

**CALL CENTER INFLUENCE ON THE DELIVERY OF MENTAL HEALTH
SERVICES AMONG YOUNG PEOPLE: A CASE OF ONE2ONE CALL
CENTER IN NAIROBI, KENYA**

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DECLARATION

This thesis is my original work and has not been presented for a degree or any other award at any other university.

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DEDICATION

This thesis is dedicated to my family, who have supported me throughout my journey, and to my supervisors for their endless guidance and input.

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I acknowledge the Department of Health Systems Management and my supervisors, whose dedication to healthcare improvement inspires me. Their guidance and feedback have been invaluable in shaping this thesis. I acknowledge the contributions of countless individuals and organizations whose research forms the theoretical foundation of this thesis.

ABSTRACT

Mental health issues among young people have become increasingly prevalent, with potentially severe consequences for their well-being and societal development. Kenya faces a significant mental health burden, with high rates of disorders among adolescents and young people. Despite the need for accessible mental health services, challenges like limited information dissemination, unclear community support pathways, and a shortage of health professionals persist. Call centers play a critical role in enhancing accessibility, reducing stigma through anonymity, and improving resource allocation by prioritizing urgent cases. This study examined the influence of call centers on mental health service delivery in Nairobi County, focusing on four objectives: To evaluate the influence of crisis intervention on the delivery of mental health services, to examine the influence of round-the-clock availability on the delivery of mental health services, to determine the influence of resource sharing on the delivery of mental health services, to establish the influence of follow-ups on the delivery of mental health services among young people in Nairobi County. Grounded in the Information Systems Success Model and Lean Thinking in Healthcare, the research employed a descriptive cross-sectional design. The study population comprised healthcare providers linked to the one2one call center, with a sample size of 112 selected through simple random sampling. Data were collected using questionnaires and analyzed with descriptive and inferential statistics using the SPSS program version 25. The findings indicated significant positive correlations between crisis intervention and round-the-clock availability ($\rho = .424, p < .001$), resource sharing ($\rho = .354, p < .001$), follow-up ($\rho = .292, p = .002$), and mental health service delivery ($\rho = .439, p < .001$). Round-the-clock availability was also significantly correlated with resource sharing ($\rho = .336, p < .001$), follow-up ($\rho = .389, p < .001$), and service delivery ($\rho = .384, p < .001$). Resource sharing was significantly associated with follow-up ($\rho = .470, p < .001$) and service delivery ($\rho = .198, p = .042$). Follow-up positively correlated with service delivery ($\rho = .348, p < .001$). The study concludes that call centers, through crisis intervention, round-the-clock availability, resource sharing, and follow-ups, significantly improve the delivery of mental health services to young people in Nairobi County. The study recommends that call center management strengthen crisis intervention strategies and train staff, ensure 24/7 availability of human support services, promote resource sharing among stakeholders, and develop policies prioritizing responsive mental health interventions and supporting digital systems for timely referrals. The study recommends further study on the effectiveness of call center interventions in addressing youth mental health needs, examining the impact of technological advancement, and exploring beneficiaries' perspectives to determine how crisis intervention, round-the-clock availability, resource sharing, and follow-ups independently influence mental health outcomes.

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ABBREVIATIONS AND ACRONYMS

CAMHS	Child and Adolescent Mental Health Services
CBT	Cognitive-Behavioral Psychotherapy
CDC	Center for Diseases Control
FHs	Faith Healers
IAPT	Improving Access to Psychological Therapies
IHPs	Infantile Hypertrophic Pyloric stenosis
IHPs	Integrated Health Practitioners
IPTS	Interpersonal Psychological Theory of Suicide
KNCHR	Kenyan National Commission of Human Rights
MHPAEA	Mental Health Parity and Addiction Equity Act
NHS	National Health Service
NIMH	National Institute of Mental Health
PTSD	Post-Traumatic Stress Disorder
RCTs	Randomized Controlled Trials
SAMHSA	Substance Abuse and Mental Health Services Administration
T.H.s	Traditional Healers
TOC	Teen Options for Change
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The escalating global issue of youth mental health necessitates timely and effective services. Innovative call centers have emerged as accessible platforms for young individuals to anonymously discuss their concerns via phone, text, or chat, reducing stigma and encouraging help-seeking (McGorry et al., 2022; Rod & Ashill, 2013). These 24/7 centers offer immediate aid during crises, bridging short-term support and long-term care referrals (Bhattacharya et al., 2023). Strategic health system management involves resource allocation, seamless integration of call centers with mental health services, and a focus on training and data security (Puertas et al., 2020). Recognizing call centers' role and management implications enables health systems to enhance their responsiveness to youth mental health needs, ultimately fostering improved well-being and resilience.

In recent years, technological advancements and an increased awareness of the essence of timely mental health intervention have significantly transformed mental health services (Ebert et al., 2018). Call centers play a crucial role in this evolution, serving as essential crisis intervention components by providing 24/7 availability, enabling resource sharing, and conducting follow-ups (Zito et al., 2018). The integrated approach enhances the effectiveness and accessibility of mental health services by offering immediate support during crises, breaking down the constraints of traditional office hours through 24/7 availability, and serving as information hubs for resource dissemination.

Call centers act as frontline responders during mental health crises, providing immediate and compassionate support to individuals facing acute distress. Their timely intervention is a crucial bridge to more comprehensive mental health care (Magill et al., 2020; Mogassabi et al., 2020; Semaan et al., 2020). Operating around the clock, call centers address the unpredictable nature of mental health issues, ensuring individuals in distress have continuous access to support. This accessibility transcends the limitations of traditional office hours, catering to the population's diverse needs and contributing to a more inclusive and responsive mental health support system (Gruber et al., 2021).

Additionally, call centers serve as central repositories of mental health information, guiding individuals to relevant services and resources and empowering them to actively engage in their mental health journeys (McGorry et al., 2022). Including follow-ups in the call center's role further ensures ongoing support, monitoring progress, and optimizing interventions to promote sustained mental well-being. This comprehensive approach reflects the evolving landscape of mental health services, leveraging technology and timely interventions for a more accessible and effective care delivery (Raeside et al., 2024).

On a global scale, there is an increasing awareness of the healthcare issues connected with mental diseases (Clisu et al., 2022; Gunnell et al., 2018). Young people are predominantly susceptible to mental health issues, yet only a minority seek therapy or assistance during this critical period (Gunnell et al., 2018). Globally, it is estimated that 14% of adolescents ranging from 10 to 19 years are affected by conditions related to mental health (World Health Organization (WHO), 2022). Among these, behavior

problems, depression, and anxiety are the most common. In the United States of America (U.S.A), around 20% of children and adolescents suffer from mental health conditions, leading to annual inpatient and outpatient healthcare costs totaling \$247 billion (Bardach et al., 2014; Freyleue et al., 2023). Similarly, 13% of young individuals aged 5 to 19 in the United Kingdom (U.K.) are affected by mental illnesses (Newlove-Delgado et al., 2021; Sadler et al., 2018), and the figure stands at 14% for young people in Australia (Lawrence et al., 2016).

The WHO devised a framework for healthcare delivery. The service delivery pillar is supported by the human resources for health and health management information systems pillars (Labrique et al., 2018; Management Sciences for Health, 2015). Compared to the general population, young individuals with mental health issues experience decreased physical well-being, prolonged hospital stays, and diminished healthcare quality due to both their conditions and life circumstances (Cyclus et al., 2016; Lawrence et al., 2016). Mental health challenges not only compromise the well-being of young individuals but also correlate with academic underachievement and failure to complete high school (Lai et al., 2022; Ma et al., 2023). Those who leave high school early are more prone to unemployment, leading to lasting effects on their future educational achievements, job prospects, and earning capabilities (Mitchell et al., 2022). Healthcare use and treatment expenses for young persons with mental illnesses are often more significant than for their counterparts (Fleming et al., 2020).

Ibrahim et al. (2013) found that individuals 18 to 25 years old exhibit more significant levels of depression compared to other age brackets within the general populace, with 10.9% (Zorrilla et al., 2019). This age group encounters distinct stressors and

challenges while transitioning into adulthood, given the expectations to shoulder adult responsibilities (Zorrilla et al., 2019). Many young adults in this age range grapple with significant distress as they navigate multiple life changes, striving to make sense of their evolving circumstances (Clisu et al., 2022). The emotional and personal issues affiliated with this phase of a young person's lifecycle and the strategies employed to address these concerns (Garcia-Carrion et al., 2019) hold immense importance.

Seeking help for mental health problems is often seen as an adaptive coping strategy in which a person participates in behavior that conveys their pain to others in order to get assistance via understanding, guidance, information, therapy, or general support (Xu et al., 2018). Help-seeking is a complex process impacted by an individual's attitudes, interests, and ambitions. As a result, many individuals seek assistance from various sources (Westberg et al., 2022). Lynch et al. (2023) found that both formal and informal help-seeking behaviors serve as crucial protective factors for the mental well-being of young individuals. Those experiencing self-harming or suicidal thoughts and behaviors have much less inclination to search for assistance for their mental health issues (Tesfaye et al., 2020).

In the USA, the most common programs to provide mental health services among young people include School Counseling, Community Mental Health Centers, Private Practices and Clinics, Telehealth Services, University Counseling Centers, and National Helplines and Online Resources (Morales et al., 2020; Murdy, 2023). Similarly, in England, Child and Adolescent Mental Health Services (CAMHS), School-Based Mental Health Support, Improving Access to Psychological Therapies (IAPT), Online and Digital Resources, and Early Intervention are strategies aimed at

helping young people to manage mental health and improve their wellbeing (Howard & Khalifeh, 2020; Lau-Zhu et al., 2023).

In Africa, Nigeria has increased awareness campaigns and initiatives to reduce stigma around mental health (Ajike et al., 2022). However, mental health services, including those specifically tailored for young people, remain limited in rural areas. South Africa has a more developed mental health infrastructure than other African countries (Truter, 2023). However, challenges still exist, including a scarcity of mental health professionals and disparities in access between urban and rural areas (Docrat et al., 2019; Myers et al., 2018).

Rwanda has tried integrating mental health into its healthcare system, especially after the 1994 genocide. There has been a focus on community-based mental health programs. The government and NGOs work together to provide young people with counseling, therapy, and support services (Balthazar, 2021). The stigma surrounding mental health still exists but has decreased over the years (Semo & Frissa, 2020). In Uganda, mental health services are generally limited, and the focus has historically been more on severe mental illnesses. NGOs and community-based organizations provide mental health support, but access to quality care remains an issue, particularly for young people (Kola, Kohrt, et al., 2021).

The Kenya Mental Health Policy 2015-2030 establishes a robust framework for mental health initiatives, prioritizing equity, people-centeredness, and a multi-sectoral approach. It outlines objectives that focus on mental health promotion, comprehensive service provision, and the protection of rights for individuals with mental disorders, aiming to alleviate burdens on affected individuals and communities. Complementing

this policy, the Kenya Mental Health Action Plan (2021-2025) details targeted actions to implement the overarching goals, emphasizing mental health promotion, service delivery, rights protection, and research. The Kenya Mental Health Act 2020, replacing the 1989 law, is a significant legislative stride championing comprehensive rights for individuals with mental disorders (Ndeti et al., 2017). Despite challenges like resource constraints and social stigma, sustained government support, civil society engagement, and collaboration with stakeholders hold the potential to bring meaningful change to the lives of those impacted by mental illness in Kenya (Memiah et al., 2022).

According to the Kenyan National Commission for Human Rights (KNCHR), 25% and 40% of outpatients and inpatients, respectively, suffer from mental health issues (Mostert et al., 2024). Kenya faces challenges in providing comprehensive mental health services, especially in rural and informal settlements, where it has been improving mental health services by training more mental health professionals and increasing awareness (Kwobah et al., 2023). Some NGOs and initiatives focus on mental health support for young people, but resources remain limited (Angwenyi et al., 2021; Marangu et al., 2021).

In Kenya, adopting a collaborative framework that integrates Informal Health Providers (IHPs) is well-suited to address the challenges in the mental healthcare system (Musyimi et al., 2017). Similar to other African nations, Kenya grapples with a shortage of mental health professionals. Many individuals, especially those residing in rural areas, turn to IHPs such as Traditional Healers (T.H.s) and Faith Healers (F.H.s) for mental health treatments (Kumah, 2022). Despite recent efforts to establish formal communication channels between formal and informal healthcare providers (Musyimi

et al., 2017; Ndeti et al., 2016), involving IHPs through task-sharing could be a significant approach to tackling Kenya's mental health issues. However, there is limited understanding of the challenges faced by IHPs when integrating into a system that addresses mental health problems.

The increasing utilization of inventive and innovative resources has transformed the landscape of seeking assistance, enabling individuals to engage in help-seeking actions without a direct interpersonal element (Swick & Powers, 2018). The provision of mental care has become an increasingly critical concern in the developing world. Mental health issues have profound and lasting impacts on individuals, families, and society.

In Kenya, research has indicated that the prevalence of depression among peripartum adolescents ranges from 12% to 50% (Kumar et al., 2021). One central support system is the "one2one Call Center," which has gained prominence for its potential to provide mental health services to the youth population. The one2one Call Center is a unique platform that offers young people confidential and non-judgmental mental health support. Despite its increasing popularity, more comprehensive research is needed that systematically examines call centers' influence on mental care delivery to this demographic.

Nairobi's urban population and diverse socio-economic backgrounds complicate mental health service delivery (Wado et al., 2022). Understanding how the Call center addresses barriers related to stigma, limited access to traditional mental health services, and the unique needs of young people will be crucial for policymakers, healthcare providers, and organizations working in the mental health sector. Additionally, the role

of technology-mediated interventions, such as the call center, in reaching marginalized and underserved youth populations should be investigated.

In analyzing the successes and potential areas for improvement within the Call center model, I provided evidence-based recommendations for optimizing the delivery of mental health services to young individuals facing diverse psychological and emotional challenges. The study underscored the importance of harnessing technology and innovative approaches to address mental health needs among young people, ultimately contributing to their overall well-being and the development of a healthier society.

1.2 Statement of the Problem

The Kenya Mental Health Policy (2015-2030) is a crucial initiative aiming to establish accessible and comprehensive mental health services, particularly recognizing the importance of youth-focused interventions in light of demographic changes, urbanization, and the exacerbated impact of COVID-19 (Mathai et al., 2021; Mwavua et al., 2023). However, challenges include limited information dissemination, unclear support pathways, and a shortage of mental health professionals. Call centers are identified as pivotal to bridging these gaps, especially during periods of restrictions, offering a potential solution to enhance outreach and support mechanisms (Mathai et al., 2021).

The gravity of the mental health burden in Kenya is underscored by credible data, with the Kenya Ministry of Health (2019) report revealing that approximately 25% of the population experiences a mental health disorder at some point in their lives, with depression and anxiety disorders being the most prevalent at around 10% (Mathai et al., 2021; Mbwayo et al., 2020). Furthermore, the WHO's (2021) alarming statistic of

just one psychiatrist for every 500,000 people emphasizes the critical need for urgent action to address the scarcity of mental health resources and infrastructure, ensuring that adequate support and services are readily available to alleviate the escalating mental health crisis in the country.

In Nairobi County, 50% live in informal settlements, mostly under 24, facing societal challenges linked to mental health (Ndetei et al., 2023; Njeru & Kimutai, 2018). This group encounters psychosocial and environmental factors, including poverty and caregiver mental health issues (Ndetei et al., 2023). The inability to access in-person support intensifies concerns (Osborn et al., 2020). This research explores call centers' influence on youth mental health services. Despite the need for solutions, only some studies exist. Musyimi et al. (2018) examined the impacts of mhGAP-IG in a rural setting, while Mwavua et al. (2023) studied a digital mental health platform during COVID-19. There is a lack of studies on call centers and youth mental health services, making this research necessary. This study, therefore, sought to examine call center's influence on the delivery of mental health services among young people in Nairobi County.

1.3 Purpose of the Study

The study aimed to establish the call center's influence on the delivery of mental health services among young people in Nairobi County.

1.4 Objectives

- i. To evaluate the influence of crisis intervention on the delivery of mental health services among young people in Nairobi County

- ii. To examine the influence of round-the-clock availability on the delivery of mental health services among young people in Nairobi County
- iii. To determine the influence of resource sharing on the delivery of mental health services among young people in Nairobi County
- iv. To establish the influence of follow-ups on the delivery of mental health services among young people in Nairobi County

1.5 Research Questions

- i. What is the influence of crisis intervention on the delivery of mental health services among young people in Nairobi County?
- ii. To what extent does round-the-clock availability influence the delivery of mental health services among young people in Nairobi County?
- iii. What is the influence of resource sharing on the delivery of mental health services among young people in Nairobi County?
- iv. What is the influence of follow-ups on the delivery of mental health services among young people in Nairobi County?

1.6 Justification of the Study

Mental health issues among young people have become increasingly prevalent, with potentially severe consequences for their well-being and societal development. However, there is a lack of in-depth research that specifically investigates the effectiveness and implications of call center-based mental health support, especially within the unique context of Nairobi County. In addition, Nairobi County is

characterized by rapid urbanization, a diverse demographic profile, and varying socio-economic backgrounds. The urban environment presents challenges and opportunities for mental health service delivery to young people. The one2one Call Center, as a technology-mediated platform, has gained prominence as a potential solution to bridge the gap between traditional mental health services and the needs of young individuals who face barriers related to stigma, limited awareness, or access to in-person support. Therefore, this study helped better understand how the call center influences mental health service delivery and whether it effectively addresses young people's diverse mental health needs in this urban setting. The study findings will contribute to evidence-based recommendations for optimizing the utilization of technology for mental health support and creating a holistic framework for improving the mental health outcomes of young people in urban contexts.

1.7 Limitations of the Study

The limitations of a study are the aspects that may affect the results or conclusions of the study. In the case of this study, the study's sample size was small, which confines the generalizability of the results to a larger population. The study took place at the one2one Call Center in Nairobi County, which may limit the generalizability of the findings to other call centers in other counties or settings. There was a risk of bias in the study due to the researchers' personal biases or the selection of participants. The study relied on self-reported participant data, which may only be partially accurate or reliable.

1.8 Delimitation of the Study

The study concentrates explicitly on Nairobi County, limiting the generalizability of findings to other regions or counties in Kenya or beyond the borders. The unique socio-cultural context of Nairobi County and its young population were a central focus of the investigation. The study centers on delivering mental health services through the call centers. It does not encompass the broader landscape of mental health services, facilities, or organizations operating in Nairobi County. The scope was limited to the specific services provided by the call centers. The study was limited to the one2one Call Center dealing with mental health in Nairobi, excluding the examination of other call centers or helplines that might be addressing related issues. Language diversity exists within Nairobi County; the study was limited to English and Swahili. Language barriers could influence the reach and impact of the call center on different linguistic groups. The study did not extensively explore external factors (such as socio-economic status, education, or family support) that would interact with the influence of the call center on mental health service delivery.

1.9 Significance of the Study

The study's findings will directly impact young individuals who seek mental health support through call centers. Understanding the effectiveness and quality of the services provided can help them make informed decisions about seeking help and participating in the services. Positive outcomes could enhance their well-being and encourage more young people to seek support.

The study's results can offer valuable insights into call center management and the effectiveness of their services. Positive findings could affirm their approaches and

encourage the continued provision of high-quality mental health services. On the other hand, if issues or gaps are identified, the call center can use the findings to improve its strategies, training programs, and resource allocation.

Mental health practitioners and professionals can benefit from this study's findings by understanding the influence of remote support systems, such as call centers, on young individuals seeking help. The study might shed light on the types of issues most commonly presented by young people, the effectiveness of interventions, and any gaps in service delivery. This information can guide mental health professionals in tailoring their services to better address the needs of this specific population.

The study can provide evidence-based insights into the effectiveness of alternative mental health service delivery models, such as call centers, for government agencies and policymakers. This information can influence decisions regarding resource allocation, funding, and integrating such services into the larger mental health support framework in Nairobi County.

Researchers and academia will value the study's findings as they contribute to mental health service delivery knowledge. It could open avenues for further research on the effectiveness of remote interventions, the specific challenges faced by young people seeking mental health support, and the best practices for training call center staff in handling mental health-related concerns. The study has the potential to enrich theoretical frameworks within the field of mental health service delivery, foster interdisciplinary research, and stimulate further investigations into the dynamic relationship between technology, urban environments, and mental health support. Its

findings can be a valuable resource for researchers seeking to improve mental health services globally.

1.10 Assumptions of the Study

The research made the following presumptions:

- i. Participants were expected to willingly and voluntarily participate in the research without coercion.
- ii. The participants were anticipated to generate precise, high-quality data that can be generalized to a larger population.
- iii. The methods employed for gathering field data were chosen as the most suitable and reliable, ensuring that the information gathered accurately represented the actual situation in the field.
- iv. The techniques used for analyzing the data were designed to yield precise results that depict the genuine dynamics being investigated.

1.11 Operational Definitions of Terms

Call Center	A centralized department that handles incoming and outbound calls from existing and prospective consumers seeking mental health assistance (Chicu <i>et al.</i> , 2019; Kaboli <i>et al.</i> , 2021).
Crisis	Refers to a short-term, goal-oriented approach to helping people
Intervention	experiencing a mental health crisis. Crisis intervention aims to help people stabilize their crisis and develop a longer-term mental health care plan (Dadfar & Lester, 2021; Gould <i>et al.</i> , 2018)

Delivery of Mental Health Services	Refers to providing various forms of mental health care, support, and interventions to address young individuals' mental and emotional well-being (Bradford & Rickwood, 2014; Bucci et al., 2015)
Follow-Ups on Delivery	This refers to checking in with a client after receiving a mental health service (Raeside et al., 2024).
Mental Health Services	Refer to various interventions that help people maintain or improve their mental health (Bradford & Rickwood, 2014).
Resource Sharing	It refers to sharing information and resources between organizations and individuals to better serve people with mental health needs. This includes sharing information about mental health disorders, treatment options, and community resources. It also includes sharing case management responsibilities, providing referrals, and collaborating on research and training (Cui et al., 2022).
Round-The-Clock Availability	This means the call center is staffed every day, seven days a week, and someone/ system is always available to answer calls from people needing mental health support (Bhattacharya et al., 2023).
Young People	This study adopts the United Nations definition of "youth" as individuals aged 15 to 24 (United Nations, 2024).

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The current chapter examined the research on call centers' influence on delivering mental health services to young people. It served as the study's theoretical and conceptual basis. It investigated and established what other writers have done and established on this subject.

2.2 Delivery of Mental Health Services among Young People

In this section, we delved into mental health services among young individuals. Crisis resolution assumed a central role, representing the immediate response and management of mental health challenges faced by youth. Referral rates stand as critical markers, signifying the accessibility and utilization of mental health services, thereby ensuring timely and appropriate interventions. Enhancing coping skills among young individuals is a crucial indicator, reflecting their resilience and adeptness in navigating mental health difficulties.

As reported by the WHO (2020), 10-20% of children and adolescents globally experience mental health disorders, half of which manifest by age 14. This alarming rate emphasizes the critical need for sufficient mental health services for young individuals. However, providing access to these services presents a significant obstacle. Research has shown that nearly 75% of young people dealing with mental health problems do not receive the necessary treatment (Mishu et al., 2023). Factors such as stigma, lack of awareness, and limited resources contribute significantly to this gap in treatment (Sequeira et al., 2022).

In recent years, efforts have been made to integrate mental health services into educational institutions. School-based interventions can be crucial in early identification and intervention (Ma et al., 2023). Moreover, telehealth has emerged as a promising avenue, enhancing access to services, particularly in underserved areas (Memiah et al., 2022). Collaboration between sectors, including healthcare, education, and social services, is essential for comprehensive mental healthcare delivery. Integrated systems allow for holistic assessment and treatment planning (Dadfar & Lester, 2021)

Involving young people in designing and implementing mental health initiatives may also result in more effective results (Mishu et al., 2023). Youth participation ensures that programs are adapted to their individual needs and interests. Investing in research is crucial for advancing mental health service delivery. Evidence-based interventions must be continually developed and evaluated (Mabrouk et al., 2022).

The provision of mental care to adolescents and young people in the United States is an urgent matter as the incidence of mental health illnesses continues to climb. According to the National Institute of Mental Health (NIMH), 17.4% of kids aged 6-17 in the United States have a mental health problem (National Institute of Mental Health, 2017). Despite this high prevalence, access to appropriate care remains a challenge, with a report by the Substance Abuse and Mental Health Services Administration (SAMHSA) indicating that only 44.2% of youth with major depressive episodes received treatment in 2020 (Knopf, 2023). Factors like stigma and limited resources contribute to this treatment gap. Efforts are being made to address this issue through various means. The Mental Health Parity and Addiction Equity Act (MHPAEA) ensures that mental health

services are covered by insurance plans on par with physical health services, promoting more equitable access to care.

Additionally, school-based mental health programs have gained prominence (Mbwayo et al., 2020; Ndeti et al., 2016). They found that school-based interventions significantly reduced symptoms of depression and anxiety among students. However, more comprehensive and integrated approaches are needed, involving collaborations between healthcare, education, and policy sectors to ensure that young individuals receive the necessary mental health support.

The frequency of mental health problems among young people in the United Kingdom is also worrying (Ribeiro et al., 2023). Around 1 in 8 individuals aged 5 to 19 have at least one mental disorder, with emotional disorders being the most common (WHO, 2020; Wright et al., 2020). While the U.K.'s National Health Service (NHS) offers mental health services, long waiting times and resource limitations can hinder timely interventions. In China, the rate of mental health problems among young people has surged, with academic pressure and societal expectations being key stressors. A study in Shanghai found that nearly 20% of adolescents had experienced a mental health disorder (Hall et al., 2023; Schwank et al., 2020). However, stigma remains a significant barrier to seeking help, compounded by limited mental health infrastructure and professional shortages.

In Nigeria, the prevalence of mental health disorders among adolescents is around 10%, with a significant shortage of mental health professionals and resources (Ajike et al., 2022; Kola, Abiona et al., 2021). School-based interventions have been implemented to address this gap, emphasizing psychoeducation and early identification (Adewuya &

Oladipo, 2020). Ethiopia also lacks mental health infrastructure, mainly in rural areas (Upadhaya et al., 2016). Approximately 15% of Ethiopian adolescents experience mental health disorders (Kassaw & Alemayehu, 2023). The government has implemented community-based mental health programs to improve access and address stigma (Tadesse Gebremedhin et al., 2021). Uganda faces a mental health treatment gap of over 90% among young people (Mugisha et al., 2016). The country has integrated mental health services into its primary healthcare system, supported by task-shifting strategies that train non-specialist health workers to deliver primary mental health care (Mugisha et al., 2016; Upadhaya et al., 2016).

In Kenya, delivering mental health services among young people is a pressing concern, given the rising prevalence of mental health issues within this demographic. According to a study by the African Journal of Psychiatry, approximately 15-20% of Kenyan adolescents suffer from mental health disorders (Ndetei et al., 2016). This alarming statistic underscores the urgency of adequate mental health service provision for Kenyan youth. However, access to mental health services remains limited in Kenya (Wango, 2020). The country's mental health system faces challenges, including a shortage of trained mental health professionals and inadequate funding (Jaguga & Kwobah, 2020). A report from the World Health Organization indicates that Kenya has only 83 practicing psychiatrists and 427 psychiatric nurses, resulting in a significant treatment gap (WHO, 2022).

In Kenya, efforts are being made to address these challenges. Kenya's Mental Health Policy (2015-2030) outlines strategies to improve mental health services and enhance integration within the healthcare system (Ndetei et al., 2017). Additionally, non-

governmental organizations (NGOs) like Basic Needs Kenya are working to raise awareness and provide community-based mental health support. Schools are also becoming focal points for mental health interventions. The Mental Health Gap Action Programme (mhGAP) training equips teachers with skills to identify and support students with mental health concerns (Kohrt et al., 2021; Musyimi et al., 2018).

Nairobi's urban context exacerbates the mental health challenges. A study by Achoki et al. (2019) found that urban adolescents in Nairobi faced higher levels of psychological distress than their rural counterparts. Rapid urbanization and associated stressors could contribute to this disparity. Limited mental health infrastructure, including insufficient mental health professionals and facilities, impedes the delivery of services.

Non-governmental organizations (NGOs) such as BasicNeeds and the Africa Mental Health Foundation have established initiatives in Nairobi to increase mental health awareness and improve service access for young people (Musyimi et al., 2017; Mutiso et al., 2018). These organizations work towards reducing stigma and providing culturally appropriate interventions. Digital technologies offer promise in bridging the service gap. The prevalence of mobile phones in Kenya provides an opportunity for innovative solutions (Kharono et al., 2022). The Friendship Bench program, which originated in Zimbabwe and has been implemented in Nairobi, utilizes trained lay health workers to deliver mental health interventions via SMS and in-person sessions (Verhey et al., 2020). Providing mental care to young people in Nairobi is hindered by various obstacles, including rapid urbanization, resource shortages, and social stigma. Despite these barriers, initiatives led by NGOs and innovative digital interventions show promise in addressing the mental health needs of Nairobi's youth population

(Verhey et al., 2020). However, sustained efforts, increased investment, and collaboration between various stakeholders are essential to effectively meet the mental health needs of the city's young residents.

2.3 Crisis Intervention and Mental Health Services Delivery

This section examined studies on call volume, offering insights into the frequency and urgency of crisis requests; intervention speed, evaluating the efficiency and timeliness of crisis responses; and the success rate of de-escalation attempts, illuminating the effectiveness of interventions in promptly managing and mitigating immediate crises. These investigations explored and elucidated a comprehensive understanding of the demand for services, the efficacy of response mechanisms, and the impact of interventions on crisis management.

Horton et al. (2016) investigated the link between late teenage and young adult depression, suicidal thoughts, and the interpersonal psychological theory of suicide (IPTs). The research Utilized self-report measures to assess depressive symptoms, suicidal thoughts, and variables associated with the interpersonal psychological theory of suicide (IPTs), including feeling like a burden and lack of social connection, experiencing increased depressive symptoms, and a heightened risk of suicidal thoughts. The study concluded that IPTs factors significantly impacted the mental well-being of late adolescents and young adults.

King et al. (2015) aimed to assess the effectiveness of the 'Teen Options for Change' (TOC) intervention in connecting these high-risk individuals with appropriate mental health services and reducing their suicidal behaviors. The researchers conducted a randomized controlled trial involving 87 young patients (ages 12-18) who screened

positive for suicide risk during their visit to an urban emergency department. The participants were assigned to either the TOC intervention group or a control group that received enhanced usual care. The TOC intervention consisted of a manualized brief therapy session and a safety planning intervention. Participants in the intervention group were provided with a safety plan and coping skills and linked to follow-up mental health care. Participants in the TOC group reported more significant reductions in suicidal ideation at the three-month follow-up compared to the control group. The TOC group also reported a higher likelihood of engaging in outpatient mental health services post-intervention. The intervention demonstrated acceptability among both participants and emergency department staff.

Gould et al. (2018) evaluated the outcomes of crisis hotline interventions specifically for individuals who call in with suicidal thoughts. The study collected data from 12 crisis hotlines across the United States. Callers who expressed suicidal thoughts or intentions were included in the study. The participants were asked a series of questions during their initial call, and a follow-up interview was conducted within a few weeks after the initial call. The study found that the crisis hotline interventions effectively managed the immediate crisis. Most callers reported reduced distress after speaking to a crisis hotline responder. Many callers reported engaging in positive help-seeking behaviors after the initial call. This included seeking professional help, talking to friends or family, and accessing mental health services. Among the callers, a notable percentage reported having definite plans for suicide. The crisis hotline intervention reduced suicidal intent, indicating the potential life-saving impact of these interventions (Labouliere et al., 2020).

Harstad et al. (2021) presented a comprehensive review of the effectiveness of cognitive-behavioral psychotherapy (CBT) as an intervention for anxiety and depressive disorders in young individuals. The study systematically reviewed the available literature using evidence-based medicine principles. The review encompassed randomized controlled trials (RCTs), case studies, and other relevant research designs to evaluate the efficacy and impact of CBT interventions. The study found a positive impact of cognitive-behavioral psychotherapy on anxiety and depressive disorders in young individuals. The review concludes that CBT demonstrates considerable effectiveness in reducing symptoms of anxiety and depression among children and adolescents. The analysis reveals consistent evidence supporting the beneficial effects of CBT across various studies and settings. The study emphasized that CBT equips young individuals with essential coping skills and strategies that extend beyond the therapeutic context, contributing to improved long-term outcomes (Harstad et al., 2021).

2.4 Round-the-Clock Availability and Mental Health Services Delivery

This section critically examined studies elucidating the influence of round-the-clock availability on mental health service delivery.

Waiting time represents a fundamental indicator influencing access to care, encompassing the duration individuals await mental health support during non-standard hours (Bhattacharya et al., 2023). Call center service capacity denotes the capability of crisis intervention services to manage and handle incoming calls effectively. Language availability signifies providing mental health services in diverse languages, ensuring accessibility for culturally diverse populations.

Mansfield et al. (2021) explored the relationship between the perceived availability of mental health services in schools and the feelings of stigma among students. Participants were asked about their perceptions of the availability of mental health support services within their school and their feelings about the stigma associated with seeking help for mental health issues. The study also considered demographic variables such as age and gender. The study found a significant association between the perceived presence of mental health provision in schools and reduced feelings of stigma among students. Students who believed their school had solid mental health support reported lower levels of stigma. This suggests that the availability of mental health services within schools may contribute to a more supportive environment that fosters open discussions about mental health and reduces the fear of judgment associated with seeking help.

(Musyimi et al., 2017) Studied the influence of the availability and utilization of mental health services at Kenya's primary healthcare level. The study adopted a systematic approach, utilizing qualitative and quantitative methods to gather data. The study offered a well-rounded perspective on the subject matter. The study findings indicated a limited availability of mental health services, a lack of specialized staff, inadequate training, and varying degrees of integration of mental health into primary care (Sequeira et al., 2022). The study contributed valuable insights into the factors that influence individuals' decisions to seek mental health care. The study concluded that availability significantly influenced the utilization of mental health services at Kenya's primary health care level.

Mughal et al. (2024) found a significant unmet need for addressing child and youth mental health issues in Canada. Charitable organizations like Kids Help Phone (KHP) play a vital role in bridging gaps within the system by providing 24/7 e-mental health services outside the formal healthcare system. The study highlighted the concerns raised by young people using Kids Help Phone services and explored how these issues varied across different platforms and age groups. Anxiety, stress, and depression emerged as the most frequently discussed topics across all platforms and age groups. The study found that providing 24/7 mental health services effectively addressed youth's barriers to accessing care during non-traditional hours. The study concluded that the 24/7 mental health services significantly influenced the access to care and the overall outcomes for young individuals seeking mental health support.

Willems et al. (2021) studied the effects of 24/7 Crisis Services and utilization of Mental health services. The study employed a mixed-method approach to fulfill the purpose of the study. The study found that patients with access to 24/7 crisis services were less likely to attempt suicide or be hospitalized for mental health reasons than patients who did not have access to 24/7 crisis services. The study also found that patients with access to 24/7 crisis services were more likely to receive timely and effective treatment. The study further found several factors contributing to reducing suicide and hospitalization rates among people with mental illness, such as early intervention, access to care, supportive relationships, education, and awareness.

2.5 Resource Sharing and Mental Health Services Delivery

This section delved into a series of studies on the role of resource sharing in shaping mental health service delivery: Ease of access to resources signifies convenience and

straightforwardness in obtaining necessary mental health resources. Diversity of resources denotes the variety and range of available mental health resources. Multimedia resources encompass utilizing various media or technological tools in resource sharing.

Xue et al. (2020) studied a resource-sharing platform and found that online learning disrupted traditional education methods, significantly enhancing both interest and efficiency in learning. The study analyzed the sharing features of mental health education resources and constructed a classification evaluation model based on a resource-sharing platform for online mental health learning. The results showed that online mental health learning had four key functions: guidance, diagnosis, regulation, and stimulation.

Cui et al. (2022) conducted a study on the impact of resource sharing and collaboration on children's mental health services: the impact of pooled funding. The study examined the experiences of organizations or agencies involved in children's mental health services that have adopted pooled funding mechanisms. The study found that resource sharing, collaboration, and service delivery efficiency were closely related. Additionally, the study contributed to understanding how different stakeholders, including government agencies, non-profit organizations, and community groups, can work together more effectively to support children's mental health.

In a study conducted by (Malhotra & Shah, 2018), the growth of referral and staff expertise-sharing networks was investigated in response to a significant increase in funding for services within a regional network of children's mental health organizations over two years. A quantitative network survey was conducted among directors of 22

county government-funded mental health care non-profits. The study revealed the formation of referral and employee expertise-sharing networks, with different patterns observed within each network. According to a stochastic actor-oriented network dynamics model, agencies with more referral and staff expertise-sharing partners were likely to establish and maintain new collaborations over the two years. Interestingly, agencies tended to refer to those they trust, although trust did not necessarily correlate with employee expertise-sharing. This research highlighted the development of intricate partnerships among mental health organizations, leveraging previous collaborations to coordinate services among similar providers amidst resource limitations and service expansion. These referral partnerships may facilitate the sharing of information and resources.

Anjos (2016) examined how an organization's centrality in four resource exchange networks affects resource sharing to understand how network linkages improve outpatient and mental health care coordination and efficacy. According to the research, centrality in a customer referral network predicts centrality in a general contact network. Conversely, connections and money allocation centrality indicate organizational influence. The study concluded that the organization with the most significant influence within the system may differ from the organization with the most significant role in coordinating routine contacts.

2.6 Follow-ups and Mental Health Services Delivery

This section explored diverse studies focusing on the influence of follow-up interventions in mental health service delivery: Frequency of follow-ups indicates the regularity or interval between successive mental health assessments or interventions.

Mode of follow-up refers to the method or channel used to conduct follow-up interventions, such as phone calls, face-to-face meetings, or digital platforms. Personalization entails tailoring follow-up interventions to individual needs or characteristics.

Koenen et al. (2017) studied the influence of follow-up interventions on post-traumatic stress disorder symptoms. The study systematically searched relevant databases to identify studies investigating the impact of follow-up interventions on PTSD symptoms. They applied strict inclusion and exclusion criteria to select studies that met specific quality standards. The selected studies were then subjected to a meta-analysis statistical method. The study found that follow-up interventions significantly reduced PTSD symptoms. This could include information on the average reduction in symptoms, the variability across different interventions, and potential factors that moderated the effectiveness of follow-up strategies. The study informed mental health professionals about the value of implementing follow-up interventions to treat PTSD. The study concluded that follow-up interventions significantly influenced post-traumatic stress disorder symptoms.

Kishi et al. (2023) the continuity of antidepressant treatment for adults with depression in the United States. The study utilized a large-scale observational design, relying on secondary data sources such as health insurance claims or medical records. The study involved a representative sample of adults diagnosed with depression who had received antidepressant medication prescriptions. Statistical analyses were conducted to identify trends and associations within the data, employing survival analysis or regression models to assess factors related to treatment continuity. The study found that adults

with depression who adhered to antidepressant treatment over time could manage their condition.

After FDA advice, Lu et al. (2020) examined how provider contact affected pediatric suicidality with SSRIs. The study employed a retrospective observational design, analyzing existing medical and administrative data from electronic health records or insurance claims. The study included a sample of children and adolescents who were prescribed SSRIs. The study analyzed data related to provider visits, medication prescriptions, and other healthcare interactions. The study found that the FDA advisory significantly impacted the frequency of provider-patient interactions for individuals taking SSRIs. Additionally, the study pointed out an increase in monitoring, follow-up visits, or communication between healthcare providers and patients or their families after the advisory.

Heckman et al. (2017) conducted a randomized clinical study investigating the impact of two telephone-delivered mental health therapies on rural HIV-positive individuals in the United States. The study aimed to determine if these therapies could help patients in rural areas cope with their condition. Self-administered questionnaires were given to participants before, after, and at 4- and 8-month follow-ups. The results showed that neither therapy significantly reduced depressive and psychological symptoms. However, the Information Support group participants reported receiving significantly more support from friends at the four and 8-month follow-ups. They faced fewer barriers to accessing healthcare and social services at the 4-month follow-up. This suggests that telephone-delivered information-support groups could enhance the

perception of support and improve this population's access to health and social services. However, the practical impact of intervention-related changes was limited.

2.7 Theoretical Framework

The following theories guided the study;

2.7.1 Information Systems Success Model

The Information Systems Success Model, developed by DeLone and McLean, is a comprehensive framework with six critical dimensions to assess the intricate nature of information system (IS) success (Çelik & Ayaz, 2022; Sabeh et al., 2021). These dimensions include system quality, addressing technical aspects such as reliability, accuracy, and user-friendliness; information quality, which evaluates the relevance, accuracy, and completeness of the generated information; service quality, assessing the responsiveness, helpfulness, and accessibility of the IS service; use, measuring the extent to which the IS, is utilized by its intended users; user satisfaction, gauging the degree to which users find satisfaction with the IS; and net benefits, examining the overall advantages the IS provides to the organization, such as increased productivity, improved decision-making, and reduced costs (Makalesi et al., 2021). This comprehensive model acknowledges the multifaceted nature of IS success, offering a nuanced approach for evaluation in diverse organizational contexts (Sabeh et al., 2021).

The Information Systems Success Model provides a valuable framework for analyzing the impact of a call center on the delivery of mental health services to young people, focusing on critical aspects such as crisis intervention, round-the-clock availability, resource sharing, and follow-ups (Martono et al., 2020; Mayston et al., 2020). Information quality is paramount for the call center's efficacy in crisis intervention. The

accuracy, timeliness, and relevance of information delivered to mental health professionals during crisis calls ensure that interventions are well-informed and tailored to the specific needs of the individuals seeking assistance (Sabeh et al., 2021). Additionally, system quality plays a vital role in crises, with a reliable and responsive call center system enabling swift access to critical information, thereby contributing to the overall effectiveness of crisis intervention (Hashemi et al., 2024).

Regarding round-the-clock availability, the Information Systems Success Model underscores the importance of information quality in ensuring accurate and up-to-date information is available at any time (Sabeh et al., 2021). A well-designed system supports this by consistently providing reliable information about mental health services, crisis management strategies, and relevant resources, ultimately enhancing the quality of information accessible 24/7 (Hashemi et al., 2024). Furthermore, system quality, emphasizing reliability and accessibility, is crucial for ensuring young people can access mental health services whenever needed, thereby contributing to the overall efficiency and effectiveness of service delivery.

The call center's resource-sharing success relies on information and system quality. High-quality information about available mental health resources ensures that mental health professionals can effectively guide young people to appropriate support (Mayston et al., 2020). Simultaneously, an efficient system facilitates seamless communication and resource sharing among professionals, supporting collaborative efforts and efficient resource allocation, thereby enhancing the overall effectiveness of resource sharing.

When considering follow-ups, the Information Systems Success Model emphasizes the significance of information quality in providing accurate and relevant information about follow-up procedures and available support services (Makalesi et al., 2021). A well-functioning system complements this by supporting the scheduling and tracking of follow-up activities, showcasing efficiency in managing and documenting follow-up processes, and contributing to the overall effectiveness of mental health service delivery (Hamunyela & Jere, 2018; Hashemi et al., 2024).

Therefore, the Information Systems Success Model highlights the critical role of information quality and system quality in the success of a mental health call center. These dimensions are crucial for ensuring the effectiveness and efficiency of crisis intervention, 24/7 availability, resource sharing, and follow-ups, all of which contribute to improving the delivery of mental health services to young people.

2.7.2 Lean Thinking in Healthcare

Lean Thinking in Healthcare, pioneered by James Womack and Daniel Jones in the 1990s (Akmal et al., 2020), draws inspiration from the success of Toyota's lean manufacturing system (Kovacevic et al., 2016). Their belief in the applicability of lean principles to healthcare led to the development of a methodology to enhance efficiency and quality in healthcare delivery (Akmal et al., 2020). This theory's core tenets involve identifying and eliminating waste, defined as anything not contributing value to the patient experience, such as waiting times and unnecessary procedures (Kovacevic et al., 2016). Emphasizing patient-centric care, Lean Thinking prioritizes designing and delivering healthcare services tailored to patient needs.

Continuous improvement is fundamental, with healthcare providers consistently seeking ways to eliminate waste and enhance the overall patient (Nihayatul Munaa et al., 2023). Demonstrating several benefits, including reduced costs, improved quality of care, increased patient satisfaction, and reduced staff burnout, Lean Thinking in Healthcare has been applied in practical examples like same-day appointments to reduce wait times, lean surgery techniques optimizing operating room processes, and the implementation of telehealth to offer remote care, saving both time and resources for patients and healthcare providers alike (Nihayatul Munaa et al., 2023).

Lean Thinking offers a valuable framework for enhancing healthcare processes, particularly within mental health services. Its application aims to optimize operations, improve efficiency, and ultimately elevate patient outcomes (Nihayatul Munaa et al., 2023). Identifying value focuses on understanding and delivering what matters most to the young individuals seeking assistance. This entails defining customer value, with key objectives including timely crisis intervention, 24/7 availability, resource sharing, and follow-up services (Akmal et al., 2022). To comprehensively address these goals, mapping the value stream becomes crucial, requiring an in-depth understanding of the end-to-end process from the initial call to subsequent follow-up activities.

Value stream analysis is pivotal in Lean Thinking, prompting the call center to assess its processes critically. Initiatives such as eliminating waste come to the forefront, necessitating identifying and removing any superfluous steps or redundancies that do not directly contribute to the well-being of the youth seeking help (Akmal et al., 2022). Simultaneously, standardizing processes, particularly crisis intervention protocols and

follow-up procedures, ensures consistency and minimizes variations in service delivery.

Creating flow within the call center involves optimizing communication channels and resource allocation. Streamlining communication is imperative to maintain smooth and efficient interactions among call center staff, mental health professionals, and other stakeholders, thereby preventing delays and misunderstandings (Akmal et al., 2022). Concurrently, Lean principles optimize resource allocation, ensuring mental health professionals are available when needed and resources appropriately shared among different cases. Establishing pull in a mental health call center involves developing a system where services respond dynamically to the demand. This approach ensures that resources are allocated based on the real-time needs of young people rather than adhering to a predetermined schedule (Mazur et al., 2019).

Pursuing perfection in Lean Thinking is synonymous with a commitment to continuous improvement. Encouraging a culture of ongoing refinement within the call center involves regularly reviewing processes based on feedback, outcomes, and evolving requirements within the mental health landscape (Akmal et al., 2020, 2022). Data-driven decision-making becomes integral to this process, leveraging analytics to identify patterns, measure intervention effectiveness, and inform resource allocation and process improvements (Mazur et al., 2019).

Enhancing Flexibility within the call center entails designing processes that can adapt to diverse mental health cases. This may involve comprehensive staff training, equipping them to handle various situations, and ensuring the call center addresses various needs. Empowering staff is a cornerstone of Lean Thinking, emphasizing the

importance of training and involving call center staff in the improvement process (Bektas & Kiper, 2022). Empowered and engaged staff are more likely to contribute innovative solutions and improvements to the system, fostering a culture of continuous enhancement (Bektas & Kiper, 2022).

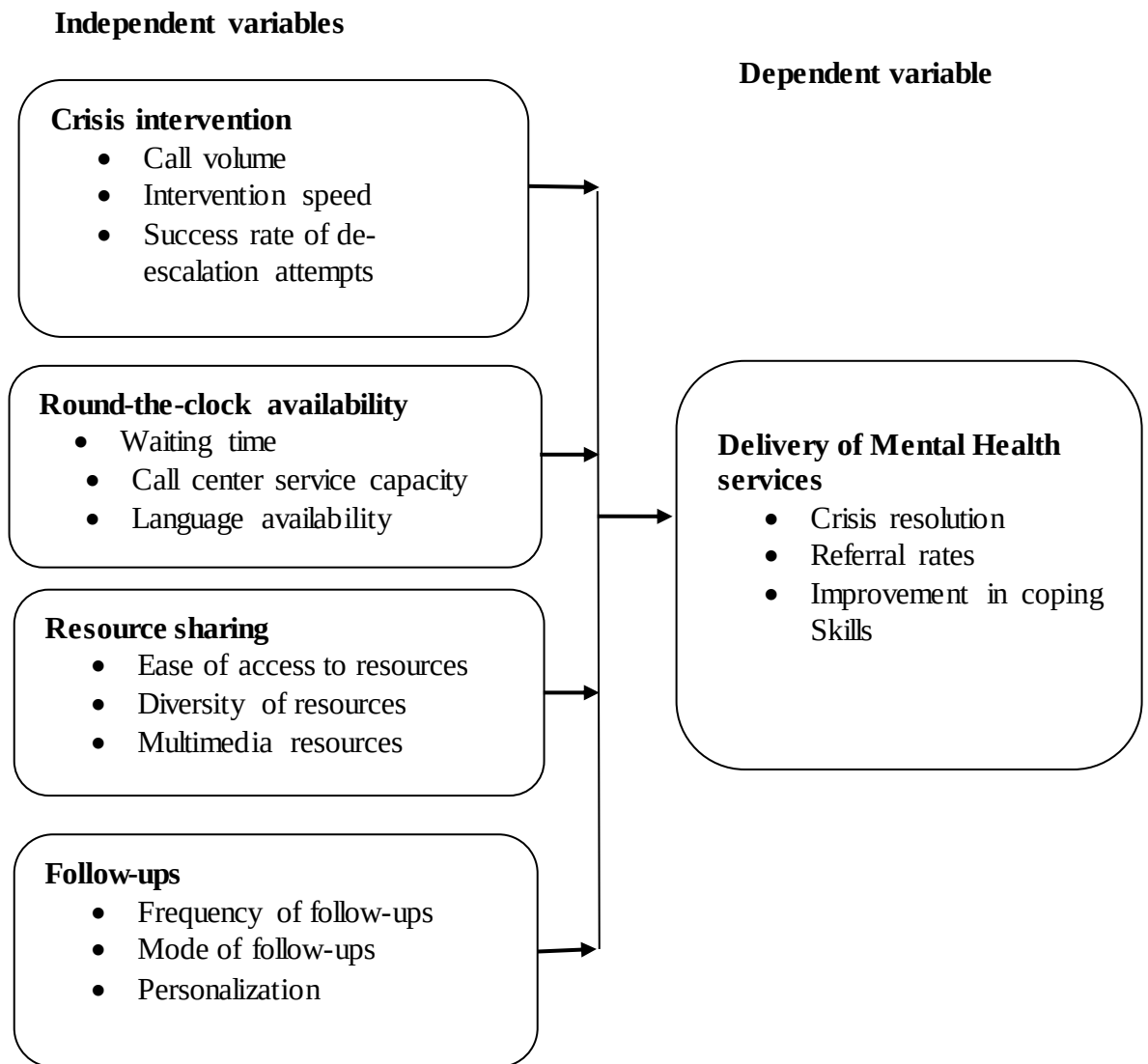
The overarching goal of applying Lean Thinking to a mental health call center is to optimize outcomes for young people. By emphasizing efficiency and effectiveness, the focus is on delivering value through tailored crisis intervention, 24/7 availability, resource sharing, and follow-ups specifically designed to meet the unique needs of this demographic.

2.8 Conceptual Framework

The relationships of study variables are demonstrated using the framework (Mugenda & Mugenda, 2009). The graphic shows that independent variables affect dependent factors. Figure 2.1 shows the independent-dependent connection in the investigation;

Figure 2.1

Conceptual Framework



In the conceptual framework, the independent variables and dependent variables will be measured as follows:

- a. Crisis intervention (independent variable)
 - i. Call volume as the total number of calls received within a specific period
 - ii. Intervention speed is the average time from the call receipt to intervention initiation.

- iii. Success rate of de-escalation as the percentage of cases where initial de-escalation efforts successfully resolved the crisis without further intervention.
- b. Round-the-clock availability (independent variable)
 - i. Waiting time is the average time a caller waits before speaking to a counselor at the call center.
 - ii. Call center service capacity is the total number of calls the center can handle simultaneously or over a period.
 - iii. Language availability is the number of languages available for service.
- c. Resource sharing (independent variable)
 - i. Ease of access to resources refers to the simplicity with which call center staff and callers can access mental health resources.
 - ii. Diversity of resources includes the range and type of resources available.
 - iii. Multi-media resources entail the availability and utilization of various multimedia resources.
- d. Follow-ups (independent variable)
 - i. Frequency of follow-up is the number of contacts made with callers within a specified timeframe.
 - ii. The mode of follow-up is used for follow-up, e.g., phone calls and text messages.
 - iii. Personalization is the degree to which follow-up interactions are tailored to individual needs.
- e. Delivery of mental health services (dependent variable)

- i. Crisis resolution as the percentage of cases where the crisis is resolved satisfactorily by call center
- ii. Referral rates is the proportion of callers referred to additional mental health services or professionals
- iii. Improvement in coping skills is the changes in callers' reported ability to manage stress or crises.

2.9 Research Gap

The study targeted to fill the following gaps: Call centers offer a convenient way for young people to access mental health support; there exists a research gap in evaluating the effectiveness of these interventions. Exploring the outcomes of mental health services provided through a call center, such as changes in mental health symptoms, well-being, and overall satisfaction, can provide insights into the influence of such interventions. Further, the study investigated whether call center services are equally accessible to all segments of the young population in Nairobi County. There might be disparities based on socio-economic status, gender, education level, and urban vs. rural residence. Ensuring the quality of care provided by call centers is essential for the well-being of young people seeking help. The study evaluated whether the effects of the support provided through the call center persist over time or if there is a need for additional follow-up or ongoing care. The study highlighted potential technology-related barriers like internet access, smartphone ownership, etc. Some young people might be excluded from using call center services due to limitations in technology access.

2.10 Summary of Literature Review

This chapter covered past studies regarding the objectives of call centers' influence on delivering mental health services to young people. It included the Information Systems Success Model and Lean Thinking in Healthcare as theoretical frameworks. The section presents the conceptual framework, research gaps, and the chapter summary.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter entails the process and procedures followed to fulfill the purpose of this study. It explicitly covers the study's design, population, location, data collection tools, and data analysis methods.

3.2 Research Design

The study was cross-sectional and used quantitative data collection to determine how the call center affects the delivery of mental health services to Nairobi County youth. Using a questionnaire, the design aims to describe particular features standard in target population organizations, elements, individuals, and objects (Chawla & Sondhi, 2014). (Chawla & Sondhi, 2014) state that descriptive cross-sectional research identifies the 'what,' 'where,' and 'how' of an occurrence, phenomenon, situation, or relationship. According to (Mugenda & Mugenda, 2009), a researcher utilizes descriptive cross-sectional research design to gather information on the existing phenomena state and define variables or circumstances in a setting.

3.3 Target Population

Z. Ibrahim and Marcaccio (2023) defined population as the total number of subjects (persons, objects, or otherwise) utilized to support an extensive and thorough research study. It constitutes all elements bearing observable characteristics that interest a study. The target population for this study was mental healthcare providers under the one2one Call Center program. There were 237 personnel supporting digital health at the center and community. Founded in 2002, LVCT Health is a well-established NGO in Kenya commonly known for carrying out large-scale health initiatives there and beyond the

borders. The organizations work alongside Nairobi County and other stakeholders at the county level in providing mental health services to vulnerable youths in Nairobi (Ligami, 2023).

3.4 Sampling Procedure

Mweshi and Sakyi (2020) describe sampling as choosing a group of objects to investigate to reflect the complete population. The researcher applied simple random sampling to select the study's respondents from a population of 237 employees at one2one Call Center. Yamane's (1967) equation was used to determine the sample size for the population.

The Yamane formula is:

$$n = N / (1 + Ne^2)$$

where: n = Sample size N = Population size e = Margin of error (expressed as a proportion, typically a decimal)

With a 5% margin of error (e = 0.05)

Therefore:

$$n = 237 / (1 + 446 (0.05)^2)$$

$$n = 237 / (1 + 446 (0.0025))$$

$$n = 237 / (1 + 1.115)$$

$$n = 112.056$$

Rounding off to 112. To account for non-response, 10% of respondents were added to the sample size 112 to make the actual sample size 122. Hence, the sample size required

for this study with a population of 237 and a 5% margin of error with 10% non-response - respondents was 122. The researcher used a random number generator using Microsoft Excel 2013. The personnel whose numbers matched the randomly generated 122 were selected to participate in the study.

3.5 Instrumentation

The researcher used questionnaires to collect quantitative and qualitative data to fulfill this study's purpose. The questionnaire contained closed questions. It contained five sections, Part A to Part E, where Part A covered the respondents' demographics to confirm their eligibility to participate in the study. Parts B to E contained items on the study variables. A 5-point Likert scale was used to quantify the level of agreement on the various statements under each study variable.

3.5.1 Pre-test

According to Perneger et al. (2015), a default sample size of 30 participants is recommended. In Mombasa City County, the pre-test with call centers serving the region utilized responses to identify and fix inconsistencies and flaws to improve the main study's data. Mombasa City County was chosen as it exhibits demographic characteristics similar to those of Nairobi City County, especially among young people and mental health issues.

3.5.2 Validity of Research Instruments

Validity determines if the research calculates what it is meant to measure or whether the findings are accurate, according to (Vincent et al., 2019). The study considered face and content validity to promote presentability and ensure the tools capture the intended

data. Supervisors reviewed the study tools for accuracy and sufficiency. Their recommendations and explanations enhanced coverage or sample of the examined information.

3.5.3 Reliability of Research Instruments

(Mugenda & Mugenda, 2009) stated that dependability demonstrates the quality of a research instrument when a study tool generates comparable outcomes across several trials. The findings from the pre-test conducted in Mombasa provided insights that informed the main study in Nairobi. With a Cronbach's Alpha value of 0.7 obtained during the pre-test, the instrument demonstrated an acceptable level of internal consistency, indicating that the items effectively measured intended constructs.

3.6 Methods of Data Collection

Before beginning the data-gathering process, the researcher got permission from the appropriate authorities or government agencies. A one-day sensitization session was conducted for three research assistants to ensure they were well-prepared for the study. During the session, the research assistants were introduced to the study's objective, procedures, and specific roles and responsibilities. The researcher shared the questionnaires with the participants throughout the data-collecting activity. Along with the questionnaire, the researcher gave the participants a short explanation of the study's goal. This explanation was concise, to the point, and written in simple English. A questionnaire took around 15-20 minutes to complete. To give enough time for data collection, the activity took two weeks.

3.7 Operational Definition of Variables

The operationalization process facilitates the transformation of an abstract notion into a quantifiable and observable phenomenon. Table 3.1 presents the measurement approach for several variable indicators used in the investigation.

Table 3.1

Operationalization of Variables

Variable	Category	Indicator	Scale
Crisis Intervention	Independent	• Call volume • Intervention speed • Success rate of de-escalation attempts	Ratio scale
Round-the-Clock Availability	Independent	• Waiting time • Call center service capacity • Language availability	Ratio scale
Resource Sharing	Independent	• Ease of access to resources • Diversity of resources • Multimedia resources	Ratio scale
Follow-Ups	Independent	• Frequency of follow-ups • Mode of follow-ups • Personalization	Ratio scale
Delivery of Mental Health Services	Dependent	• Crisis resolution • Referral rates • Improvement in coping skills	Ratio scale

3.8 Methods of Data Analysis

The raw data collected in the field was coded and analyzed using the SPSS version 25.0. Descriptive statistics such as median, mode, percentages, and frequencies were conducted. Logistic regression and Spearman's rank correlation analysis were conducted to evaluate the correlations between the research variables. Notably, the

multivariate Kernel regression model (Vinod, 2022) shown below was utilized to model the relationship between the dependent and independent variables.

$$\hat{Y} = \frac{\sum_{i=1}^n K_h(\mathbf{X}_i - \mathbf{X}) \cdot Y_i}{\sum_{i=1}^n K_h(\mathbf{X}_i - \mathbf{X})}$$

$\hat{Y}$ is the estimated delivery of mental health services

K_h = is the multivariate kernel function that determines the weight given to each observation.

$\mathbf{X}_i$ = is the vector of independent variables for the i -th observation (i.e., $\mathbf{X}_i = (X_{i1} \text{ crisis intervention, } X_{i2} \text{ round-the-clock availability, } X_{i3} \text{ resource sharing, } X_{i4} \text{ follow-ups})$

Y_i is the observed value of the delivery of mental health services for the i -th observation.

h is the bandwidth parameter, which controls the width of the kernel function.

3.9 Ethical Considerations

The Kenya Methodist University Ethical Committee permitted the researcher to conduct this study. The National Commission for Science and Technology Innovation (NACOSTI) permitted the researcher to collect the data required for this investigation. The investigator ensured that the use of data obtained for scholarly intent was clearly defined. Respondents were assured that the information they supplied was kept strictly confidential. All information submitted by responders was kept safe, and the principles of anonymity were observed.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter discusses the findings after analyzing the call center's effect on the delivery of mental health services among young people in Nairobi County. Using the SPSS 25.0 program, descriptive and inferential statistics analyses were conducted. The study's findings are presented through charts, tables, and discussions. The chapter is arranged in sections covering the response rate, the respondents' general information, descriptive analysis, correlation, and regression analysis that were performed.

4.2 Pre-test Results

In Mombasa City County, the pre-test with call centers serving the county was used to test the tool's validity and reliability. The study used Cronbach's Alpha to measure the tool's internal consistency. Responses were utilized to identify and fix inconsistencies and flaws, improving the main study's data.

Table 4.1

Reliability Result

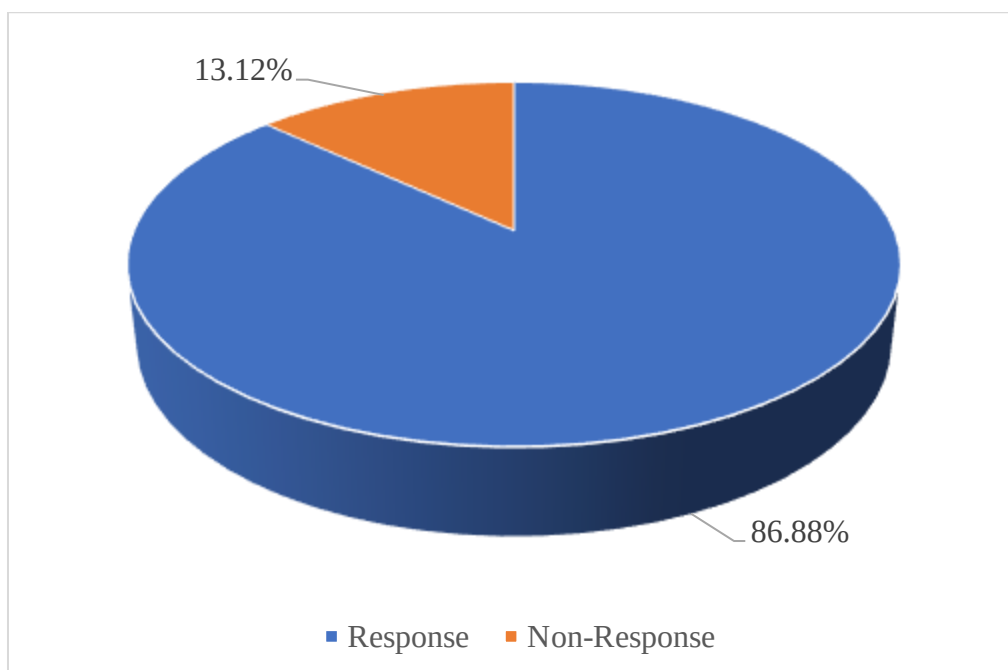
	Cronbach's	N of	
	Alpha	items	Conclusion
Delivery of mental health			
services	0.826	12	Scale Reliable
Crisis intervention	0.944	8	Scale Reliable
Round-the-clock availability	0.953	9	Scale Reliable
Resource sharing	0.864	9	Scale Reliable
Follow-ups	0.978	9	Scale Reliable
Overall	0.913		Instrument reliable

4.3 Response Rate

Of the 122 questionnaires distributed to the respondents, 106 were filled out and returned, equating to an 86.88% response rate. According to Mugenda & Mugenda (2009), a response rate of 70% and above is the ideal sample size for research as it provides enhanced results for drawing conclusions and recommendations.

Figure 4.1

Response Rate



4.4 Demographic Information

The study collected the respondents' demographic information, including age, gender, educational qualifications, and the time they worked at the call center. Subsequent sub-sections illustrate these results.

4.4.1 Gender of the Respondents

The research participants were requested to specify their gender. Table 4.3 indicates the results of the responses that the respondents gave.

Table 4.2

Gender of Respondents

	Frequency	Percent	Cumulative Percent
Male	40	47.2	47.2
Female	56	52.8	100
Total	106	100	

Table 4.3 illustrates that 47.2% of the participants were males, while 52.8% were female.

4.4.2 Age of the Respondents

The research participants were requested to indicate their age groups, as illustrated in Table 4.4

Table 4.2

Age of the Respondents

	Frequency	Percent	Cumulative Percent
25 years and below	46	43.4	43.4
26 -35 years	53	50	93.4
36-45 years	7	6.6	100
Total	106	100	

The results in Table 4.4 indicate that the proportion of the respondents, equating to 50% of the members, were in the age group ranging from 26 to 35 years. The second largest group consisted of respondents aged 25 years and below, at a percentage of 43.4%. The least represented age group comprised 6.6% of the respondents, ages 36 to 45. This age group's representation implies that data and conclusions drawn reflect the perspectives and experiences of young people.

4.4.3 Academic Qualifications of the Respondents

Table 4.5 illustrates the results of the participants when they were requested to list their highest academic qualifications.

Table 4.3

Academic Qualification of the Respondents

	Frequency	Percent	Cumulative Percent
Certificate	8	7.5	7.5
Diploma	23	21.7	29.2
Graduate/Degree	66	62.3	91.5
Postgraduate	9	8.5	100
Total	106	100	

As shown in Table 4.5, the study's respondents with an undergraduate degree qualification made up the highest proportion at 62.3%. At a distant second were diploma holders, who comprised 21.7%, while postgraduate level respondents were third at 8.5%. The least represented group also had the most minor academic qualifications at a certificate level and comprised 7.4% of the respondents. The results

show that all the respondents had attained a tertiary education qualification. Therefore, the researcher could rightly conclude that the respondents could read and comprehend all the questionnaire details and correctly fill out the required information.

4.4.4 Working Length of the Respondents

The participants were requested to indicate the period they were employed/ volunteered in the organization. The findings of their responses are shown in Table 4.6

Table 4.4

Working Length of the Respondents

	Frequency	Percent	Cumulative Percent
1-5 years	79	74.5	74.5
6-10 years	11	10.4	84.9
Less than 1 year	13	12.3	97.2
Over 10 years	3	2.8	100
Total	106	100	

Most respondents shared that they had supported the call center for 1-5 years at a percentage of 74.5%. Another 12.3% of the respondents indicated that they had been employed for less than one year, 10.4% indicated between 6 to 10 years, and only 2.8% of the participants had been in employment for at least ten years. These responses demonstrate that most respondents were employed for an extended period in the county to understand the performance and operations of the call center.

Descriptive Analysis

The researcher performed descriptive analysis, as presented in the following sub-sections. These sections present the results in median and mode, discuss the findings,

and link them to previous studies. The subsequent sections are arranged according to the study objectives.

4.5 Crisis Intervention on Delivery of Mental Health Services

The first study objective was to assess crisis intervention's influence on mental health services delivery for young people in Nairobi County. Participants were asked to describe how crisis intervention affected the provision of mental health services. The 5-point Likert scale was applied to rate the responses as illustrated: SD-strongly disagree (1), D-disagree (2), N-neutral (3), Agree (4), and SA-strongly agree (5). The compiled findings are demonstrated in Table 4.7.

Table 4.5

Crisis Intervention on Delivery of Mental Health Services

Statements	n	SD-strongly disagree (1)	D-disagree (2)	N-neutral (3)	Agree (4)	SA-strongly agree (5)	Median	Mode
Call volume to handle is large.	106	2 (2%)	3 (3%)	32 (30%)	52 (49%)	17 (16%)	4	4
The frequency of cases has reduced	106	4 (4%)	7 (7%)	26 (25%)	48 (45%)	21 (20%)	4	4
Response time is short for the intervention.	106	5 (5%)	7 (7%)	19 (16%)	45 (42%)	30 (28%)	4	4
The engagement rate is high.	106	3 (3%)	4 (4%)	20 (19%)	39 (37%)	40 (38%)	4	5
De-escalation is effective for all help seekers.	106	1 (1%)	9 (8%)	24 (23%)	47 (44%)	25 (24%)	4	4
User satisfaction is high.	106	1 (1%)	2 (2%)	14 (20%)	59 (47%)	30 (30%)	4	4
The proportion of young people referred to ongoing mental health services is high.	106	1 (1%)	2 (2%)	21 (20%)	50 (47%)	32 (30%)	4	4
Training and preparedness of crisis intervention staff is available.	106	2 (2%)	3 (3%)	22 (21%)	59 (56%)	20 (19%)	4	4

The study results for objective one indicated an agreement among respondents on the effectiveness of the crisis intervention. The majority agree (median =4, mode=4) that call volume is high (median =4, mode=4), the frequency of cases has reduced (median =4, mode=4), and response times are satisfactory (median =4, mode=4). De-escalation strategies were effective (median =4, mode=4), and user satisfaction was generally positive (median =4, mode=4). There was a high proportion of young people being referred to ongoing mental health services (median =4, mode=4), and the training and preparedness of crisis intervention staff were well-regarded (median =4, mode=4). Notably, the engagement rate stood out, with many respondents strongly agreeing (median =4, mode=5) that it was high, highlighting the success of the intervention in maintaining user involvement. This implies that as a result of crisis intervention in the provision of mental care in Nairobi County, user satisfaction is high, the proportion of youthful persons referred to ongoing mental health services is high, the engagement rate is high, training and preparedness of crisis intervention staff are available and that response time is short for the intervention.

The high user satisfaction, the large number of youths referred to ongoing mental health services, the high engagement rates, and the well-prepared crisis intervention staff all point to the effectiveness of the intervention. The short response time also contributes to the efficiency of service delivery. These findings are consistent with research by (Boness et al, 2021), which found that crisis intervention hotlines significantly reduced distress in callers, with a notable portion reporting improved emotional well-being. These findings, similar to those from the Nairobi study, demonstrate high user satisfaction and an increased likelihood of engaging in follow-up mental health

services, thereby stressing the positive influence of crisis intervention on mental health service delivery.

4.6 Round-the-clock Availability on Delivery of Mental Health Services

The second objective of the research aimed to evaluate the influence of round-the-clock availability on mental health service delivery among young persons in Nairobi. The participants were requested to state the degree to which 24-hour availability contributes to providing mental well-being among young people in Nairobi. The 5-point Likert scale was applied to rate the responses as illustrated: SD-strongly disagree (1), D-disagree (2), N-neutral (3), Agree (4), and SA-strongly agree (5). The compiled findings are demonstrated in Table 4.8.

Table 4.6

Round-the-clock Availability on Delivery of Mental Health Services

Statements	n	SD- strongly disagree (1),	D- disagree (2)	N- neutral (3)	Agree (4)	SA- strongly agree (5)	Media n	Mode
Waiting time is short.	106	2 (2%)	3 (3%)	22 (21%)	59 (56%)	20 (19%)	4	4
Protocols for urgent cases are available.	106	3 (3%)	2 (2%)	14 (13%)	47 (44%)	40 (38%)	4	4
The Center offers scheduled appointments.	106	1 (1%)	3 (3%)	18 (17%)	46 (43%)	38 (36%)	4	4
Services are available 24/7, every day.	106	11 (10%)	20 (19%)	16 (15%)	32 (30%)	27 (25%)	4	4
Multiple communication channels, such as phone, text, and web chat, are available.	106	1 (1%)	0 (0%)	11 (10%)	35 (33%)	59 (56%)	5	5
The number of mental health professionals available is sufficient.	106	2 (2%)	8 (8%)	25 (24%)	42 (40%)	29 (27%)	4	4
The call center can handle many cases at once	106	1 (1%)	5 (5%)	26 (25%)	38 (36%)	36 (34%)	4	4
Service is accessible to young people in different areas of Nairobi.	106	1 (1%)	1 (1%)	11 (10%)	41(39%) ()	52 (49%)	4	5

Statements	n	SD- strongly disagree (1),	D- disagree (2)	N- neutra l (3)	Agree (4)	SA- strongl y agree (5)	Media n	Mode
Service is available in multiple languages to cater to diverse populations.	106	2 (2%)	2 (2%)	21 (20%)	41 (39%)	40 (38%)	4	4

The study results for objective two demonstrated agreement across several aspects of service availability and accessibility. Respondents generally agreed that waiting times were short (median =4, mode=4), urgent case protocols were in place (median =4, mode=4), and scheduled appointments were offered with services available 24/7 (median =4, mode=4). The availability of multiple communication channels such as phone, text, and web chat received particularly strong agreement (median =5, mode=5). The adequacy of mental health professionals (median =4, mode=4) and another center's capacity to handle multiple cases also garnered agreement (median =4, mode=4). Service accessibility to young people in various areas of Nairobi had a strong agreement (mode=5), and availability in multiple languages had respondents agreed-upon scores (median =4, mode=4).

Results showed that 24-hour availability on the provision of psychological well-being among young people in Nairobi County, multiple communication channels, such as phone, text, and web chat, were available, service was accessible to young people in different areas of Nairobi, protocols for urgent cases were available, the center offers scheduled appointments, service was available in multiple languages to cater to diverse populations and that the call center handled many cases at once.

In line with the study findings, Bhattacharya et al. (2023) found a significant association between the perceived presence of mental health provision in schools and reduced

feelings of stigma among students. Students who believed their school had solid mental health support reported lower levels of stigma (Ma et al., 2023). This suggests that the availability of mental health care within schools may contribute to a more supportive atmosphere that fosters open communication about mental health and reduces the fear of judgment associated with seeking help (Kabia et al., 2019).

4.7 Resource Sharing on Delivery of Mental Health Services

The study's third objective was to investigate how resource sharing affected young people in Nairobi County's access to mental health services. The respondents were asked to rate the degree to which sharing of resources aids in the provision of mental health for young people within Nairobi. The 5-point Likert scale was applied to rate the responses as illustrated: SD-strongly disagree (1), D-disagree (2), N-neutral (3), Agree (4), and SA-strongly agree (5). The compiled findings are demonstrated in Table 4.9.

Table 4.7

Resource Sharing on Delivery of Mental Health Services

Statements	n	SD-strongly disagree (1),	D-disagree (2)	N-neutral (3)	Agree (4)	SA-strongly agree (5)	Median	Mode
Resources are easily accessible.	106	3 (3%)	0 (0%)	21 (20%)	55 (52%)	27 (25%)	4	4
Resources at the disposal of the center are diversified.	106	0 (0%)	4 (4%)	26 (25%)	50 (47%)	26 (25%)	4	4
Multimedia resource sharing exists.	106	1 (1%)	1 (1%)	19 (18%)	51 (48%)	34 (32%)	4	4
Shared staffing arrangements and joint training programs exist.	106	3 (3%)	7 (7%)	22 (21%)	46 (43%)	28 (26%)	4	4

Statements	n	SD- strongly disagree (1),	D- disagree (2)	N- neutral (3)	Agree (4)	SA- strongly agree (5)	Median	Mode
The cross-training level provided to mental health professionals is high.	106	0 (0%)	9 (8%)	22 (21%)	51 (48%)	24 (23%)	4	4
Joint programs and initiatives are present in the center.	106	0 (0%)	7 (7%)	25 (25%)	53 (50%)	21 (20%)	4	4
Resource allocation and distribution are fair.	106	2 (2%)	5 (5%)	26 (25%)	48 (45%)	25 (24%)	4	4
Telehealth and technology are shared with partners.	106	1 (1%)	4 (4%)	26 (25%)	44 (42%)	31 (29%)	4	4
Shared data and information systems are available.	106	2 (2%)	5 (5%)	22 (21%)	48 (45%)	29 (27%)	4	4

The objective three study results indicated that respondents agreed that resources were easily accessible (median =4, mode =4) and diversified (median =4, mode =4) and that multimedia resource sharing was in place (median =4, mode =4). Shared staffing arrangements, joint training programs (median =4, mode=4), and cross-training for mental health professionals were positive (median =4, mode=4). Joint programs and initiatives were present (median =4, mode=4), resource allocation was considered fair (median =4, mode=4), and telehealth technology was shared with partners (median =4, mode=4). Shared data and information systems were available (median =4, mode=4), indicating collaboration and resource management within the center.

The study results indicated that resource sharing existed, resources were easily accessible, and the center's resources were diversified. Shared data and information systems were available, telehealth and technology were shared with partners, the cross-

training level provided to mental health professionals was high, and joint programs and initiatives were present in the center.

In tandem with the study findings, Cui et al. (2022) established that the collaborations facilitated sharing resources, including expertise, funding, and personnel, to implement the Chronic Care Model. Cui et al. (2022) found that resource sharing, collaboration, and service delivery efficiency were closely related.

4.8 Follow-Ups on Delivery of Mental Health Services

The study's final objective sought to examine the influence of follow-ups on providing mental care among young persons in Nairobi. The respondents were asked to rate the degree to which follow-ups influence the provision of services for young people. The 5-point Likert scale was applied to rate the responses as illustrated: SD-strongly disagree (1), D-disagree (2), N-neutral (3), Agree (4), and SA-strongly agree (5). The compiled findings are demonstrated in Table 4.10

Table 4.8

Follow-Ups on Delivery of Mental Health Services

Statements	n	SD- strongly disagree (1),	D- disagree (2)	N- neutral (3)	Agree (4)	SA- strongly agree (5)	Median	Mode
The frequency of follow-ups is high.	106	2 (2%)	7 (7%)	14 (13%)	60 (57%)	23 (22%)	4	4
There are diversified modes of follow-ups.	106	1 (1%)	4 (4%)	16 (15%)	32 (30%)	53 (50%)	4	5
The proportion of young people who actively engage in follow-up appointments is high.	106	0 (0%)	7 (7%)	26 (25%)	48 (45%)	25 (24%)	4	4
Mental health symptoms and well-being are promoted during follow-ups.	106	1 (1%)	4 (4%)	13 (12%)	46 (43%)	42 (40%)	4	4

Statements	n	SD- strongly disagree (1),	D- disagree (2)	N- neutral (3)	Agree (4)	SA- strongly agree (5)	Median	Mode
Seekers give positive feedback during follow-ups.	106	1 (1%)	2 (2%)	27 (25%)	41 (39%)	35 (33%)	4	4
Follow-ups enhance treatment adherence.	106	2 (2%)	3 (3%)	20 (19%)	46 (43%)	35 (33%)	4	4
Personalized/customized follow-up is done for acute cases.	106	1 (1%)	2 (2%)	25 (24%)	32 (30%)	46 (43%)	4	5
Follow-ups ensure continuity of care.	106	0 (0%)	2 (2%)	16 (15%)	50 (47%)	38 (36%)	4	4
Follow-ups enhance long-term outcomes.	106	1 (1%)	3 (3%)	9 (8%)	46 (43%)	45 (42%)	4	4

According to the study's results, there was a general agreement regarding the effectiveness of follow-ups in the center intervention. Most respondents agreed that the frequency of follow-up was high (median =4, mode=4), various modes of follow-up existed (median =4, mode=4), and the proportion of young people engaging in them was notable (median =4, mode=4). Personalized follow-up for acute cases and diversifying follow-up modes received a particularly strong agreement (mode=5). Follow-ups were seen to promote mental health (median =4, mode=4), garnered positive feedback, enhanced treatment adherence, ensured continuity of care, and improved long-term outcomes, as reflected by consistent median and mode scores of 4 across these areas.

The findings indicate that follow-up interventions are critical in promoting long-term mental health outcomes. They reduce symptoms, improve overall well-being, ensure continuity of care, and diversify follow-up methods. Talarico (2021) found that follow-up interventions significantly reduced mental health symptoms. This could include information on the average reduction in symptoms, the variability across different

interventions, and potential factors that moderated the effectiveness of follow-up strategies. The study informed mental health professionals about the value of implementing follow-up interventions to treat mental health.

4.9 Delivery of Mental Health Services

Using a 5-point Likert scale where: SD-strongly disagree (1), D-disagree (2), N-neutral (3), Agree (4), and SA-strongly agree (5), participants were required to select the level to which they agreed to the different statements related to the Delivery of Mental Health Services. Table 4.11 below illustrates the research findings.

Table 4.9

Delivery of Mental Health Services

Statements	n	SD- strongl y disagre e (1),	D- disagre e (2)	N- neutra l (3)	Agre e (4)	SA- strongl y agree (5)	Media n	Mod e
Crisis resolution rates have increased.	106	1(1%)	4 (4%)	24 (23%)	62 (58%)	15 (14%)	4	4
Referral rates have increased.	106	1 (1%)	2 (2%)	21 (20%)	37 (35%)	45 (42%)	4	5
Service utilization rates have increased.	106	1 (1%)	1 (1%)	18 (17%)	51 (48%)	35 (33%)	4	4
Wait time for services has significantly reduced.	106	1 (1%)	1 (1%)	22 (21%)	60 (57%)	22 (21%)	4	4
Treatment completion rates have increased.	106	1 (1%)	2 (2%)	24 (23%)	53 (50%)	26 (25%)	4	4
Patient satisfaction and experience have been enhanced.	106	1 (1%)	1 (1%)	24 (23%)	51 (48%)	29 (27%)	4	4
Follow-up is promoted.	106	1 (1%)	3 (3%)	21 (20%)	28 (26%)	53 (50%)	5	5
The timeliness of the intervention is boosted.	106	1 (1%)	2 (2%)	21 (20%)	54 (51%)	28 (26%)	4	4

Statements	n	SD- strongly disagree (1),	D- disagree (2)	N- neutral (3)	Agree (4)	SA- strongly agree (5)	Median	Mode
Accessibility of mental health services is enhanced.	106	1 (1%)	0 (0%)	22 (21%)	51 (48%)	32 (30%)	4	4
The number of individuals using mental health services has increased.	106	1 (1%)	0 (0%)	16 (15%)	32 (30%)	57 (54%)	4	5
Patient satisfaction is enhanced.	106	1 (1%)	1 (1%)	20 (19%)	48 (45%)	36 (34%)	4	4
The flow of information is promoted.	106	1 (1%)	3 (3%)	20 (19%)	49 (46%)	33 (31%)	4	4

According to the study's results, there was agreement that crisis resolution rates (median =4, mode =4), service utilization (median =4, mode = 4), wait-for-time reduction (median =4, mode = 4), treatment completion rates (median =4, mode=4, patient satisfaction (median =4, mode=4) and timelines interventions had improved (median =4, mode=4). The areas that stood out with the higher agreement, reflected by mode scores of 5, included referral rates, follow-up promotion, and the increase in individuals using mental health services. This implied that call center referral rates had increased, patient satisfaction had improved, service utilization rates had increased, the flow of information had been promoted, the number of individuals receiving mental health care had surged, follow-up had been promoted, patient satisfaction and experience was enhanced, and accessibility of mental health services was enhanced.

4.10 Correlation Analysis

Correlation analysis was conducted to examine the call center's influence on the provision of mental health services among young people in Nairobi County.

			Crisis - intervention	Roundclock	Resource shairing	Follow up	Delivery of mental health services
Spearman's rho	Crisis - intervention	Correlation Coefficient	1.000	.424**	.354**	.292**	.439**
		Sig. (2- tailed)		.000	.000	.002	.000
		N	106	106	106	106	106
	Roundclock	Correlation Coefficient	.424**	1.000	.336**	.389**	.384**
		Sig. (2- tailed)	.000		.000	.000	.000
		N	106	106	106	106	106
	Resource shairing	Correlation Coefficient	.354**	.336**	1.000	.470**	.198*
		Sig. (2- tailed)	.000	.000		.000	.042
		N	106	106	106	106	106
	Follow up	Correlation Coefficient	.292**	.389**	.470**	1.000	.348**
		Sig. (2- tailed)	.002	.000	.000		.000
		N	106	106	106	106	106
	Delivery of mental health services	Correlation Coefficient	.439**	.384**	.198*	.348**	1.000
		Sig. (2- tailed)	.000	.000	.042	.000	
		N	106	106	106	106	106

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 4.10

Correlation Analysis

			Crisis - intervention	Round clock	Resource sharing	Follow up	Delivery of mental health services
Spearman's rho	Crisis - intervention	Correlation Coefficient	1.000	.424**	.354**	.292**	.439**
		Sig. (2- tailed)		.000	.000	.002	.000
		N	106	106	106	106	106
	Round clock	Correlation Coefficient	.424**	1.000	.336**	.389**	.384**
		Sig. (2- tailed)	.000		.000	.000	.000
		N	106	106	106	106	106
	Resource sharing	Correlation Coefficient	.354**	.336**	1.000	.470**	.198*
		Sig. (2- tailed)	.000	.000		.000	.042
		N	106	106	106	106	106
	Follow up	Correlation Coefficient	.292**	.389**	.470**	1.000	.348**

		Crisis - intervention	Round clock	Resource sharing	Follow up	Delivery of mental health services
	Sig. (2-tailed)	.002	.000	.000		.000
	N	106	106	106	106	106
Delivery of mental health services	Correlation Coefficient	.439**	.384**	.198*	.348**	1.000
	Sig. (2-tailed)	.000	.000	.042	.000	
	N	106	106	106	106	106

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

In the study, a Spearman's rho correlation analysis was conducted to examine the relationships between several variables influencing the delivery of mental health services, including crisis intervention, round-the-clock availability, resource sharing, and follow-up. The results revealed significant positive correlations between most variables. Crisis intervention was significantly correlated with round-the-clock availability ($\rho = .424, p < .001$), resource sharing ($\rho = .354, p < .001$), follow-up ($\rho = .292, p = .002$), and delivery of mental health services ($\rho = .439, p < .001$). This indicates that as the effectiveness of crisis intervention increases, so do these other variables or factors.

Round-the-clock availability was significantly and positively correlated with resource sharing ($\rho = .336, P < .001$), follow-up ($\rho = .389, p < .001$), and delivery of mental health services ($\rho = .384, p < .001$). This showed that the round-the-clock availability was related to better resource sharing, follow-up practices, and service delivery.

Resource sharing was significantly correlated with follow-up ($\rho = .470, p < .001$) and delivery of mental health services ($\rho = .198, p = .042$), indicating that resource sharing plays an important role. Follow-up had a significant positive correlation with the

delivery of mental health services ($\rho = .348, P < .001$), suggesting that regular follow-ups are linked with improved service delivery.

A study by Hoffberg et al. (2020) supports these findings and found that well-coordinated crisis interventions significantly boost the efficiency of mental health service delivery. This further validates the strong positive relationship between crisis intervention and improved mental health outcomes for young people. These results underscore the need for sustained investment in crisis intervention services to maintain and expand their positive influence on youth mental health (Semenova, 2022).

The study contributed to understanding how different stakeholders comprising community groups, non-profit organizations, and government agencies can work together more effectively to support children's mental health. Truter (2023) concluded that the institution with the most significant power within the system may differ from the organization with the most significant role in coordinating routine contacts.

4.11 Regression Analysis

The researcher performed logistic regression to test how independent variables influenced the provision of mental health services among young people in Nairobi County.

4.11.1 Model Summary

Table 4.11
Logistic Regression Model Summary

Model Fit Statistics	Value
-2 log-likelihood	325.24

Cox & Snell R^2	0.432
Nagelkerke R^2	0.582

Predictors: (Constant) Crisis intervention, round-the-clock availability, resource sharing, follow-ups

The logistic regression model was used to examine the influence of the four predictors: crisis intervention, round-the-clock availability, resource sharing, and follow-up on the delivery of mental health services in Nairobi County. In Table 4.13, the -2 log-likelihood value of 325.24 indicates how well the model fits the data, with lower values suggesting a better fit. The Cox & Snell R^2 value of 0.432 indicated that the predictors explained 43.2% of the variability in the dependent variable. At the same time, the Nagelkerke R^2 of 0.582 suggested a higher explanation of variance, with 58.2% of the variance accounted for by the predictors. These values indicated that the model had a reasonable fit and that the selected predictors played a substantial role in explaining the delivery of mental care in Nairobi.

4.11.2 Logistic Regression Coefficients

Logistic regression analysis was used to understand how various predictors/independent variables affected the likelihood of the delivery of mental health services. It provided insights into the strength and direction of the relations between the independent variables and dependent variable, as shown in Table 4.14

Table 4.12***Logistic Regression Coefficients***

Predictor Variable	B (coefficient)	Std. Error	Wald		Significance (p-value)	Exp (B) (odds Ratio)
			Chi-Square	df		
Constant	-1.234	0.456	7.33	1	0.007	0.29
Crisis intervention	0.752	0.215	12.31	1	0.001	2.121
Round-the-clock availability	0.452	0.187	5.87	1	0.015	1.571
Resource sharing	-0.345	0.193	3.19	1	0.074	0.708
Follow-ups	0.982	0.256	14.72	1	0.000	2.671

Predictors: (Constant) Crisis intervention, round-the-clock availability, resource sharing, follow-ups

The constant ($B = -1.234$, $p = 0.007$) indicated that when all predictor variables were at zero, the log odds of the delivery of mental care were negative, and the odds of the event happening were 0.29, meaning the event was less likely than not. Crisis intervention ($B = 0.752$, $p = 0.001$) significantly increased the odds of delivering mental health services with an odds ratio of 2.121, meaning that for every one-unit increase in crisis intervention, the odds of the mental health service delivery occurring more than double. Round-the-clock availability ($B = 0.452$, $p = 0.015$) had a significant positive effect, with an odds ratio of 1.571. Resource Sharing ($B = -0.345$, $p = 0.074$) indicated a negative relationship, but it was not statistically significant at the 0.05 level, with an odds ratio of 0.708. Follow-ups ($B = 0.982$, $p < 0.001$) had the most positive effect, with an odds ratio of 2.671, meaning that increasing follow-up substantially increased the odds of delivering mental health services.

Semenova (2022) established that patients with access to crisis services had increasingly lower chances of attempting suicide or being hospitalized for mental health

reasons than patients who did not have access to crisis services. The study also found that patients with access to 24/7 crisis services were more likely to receive timely and effective treatment. The study further found several factors contributing to reducing suicide and hospitalization rates among people with mental illness, such as early intervention, access to care, supportive relationships, education, and awareness.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, the current study's results are summarized and presented in sub-sections consisting of a summary, conclusions, and recommendations. The conclusions drawn from the study are of utmost importance, providing reassurance and confidence in the validity of the findings. Additionally, future researchers are given suggestions on potential study areas, further strengthening the study's impact.

5.2 Summary of the Study

The study demonstrated that crisis intervention in the provision of mental health services not only increases user satisfaction but also boosts the proportion of young persons referred to ongoing mental health care, enhances the engagement rate, ensures the availability of training and preparedness of crisis intervention staff, and shortens response time. This promising outcome paves the way for a brighter future in mental health services for young people.

The study revealed that multiple communication channels, such as phone, text, and web chat, are available around the clock among young people in Nairobi County. Service is accessible to young people in different areas of Nairobi, protocols for urgent cases are available, the center offers scheduled appointments, the service is available in multiple languages to cater to diverse populations, and the call center can handle many cases simultaneously.

In addition, the study established that as a result of resource sharing in the administration of mental health care, resource sharing exists, resources are easily accessible, resources at the disposal of the center are diversified, shared data and

information systems are available, telehealth and technology are shared with partners, the cross-training level provided to mental health professionals is moderate and that joint programs and initiatives are present in the center.

Further, the study revealed that follow-ups enhance long-term outcomes, promote mental health symptoms and well-being, ensure continuity of care, have diversified modes of follow-up, seekers give positive feedback during follow-ups, enhance treatment adherence, and provide personalized/customized follow-up for acute cases.

The study also established that call center referral rates have increased, patient satisfaction has improved, service utilization rates have increased, the flow of information has been promoted, the number of individuals using mental health services has risen, follow-up has been promoted, patient satisfaction and experience have been enhanced, and accessibility of mental health services has been enhanced.

5.3 Conclusion

The study concludes that crisis intervention improves the provision of mental health services. It suggests that providing mental health services to youth in Nairobi County will increase the number of crisis intervention units. 24/7 availability had a favorable effect on the provision of mental health care to youth in Nairobi County, indicating that an increase in units results in a rise in the provision of mental health services to youth in Nairobi County.

The provision of mental health care was positively impacted by resource sharing, indicating that an increase in units results in an increase in the accessibility of mental healthcare among young persons in Nairobi County. Follow-ups revealed a favorable effect on providing mental health services to youth in Nairobi County,

indicating that increased units had a beneficial effect on providing mental health care to youth in Nairobi County.

5.4 Recommendations

The study highlights key health system recommendations for enhancing mental health services/ support through call center operations in Nairobi County.

- i. LVCT Health management should invest in crisis intervention strategies and train call center staff to provide immediate and effective support, enhancing the availability and responsiveness of mental health services for young people.
- ii. The management at LVCT Health should facilitate round-the-clock availability of human support services 24/7 to meet diverse needs and handle urgent distress calls
- iii. The management at LVCT Health and Nairobi County should promote resource sharing and collaboration among stakeholders to optimize resource utilization for mental health service delivery
- iv. Nairobi County should formulate guidelines or protocols for effective young people referrals from digital platforms to health facilities.

5.5 Recommendations for Further Research

Future research should aim to deepen our understanding of the various dimensions of call center interventions for mental health support among young people. These include:

- i. Assess the specific interventions provided through the call center and their effectiveness in addressing the mental health needs of young people.

- ii. Study the impact of technological advancements, such as Artificial intelligence platforms in call centers.
- iii. Study from the beneficiaries' perspective to determine and direct associations of crisis intervention, round-the-clock availability, resource sharing, and follow-up with the delivery of mental health services

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APPENDICES

Appendix I: Informed Consent

Kenya Methodist University
P. O Box 267-60200
MERU, Kenya

SUBJECT: INFORMED CONSENT

Dear Respondent,

I am Mutwiri Robert Kimathi, an MSc Health Systems Management student from Kenya Methodist University. I am conducting a study titled **Call Center Influence on Delivery of Mental Health Services among Young People in Nairobi County**. The findings of this study will help strengthen the health system. The findings of this study will strengthen the health system. This will benefit the community, the neighboring counties, and the country. The proposal will bring new insight to the researcher and help those deciding on health systems. All the decisions made will be relevant to county and national government.

Procedure to be followed

This study will require me to gather information from you as a participant to help enforce the health system pillar. I will need your approval to record some of the information you give for academic purposes only.

As a participant, you can accept or reject the pleasure of participating in this academic study. No one will judge you for your decision to partake in this study. And whatever you decide will not be used against you by any party present or absent.

You are allowed to participate in this study on your own will. Any questions that are study-related are accepted at any time. You may or may not answer questions you must answer at any time. You may also leave an interview room or area whenever you wish. All the decisions you make will be accepted positively by the researcher.

Discomforts and risks

During the session, you may encounter questions that could be personal or uncomfortable, which may not align with your preferences. You can choose whether to respond to these questions; declining to answer will not result in further inquiries. Please note that the entire interview process may extend beyond 10 minutes. If you feel uncomfortable at any point during the session, you have the right to discontinue your participation at your discretion.

Benefits

Participating in this academic study will help improve county and national healthcare systems. As a result, not only does your county or country benefit from it, but the entire continent of Africa will also get new insight into strengthening healthcare systems. This will significantly help scholars and government entities on how to improve healthcare systems.

Rewards

This study is entirely academic; therefore, no rewards will be given or received for undertaking this study.

Confidentiality

The study will be confidential from any outside partner and undertaken privately to ensure that every party is comfortable. No name or personal detail will be recorded in either of the questionnaires. After all is done, the documents will be kept safely in the University.

Contact Information

If you have any questions, you may contact the following supervisors:

1. Dr Caroline Kawila, Head of the Department of Health Systems Management of Kenya Methodist University, Nairobi campus.

Participant's Statement

The above statements are well-read and understood by myself. There are chances to ask any questions as per the study at hand, and I am satisfied with the answers I will get. I have volunteered entirely to participate in this study. Any records from this study will be kept with utmost care and privacy. I can leave the study session any time I wish without questions. I understand that I will not be victimized anywhere, whether at work or home.

Name of Participant..... Date.....

Signature.....

Investigator's Statement

I, the researcher, has read to my participants all the required instruction on this study in the most accessible language that he/she may understand, and I have signed all the agreements done to this study.

Name of Interviewer.....Date.....

Interviewer Signature.....

Appendix II: Questionnaire

SECTION A: Demographic Information

1. What is your gender?

Female [] Male []

2. What is your age bracket?

25 years and below [] 26-35 years []

36-45 years [] Above 45 years []

3. What is your highest education level?

Certificate level [] Diploma level [] Graduate/Degree []

Postgraduate [] Others-specify..... []

4. For how long have you worked in this center?

Less than 1 year [] 1-5 years []

6-10 years [] Over 10 years []

Section B: Crisis Intervention

5. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to Crisis Intervention

Statements	1	2	3	4	5
• Call volume					
Call volume to handle is large.					
The frequency of cases has reduced					
• Intervention Speed					
Response time is short for the intervention.					

The engagement rate is high.					
• Success rate of de-escalation attempts					
De-escalation is effective for all help seekers.					
User satisfaction is high.					
The proportion of young people referred to ongoing mental health services is high.					
Training and preparedness of crisis intervention staff is available.					
Any other comment:					

Section C: Round-the-Clock Availability

- Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to Round-the-Clock Availability

Statements	1	2	3	4	5
• Waiting time					
Waiting time is short.					
Protocols for urgent cases are available.					
The Center offers scheduled appointments.					
• Call center service capacity					
Services are available 24/7, every day.					
Multiple communication channels, such as phone, text, and web chat, are available.					
The number of mental health professionals available is sufficient.					
The call center can handle many cases at once					
• Language availability					
Service is accessible to young people in different areas of Nairobi.					

Service is available in multiple languages to cater to diverse populations.					
Any other comment:					

SECTION D: Resource Sharing

6. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-moderately agree, 4-agree and 5-strongly agree, kindly indicate your agreement level to the statements below that relate to Resource Sharing

Statements	1	2	3	4	5
• Ease of access to resources					
Resources are easily accessible.					
Resources at the disposal of the center are diversified.					
Multimedia resource sharing exists.					
Shared staffing arrangements and joint training programs exist.					
• Diversity of resources					
The cross-training level provided to mental health professionals is high.					
Joint programs and initiatives are present in the center.					
Resource allocation and distribution are fair.					
• Multimedia resources					
Telehealth and technology are shared with partners.					
Shared data and information systems are available.					
Any other comment.....					

Section E: Follow-Ups

7. Using a scale of 1-5 where 1-strongly disagree, 2- disagree, 3-moderately agree, 4-agree and 5-strongly agree, kindly indicate your agreement level to the statements below that relate to Follow-Ups

Statements	1	2	3	4	5
• Frequency of follow-ups					
The frequency of follow-ups is high.					

There are diversified modes of follow-ups.					
The proportion of young people who actively engage in follow-up appointments is high.					
• Mode of follow-ups					
Mental health symptoms and well-being are promoted during follow-ups.					
Seekers give positive feedback during follow-ups.					
Follow-ups enhance treatment adherence.					
• Personalization					
Personalized/customized follow-up is done for acute cases.					
Follow-ups ensure continuity of care.					
Follow-ups enhance long-term outcomes.					
Any other comment.....					

Section F: Delivery of Mental Health Services

- Using a scale of 1-5 where 1-strongly disagree, 2-disagree, 3-Moderately agree, 4-Agree and 5-Strongly agree, kindly indicate your agreement level to the statements below that relate to the Delivery of Mental Health Services

Statements	1	2	3	4	5
• Crisis resolution					
Crisis resolution rates have increased.					
Referral rates have increased.					
Service utilization rates have increased.					
Wait time for services has significantly reduced.					
• Referral rates					
Treatment completion rates have increased.					

Patient satisfaction and experience have been enhanced.					
Follow-up is promoted.					
The timeliness of the intervention is boosted.					
Improvement in coping skills					
Accessibility of mental health services is enhanced.					
The number of individuals using mental health services has increased.					
Patient satisfaction is enhanced.					
The flow of information is promoted.					
Any other comment:					

THANK YOU FOR PARTICIPATING

Appendix III: Research Permit NACOSTI

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 822818	Date of Issue: 14/March/2024
RESEARCH LICENSE	
	
This is to Certify that Mr., Robert Mutwiri Kimathi of Kenya Methodist University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: CALL CENTRE INFLUENCE ON THE DELIVERY OF MENTAL HEALTH SERVICES AMONG YOUNG PEOPLE: A CASE OF ONE2ONE CALL CENTRE IN NAIROBI COUNTY for the period ending : 14/March/2025.	
License No: NACOSTI/P/24/33716	
Applicant Identification Number: 822818	 Director General
	NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	
See overleaf for conditions	

Appendix IV: KEMU Introduction Letter



KENYA METHODIST UNIVERSITY

P. O. Box 267 Meru - 60200, Kenya

Fax: 254-64-30162

Tel: 254-064-30301/31229/30367/31171

Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

February 29, 2024

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100
NAIROBI.

Dear Sir/Madam,

RE: MUTWIRI ROBERT KIMATHI – (REG. NO. HSM-3-2859-3/2021)

This is to confirm that the above named person is a bona fide student of Kenya Methodist University, in the School of Medicine and Health Sciences, Department of Health System Management undertaking a Master's Degree in Health System Management. He is conducting research on: "Call Center Influence on the Delivery of Mental Health Services among Young People: A Case of One2one Call Center in Nairobi County".

We confirm that his research proposal has been presented and approved by the University.

In this regard, we are requesting your office to issue a research license to enable him collect data.

Any assistance accorded to him will highly be appreciated.



Dr. John M. Muthuri (PhD)
Dean, Postgraduate Studies

Cc: Dean SMHS
CoD, HSM
Program Coordinator -HSM
Student Supervisors

Appendix V: KEMU ISERC Approval



KENYA METHODIST UNIVERSITY

P. O. BOX 267 MERU - 60200, KENYA
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FAX: 254-64-30162
EMAIL: INFO@KEMU.AC.KE

February 29, 2024

KeMU/ISERC/HSM/02/2024

MUTWIRI ROBERT KIMATHI
HSM-3-2859-3/2021

Dear Robert,

SUBJECT: CALL CENTER INFLUENCE ON THE DELIVERY OF MENTAL HEALTH SERVICES AMONG YOUNG PEOPLE: A CASE OF ONE2ONE CALL CENTER IN NAIROBI COUNTY

This is to inform you that Kenya Methodist University Institutional Scientific Ethics and Review Committee has reviewed and approved your research proposal. Your application approval number is KeMU/ISERC/HSM/02/2024. The approval period is 29th February, 2024 – 29th February, 2025.

This approval is subject to compliance with the following requirements:-

- I. Only approved documents including (informed consent, study instruments, MTA) will be used.
- II. All changes including (amendments, deviations, and violations) are submitted for review and approval by Kenya Methodist University Institutional Scientific Ethics and Review Committee.
- 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 KeMU ISERC within 72 hours of notification.
- IV. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KeMU ISERC 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 KeMU ISERC.

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

