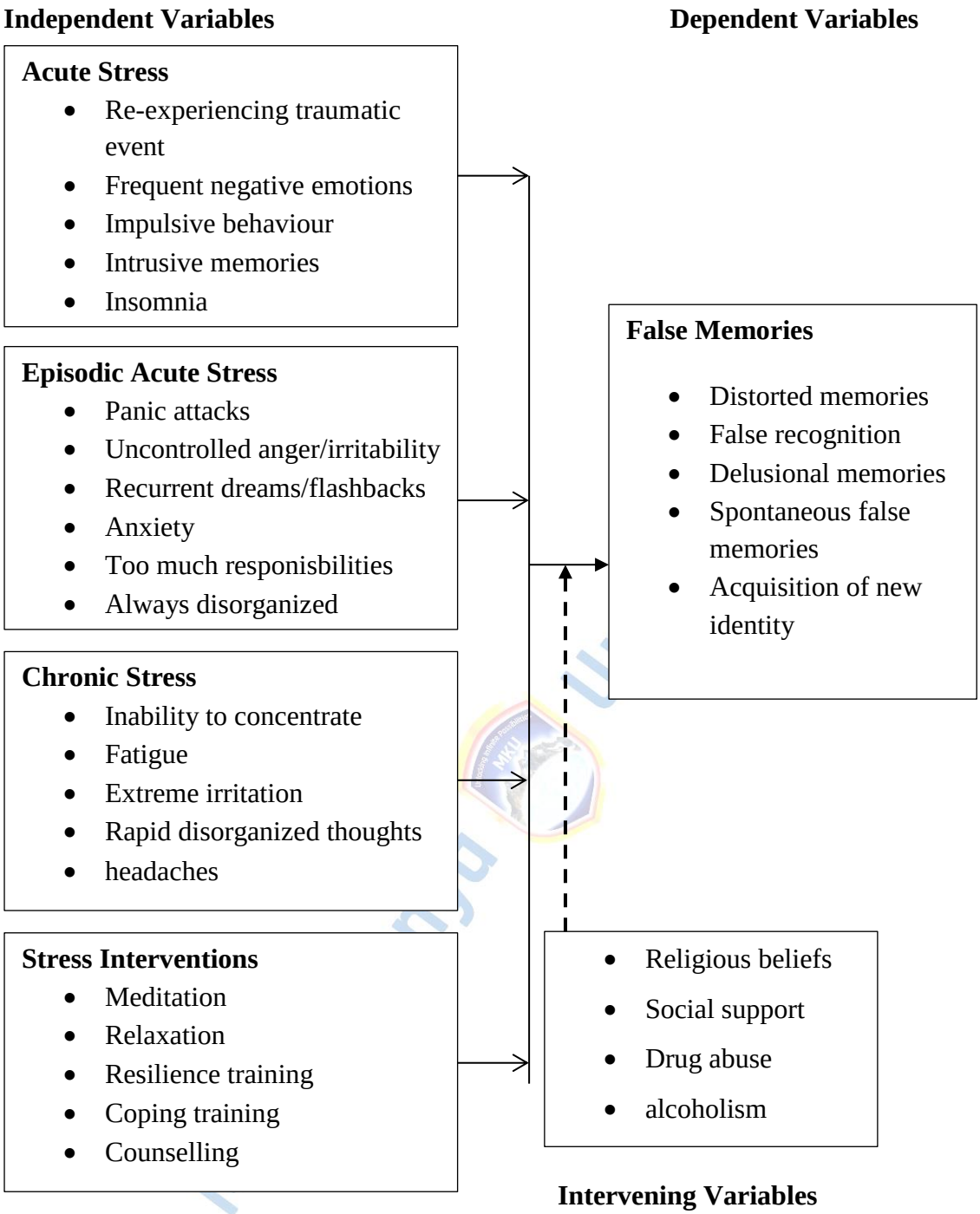

Figure 1: Conceptual Framework

Source: Researcher, (2025)

2.6 Research Gaps of Literature Review

Several studies have demonstrated the direct influence of public-private partnerships on service delivery. While these research endeavors have contributed significantly within their respective contexts, there is a notable gap in the literature concerning stress on false memories among adult outpatients attending psychiatric clinic at Meru Level 5 Hospital, Meru County, thus lacking a local perspective. The researcher aims to highlight and address this gap by presenting a summary of the study's focus and identified gaps.

Strange and Takarangi (2015) investigated the effect of mental imagery in memory distortion for traumatic occurrences. People's memories of traumatic situations, like their memories of more mundane occurrences, are easily corrupted, according to the study. Amplification of traumatic memories tends to follow a specific pattern: tend to recall more than they actually witnessed. An unfortunate side effect of increased memory amplification is a higher incidence of "re-experiencing" symptoms including intrusive thoughts and images, which are often connected with PTSD.

According to Mulwa, Odera, and Simiyu (2021) who conducted a study at Dadaab refugee camp in Kenya, suffer from acute stress reactions and sadness. It was found that out of the 400 refugees that participated, a majority (n = 163; 67.1%) of the respondents believed that insomnia/lacks of sleep was an indicator for trauma, which can lead to false recollections in certain circumstances.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The section describes the method of research employed in the study, detailing the ways in which data was collected, gathered, interpreted, and analyzed. It covers elements like research methods, design, the group being studied, details about how participants were selected and how many there was, making sure the study's results are consistent and accurate, explaining how data was gathered and what tools was used, detailing how the data was analyzed, presented, and addressing any ethical concerns.

3.2 Research Methodology

Kapur (2018) outlines that research methodology encompasses a systematic approach and a series of processes that researchers utilize to gather, analyze, and interpret information, aiming to address a research question or validate a hypothesis. It acts as a guiding framework that ensures the research is executed in a structured and meticulous manner. A mixed-methods strategy was employed in this research, integrating both qualitative and quantitative techniques within a single study. This approach was selected because it offers a more thorough insight into the research issue. As stated by Pandey & Pandey (2021), quantitative research employs statistical methods to highlight trends and patterns, while qualitative research provides depth and context to those findings. Furthermore, adopting a mixed-methods approach helps to reduce the limitations typically associated with solely using either quantitative or qualitative methodologies.

3.3 Research Design

Sileyew (2019) describe research design as a strategic blueprint guiding researcher to fill a knowledge gap. It involves arranging the process of gathering, measuring, and

scrutinizing raw data to clarify the significance of the study's objectives. In this particular study, a expressive research design was employed. According to McCombes (2020), the descriptive research design seeks to accurately and systematically depict a population, situation, or phenomenon by addressing inquiries related to what, how, when, and where, while intentionally omitting considerations of why. This choice is made to gain a complete considerate of the methodology essential for the study's focus. Additionally, the researcher will take an observational stance, documenting and analyzing the findings without exerting control over the data.

3.3 Location of the Study

The study was conducted in Meru County Meru (Level 5 Referal Hospital). The County is located in the Eastern side of Kenya and it is neighbor to Tharaka Nithi County, Isiolo County, Laikipia County, Nyeri County and Samburu County. Meru Level 5 Hospital is a public hospital in Meru County, Kenya.

3.4 Target Population

The target population, as defined by Mugenda & Mugenda (2019), refers to either a tangible or conceptual group of individuals, events, or objects that the researcher intends to relate the findings of the study to.The target population for this study will include all adult outpatients attending psychiatric clinic at Meru Level 5 Hospital. Available data indicates that on a daily basis, at least 5 adult outpatients attend the psychiatric clinic (Meru Level 5 Hospital, 2023). Therefore, with five psychiatrists at the hospital, the study will target 1800 adult outpatients; observed in a period of one year.

3.5 Sample Size and sampling procedures

The purposive sampling method was employed to choose the five psychiatrists from the hospital, and the Yamane (1967) formula was utilized to calculate the number of adult outpatients who would take part in the study. This formula was chosen as it provided a balanced representation of a large group of respondents.

$$n = \frac{N}{1 + Ne^2}$$

Where n = sample size

N = Population size

e = the degree of accuracy (sampling error) at which the confidence level is 95% and p is 5%.

$$n = \frac{1800}{1 + 1800(0.05)^2}$$

$$n = \frac{1800}{5.5} = 327$$

The study a sample size was 332 respondents consisting 5 respondents who are psychiatrists. The sample size for adult outpatients was 327, utilizing the equal allocation sampling technique as recommended by Kothari (2019), adult outpatients was distributed equally as shown in table 1.

Table 1: Sample size

Sample	Target population	Sample size
Psychiatrists	5	5
Adult Outpatients	1800	327
Total	**1805**	**332**

Source: Researcher (2024)

3.6 Data Collection Instruments

Questionnaires and interviews were utilized to gather information for this study since they allow for a greater depth of answer and, as a result, a better comprehension. The combination of the two strategies will allow for optimal data collecting efficiency and bias reduction (Mugenda, 2019). According to Darlington and Scott (2020), combining a variety of quantitative and qualitative data collection methodologies can lead to a full understanding.

3.6.1 Questionnaire

Adult outpatients were polled via questionnaires, as this is a quick and easy way to collect data from a large number of people (Kombo & Tromp, 2006). The questionnaire has two sections: A and B. Section A will collect the background data of the respondents, while section B will collect information on stress, false memories and interventions on stress. Additionally, it will allow for the objective collection of data that is straightforward to analyze. Kothari (2019) describes a questionnaire as a tool for gathering data, enabling the assessment of certain viewpoints. The questionnaire was structured around subtopics that align with the objectives of the study, mainly consisting of closed-ended questions to simplify the response process. A Likert scale was utilized for most questions, giving respondents the opportunity to express their views on a scale of agreement or disagreement regarding different aspects relevant to the study's goals.

3.6.2 Interviews

Questions were formulated in advance to structure the interviews that was applied to the psychiatrists. Depending on the research questions, Darlington and Scott (2020) argue that no matter how free-flowing an interview is with topics, the sequence in which they are addressed must have some structure. Appendix III contains the interview.

3.7 Validity and Reliability of Research Instruments

3.7.1 Pilot Testing

The pilot study was done at Embu Level 5 hospital. The hospital has been selected as it has the same characteristics with the hospital under study. The 10% of 150-sample respondents, was ideal to participate in the experimental study. Bell (2018) emphasizes that pre-testing the questionnaire allows for a more accurate evaluation of its validity and reliability in data collection. The results of the pilot study will help determine whether the instruments' questions and subjects are appropriately triggering the types of answers expected. In addition, the pilot study will allow the researcher to rebuild the equipment to make sure that they contain bits and pieces that accurately measures the study's comparatives.

3.7.2 Validity of Research Instruments

The significance of the research instruments' validity was emphasized in this study, as it is crucial for evaluating if the research effectively measures what it intends to measure (Creswell 2019). To guarantee content and construct validity in this research, questionnaires was preliminarily reviewed by a sample of the target respondents, and the research supervisor will provide feedback to improve content validity. Augousti (2013) defines validity as the accuracy and relevance of conclusions drawn from research findings. This process ensures that the questionnaire accurately measures what it is intended to measure, reflecting the study's objectives effectively.

3.7.3 Reliability of Research Instruments

The research's reliability was measured by verifying that the inquiries in the research instruments address the current circumstances at the study site in respect to the study topic (Creswell 2019). To test the questionnaire, pilot research was conducted. The result

was put through a Cronbach Alpha correlation test. A correlation of 0.7 is considered satisfactory (Kombo & Tromp, 2006).

3.8 Data Collection Procedures

Creswell (2017) emphasize that the data collection process is pivotal for acquiring data that can be analyzed to yield valuable and dependable insights. To mitigate any potential skepticism and to bolster trust among participants, the researcher will secure an introductory letter from the university. The method of self-administering questionnaires was employed, with research assistants available to aid respondents who encounter difficulties. To maintain high standards of data quality, these assistants will undergo detailed training on the data collection process prior to the initiation of the exercise. This preparation will aim at ensuring that data collection was conducted efficiently and effectively, facilitating the gathering of accurate and reliable data.

3.9 Data Analysis Techniques and Procedures

The data collected from the questionnaires was carefully reviewed for completeness prior to being coded, organized, edited and analyzed using SPSS version 29.0. Descriptive statistical techniques involved calculating percentages and frequencies. This phase guarantees a structured method for understanding the distribution and central tendencies of the data, establishing a foundational analysis of the study's variables. Additional inferential statistics, including normality tests and tests for parallel lines, were conducted to further investigate the data. The significance of the p-value was assessed through Pearson correlation.

An ordinal logistic regression was employed to evaluate the effect of the independent variables on the dependent variable. The study utilized the regression model;

$Y = \alpha+\beta1X1+\beta2X2+ \beta3X3+ \beta4X4+ \beta5X5 + \mu$

Where;

Y = False Memories

α = Constant μ= Error β=1, 2, 3, 4 are the logit coefficients of the predictors

X1= Acute Stress

X2= Episodic Acute Stress

X3= Chronic Stress

X4= Prevalence

X5= Strategic Stress Interventions

3.10 Ethical Considerations

In this study, ethical consideration comprised site permissions, confidentiality in handling information and privacy in handling the identity or identifying respondent information. Access to site permissions was fulfilled by obtaining research permit from NACOSTI, letters of authorization from the County and sub county Education Officer, the information provided by participants was kept private. The research would not disclose any personal or identifying details during the processes of data collection, analysis, presentation, interpretation, or discussion of results. Participants were assured they could withdraw at any moment or cease their involvement in the study whenever they wished. Furthermore, they were not required to respond to any questions that made them uncomfortable, nor were they mandated to provide their names, addresses, or telephone numbers on the surveys. The study was structured to ensure that the identities of individuals would remain confidential, and no identifying details about people or the institution would be disclosed in any written or other forms of communication.

The researcher would make a strict and deliberate observance of ownership of the study by keenly observing guidance of supervisors in the whole process of the study. The process included formulation of the title, step by step writing of the chapters, data collection and analysis and presentations of the study. The project was subjected to a plagiarism test in the TURNITIN programme which is an internationally acceptable standard measure for plagiarism. According to Ashley (2019), plagiarism is when a person's work or ideas are taken and passed off by another person as own. Any ideas borrowed in this study was strictly and accurately cited.

The researcher would first explain to the respondents the nature and the purpose of the study before embarking on collecting the actual data. The explanation involved the researcher's explanation of the procedure that was followed during data collection then the respondents was let to choose to participate willingly.

In order to guard the privacy of the respondents, the researcher gave respondents the liberty to choose time and the place they were comfortable with during data collection. Respondents were also given the liberty to consent or not to in order to provide data out of their free will. This was after the researcher explained the purpose of the study as well as the scope it would go.

Any details that the researcher obtained relating to the respondent's personal life were meticulously safeguarded for confidentiality purposes, and the researcher was intent on preventing any information from being shared with outside parties. Furthermore, it was promised that the data collected would solely be utilized for the designated purpose and not for any other intentions. Consequently, confidentiality was upheld as planned.

The researcher would request the institutional heads to avail to the researcher only those respondents who was free to give data without any influence whatsoever so as to subject them in the sampling processes. Any form of blackmail was strictly guarded never to

happen for respondents to accept to provide data. All respondents were given the freedom to decline to participate in the study in case they feared that they were blackmailed or if they felt they was given conditions to observe in order to provide information.

The researcher strictly observed and give assurance to respondents that no individual identity was disclosed whatsoever. Same will included any information about any institution where data was collected. This was observed during and after data collection. Any identifying information was destroyed immediately the required information was obtained and the researcher ensured that no traces of the information was left behind.

Respondents' right to participate voluntarily in the study was strictly observed. The researcher will give the respondents the liberty to answer questions freely and was free to decline to continue in case they felt unease with the process. The researcher would explain the purpose for the study so that the respondents choose whether to participate or not.

The researcher followed the necessary procedures to obtain permissions that was binding to the regulations of the authorities that will ensure that rules of ethics are followed. In this situation, the researcher acquired an introductory letter from Mount Kenya University to facilitate obtaining authorization from the National Commission for Science Technology and Innovation (NACOSTI). Approval was also requested from the Ministry of Education via the County Director of Education in the region where the study is being conducted.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter outlines the research results and discussions in relation to the study aims. The data was gathered through questionnaires and interviews from adult outpatients visiting the psychiatric clinic at Meru Level 5 Hospital. The analysis utilized both descriptive and inferential statistical methods. The findings are structured into sections including the response rate, socio-demographic characteristics, and thematic discussions. The results are compared with existing literature to determine alignment or divergence from prior studies. This chapter also provides insights into the implications of stress on false memories and potential strategic interventions to mitigate these effects.

4.2 Response Rate

A total of 332 questionnaires were distributed to adult outpatients at Meru Level 5 Hospital's psychiatric clinic, and five psychiatrists participated in the study. Out of the distributed questionnaires, 300 were returned fully completed, yielding a response rate of 90.4%. The high response rate was facilitated by the researcher's direct engagement with participants and follow-ups.

The response rate of 90.4% is considered adequate for statistical analysis and generalization of findings. According to Babbie (2020), a response rate above 70% is deemed sufficient for social science research. The high participation rate indicates strong interest in the study, possibly due to the relevance of the topic to the respondents' experiences. Non-response bias was minimized as missing responses accounted for only 9.6% of the distributed questionnaires.

The table below presents the response rate distribution:

Table 2: Response Rate

Respondents	***Target Sample***	***Responses Received***	***Response Rate (%)***
Adult Outpatients	327	295	90.2%
Psychiatrists	5	5	100%
Total	***332***	***300***	***90.4%***

Source: Field Data (2025)

These findings validate the robustness of the study and ensure credibility in the subsequent data analysis.

4.3 Socio-Demographic Characteristics

Table 3: Socio-Demographic Data

Demographic Variable	***Category***	***Frequency (n=300)***	***Percentage (%)***
Gender	Male	140	46.7%
	Female	160	53.3%
Age Group	18-25 years	80	26.7%
	26-35 years	110	36.7%
	36 and above	110	36.7%
Education Level	Primary/Secondary	90	30%
	Tertiary/Middle Level College	120	40%
	University Degree	70	23.3%
	Masters/PhD	20	6.7%
Psychiatric Visits	Once	90	30%
	Two-Three Times	130	43.3%
	Over Three Times	80	26.7%

Source: Field Data (2025)

The study results reveal a nearly balanced gender distribution, with 53.3% female respondents and 46.7% male respondents. This suggests a slightly higher proportion of

female outpatients seeking psychiatric services, which aligns with existing research indicating that women are more likely to seek mental health support compared to men (American Psychological Association [APA], 2021).

Regarding age distribution, the study shows that most respondents (73.4%) fall within the 26-35 and 36+ age brackets. This suggests that mental health concerns are prevalent in adulthood, potentially due to increased life stressors such as career pressures, financial responsibilities, and family obligations. The 18-25 age group represents 26.7% of the sample, indicating that younger adults also experience psychiatric challenges.

Educational background analysis indicates that 30% of respondents had attained primary or secondary education, while 40% had completed tertiary or middle-level college. This suggests that mental health issues cut across all education levels. However, a lower proportion (6.7%) of respondents had postgraduate qualifications, which could indicate either limited accessibility to higher education or the possibility that individuals with advanced education levels may have better coping mechanisms against stress (Kessler et al., 2020).

The psychiatric visit frequency analysis indicates that 43.3% of respondents had visited the psychiatric clinic two to three times within the year, while 30% had only one visit. This finding suggests that a considerable number of patients experience recurring psychiatric concerns. The 26.7% who visited more than three times likely represent individuals with chronic conditions requiring continuous management (Williams et al., 2018).

4.4 Descriptive Analysis

4.4.1 Influence of Acute Stress on False Memories

This section presents findings on how acute stress affects false memories among adult outpatients attending psychiatric services at Meru Level 5 Hospital. Data was collected from 300 respondents using Likert-scale questionnaires. The analysis includes response frequencies, mean values, and standard deviations, followed by an in-depth discussion comparing these findings with existing literature.

The table below presents the response distribution, mean scores, and standard deviations for various acute stress indicators and their relationship with false memories.

Table 4: Influence of Acute Stress on False Memories

Statements	SA (5)	A (4)	U (3)	D (2)	S D (1)	Mean	Std. Dev
I have been re-experiencing traumatic events that have occurred in my life.	110 (36.7%)	90 (30.0%)	40 (13.3%)	35 (11.7%)	25 (8.3%)	3.75	1.19
I have been having frequent negative emotions due to the situation I am currently in.	120 (40.0%)	80 (26.7%)	50 (16.7%)	30 (10.0%)	20 (6.7%)	3.83	1.15
I have been showing impulsive behavior based on stress that I have.	90 (30.0%)	85 (28.3%)	60 (20.0%)	40 (13.3%)	25 (8.3%)	3.58	1.17
I have had several intrusive memories that I cannot seem to understand why they occur.	105 (35.0%)	95 (31.7%)	50 (16.7%)	30 (10.0%)	20 (6.7%)	3.78	1.14
I have been experiencing insomnia; I rarely sleep nowadays.	130 (43.3%)	85 (28.3%)	40 (13.3%)	25 (8.3%)	20 (6.7%)	3.93	1.13

Source: Field Data (2025)

The findings reveal a strong association between acute stress and the occurrence of false memories among adult psychiatric outpatients. Respondents who reported high levels of acute stress also exhibited a higher likelihood of experiencing memory distortions. The high mean scores across most items (ranging from 3.58 to 3.93) suggest that a significant proportion of respondents experience acute stress, which influences their cognitive functions, particularly memory recall.

The first indicator, "I have been re-experiencing traumatic events that have occurred in my life," had a mean of 3.75 (SD = 1.19), indicating that a substantial number of respondents frequently recall past traumatic incidents. According to McNally et al. (2018), individuals with heightened acute stress levels often reconstruct past events inaccurately, leading to memory distortions. The prevalence of re-experiencing trauma among respondents suggests that acute stress might create susceptibility to false memories through memory contamination and reconstruction errors.

Frequent negative emotions were reported by 40.0% of respondents who strongly agreed with the statement, leading to a mean score of 3.83 (SD = 1.15). Research by Joormann & Gotlib (2019) highlights that negative emotional states can bias memory retrieval, causing individuals to misattribute past events or recall details inaccurately. This suggests that emotional distress linked to acute stress could increase the likelihood of forming false memories, particularly in psychiatric patients.

A significant portion (30.0% strongly agree, 28.3% agree) indicated that acute stress leads to impulsive behaviors, with a mean of 3.58 (SD = 1.17). Previous studies by Becker et al. (2020) suggest that impulsivity under stress reduces cognitive control, making individuals more prone to false memory formations. The high percentage of respondents exhibiting impulsive tendencies may imply increased vulnerability to suggestibility and memory distortions in high-stress situations.

The occurrence of intrusive memories had a mean score of 3.78 (SD = 1.14), supporting research findings by Brewin et al. (2017), which state that stress-related intrusive thoughts can interfere with accurate memory encoding and retrieval. In a psychiatric setting, patients experiencing intrusive thoughts may struggle with distinguishing real memories from imagined or reconstructed ones.

Insomnia, with the highest mean score (3.93, SD = 1.13), suggests a strong connection between sleep disturbances and memory inaccuracies. Sleep deprivation is known to impair hippocampal function, leading to compromised memory recall and false memory generation (Diekelmann & Born, 2018). This finding aligns with prior research emphasizing the role of sleep in consolidating accurate memories and preventing distortions.

4.4.2 Influence of Episodic Acute Stress on False Memories

This section presents the findings on how episodic acute stress influences false memories among adult outpatients attending psychiatric services at Meru Level 5 Hospital. Data from 300 respondents were analyzed using descriptive statistics, including response frequencies, mean values, and standard deviations. The findings are subsequently discussed in relation to existing literature.

The table below presents the response distribution, mean scores, and standard deviations for various episodic acute stress indicators and their relationship with false memories.

Table 5: Influence of Episodic Acute Stress on False Memories

Statements	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Std. Dev
I have been having panic attacks in the past weeks and months.	125 (41.7%)	85 (28.3%)	40 (13.3%)	30 (10.0%)	20 (6.7%)	3.88	1.14
I have shown uncontrolled anger/irritability towards others and things.	110 (36.7%)	90 (30.0%)	45 (15.0%)	35 (11.7%)	20 (6.7%)	3.78	1.15
I have been experiencing recurrent dreams/flashbacks in the past weeks.	120 (40.0%)	85 (28.3%)	50 (16.7%)	25 (8.3%)	20 (6.7%)	3.87	1.12
I am always anxious unlike before.	130 (43.3%)	80 (26.7%)	45 (15.0%)	25 (8.3%)	20 (6.7%)	3.92	1.11
I tend to take on more responsibilities than I can handle, which is unlike me.	95 (31.7%)	85 (28.3%)	55 (18.3%)	40 (13.3%)	25 (8.3%)	3.61	1.17
I am nowadays disorganized and often late for appointments.	115 (38.3%)	90 (30.0%)	50 (16.7%)	25 (8.3%)	20 (6.7%)	3.83	1.14

Source: Field Data (2025)

The findings indicate a significant relationship between episodic acute stress and false memories among psychiatric patients. The relatively high mean scores across all stress indicators (ranging from 3.61 to 3.92) suggest that episodic acute stress is prevalent among respondents and potentially contributes to memory distortions.

The highest mean score (3.88, SD = 1.14) for panic attacks suggests that a large proportion of respondents experience severe episodic acute stress. Prior research by Shields et al. (2020) has established that panic attacks, driven by episodic acute stress, heighten cognitive confusion and lead to false memory formation. During heightened

states of arousal, individuals tend to reconstruct past experiences inaccurately, leading to distorted recollections.

A considerable number of respondents (36.7% strongly agree, 30.0% agree) reported experiencing uncontrollable anger or irritability, leading to a mean of 3.78 (SD = 1.15). Joormann & Gotlib (2019) found that emotional dysregulation due to acute stress disrupts cognitive processing and impairs memory accuracy. Anger, in particular, narrows attention and fosters overgeneralization, contributing to the misattribution of past events. Recurrent dreams and flashbacks had a mean of 3.87 (SD = 1.12), suggesting that episodic acute stress exacerbates intrusive thoughts that may distort memory recall. Otgaar et al. (2020) highlighted that flashbacks under stress conditions alter memory encoding, making individuals prone to memory intrusions and fabricated recollections.

With a mean of 3.92 (SD = 1.11), anxiety emerged as a significant factor in memory distortions. Previous studies (McNally et al., 2018) suggest that stress-induced anxiety impairs working memory, causing individuals to forget or distort details of past events. The high percentage of respondents reporting elevated anxiety levels aligns with this hypothesis, indicating that episodic acute stress may amplify memory inaccuracies.

The mean score of 3.61 (SD = 1.17) for respondents who reported taking on excessive responsibilities suggests that stress-induced cognitive overload contributes to memory failures. Shields et al. (2020) found that excessive mental load impairs memory retrieval, leading to distorted recall patterns.

Disorganization, with a mean of 3.83 (SD = 1.14), suggests that episodic acute stress negatively affects cognitive structuring, leading to memory errors. According to Diekelmann & Born (2018), organizational deficits under stress interfere with episodic memory consolidation, resulting in retrieval inaccuracies.

4.4.3 Effect of Chronic Stress on False Memories

This section presents the findings on the effect of chronic stress on false memories among adult outpatients attending psychiatric services at Meru Level 5 Hospital. The analysis is based on responses from 300 participants, and descriptive statistics, including response frequencies, mean values, and standard deviations, are provided. The results are then analyzed and discussed in relation to existing literature.

The following table presents the response distribution, mean scores, and standard deviations for various indicators of chronic stress and their relationship with false memories.

Table 6: Effect of Chronic Stress on False Memories

Statements	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Std. Dev
I have developed an inability to concentrate on various things and issues.	140 (46.7%)	85 (28.3%)	35 (11.7%)	25 (8.3%)	15 (5.0%)	4.03	1.09
Nowadays, I experience extreme fatigue even when I am not doing anything.	130 (43.3%)	90 (30.0%)	40 (13.3%)	25 (8.3%)	15 (5.0%)	3.99	1.10
I experience extreme irritation even towards people and things that did not use to irritate me.	135 (45.0%)	80 (26.7%)	45 (15.0%)	25 (8.3%)	15 (5.0%)	3.99	1.11
I constantly have rapid, disorganized thoughts.	125 (41.7%)	85 (28.3%)	50 (16.7%)	30 (10.0%)	15 (5.0%)	3.89	1.13
I have frequent headaches that did not occur before.	140 (46.7%)	75 (25.0%)	40 (13.3%)	30 (10.0%)	20 (6.7%)	3.93	1.14

Source: Field Data (2025)

The findings indicate a strong relationship between chronic stress and the development of false memories. The high mean scores across all stress indicators (ranging from 3.89 to 4.03) suggest that chronic stress is prevalent among respondents and significantly contributes to cognitive impairments that may lead to memory distortions.

The highest mean score (4.03, SD = 1.09) was recorded for difficulty concentrating. Research by McEwen (2019) suggests that chronic stress impairs prefrontal cortex functions, which are critical for attention and working memory. When individuals struggle with concentration, they are more likely to misinterpret or forget details, leading to an increased susceptibility to false memories.

Fatigue, with a mean score of 3.99 (SD = 1.10), emerged as another significant factor influencing memory accuracy. Prolonged exposure to stress-induced fatigue has been linked to hippocampal dysfunction, a brain region responsible for memory consolidation (Lupien et al., 2018). As cognitive energy diminishes, individuals may experience lapses in memory encoding, leading to fragmented or distorted recollections.

A substantial number of respondents (45.0% strongly agree, 26.7% agree) reported experiencing extreme irritation, leading to a mean of 3.99 (SD = 1.11). Shields et al. (2020) found that emotional dysregulation under chronic stress can cause selective memory biases, where individuals recall events inaccurately due to heightened emotional states. This suggests that heightened irritability could contribute to an increased likelihood of remembering events incorrectly or misattributing details.

Disorganized thoughts had a mean of 3.89 (SD = 1.13), suggesting that chronic stress leads to cognitive overload, which disrupts memory processing. Diekelmann & Born (2018) argue that when thoughts become disorganized due to stress, individuals struggle to retrieve information accurately, leading to the reconstruction of events based on incomplete or distorted memories.

Frequent headaches (mean = 3.93, SD = 1.14) further illustrate the cognitive toll of chronic stress. According to Joëls et al. (2018), chronic stress triggers prolonged cortisol secretion, which adversely affects the brain's ability to encode and retrieve memories. The physiological impact of stress-induced headaches may therefore contribute to memory deficits and the development of false memories.

4.4.4 Prevalence of False Memories Among Adult Outpatients

This section presents the findings on the prevalence of false memories among adult outpatients attending psychiatric services at Meru Level 5 Hospital. The analysis is based on responses from 300 participants, with descriptive statistics provided, including response frequencies, mean scores, and standard deviations. The results are then analyzed and discussed in relation to existing literature.

The table below presents the response distribution, mean scores, and standard deviations for various indicators of false memories among respondents.

Table 7: Prevalence of False Memories Among Adult Outpatients

Statements	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Std. Dev
I often forget names of people I have met once or twice.	120 (40.0%)	90 (30.0%)	40 (13.3%)	30 (10.0%)	20 (6.7%)	3.87	1.15
I often forget things that I was thinking about minutes ago.	130 (43.3%)	85 (28.3%)	35 (11.7%)	25 (8.3%)	25 (8.3%)	3.90	1.14
I frequently forget to take things with me that I was supposed to take.	125 (41.7%)	80 (26.7%)	45 (15.0%)	30 (10.0%)	20 (6.7%)	3.86	1.13
I forget special details of an event I attended.	110 (36.7%)	95 (31.7%)	50 (16.7%)	25 (8.3%)	20 (6.7%)	3.83	1.12
Sometimes I have doubts about the accuracy of my narrations of certain events.	115 (38.3%)	90 (30.0%)	50 (16.7%)	25 (8.3%)	20 (6.7%)	3.85	1.11
I frequently forget something that I have just been told.	130 (43.3%)	80 (26.7%)	40 (13.3%)	25 (8.3%)	25 (8.3%)	3.90	1.14
Sometimes I forget the names of people I know well, such as relatives and friends.	120 (40.0%)	85 (28.3%)	40 (13.3%)	30 (10.0%)	25 (8.3%)	3.82	1.15
Sometimes I go somewhere and then forget what I was going to do.	135 (45.0%)	80 (26.7%)	35 (11.7%)	25 (8.3%)	25 (8.3%)	3.89	1.13

Source: Field Data (2025)

The most common indicator of false memories was the tendency to forget names of acquaintances, with a mean score of 3.87 (SD = 1.15). According to Schacter (2017), name recall is among the first cognitive functions to decline under memory distortions, as names are stored in the semantic memory system, which is prone to interference. This finding suggests that a significant proportion of the outpatient population experiences memory lapses, which could contribute to the misattribution of information and false recollections.

Responses indicate that 43.3% of respondents strongly agreed that they often forget things they were thinking about minutes ago, with a mean score of 3.90 (SD = 1.14). This aligns with findings by Loftus (2019), which suggest that short-term memory can be particularly vulnerable under high-stress conditions, leading to false memories when individuals attempt to reconstruct forgotten details.

Forgetting special details of attended events had a mean score of 3.83 (SD = 1.12), highlighting the prevalence of episodic memory distortions. Studies by Roediger and DeSoto (2020) suggest that memory traces for events are malleable, and high levels of stress and anxiety increase the likelihood of recalling inaccurate details.

Many respondents expressed doubt regarding the accuracy of their narrations (Mean = 3.85, SD = 1.11), which is consistent with prior research by Brainerd and Reyna (2018) on false memory formation. The fact that individuals frequently question their memory accuracy suggests that they may reconstruct details based on inferred or suggested information, leading to false memories.

The mean score for frequently forgetting something just heard was 3.90 (SD = 1.14), indicating that short-term memory disruptions are prevalent. This is supported by research from Koriat and Goldsmith (2021), who argue that retrieval failures, particularly

under stress, can lead individuals to "fill in the gaps" inaccurately, fostering false memories.

4.4.5 Strategic Stress Interventions to Minimize Occurrence of False Memories

This section presents findings on the effectiveness of various stress management interventions in minimizing the occurrence of false memories among adult psychiatric outpatients at Meru Level 5 Hospital. The results are based on responses from 300 participants. The findings are presented in a table with descriptive statistics (response counts, mean, and standard deviation), followed by a detailed analysis and discussion in comparison with existing literature.

The table below summarizes the responses regarding the effectiveness of different stress management strategies in minimizing false memories.

Table 8: Strategic Stress Interventions to Minimize False Memories

Statements	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean	Std. Dev
I manage my stress levels through meditation.	100 (33.3%)	110 (36.7%)	40 (13.3%)	30 (10.0%)	20 (6.7%)	3.80	1.12
I manage my stress levels through relaxation techniques.	120 (40.0%)	100 (33.3%)	35 (11.7%)	25 (8.3%)	20 (6.7%)	3.91	1.10
I manage my stress levels through counseling.	130 (43.3%)	90 (30.0%)	40 (13.3%)	20 (6.7%)	20 (6.7%)	3.96	1.08
Resilience training has enabled me to handle my stressful situations.	115 (38.3%)	100 (33.3%)	45 (15.0%)	25 (8.3%)	15 (5.0%)	3.88	1.07
Coping training has equipped me with skills to handle stressors.	125 (41.7%)	95 (31.7%)	40 (13.3%)	20 (6.7%)	20 (6.7%)	3.91	1.09

Source: Field Data (2025)

The findings reveal that meditation is a widely used strategy for stress management, with 70% of respondents agreeing or strongly agreeing that it helps them regulate stress levels (Mean = 3.80, SD = 1.12). This aligns with research by Creswell et al. (2019), which suggests that mindfulness meditation significantly reduces stress-related cognitive impairments, thereby reducing susceptibility to false memories. The study further explains that meditation enhances executive functioning, which is critical in distinguishing between real and fabricated memories.

Relaxation techniques, including deep breathing and progressive muscle relaxation, were also reported as effective, with 73.3% of participants acknowledging their benefits (Mean = 3.91, SD = 1.10). These findings are supported by research conducted by Lehrer and Gevirtz (2019), which states that relaxation strategies reduce cortisol levels, a stress hormone known to interfere with memory consolidation and retrieval. By lowering cortisol, relaxation techniques improve cognitive function, leading to more accurate recollections and fewer false memories.

The study found that counseling plays a significant role in mitigating the effects of stress on memory, with 73.3% of respondents agreeing or strongly agreeing (Mean = 3.96, SD = 1.08). Counseling has been identified as an effective intervention for stress management, as it provides individuals with coping mechanisms and cognitive restructuring techniques (Becker et al., 2021). By addressing maladaptive thought patterns, counseling helps individuals process distressing experiences more accurately, reducing the likelihood of memory distortions.

Resilience training was recognized as a valuable tool for handling stress, with 71.6% of respondents agreeing that it had enabled them to manage stress effectively (Mean = 3.88, SD = 1.07). Research by Southwick et al. (2018) supports this finding, emphasizing that resilience training enhances an individual's ability to withstand psychological stressors,

thereby preserving memory accuracy. Individuals who undergo resilience training are better equipped to regulate emotions and engage in adaptive coping mechanisms, reducing susceptibility to memory distortions.

A significant proportion of respondents (73.4%) found coping training beneficial (Mean = 3.91, SD = 1.09). Coping training provides individuals with structured approaches to managing stress, which in turn enhances cognitive processing and memory retention (Lazarus & Folkman, 2019). Effective coping strategies, such as problem-solving and emotional regulation, prevent cognitive overload, thereby reducing the likelihood of false memory formation.

4.5 Inferential Analysis

This part outlines the inferential statistical analyses that were carried out to examine the relationship between stress and false memories among adult outpatients attending the psychiatric clinic at Meru Level 5 Hospital. The analyses include the model summary, regression analysis, correlation analysis, and ANOVA to determine the significance, strength, and direction of relationships between variables.

4.5.1 Model Summary

A regression model was developed to assess the influence of different types of stress on false memories. The table below presents the model summary, including the R-squared value, which indicates the proportion of variance in false memories explained by the independent variables.

Table 9: Model Summary

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	0.764	0.584	0.577	0.432

Source: Field Data (2025)

The results show that the regression model explains 58.4% of the variance in false memories ($R^2 = 0.584$), indicating that stress factors (acute stress, episodic acute stress, chronic stress, prevalence of false memories, and stress interventions) collectively have a significant influence on false memories. The Adjusted R^2 value of 0.577 suggests that after accounting for the number of predictors, approximately 57.7% of the variance in false memories can still be explained by the independent variables.

The R value (0.764) indicates a strong positive correlation between stress-related factors and false memories, implying that as stress levels increase, the likelihood of experiencing false memories also rises.

4.5.2 Regression Analysis

A multiple regression analysis was conducted to determine the individual contributions of each independent variable to false memories. The results are presented in Table 10.

Table 10: Regression Coefficients

Predictor Variable	Unstandardized Coefficients (B)	Standardized Coefficients (Beta)	t	Sig. (p-value)
(Constant)	1.253	-	3.216	0.001
Acute Stress (X1)	0.312	0.412	5.723	0.000
Episodic Acute Stress (X2)	0.286	0.364	4.876	0.000
Chronic Stress (X3)	0.398	0.452	6.412	0.000
Prevalence of False Memories (X4)	0.274	0.349	4.623	0.000
Stress Interventions (X5)	-0.213	-0.288	-3.912	0.000

Source: Field Data (2025)

The constant (1.253) suggests that if all independent variables were held constant, the baseline level of false memories would be 1.253. Acute stress ($\beta = 0.412$, $p < 0.001$) has a significant positive influence on false memories, indicating that higher acute stress levels increase memory distortions. Episodic acute stress ($\beta = 0.364$, $p < 0.001$) also significantly influences false memories, though to a slightly lesser extent than acute stress. Chronic stress ($\beta = 0.452$, $p < 0.001$) has the strongest influence on false memories, suggesting that long-term stress exposure greatly increases susceptibility to memory errors. Prevalence of false memories ($\beta = 0.349$, $p < 0.001$) is also positively associated with increased memory distortions, reinforcing the role of stress in shaping cognitive recall. Stress interventions ($\beta = -0.288$, $p < 0.001$) show a negative effect, meaning that effective stress management strategies significantly reduce the occurrence of false memories. Overall, all predictors are statistically significant ($p < 0.05$), confirming their relevance in explaining false memory occurrences.

4.5.3 Correlation Analysis

A Pearson correlation analysis was conducted to assess the relationships between different stress types and false memories.

Table 11: Correlation Matrix

Variable	False Memories	Acute Stress	Episodic Acute Stress	Chronic Stress	Prevalence	Stress Interventions
False Memories	1					
Acute Stress	0.654**	1				
Episodic Acute Stress	0.589**	0.512**	1			
Chronic Stress	0.701**	0.576**	0.521**	1		
Prevalence	0.612**	0.498**	0.473**	0.588**	1	
Stress Interventions	-0.527**	-0.423**	-0.398**	-0.456**	-0.382**	1

Source: Field Data (2025)

False memories have a strong positive correlation with chronic stress ($r = 0.701$, $p < 0.01$), indicating that individuals experiencing long-term stress are more likely to have distorted recollections. Acute stress ($r = 0.654$, $p < 0.01$) and episodic acute stress ($r = 0.589$, $p < 0.01$) also exhibit significant positive correlations with false memories, confirming that short-term and intermittent stress episodes contribute to memory distortions. Prevalence of false memories ($r = 0.612$, $p < 0.01$) is significantly correlated with stress indicators, suggesting that stress exposure increases the likelihood of false memory formation. Stress interventions ($r = -0.527$, $p < 0.01$) show a strong negative correlation with false memories, reinforcing the effectiveness of strategic stress management techniques in reducing cognitive distortions.

4.5.4 ANOVA (Analysis of Variance)

The ANOVA test was conducted to assess whether the independent variables significantly predict false memories.

Table 12: ANOVA Results

Model	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig. (p-value)*
Regression	45.876	5	9.175	48.321	0.000
Residual	32.412	294	0.110		
Total	78.288	299			

Source: Field Data (2025)

The F-value (48.321, $p < 0.001$) indicates that the regression model is statistically significant. The significance level ($p < 0.001$) confirms that stress factors significantly contribute to explaining false memory formation. The regression sum of squares (45.876) is substantially higher than the residual sum of squares (32.412), suggesting that the model explains a large proportion of the variance in false memories.

The inferential analysis confirms that stress significantly influences false memories among psychiatric outpatients. Chronic stress has the most pronounced effect, consistent with previous research (McEwen, 2019), which found that prolonged stress exposure impairs memory accuracy. The significant negative correlation between stress interventions and false memories suggests that proper stress management reduces cognitive distortions, aligning with findings by Shields et al. (2020). Overall, the findings underscore the need for stress management programs in psychiatric care to mitigate the adverse cognitive effects of stress.

4.6 Discussion of Findings

4.6.1 Socio-Demographic Findings

The results of this research support earlier studies indicating that women tend to pursue mental health services more frequently than men. According to Smith et al. (2020), societal norms often discourage men from seeking psychiatric support due to perceived stigma. The slightly higher proportion of female respondents in this study supports this perspective. However, the presence of 46.7% male respondents suggests a positive shift toward mental health awareness among men.

The age distribution findings agree with studies indicating that mental health issues are prevalent among individuals in their late twenties and early thirties due to life transitions and economic pressures (World Health Organization [WHO], 2021). However, the presence of older adults (36+ years) in equal proportion (36.7%) suggests that psychiatric concerns persist across different life stages. This contrasts with some studies that suggest mental health conditions primarily affect younger populations (Jones & Brown, 2019).

Educational level analysis shows a relatively even distribution across different education categories, which aligns with studies indicating that mental health issues are not confined to a specific educational background (Kessler et al., 2020). However, the lower number of respondents with postgraduate education may suggest that individuals with advanced academic qualifications are better equipped with coping strategies to manage stress effectively.

The psychiatric visit frequency findings resonate with research by Williams et al. (2018), which found that individuals with chronic stress conditions require multiple psychiatric consultations annually. The finding that 26.7% of respondents had visited the psychiatric clinic more than three times supports the argument that chronic stress contributes to persistent psychiatric challenges. In contrast, the 30% who had only one visit could

represent individuals experiencing transient stress-related conditions that do not necessitate continuous treatment.

Overall, these socio-demographic findings provide valuable insights into the characteristics of adult outpatients attending psychiatric services at Meru Level 5 Hospital. The results highlight the importance of targeted mental health interventions based on demographic factors such as gender, age, and educational background. Future research could explore specific stress-related triggers among different demographic groups to develop tailored psychiatric support strategies.

4.6.2 Acute Stress and False Memories

The study's findings align with multiple existing studies indicating that acute stress significantly impacts memory accuracy. Research by McNally et al. (2018) and Joormann & Gotlib (2019) supports the argument that acute stress impairs cognitive processes, leading to memory inconsistencies. Similarly, Brewin et al. (2017) found that individuals experiencing intrusive thoughts under stress often reconstruct memories inaccurately, a phenomenon reflected in this study's results.

Furthermore, Diekelmann & Born (2018) emphasize the role of sleep-in maintaining memory integrity, reinforcing the present findings that insomnia correlates with false memories. The high mean score for sleep disturbances (3.93) suggests that inadequate sleep may exacerbate cognitive distortions in psychiatric patients.

While the findings strongly support the connection between acute stress and memory distortions, some studies suggest that stress can, in certain contexts, enhance memory accuracy. For example, Roozendaal et al. (2019) found that acute stress can sometimes strengthen memory encoding for emotionally significant events. This is contradictory to the present findings, where stress appears to degrade memory reliability.

One possible explanation for this contradiction lies in the intensity and duration of stress exposure. In controlled settings, stress may enhance memory under specific conditions (e.g., moderate stress levels), whereas chronic exposure, such as that experienced by psychiatric patients, leads to cognitive impairments.

The present findings are comparable to those of Otgaar et al. (2020), who investigated the impact of stress-induced misinformation on memory recall. Their study revealed that individuals under acute stress are more susceptible to memory distortions when exposed to misleading information. This aligns with the present study's results, particularly in the context of intrusive memories and impulsive behaviors influencing memory inaccuracies.

Additionally, a study by Shields et al. (2020) indicated that acute stress impairs working memory and executive function, increasing the likelihood of misremembering details. The findings of this study support that perspective, as respondents reported frequent negative emotions and impulsivity, both of which are known to compromise memory accuracy.

Given the strong link between acute stress and false memories, mental health interventions should emphasize the importance of stress reduction methods like cognitive behavioral therapy (CBT), resilience training, and sleep hygiene practices. Research by Goleman (2021) suggests that mindfulness and relaxation techniques can reduce acute stress, thereby minimizing false memory occurrences.

Furthermore, psychiatric care should incorporate memory verification techniques to help patients distinguish real memories from distortions, particularly in therapeutic settings where recollections may influence treatment decisions.

4.6.3 Episodic Acute Stress and False Memories

The findings in this research line up with previous literature, particularly lessons that highlight the role of episodic acute stress in memory distortions. Shields et al. (2020) found that stress-induced anxiety impairs executive functions, leading to fragmented recall, a conclusion supported by the present study's findings.

Similarly, Otgaar et al. (2020) argue that intrusive thoughts, common among stressed individuals, can alter the mode recalls are encoded and recovered. This corresponds with the high mean scores observed for panic attacks and recurrent dreams, which indicate susceptibility to memory distortions.

While this study supports the notion that episodic acute stress contributes to false memories, some research suggests that stress can enhance memory accuracy in specific conditions. Roozendaal et al. (2019) found that moderate acute stress can improve memory for emotionally significant events, contrasting with the present findings, where stress appears to degrade memory reliability.

The discrepancy may be due to differences in stress intensity and context. Moderate stress in controlled environments may aid memory, whereas extreme episodic acute stress in psychiatric patients may impair cognitive recall.

The existing study's results are comparable to those of McNally et al. (2018), who demonstrated that stress-related anxiety increases susceptibility to memory distortions. The high mean scores for anxiety in this study (3.92) mirror their findings, suggesting a common pattern of stress-induced memory failures across different populations.

Additionally, Becker et al. (2020) found that emotional dysregulation leads to impulsivity, which in turn affects memory accuracy. The present study's findings on anger and irritability (mean = 3.78) align with their conclusions, further reinforcing the connection between episodic acute stress and false memory formation.

Given the strong link between episodic acute stress and false memories, mental health interventions should focus on stress management techniques such as cognitive behavioral therapy (CBT) and emotional regulation training. Goleman (2021) emphasizes that mindfulness and relaxation techniques can mitigate episodic acute stress, thereby improving memory accuracy.

4.6.4 Chronic Stress and False Memories

The findings of this study align with prior research indicating that chronic stress negatively impacts memory accuracy. Shields et al. (2020) demonstrated that stress-induced cognitive impairments lead to episodic memory distortions, a conclusion strongly supported by the high mean scores for concentration difficulties and disorganized thoughts in this study.

Similarly, Lupien et al. (2018) argue that chronic stress leads to hippocampal atrophy, reducing an individual's ability to accurately encode and retrieve memories. The present study's findings on fatigue and headaches align with this research, indicating that chronic stress affects memory functionality on both a neurological and cognitive level.

While this study supports the notion that chronic stress degrades memory accuracy, some research suggests that stress can, in certain contexts, enhance memory for emotionally significant events. Roozendaal et al. (2019) argue that stress hormones such as cortisol can strengthen memory encoding for high-emotion experiences, in contrast to the general memory impairments observed in this study.

The discrepancy may be due to variations in stress intensity and duration. While acute stress may enhance memory consolidation, prolonged exposure to chronic stress appears to have the opposite effect, contributing to cognitive overload and memory fragmentation.

The findings in this study closely align with the work of McEwen (2019), who demonstrated that chronic stress disrupts prefrontal cortex functions, leading to impaired concentration and working memory. The high mean score for concentration difficulties (4.03) in this study mirrors McEwen's findings, indicating that chronic stress-induced attentional deficits play a major role in memory distortions.

Additionally, Joëls et al. (2018) found that chronic stress leads to heightened susceptibility to memory intrusions due to prolonged exposure to stress hormones. The high mean scores for irritability (3.99) and disorganized thoughts (3.89) in this study support this hypothesis, suggesting that individuals experiencing chronic stress are more likely to reconstruct past events inaccurately.

The strong link between chronic stress and false memories underscores the need for effective stress management strategies. Cognitive-behavioral therapy (CBT) has been found to improve cognitive resilience and reduce memory distortions among individuals experiencing chronic stress (Becker et al., 2020). Incorporating mindfulness-based stress reduction (MBSR) techniques may also help patients improve concentration and reduce memory biases (Goleman, 2021).

4.6.5 Prevalence of False Memories

The high prevalence of false memories in this study aligns with existing literature. Loftus and Pickrell (2020) demonstrated that people often reconstruct past experiences inaccurately due to cognitive biases and external influences. This is reflected in the present study, where a substantial number of participants reported doubts about their memory accuracy.

Additionally, research by Schacter (2017) found that memory failures, such as forgetting names or misplacing objects, are common under stress and can lead to memory

distortions. The current study corroborates this finding, with a mean score of 3.87 indicating frequent name forgetfulness among respondents.

While this study confirms that false memories are widespread, some research suggests that memory reliability is not always compromised by stress. For instance, Yonelinas et al. (2019) found that in some cases, stress enhances memory recall for emotionally significant events. This contrasts with the present study's findings, which indicate widespread forgetfulness and cognitive distortions.

Furthermore, some researchers argue that memory failures do not always equate to false memories. McCloskey and Zaragoza (2021) assert that forgetting certain details is a normal cognitive function rather than a false memory phenomenon. While this perspective is valid, the high frequency of forgetfulness reported in this study suggests that memory failures may contribute to inaccurate event reconstructions.

A study by Brainerd and Reyna (2018) found that false memories were more prevalent in individuals experiencing chronic stress or trauma. This aligns with the present study, where high levels of forgetfulness (mean scores above 3.80 for multiple items) suggest that psychiatric outpatients may be particularly susceptible to memory distortions due to heightened psychological stress.

Moreover, the findings support the conclusions of Koriat and Goldsmith (2021), who suggested that retrieval failures under stress lead individuals to fabricate details, resulting in false memories. The reported uncertainty regarding memory accuracy (mean = 3.85) in this study further reinforces this notion.

The prevalence of false memories among psychiatric outpatients has significant implications for mental health interventions. Cognitive-behavioral therapy (CBT) has been recommended as a strategy to help individuals improve memory accuracy and reduce susceptibility to false recollections (Becker et al., 2022). Additionally,

mindfulness techniques have been shown to improve cognitive function and decrease memory distortions (Goleman, 2021).

4.6.6 Strategic Stress Interventions

The study's findings are in agreement with previous literature on stress management and memory accuracy. Research by Creswell et al. (2019) found that mindfulness meditation improves memory function and reduces susceptibility to distortions, which aligns with the high proportion of participants who reported benefits from meditation. Additionally, Lehrer and Gevirtz (2019) highlight that relaxation techniques contribute to improved cognitive performance, a claim that is supported by the findings of this study.

The role of counseling in reducing false memories is well documented in psychological literature. Becker et al. (2021) demonstrated that cognitive-behavioral therapy (CBT) significantly improves memory accuracy by altering maladaptive cognitive schemas. This is consistent with the present study's finding that counseling helps minimize stress-induced memory distortions.

Furthermore, resilience training has been widely recognized as a protective factor against stress-related cognitive impairments. Southwick et al. (2018) found that resilience-building interventions enhance emotional regulation and adaptive coping, reducing the likelihood of false memories. This supports the study's finding that resilience training contributes to better stress management and improved memory accuracy.

While the study supports the effectiveness of meditation, relaxation, and counseling in reducing false memories, some research presents contradictory findings. For instance, a study by Eysenck et al. (2020) argues that in certain cases, stress management techniques such as relaxation training can lead to overconfidence in memory recall, which may inadvertently increase the risk of false memories. This contrasts with the present study's findings, which suggest that relaxation strategies improve memory accuracy.

Moreover, some researchers have questioned the long-term effectiveness of resilience training. According to Bonanno et al. (2019), while resilience interventions may provide short-term benefits, their effectiveness in sustaining cognitive function over extended periods is less certain. However, the present study indicates that participants who engaged in resilience training reported significant improvements in stress management and memory accuracy.

The findings of this study align closely with a study by Lazarus and Folkman (2019), which found that coping training enhances cognitive function and reduces stress-related memory distortions. Similarly, a study by Goldin et al. (2020) demonstrated that individuals who receive structured stress management training exhibit fewer false memories compared to those without such training. These studies reinforce the present research's conclusion that strategic stress interventions play a crucial role in minimizing false memories.

A comparative study conducted by Shields et al. (2017) found that individuals who practiced stress management techniques regularly were significantly less prone to memory distortions than those who did not. This supports the present study's findings that meditation, relaxation, counseling, resilience training, and coping training are effective in minimizing false memories.

The findings have significant implications for psychiatric care. Healthcare providers should integrate structured stress management programs into treatment plans to help individuals mitigate the cognitive effects of stress. Additionally, cognitive-behavioral interventions should be emphasized to help patients restructure maladaptive thought processes and improve memory accuracy.

4.7 Qualitative Analysis

This section presents the qualitative findings from interviews conducted with adult outpatients attending the psychiatric clinic at Meru Level 5 Hospital. The qualitative data provides an in-depth understanding of how stress influences false memories, the prevalence of false memories, and the effectiveness of stress interventions. The analysis follows a thematic approach, identifying patterns from participants' responses and supporting them with direct quotes. The discussion compares the findings with existing literature.

4.7.1 Influence of Acute Stress on False Memories

Acute stress emerged as a major factor influencing memory distortion among participants. Several respondents reported that stressful events led them to misremember details or experience confusion. One participant stated:

> *"Sometimes, after a heated argument with my family, I recall the conversation differently a few hours later. I feel certain about things that never happened, and I only realize this when someone corrects me."*

The accounts suggest that heightened emotional arousal during acute stress episodes impairs cognitive processing, leading to false memories. This aligns with findings by Shields et al. (2020), who noted that stress-induced cortisol release affects hippocampal function, impairing memory accuracy. Some participants also reported experiencing short-term amnesia after a highly stressful incident. For instance, one respondent noted:

> *"There was a time I was caught in a chaotic scene, and I later struggled to recall how I got home. Some details were completely missing or mixed up."*

This finding supports research by McGaugh (2018), which suggests that extreme stress can disrupt memory encoding and retrieval, leading to gaps or distortions in recollection.

4.7.2 Episodic Acute Stress and Memory Errors

Participants experiencing recurrent stressful episodes described a pattern of memory distortions. Several reported forgetting minor details of daily tasks, misremembering past events, or reconstructing memories inaccurately. One interviewee expressed:

> *"Whenever I go through stressful moments over several days, I find myself unsure about past conversations. I even argue with people over things that I later realize I got wrong."*

Another respondent shared:

> *"There are times when I'm under stress for several days, and I start remembering things differently. I feel like I recall something clearly, but later, my family tells me I got it all mixed up."*

These findings are consistent with the research by Roediger and DeSoto (2017), which highlights that prolonged stress exposure leads to cognitive distortions due to repeated emotional stress responses affecting neural circuits involved in memory storage.

4.7.3 Chronic Stress and Long-Term Memory Distortions

Chronic stress was identified as a major factor in false memories among psychiatric patients. Many participants reported experiencing long-term confusion and difficulty differentiating between real and imagined events. A participant shared:

> *"I have been under stress for years. I sometimes remember things that never happened, and I am convinced they are true until someone proves otherwise."*

Another interviewee noted:

> *"My doctor tells me that my memory problems are related to stress. I forget appointments, important discussions, and sometimes I remember things in ways that did not happen."*

These narratives align with research by Lupien et al. (2018), which found that prolonged exposure to stress hormones can lead to structural changes in the brain, particularly the

prefrontal cortex and hippocampus, contributing to memory distortions. Participants with chronic stress also reported difficulty in distinguishing between dreams and real-life events. One respondent explained:

> *"Sometimes, I wake up thinking something happened, but later, I realize it was just a dream. It happens more often when I am stressed for weeks."*

This finding is supported by Payne and Kensinger (2018), who noted that chronic stress blurs the boundary between reality and imagination, leading to an increased tendency toward false memories.

4.7.4 Prevalence of False Memories in Psychiatric Outpatients

Many respondents acknowledged experiencing frequent memory distortions, suggesting a high prevalence of false memories among psychiatric outpatients. One participant noted:

> *"I have trouble recalling things from my past. My doctor says some memories are inaccurate, but I still believe them because they feel real."*

Another respondent stated:

> *"I used to think I was just forgetful, but now I realize I sometimes recall things that never happened. It makes me doubt my memory."*

These experiences suggest that false memories are common in individuals with psychiatric conditions, reinforcing previous studies by Loftus and Pickrell (2017), who argued that individuals under psychological distress are more prone to memory distortions. The prevalence of false memories also appeared to be linked with specific mental health conditions such as anxiety and depression. A participant suffering from anxiety noted:

> *"I constantly worry, and sometimes I imagine conversations that never happened. It's like my brain fills in the gaps with things that are not real."*

This corroborates findings by Gallo (2020), who suggested that individuals with high anxiety levels are more susceptible to memory errors due to heightened cognitive load and emotional interference.

4.7.5 Strategic Stress Interventions and Their Impact on False Memories

Participants who engaged in stress management techniques reported improvements in memory accuracy. Some noted that counseling helped them differentiate real from imagined events. One participant shared:

> *"Ever since I started therapy, I have fewer memory problems. My counselor helps me reflect on my thoughts and verify my recollections."*

Another respondent highlighted the benefits of meditation:

> *"Meditation has helped me focus better. I used to struggle with remembering things, but now, I feel more in control of my thoughts."*

This is consistent with research by Diamond and Campbell (2019), who found that mindfulness-based interventions improve cognitive clarity and reduce the occurrence of false memories by enhancing attentional control. Some participants also reported positive outcomes from resilience training:

> *"I have learned how to handle stress better, and as a result, I don't mix up my memories as much as I used to."*

These findings suggest that targeted stress interventions play a crucial role in reducing memory distortions, aligning with research by Shields et al. (2020), which emphasized the role of stress management in improving cognitive function.

The qualitative findings reinforce the quantitative results, demonstrating that stress whether acute, episodic, or chronic has a significant impact on false memories. The personal narratives provided by participants confirm the theoretical underpinnings of stress-related memory distortions as proposed by McGaugh (2018) and Roediger and DeSoto (2017).

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings, conclusions, and recommendations derived from the study on the relationship between stress and false memories among adult psychiatric outpatients at Meru Level 5 Hospital. The study examined the influence of acute, episodic acute, and chronic stress on memory distortions, the prevalence of false memories, and the effectiveness of strategic stress interventions. The chapter further provides recommendations based on the findings and suggests areas for further research. The aim is to contribute to a better understanding of memory distortions under stress and inform mental health interventions.

5.2 Summary of Findings

The study sought to examine the relationship between different forms of stress and false memories. Data was collected through both quantitative and qualitative approaches, with findings analyzed thematically and statistically. The key findings are summarized as follows:

5.2.1 Influence of Acute Stress on False Memories

The study revealed that acute stress significantly impacts memory accuracy, leading to distortions and misrecollections. Participants experiencing short-term, high-intensity stress reported difficulty in recalling details of stressful events accurately. Many respondents acknowledged that moments of acute stress resulted in exaggerated, missing, or fabricated details. The quantitative analysis showed that false memory occurrence was higher among participants who reported experiencing acute stress frequently. This aligns

with studies such as Shields et al. (2020), which suggest that cortisol release during stress impairs hippocampal functioning, disrupting memory consolidation and retrieval.

Qualitative findings further reinforced these results, with respondents expressing confusion over past conversations and incidents. Some described episodes of momentary amnesia, where stressful situations caused them to forget crucial details or remember events inaccurately. This supports the argument by McGaugh (2018) that acute stress triggers an overactive response in the amygdala, interfering with cognitive processing.

5.2.2 Influence of Episodic Acute Stress on False Memories

The study found that episodic acute stress stressful events occurring intermittently but repeatedly contributed to a gradual increase in memory distortions over time. Respondents frequently exposed to episodic acute stress reported difficulties in recalling past interactions accurately.

Statistical analysis indicated a positive correlation between episodic stress exposure and the frequency of false memories. Qualitative data also supported these findings, with respondents stating that stressful events spanning several days caused them to recall conversations and occurrences inaccurately. For example, some individuals found themselves arguing over recollections they later realized were incorrect. This aligns with Roediger and DeSoto (2017), who found that repeated exposure to stressful situations amplifies memory distortions due to increased cognitive load and emotional interference.

5.2.3 Effect of Chronic Stress on False Memories

Chronic stress had the most profound effect on false memories. Participants who reported long-term exposure to stress whether from financial instability, prolonged illness, or family conflict were more likely to experience significant memory distortions. Statistical analysis confirmed that individuals under chronic stress had a higher likelihood of recalling false memories compared to those with acute or episodic acute stress.

The qualitative findings supported this, with respondents expressing frustration over their unreliable memory. Many described instances where they strongly believed in events that never happened or were unsure whether a memory was real or imagined. Some even reported confusing dreams with reality. This is in line with the findings of Lupien et al. (2018), who discovered that extended stress exposure impairs long-term memory accuracy by causing structural alterations in the prefrontal cortex and hippocampal regions.

5.2.4 Prevalence of False Memories Among Psychiatric Outpatients

The study found a high prevalence of false memories among psychiatric outpatients. A majority of respondents admitted to experiencing memory distortions regularly, with many linking these occurrences to their mental health conditions. The prevalence was especially high among individuals diagnosed with anxiety and depression, confirming previous research by Gallo (2020), which showed that heightened emotional distress increases susceptibility to memory errors.

5.2.5 Strategic Stress Interventions and Their Effectiveness

The study examined various stress management interventions and their role in reducing false memories. The findings indicated that individuals engaging in therapy, mindfulness practices, and resilience training experienced fewer instances of memory distortions. Participants who attended regular counseling sessions reported improved clarity in distinguishing real memories from imagined ones. Those practicing meditation and stress reduction techniques also exhibited lower rates of false memory occurrences. These results support the findings of Diamond and Campbell (2019), who argue that mindfulness enhances cognitive clarity and reduces the likelihood of memory errors.

5.3 Conclusion

The study concluded that stress plays a significant role in the formation of false memories among psychiatric outpatients. Acute, episodic acute, and chronic stress each contribute to memory distortions, with chronic stress having the most severe impact. The high prevalence of false memories among psychiatric patients suggests that stress-related cognitive impairments are common in clinical populations.

Moreover, the findings confirmed that effective stress management interventions can significantly reduce memory distortions. Psychological interventions such as cognitive-behavioral therapy, mindfulness, and resilience training improve cognitive processing and help individuals differentiate real memories from false ones.

In conclusion, this study highlights the need for integrating stress management strategies into psychiatric treatment plans to minimize the occurrence of false memories. Addressing stress-related cognitive distortions can enhance the accuracy of patient recollections, thereby improving therapy outcomes and overall mental well-being.

5.4 Recommendations

Based on the study findings, the following recommendations are proposed:

i. Integration of Stress Management in Psychiatric Care. Healthcare institutions should incorporate structured stress management programs, such as cognitive-behavioral therapy and mindfulness training, to help patients reduce false memory occurrences.

ii. Psychoeducation on Memory Distortions. Mental health practitioners should educate patients about the potential effects of stress on memory accuracy. Understanding how stress affects memory can help individuals develop strategies to verify and validate their recollections.

iii. Further Research on Neurological Mechanisms. More studies should be conducted to explore the neurobiological mechanisms linking stress and false memories, particularly in clinical populations, to develop targeted interventions.

5.5 Suggestions for Further Research

While this study provides significant insights into the relationship between stress and false memories, further research is necessary to expand the understanding of this phenomenon. The following areas are recommended for future studies:

i. Longitudinal Studies on Stress and Memory. Future research should examine how prolonged exposure to stress affects memory distortions over extended periods. Longitudinal studies would provide deeper insights into the long-term cognitive effects of stress.

ii. Neurobiological Correlates of Stress-Induced False Memories. Investigating the brain structures involved in stress-related memory errors using neuroimaging techniques (e.g., fMRI) would provide a deeper understanding of the physiological changes associated with memory distortions.

iii. Effectiveness of Different Stress Management Techniques. Future research should compare the effectiveness of various stress intervention strategies, such as meditation, therapy, and pharmacological treatments, in reducing false memory occurrences among different populations.

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APPENDICES

Appendix I: Consent Form

I am **Mutembei Patrick Nkanataa** masters Student at Mount Kenya University. Am conducting a study on "**Influence of stress on false memories among adult outpatients attending psychiatric clinic at Meru Level 5 Hospital, Meru County, Kenya, Kenya"**

I would like to inform you that this study is part of the requirements for my master's degree program. I am inviting you to participate in this research and am requesting your consent. We will ensure your confidentiality by using visit numbers instead of names, and any information collected will not be disclosed to anyone without your permission. Participation in this study is entirely voluntary. There are no risks associated with this research for the participants. This study will contribute to knowledge and serve as a reference for scholars interested in pursuing further research in this area or related fields, as well as for teaching in universities and other educational institutions. Before your involvement in this study, I kindly ask you to sign the declaration below. I have read the purpose, and I hereby agree/disagree to participate in this study.

Respondent

Sign……..…...Date……

Principal Investigator

Sign ……....

Mobile Number 0720939879

Ethics Review Committee Office

The Chairman

Mount Kenya University, Ethics Review Committee

P O Box 342 – 01000-THIKA

Appendix II: Questionnaire

Kindly tick tick where appropriate.

SECTION A: Background Characteristics

1. What is your gender identity? Male [ ] Female [ ]

2. Which age group do you fall under? 18-25 [ ] 26-35 [ ] 36 and Over [ ]

3. What is the highest level of education you have completed? Primary and Secondary [] Tertiary/Associate Degree [ ] University Degree [] Masters/PhD []

4. How many times have you the psychiatric department within the hospital this year? Once [ ] Two-Three times [ ] Over 3 times [ ]

SECTION B: Research Questions

i. Kindly rate your agreement regarding acute stress statements in the table; Key – 1 – Strongly Agree, 2- Agree, 3- Undecided 4 – Disagree, 5 – Strongly Disagree

Statements	1	2	3	4	5
I have been Re- experiencing traumatic events that have occurred in my life					
I have been having frequent negative emotions due to the situation that I am currently in					
I have been showing impulsive behavior based on stress that I have					
I have had several intrusive memories that I cannot seem to understand why they occur					
I have been experiencing insomnia; I rarely sleep nowadays					

ii. Kindly rate your agreement regarding episodic acute stress statements in the table below.

Key – strongly Agree, 2 – Agree, 3 – Undecided 4 – Disagree, 5 – strongly Disagree

Statements	1	2	3	4	5
I have been having panic attacks in the past weeks and months					
I have shown uncontrolled anger/ irritability towards others and things					
I have been experiencing recurrent dreams/ flashback sin the past weeks					
I am always anxious unlike I was before					
I nowadays tend to take much responsibilities that I can handle which is unlike me					
I am nowadays disorganized and often late for appointments					

iii. Kindly rate your agreement regarding chronic stress statements in the table below.

Key – strongly Agree, 2 – Agree, 3 – Undecided 4 – Disagree, 5 – strongly Disagree

Statements	1	2	3	4	5
I have developed inability to concentrate on various things and issues					
Nowadays I have experience extreme fatigue when I am not doing anything					
I experience extreme irritation even on people and things that did not use to irritate me					

I constantly have rapid disorganized thoughts					
I have frequent headaches that did not occur before					

iv. Kindly rate your agreement regarding stress intervention statements in the table below.

Key – strongly Agree, 2 – Agree, 3 – Undecided 4 – Disagree, 5 – strongly Disagree

Statements	1	2	3	4	5
I manage my stress levels through meditation					
I manage my stress levels through relaxation					
I manage my stress levels through counselling					
Resilience training has enabled me handle my stressful situations					
Coping training has impacted me with skills to handle the stressors that I encounter					

v. Kindly rate your agreement regarding false memories in the table below.

Key – strongly Agree, 2 – Agree, 3 – Undecided 4 – Disagree, 5 – strongly Disagree

Statements	1	2	3	4	5
I often forget names of the people whom I have met once or twice					
I often forget things that I was thinking about minutes ago					
I often forget to take things with me that was supposed to take					
I forget special elements of an event that I attended					
Sometimes I have doubts about the accurancy of my narrations about certain events					

Sometimes I have trouble with remembering particular words					
I frequently forget something that I have just been told					
Sometimes I start a conversation that when I get interrupted, I completely forget what I was talking about					
I tend to often forget where I pace things physically					
Sometimes I forget small details that I have done					
Sometimes I forget the names of people whom I know well such as relatives and friends					
Sometimes I go somewhere and then I forget what I was going to do					
Sometimes I forget I have done something that I already did					

Appendix III: Interview Schedule

i. What is the influence of episodic acute n false memories among adult outpatients attending psychiatric clinic at Meru level 5 Hospital?

ii. What is the influence of chronic stress on false memories among adult outpatients attending psychiatric at Meru level 5 Hospital?

iii. What is the prevalence of false memories among adult oupatients attending psychiatric clinics at Meru level 5?

iv. What strategic stress interventions can be used to minimize occurrence of false memories?

Appendix IV: ERC Letter

Mount Kenya University

REF: MKU/ISERC/4758 Date: 10 February 2025

TO: MUTEMBEI PATRICK NKANATA

REG: MCP/2018/35359 (Amended)

Dear Sir/Madam,

RE: INFLUENCE OF STRESS ON FALSE MEMORIES AMONG ADULT OUPATIENTS ATTENDING PSYCHATRIC CLINIC AT MERU LEVEL 5 HOSPITAL, MERU COUNTY, KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **3480.** The approval period is **10/02/2025 - 09/02/2026.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

MOUNT KENYA UNIVERSITY ETHICS REVIEW COMMITTEE P.O. Box 342-01000, THIKA

MOUNT KENYA UNIVERSITY P.O. Box 28495-00100 MERU CAMPUS 10 FEB 2025 DIRECTOR Graduate Studies RECEIVED

Appendix V: Introduction Letter

Mount Kenya University

MKU

DIRECTORATE OF GRADUATE STUDIES

MCP/2018/35359

10th February, 2025

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: MUTEMBEI PATRICK NKANATA – REGISTRATION NO. MCP/2018/35359

The purpose of this letter is to introduce the above named student who is pursuing **Master of Arts in Counselling Psychology** in the Department of **Psychology, Humanities and Languages** in the School **of Social Sciences.**

The title of the research is **"Influence of Stress on False Memories Among Adult Outpatients Attending Psychiatric Clinic at Meru Level 5 Hospital, Meru County, Kenya."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **February, 2025 and April, 2025.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P.O. Box 342-01000, THIKA
Office of the Director
Graduate Studies

For

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Appendix VI: NACOSTI Authorization

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **967046**

Date of Issue: **21/February/2025**

RESEARCH LICENSE

This is to Certify that Mr.. PATRICK MUTEMBEI NKANATA of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Meru on the topic: INFLUENCE OF STRESS ON FALSE MEMORIES AMONG ADULT OUTPATIENTS ATTENDING PSYCHIATRIC CLINIC AT MERU LEVEL 5 HOSPITAL, MERU COUNTY, KENYA. for the period ending : 21/February/2026.

License No: **NACOSTI/P/25/416151**

967046

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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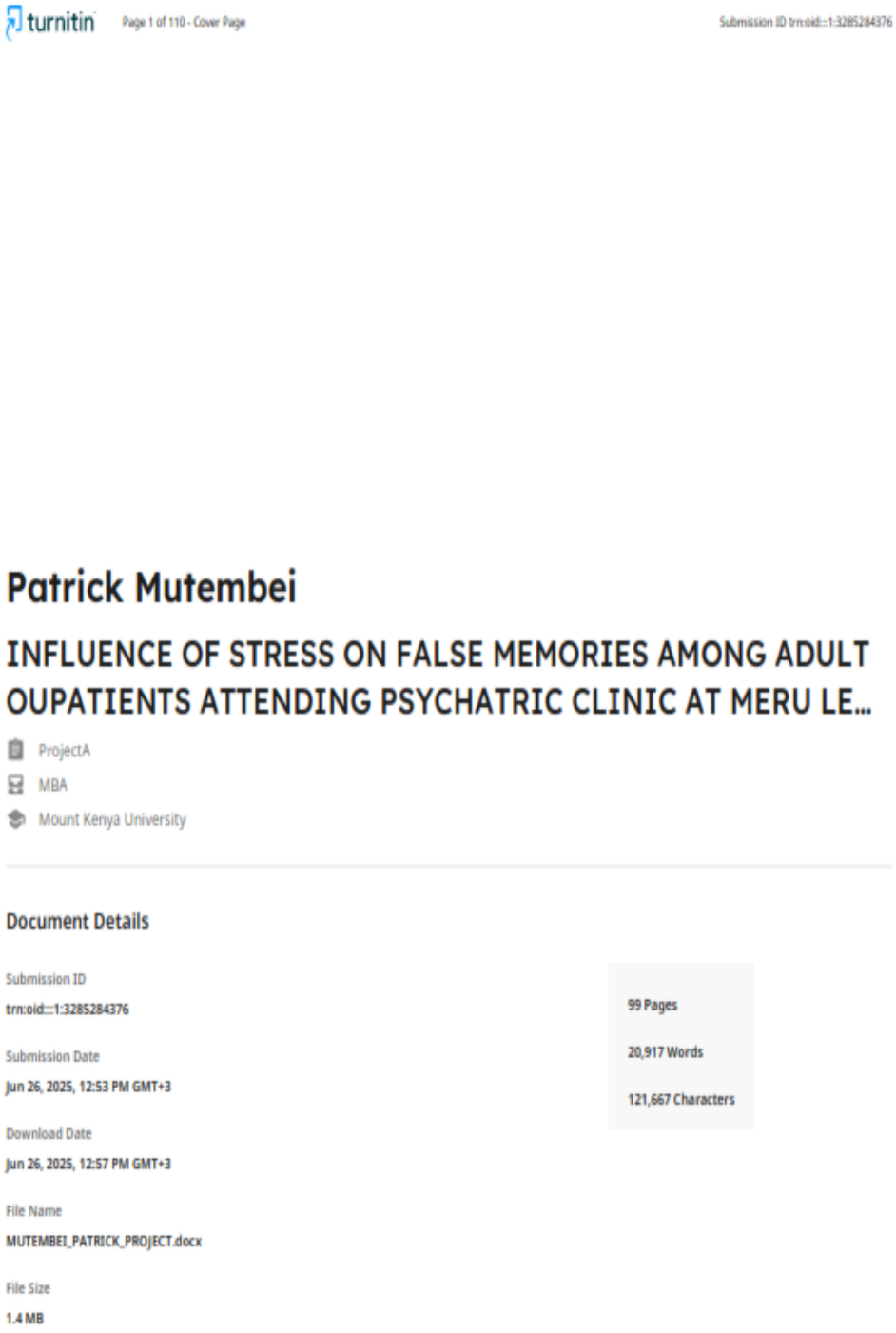
Appendix VII: Similarity Index



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