GULU UNIVERSITY

DEFAULT RATES, ASSOCIATED FACTORS, AND HEALTH WORKER PERCEPTIONS AMONG CHILDREN AGED 6–59 MONTHS IN OUTPATIENT THERAPEUTIC CARE FOR SEVERE ACUTE MALNUTRITION AT GULU REGIONAL REFERRAL HOSPITAL, UGANDA

BY

KAMULEGEYA DAVID PETERSON

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DECLARATION

I, Kamulegeya David Peterson, hereby declare that the work presented in this dissertation is entirely my own and has not been submitted for any degree or qualification at any other institution of higher learning. The opinions expressed within are mine, except where explicit references and acknowledgments are made.

Signed: 

Date: 14th /11/2025

Dr. Kamulegeya David Peterson

APPROVAL

This dissertation has been submitted for examination with the approval of the supervisors listed below:

1. Dr. Akera Peter

   Signed: 

   Date: 14th /11/2025

2. Mr. Wanyama Ronald

   Signed: 

   Date: 14th /11/2025

DEDICATION

This dissertation is dedicated to God Almighty, whose grace has sustained me throughout this journey.

I also dedicate this work to all the children battling malnutrition and to the health workers striving every day to restore hope and life. May this study contribute to improving care for the most vulnerable.

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OPERATIONAL DEFINITIONS

1. **Outpatient therapeutic care (OTC):** Programs that manage children with uncomplicated severe acute malnutrition at the community level through providing biweekly distributions of ready-to-use therapeutic foods (RUTF) and essential medications, along with regular monitoring and follow-up visits.

2. **Child:** In this study we enrolled children aged 6 to 59 months.

3. **Default:** A child who misses two consecutive program's required follow-up appointments.

4. **Default Rate:** The proportion of children who miss two consecutive program's required follow-up appointments.

ABBREVIATIONS AND ACRONYMS

AOR	Adjusted odds ratio
CI	Confidence interval
CMAM	Community-based management of acute malnutrition
DHIS2	District health information system, version 2
FY	Financial year
GRRH	Gulu regional referral hospital
GUREC	Gulu university research and ethics committee
HIV	Human immunodeficiency virus
IMAM	Integrated management of acute malnutrition
INR	Integrated nutrition register
MAUC	Mid-upper arm circumference
OTC	Outpatient therapeutic care
RUTF	Ready-to-Use therapeutic feed
SAM	Severe acute malnutrition
UDHS	Uganda demographic health survey
UNICEF	United nations children's fund

UNPS	Uganda national panel survey
USAID	United states agency for international development
WFP	World food programme
WHO	World health organization

ABSTRACT

Background: Outpatient Therapeutic Care (OTC) programs are critical for managing uncomplicated severe acute malnutrition (SAM) in children. However, high treatment default rates undermine recovery, particularly in Northern Uganda, where evidence on contributing factors and frontline worker perspectives/experiences remains limited.

Objective: To determine the default rates and factors associated with treatment default among children aged 6–59 months enrolled in OTC at Gulu Regional Referral Hospital (GRRH), and to explore health worker experiences and perceptions with the program.

Methods: A sequential explanatory mixed-methods design was used. The quantitative phase involved retrospective chart review of 411 child records from the OTC program at GRRH (July 2022–June 2024). Data were extracted from the integrated nutrition register and analysed in STATA 17 using descriptive statistics, bivariate tests, and multivariable logistic regression. The qualitative phase used a phenomenological approach. Semi-structured in-depth interviews were conducted with nine purposively selected health workers. Transcripts were thematically analysed until saturation was reached.

Results: Among 411 children, 57.2% were male, 66.2% were under 24 months, over half weighed <7 kg, and 67.6% had non-edematous SAM. The treatment default rate was 24.8%. Bivariate analysis showed significant associations between default and HIV status ($p = 0.01$), lower admission weight ($p = 0.02$), and weight <7 kg ($p = 0.03$), but no variable remained significant in multivariable analysis. Qualitative analysis revealed six thematic domains: program organization, causes of default, consequences, prevention strategies, systemic challenges, and programmatic recommendations. Key causes of default included transport barriers, RUTF stockouts, , staff absenteeism, seasonal agricultural demands, caregiver misinformation, misconceptions, and negligence, caregiver-level challenges (e.g., Domestic violence, family separation, poverty, inadequate social support, and cultural beliefs), and child-level comorbidities (e.g., HIV, TB, cerebral palsy).

Conclusion:

Outpatient therapeutic care treatment default at GRRH is high and influenced by structural, clinical, and caregiver-related barriers. While no factors were statistically associated with default, qualitative findings highlight the need for decentralization, consistent supplies, and strengthened caregiver support to improve adherence and recovery in OTC.

Keywords: Outpatient Therapeutic Care, Severe Acute Malnutrition, Treatment Default, Program Adherence, Uganda

CHAPTER ONE: INTRODUCTION

1.1 Background

Severe Acute Malnutrition (SAM) is a critical global health issue affecting around 19 million children under five years old each year and contributing to approximately 400,000 child deaths each year (WHO, 2023). Children with SAM face a mortality risk 5 to 20 times higher than their well-nourished peers (WHO, 2004). The burden of undernutrition is especially pronounced in developing countries, with most Asian and African children impacted. (Victora et al., 2021; WHO, 2023). In Uganda, an estimated 268,000 children suffer from SAM, representing a significant public health challenge (WHO, 2024). According to the Uganda Demographic and Health Survey (UDHS) 2022, 26% of children below five years are stunted, 2.9% suffer from wasting, and 3.4% are underweight (UDHS, 2022).

One of the critical issues in managing SAM is the high rate of treatment default, defined as missing two consecutive follow-up visits (Akparibo et al., 2017). Default rates in outpatient therapeutic program (OTC) programs, which are designed to provide community-based treatment for SAM, have been high. In Uganda, some regions report default rates as high as 58.6%, with routine Ministry of Health (MOH) surveys indicating a nationwide default rate of 19% and 21.9% specifically in the Acholi sub-region within the northern part of Uganda (Ssekajja et al., 2022; MOH, 2024).

The reasons for high default rates in SAM treatment programs are multifaceted and include socio-demographic characteristics like age, type of admission, and entry care point (Muftah, 2016a; Burza et al., 2015; Al Amad et al., 2017). Clinical factors, including HIV status at enrolment and initial nutritional status assessed through weight-for-height Z-scores and mid-upper arm circumference (MUAC), are also associated with default (Yebyo et al., 2013; Nyadzayo & Tshimanga, 2018; Al Amad et al., 2017; Muftah, 2016a; Burza et al., 2015). Additionally, program-related factors such as

health facility infrastructure location, duration of enrolment, and availability of medical supplies are associated with default rates (Al Amad et al., 2017; Burza et al., 2015; Moramarco et al., 2018; Muftah, 2016a; Mwanza et al., 2016a).

High default rates undermine the effectiveness of SAM treatment programs, with reduced survival and a relative risk of death for defaulters at 6.6 times higher than for children who complete their treatment (Bahwere, 2012; Akparibo et al., 2017). Defaulting also prolongs malnutrition, heightens susceptibility to infections, and raises healthcare costs due to repeated admissions (Puett & Guerrero, 2015).

Outpatient therapeutic care (OTC) programs seek to treat uncomplicated SAM cases within the community setting, reducing the burden on inpatient facilities and improving access to care(WHO, 2013). These programs provide biweekly ready-to-use therapeutic foods (RUTF) at 150-220 kcal/kg/day per child until recovery, together with routine medications—amoxicillin, vitamin A, folic acid, and deworming along with regular monitoring and follow-up visits (WHO, 2004; Amin et al., 2023). By decentralizing service delivery, OTC programs bring care closer to affected communities, making it more accessible and acceptable to caregivers (Alflah, 2022).

Understanding the treatment default in SAM treatment programs is crucial for improving child survival and health outcomes. Despite the importance of this issue, there is limited information on OTC treatment default, associated factors and health worker’s experience on OTC program in northern Uganda. This study aimed to determine the default rates, identify factors associated with treatment default among children aged 6-59 months enrolled in the OTC program for malnutrition during the financial years (FY) 2022/2023 and 2023/2024, and explore health workers' experiences of OTC at Gulu Regional Referral Hospital (GRRH).

1.2 Statement of the problem

Severe acute malnutrition remains an acute global health crisis with an annual burden of 19 million cases among children under five and around 400,000 fatalities, disproportionately affecting vulnerable populations in developing regions like Uganda. Despite the introduction of OTC programs, which aim to decentralize and improve access to life-saving interventions, the persistently high rates of treatment default significantly undermine these efforts.

In Uganda, particularly in Northern regions, the impact is acute, where high treatment default rates 19% nationally and as high as 21.9% locally undermine the efficacy of OTC programs. The high rate of treatment default not only compromises the health outcomes of individual children but also strains the healthcare system. When a child defaults from treatment, their risk of mortality increases significantly, and they become more susceptible to infections and other complications, prolonging malnutrition. This also leads to repeated admissions and higher healthcare costs.

Current research on OTC treatment default is largely observational and conducted outside Uganda, with no study on OTC treatment default, associated factors and health worker's experience on OTC program in northern Uganda.

1.3 Purpose of the study

1.3.1 General objective

To determine the prevalence and determinants of treatment default among children aged 6–59 months in outpatient therapeutic care for severe acute malnutrition at Gulu Regional Referral Hospital, and to explore related health worker experiences and perceptions.

1.3.2 Specific Objectives

1 To determine the default rates among children aged 6-59 months in the OTC program for malnutrition at GRRH.

2 To identify factors associated with treatment defaults among children aged 6-59 months in the OTC program for malnutrition at GRRH.

3 To explore health workers' experiences and perceptions of the OTC program for severe acute malnutrition at Gulu Regional Referral Hospital.

1.4 Research questions

1. What are the default rates among children aged 6-59 months in the OTC program for malnutrition at GRRH ?
2. What factors are associated with treatment defaults among children aged 6-59 months in the OTC program for malnutrition at GRRH ?
3. What are the experiences and perceptions of health workers on OTC program for malnutrition at GRRH?

1.5 Conceptual framework

The study will adopt a conceptual framework from a similar study by (Teshome et al., 2019) to explain the relationship between independent variables and OTC treatment default (figure 1).

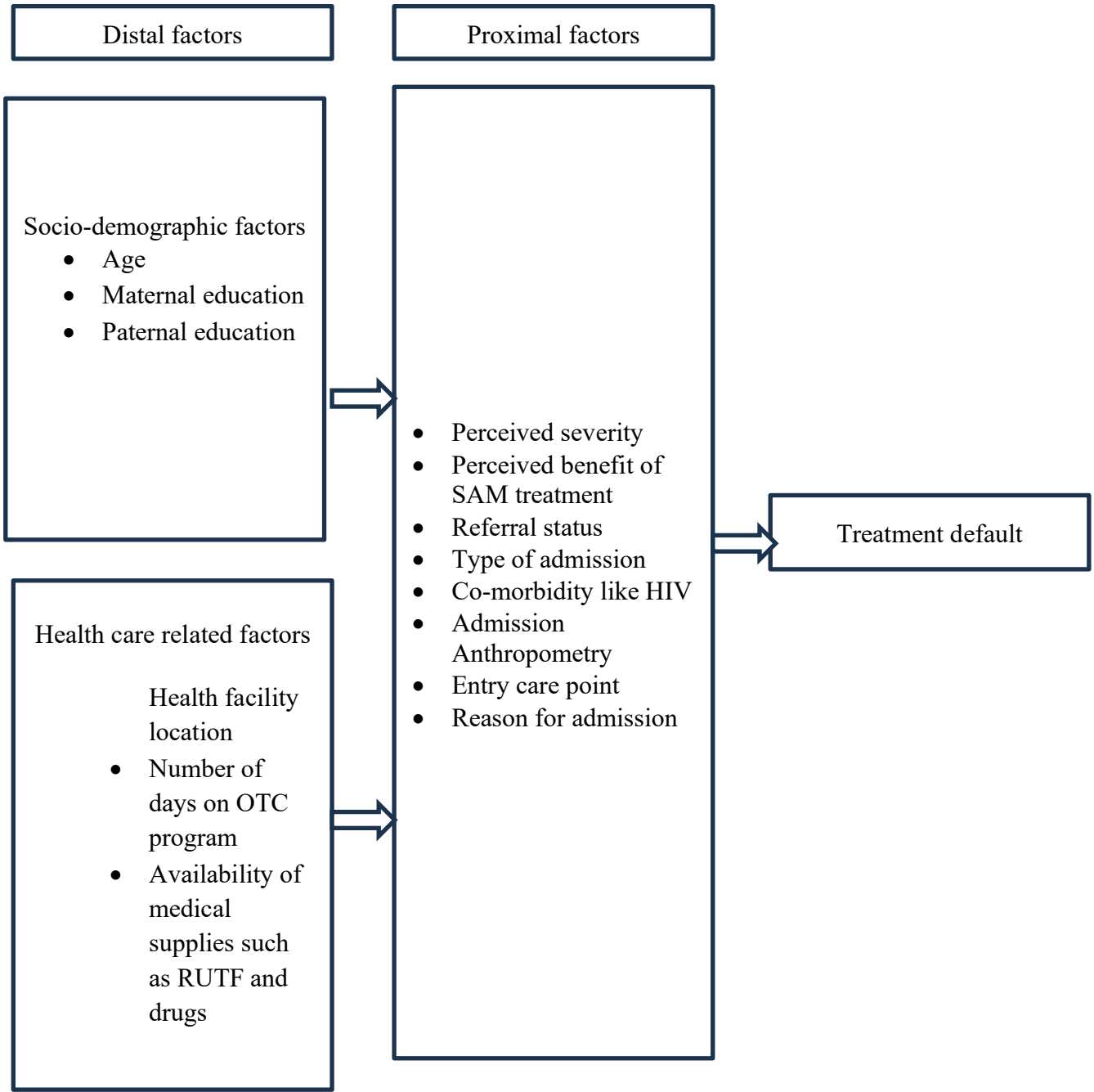


Figure 1:Conceptual framework for factors associated with treatment default in OTC, adopted with modification from (teshome et al., 2019)

The conceptual framework for treatment default in the OTC program for malnutrition encompasses a multifaceted interaction of distal and proximal factors. Distal factors include individual characteristics such as the child's age and parental education, both of which significantly shape the likelihood of adherence. Children under 24 months, who are particularly vulnerable, often require more intensive care, making adherence more challenging. Similarly, higher levels of maternal education enhance the ability to follow treatment protocols, directly impacting outcomes. Programmatic elements, such as the duration of the child's stay in the program and the availability of essential supplies like RUTF, further complicate treatment adherence. Inconsistent supply chains and prolonged treatment durations can lead to increased default rates, particularly in resource-constrained settings.

Proximal factors, which are more immediate and clinical in nature, directly impact the adherence to treatment. Misconceptions about the severity of malnutrition or the benefits of the treatment can undermine adherence, as caregivers might not fully understand the critical nature of the regimen. The type of admission, whether new or a readmission, also plays a role, with readmissions often signalling unresolved issues that complicate ongoing care. Additionally, co-morbidities like HIV introduce further complexity, increasing the burden on caregivers and the likelihood of default. Anthropometric measurements at admission, such as MUAC and Z-scores for Weight-for-Height, are essential in determining the severity of malnutrition and the intensity of treatment required. These factors, combined with whether the child was referred by another facility or self-referred, paint a comprehensive picture of the risks associated with treatment default.

The interaction of these factors highlights that, children facing multiple risks—such as those living far from health facilities, suffering from severe malnutrition, and dealing with inconsistent RUTF availability—are more prone to defaulting. This framework, therefore, underscores the need for multifaceted, targeted interventions that address both the broader socio-demographic and programmatic factors as well as the immediate clinical challenges, aiming to reduce default rates and improve health outcomes for malnourished children

1.6 Theoretical frame work:

In this study, the phenomenological approach is used as the methodological lens for the qualitative component to focus on the lived experiences of health workers as they deliver OTC services. Phenomenology seeks to describe how participants experience a phenomenon in this case, OTC program implementation and treatment default without imposing pre-existing assumptions. This is complemented by a socioconstructionist theoretical model, which posits that health workers' experiences and perceptions are co-constructed through repeated interactions with caregivers, children, colleagues, managers and the broader policy environment. Within this model, clinical guidelines, supply chains, cultural beliefs about child feeding, and institutional power relations all shape how health workers understand and respond to treatment default.

In this model, health workers' views emerge from their day-to-day interactions within three inter-related domains: (1) the health system and organisational context (staffing, workload, availability of RUTF and medicines, clinic space, tools, supervision), which affects their ability and motivation to implement IMAM guidelines and follow up defaulters; (2) the community and caregiver context (caregiver knowledge, beliefs, cultural norms, distance, transport, household income and competing demands), which influences how they judge caregivers' capacity and willingness to adhere to visits;

and (3) child-level clinical characteristics (severity and type of malnutrition, comorbidities, disability and prior treatment), which guide risk assessment and prioritisation of follow-up.

Through day-to-day interactions within these domains, health workers construct working explanations for why children default and develop informal strategies to respond.These constructed meanings and strategies mediate the relationship between structural/contextual factors and treatment outcomes, contributing either to reduced or increased default from the OTC programme.

1.7 Justification of the study

Despite the high burden of SAM in Uganda and the scale-up of community-based management of acute malnutrition, default from outpatient therapeutic care remains above acceptable international thresholds and threatens the achievement of national and global nutrition targets. At national level, Uganda's nutrition agenda articulated through the Ministry of Health's IMAM guidelines and nutrition action plans emphasizes improving coverage, adherence and quality of SAM services. Reducing default in OTC directly contributes to these priorities by improving cure rates, reducing mortality, and optimizing use of scarce RUTF and health system resources.

At the global level, improved OTC performance is aligned with WHO recommendations on community-based management of acute malnutrition, UNICEF programming priorities for child survival, and Sustainable Development Goals (SDG) 2 and 3, which commit countries to ending all forms of malnutrition and ensuring healthy lives for all. However, there is limited context-specific evidence from post-conflict Northern Uganda on the prevalence and determinants of OTC treatment default and on how frontline health workers experience and respond to this challenge.

By quantifying default rates, identifying associated factors, and documenting health workers' experiences and perceptions at Gulu Regional Referral Hospital, this study generates actionable evidence to guide programmatic strengthening, including risk stratification at admission, targeted follow-up for high-risk children, and health-system interventions to improve caregiver support. The findings are expected to inform GRRH, Gulu City health authorities, the Ministry of Health, and development partners such as WHO and UNICEF in revising program strategies for OTC and related child nutrition services.

1.8 Significance of the study

This study is significant at several levels. For program managers at GRRH and in Gulu City, it provides facility-specific estimates of default and highlights structural and clinical risk factors that can be addressed through improved case management, follow-up systems, outreach and supply chain strengthening. For the Ministry of Health and district nutrition coordinators, the study offers empirical evidence from a high-burden, post-conflict setting to complement routine DHIS2 data and inform resource allocation, supervision, and decentralization of OTC services. For international agencies such as WHO and implementing partners, the mixed-methods findings contribute to the global evidence base on why children default from community-based SAM treatment and how frontline workers navigate these challenges in practice. Ultimately, the study aims to support better child survival and equity by informing more context-responsive OTC service delivery models.

1.9 Scope of the study

This study was conducted at the outpatient therapeutic care (OTC) clinic of Gulu Regional Referral Hospital in Gulu City, Northern Uganda. It included children aged 6–59 months with severe acute malnutrition who were enrolled in the OTC programme between 1 July 2022 and 30 June 2024, as

recorded in the Integrated Nutrition Register. The quantitative component was confined to routinely collected programme data and did not capture anthropometric outcomes after discharge or outcomes of children referred to other facilities. The qualitative component was limited to health workers directly involved in OTC service delivery at GRRH and did not include caregivers or community health workers.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter reviews existing literature relevant to understanding the relationship between factors associated with treatment default in the OTC program and the experiences of health workers involved in its implementation. The review is structured according to the study objectives, beginning with an overview of the prevalence of OTC treatment default, followed by an examination of the factors associated with default, and concluding with a synthesis of literature on health workers' experiences in delivering OTC services.

2.1 Default rates in the OTC program

In resource limited nations, high default rates are prevalent among children enrolled in OTC programs for SAM, with studies reporting rates ranging from 8% to 58% in various regions. A prospective cohort study in Sana'a City, Yemen, among newly admitted children with SAM across 11 OTC programs, found that 55% of these children did not complete treatment according to the program's protocol (Al Amad et al., 2017). The default rate was determined by tracking the number of children who discontinued their attendance at the treatment facility without a formal discharge for two consecutive weeks and confirming their status as alive through home visits.

Similarly, a retrospective cohort study conducted at Tamale Teaching Hospital in Ghana among children with SAM enrolled in the OTC program between 2011 and 2013 reported a default rate of 49.1% (Saaka et al., 2015). In this study, a child was classified as a defaulter if they were absent from the program for three consecutive weeks without any formal acknowledgment or completion of the treatment cycle.

In Uganda, the ministry of health's (MOH) nutrition annual performance report for FY 2022/23, utilizing data from the district health information system (DHIS2) and periodic surveys such as the

Uganda demographic and health survey (UDHS), Uganda national service delivery survey, and Uganda national panel survey (UNPS), provides insights into the current situation. The annual nutrition MOH report indicates an overall default rate of 19% for OTC management of malnourished children under five years old in Uganda, with the OTC default rate of 21.9% in the Acholi sub-region of Northern Uganda, with a default rate of 21.9% specifically in the Acholi sub-region of Northern Uganda (Ministry of health, 2024). According to the report, the default rate is defined, using the Ugandan IMAM guidelines, as a child who misses two consecutive follow-up appointments. (Ministry of Health Uganda, 2021).

In Uganda, several research studies have explored default rates among children receiving treatment for SAM in OTC. A cross-sectional study in Kabale district in 2022 found a default rate of 58.6% among children receiving outpatient care for SAM between 2013 and 2015 (ssekajja et al., 2022). Any child who failed to attend two consecutive scheduled visits was considered a defaulter. Conversely, a prior investigation at St. Mary's Hospital Lacor in Northern Uganda in 2014 revealed a comparatively low default rate of 8% among children suffering from severe malnutrition (Nyeko et al., 2016b). However, the study was done on records over 10 years ago which limits the generalizability of its findings to the broader context of outpatient therapeutic care (OTC) treatment default in Uganda today.

2.2 Factors associated with OTC treatment default

These factors can be broadly classified into social demographic factors, clinical factors, and program-related factors.

2.2.1 Sociodemographic factors associated with OTC treatment default

Age of the patient

Younger children are more likely to default on OTC treatment than their older counterparts. Two retrospective cohort studies provide evidence that younger children are more likely to default on their treatment. A retrospective cohort assessing 303 medical records for children aged 6-59 months at Al-Mukala Mother and Child Health hospital in the Hadramouth Governorate, south-east Yemen, spanning two years from October 5, 2011, to October 5, 2013, established that children under 24 months were more likely to default on treatment compared to those above 24 months ($Chi^2 = 4.441$, $df = 1$, $p = 0.025$) (Muftah, 2016).

Likewise, an observational retrospective cohort analysis of a community-based management of acute malnutrition (CMAM) program in Bihar, India, implemented by Médecins Sans Frontières (MSF) between February 2009 and September 2011, reported that child aged 12 months or younger were 1.5 times more likely to default treatment compared to their older counterparts (Adjusted Odds Ratio [AOR] = 1.5; 95% CI: 1.3, 1.7; $P < 0.01$) (Burza et al., 2015).

Entry care point

The referral source or place is associated with client's likelihood of defaulting, with self-referrals being highly associated with OTC treatment default. A prospective cohort study on children newly admitted to eleven OTPs situated in Sana'a city's primary health centres, children referred from a health facility were 70% less likely to default than those who were self-referred (AOR = 0.3; 95% CI: o.12,0.85; $P < 0.020$) (Al Amad et al., 2017).

Similarly, in India, a retrospective cohort study of a community-based management of acute malnutrition (CMAM) program by Médecins Sans Frontières (MSF) between February 2009 and September 2011, found that children not referred by accredited social health activists (ASHAs) were 10 times more likely to default than their counterparts. (AOR = 10.2; 95% CI: 6.9, 14.0; P < 0.01) (Burza et al., 2015).

Type of admission

The admission type, whether a new admission or a readmission, is associated with the client's likelihood of defaulting, with new admissions being highly associated with defaulting. A retrospective cohort study that assessed 303 medical records of participants aged 6-59 months at Al-Mukala Mother and Child Health Hospital in the Hadramouth Governorate, southeast Yemen, from October 5, 2011, to October 5, 2013, found that newly admitted children into the OTC program were 6.9 times more likely to default treatment compared to those who had experienced readmission (OR = 6.904; 95% CI: 1.089, 43.788; p = 0.040) (Muftah, 2016).

Education level

The educational level of the child's next of kin is associated with the retention of children within OTC. A prospective cohort study focusing on children newly admitted to eleven OTPs located in Sana'a city's primary health centres, found that children with illiterate mothers were 50% less likely to default as compared to those with literate mothers. (OR = 0.5; 95% CI: 0.3, 0.7; p = 0.001) (Al Amad et al., 2017).

2.2.2 Clinical factors associated with OTC treatment default

HIV status at enrollment

The HIV status at enrollment is associated to increased rates of treatment default. A retrospective cohort study in Tigray, Northern Ethiopia, involving 628 children undergoing treatment for SAM within OTC

from April 2008 to January 2012, revealed that children with concurrent medical conditions constituted 90% of the instances where treatment was defaulted (Yebyo et al., 2013).

Specifically, a descriptive cross-sectional reviewed record of malnourished individuals between the years 2013 to 2018 (January to December), enrolled in CMAM programs at healthcare facilities in Zimbabwe reported that in 2017, 17% of children diagnosed with HIV defaulted on their treatment within the Zimbabwean context (Nyadzayo & Tshimanga, 2018).

However, the two studies above did not quantify the direct association between HIV status at enrollment and treatment defaults in outpatient therapeutic care (OTC). There is no study that measures association between HIV status at enrolment and treatment default.

Admission anthropometry

The anthropometric measurements on admission to the OTC program are associated with the treatment default, with children admitted with a z-score below -3SD more likely to default than those admitted with MAUC of less than 11.5cm. A prospective cohort study on children newly admitted to eleven OTP programs within Sana'a city's primary health centres revealed a significant disparity: children admitted with a z-score below -3SD were nearly 3 times more likely to default compared to those admitted based on a MAUC of less than 11.5cm (OR 2.7; 95% CI: 1.4-5.5; $P < 0.004$) (Al Amad et al., 2017) .

Similarly, findings from a retrospective cohort study conducted at Al-Mukala Mother and Child Health Hospital in southeast Yemen reported that children admitted because of a z-score of less than -3SD were 9.2 times more likely to default compared to those admitted because of a MAUC of less than 11.0cm (OR 9.236; 95% CI: 4.940-16.475; $P < 0.001$) (Muftah, 2016).

In Ghana, a retrospective cohort analysis focusing on children with uncomplicated severe acute malnutrition (SAM) reported that only a MAUC of less than 11cm was associated with a heightened

default rate, with a sub-hazard ratio of 1.47 (HR=1.47; 95% CI: 1.00, 2.16; P = 0.052) (Takyi et al., 2021).

In Bihar, India, an observational retrospective cohort analysis of community-based management of acute malnutrition (CMAM) program conducted by Médecins Sans Frontières (MSF) reaffirmed the importance of MUAC in predicting default rates. Children admitted with a MUAC less than 100mm demonstrated 1.6 times higher odds of defaulting than those admitted with a MUAC between 110 and 115mm (AOR = 1.6; 95% CI: 6.9, 14.0; P < 0.01) (Burza et al., 2015).

2.2.3 Program related factors associated with OTC treatment default

Health facility location

Distance to health facilities is associated with program default outcomes within OTC.

A prospective cohort study on children newly admitted to eleven OTC programs in Sana'a city's primary health centres revealed that children residing outside the health center's residential area were 1.8 times more likely to default than their nearby counterparts (AOR = 1.8; 95% CI: 1.1, 2.9; P=0.031) (Al Amad et al., 2017). Furthermore, caregivers requiring transportation to access OTC programs sites were 2.1 times more likely to default than those that walked to OTC programs sites (AOR = 2.1; 95% CI: 1.3, 3.4; P= 0.005) (Al Amad et al., 2017).

In Bihar, India, an observational retrospective cohort analysis of community-based management of acute malnutrition (CMAM) program within Biraul block reported similar findings. Children Residing outside the Biraul block were 1.1 times more likely to default than those within the block (AOR = 1.1; 95% CI: 1.01, 1.2; P = 0.025) (Burza et al., 2015).

Additionally, a retrospective observational cohort study in Zambia during 2018 investigated the treatment adherence of malnourished children over a duration from July 2015 to April 2017, utilizing records from the 2015-2017 Rainbow Project revealed that children from rural areas away from the

health facilities were 2.3 times more likely to default compared to those than lived in urban areas. (HR = 2.3; 95% CI: 1.27, 4.27; P = 0.006) (Moramarco et al., 2018).

Availability of Therapeutic feeds

The availability of therapeutic feeds such as plumpy nut is associated with default rates within therapeutic programs for severe acute malnutrition (SAM). A prospective cohort study conducted across 11 OTC programs in Sana'a City, Yemen, showed that the unavailability of Plumpy Nut during follow-up visits was associated with a 3.5-fold increase in the likelihood of treatment default compared to when Plumpy nut was available (AOR=3.5;95% CI: 1.4, 8.9; P=0.006) (Al Amad et al., 2017).

Number of days spent in OTC

The number of days a child spends in an OTC is associated with an increased likelihood of treatment default and overall program adherence. A retrospective cohort study conducted at Al-Mukala Mother and Child Health Hospital in the Hadramouth governorate, south-east Yemen, spanning from October 5, 2011, to October 5, 2013, revealed that the median time to default was 40 days. Children who remained in the program for over 42 days were six times more likely to default compared to their counterparts who had a shorter duration of program participation. (OR 6.353; 95% CI: 3.623 - 11.022) (Muftah, 2016).

Similarly, an observational retrospective cohort analysis of a community-based management of acute malnutrition (CMAM) program in Bihar, India, implemented by Médecins Sans Frontières (MSF) between February 2009 and September 2011, reported that 17.6% of children defaulted immediately after the initial admission visit. For those who remained in the program, the mean time to default was 6.2 weeks (SD = 5.2 weeks), and the median time to default was 5 weeks (IQR: 2.3–8.4 weeks) (Burza et al., 2015).

2.3 Health workers' experiences on OTC program

2.3.1 Introduction and overview of OTC programs

Outpatient care programs are designed to treat cases of uncomplicated SAM within the community setting. This approach reduces the burden on inpatient health facilities and enhances access to care, particularly in resource-limited settings(WHO, 2013). By decentralizing service delivery, OTC programs make treatment more accessible and acceptable to caregivers, bringing care closer to communities most affected by malnutrition (Alflah, 2022). Each year, countless children with SAM are supported through these interventions (Briend & Berkley, 2016). Approximately 85-90% of children with SAM receive care in OTC programs, with an average treatment duration of about two months, during which most recover (Alflah, 2022).

2.3.2 Structure and key components of OTC programs

Outpatient Therapeutic Care (OTC) programs are designed to treat uncomplicated cases of SAM in children with good appetites and no medical complications, outside of inpatient settings (WHO, 2004) (WHO, 2013). In OTC programs, children receive biweekly RUTF per kilogram body weight. Alongside RUTF, they also receive essential medications like vitamin A, antibiotics, the measles vaccine, folic acid, and deworming treatments (WHO, 2004; Amin et al., 2023).

Regular follow-up OTC visits allow healthcare providers to monitor the child's progress, adjust treatment plans as needed, and involve caregivers in the therapeutic process (Amin et al., 2023). However, the success of these visits assumes consistent access to health facilities, which may not be feasible in remote areas, potentially compromising the program's effectiveness. Another key component of OTC programs is the preventive administration of broad-spectrum oral amoxicillin to guard against bacterial infections (Briend & Berkley, 2016). While effective, this practice raises

concerns about antimicrobial resistance, particularly when follow-up and correct usage cannot be ensured(Black R, 2016).

Lastly, Caregiver education is also an integral part of OTC programs, equipping caregivers with the skills to properly administer RUTF, use antibiotics, maintain hygiene, and recognize signs of clinical deterioration(WFP, 2017).

2.3.3 Performance indicators for OTC Programs

Children in OTC programs have differing treatment outcomes influenced by both controllable and non-modifiable factors, such as age, malnutrition type, and admission type (Waruguru & Kamau, 2024). The performance of OTC programs is assessed based on several key outcome indicators, including recovery (cured), default, non-response, and death (Al Amad et al., 2017). Children attending OTC programs are discharged based on one of these four outcomes, with recovery being the desired result. Defaulting, which refers to the failure to attend two consecutive follow-up visits, is a significant challenge that affects the success of OTC interventions (Akparibo et al., 2017). Research has established that the default rate in OTC programs should remain below 15%, as per global standards set by WHO (Young & Harvey, 2004). Higher default rates are often indicative of structural challenges within the program, such as logistical difficulties or barriers related to caregiver knowledge and engagement(Young & Harvey, 2004).

2.3.4 Impact of defaulters on OTC Program performance

High default rates undermine the effectiveness of SAM treatment programs, with reduced survival rates and a relative risk of death for defaulters being 6.6 times higher than for children who complete their treatment (Bahwere, 2012; Akparibo et al., 2017). Defaulting also prolongs malnutrition, heightens susceptibility to infections, and raises healthcare costs due to repeated admissions (Puett & Guerrero, 2015).

A comprehensive understanding of the factors contributing to treatment default is essential for improving OTC program performance. Insights from health workers are crucial in identifying practical challenges and barriers. In a mixed-methods study from Zambia, health workers identified several key factors, including stock-outs of RUTF and drugs (53%) and long distances to OTC centres (32%), as major contributors to default. Additionally, 15% of health workers believed that caregiver misconceptions about their children's recovery often led to premature discontinuation of treatment (Mwanza et al., 2016)

According to the IMAM guidelines provided by the Ministry of Health, Uganda, protocols for addressing defaulters include follow-up with home visits for family assessment and support, and patients should be re-entered into the OTC program upon returning, provided they meet the necessary criteria (Ministry of Health, 2021).Strategies to reduce default rates should emphasize strengthening caregiver education, optimizing follow-up procedures, and addressing logistical challenges, such as ensuring a consistent supply of RUTF (Waruguru & Kamau, 2024).

2.3.5 Outpatient therapeutic (OTC) program challenges

Inadequate provision and improper use of RUTF

A major challenge with OTC programs for SAM is the insufficient supply and inappropriate use of RUTF. A mixed-methods study in southern Ethiopia, which interviewed 175 health extension workers across 94 service points, revealed that 32.9% of respondents identified the lack of RUTF as the primary barrier to effective community-based management of SAM (Tadesse et al., 2016). Likewise, a comparative analysis of barriers to SAM management in Pakistan and Ethiopia highlighted RUTF consumption refusal by the child as a significant issue, with 30% of defaulters in Ethiopia attributed to this refusal (Puett & Guerrero, 2015). Additionally, a qualitative study in southern Ethiopia reported

that RUTF was often viewed as a shared household food or a commodity to be sold, thus detracting from its intended therapeutic use (Tadesse et al., 2015).

Lack of antibiotics

The availability of antibiotics is another crucial barrier in OTC programs. In the same study conducted in southern Ethiopia, 62.9% of health workers identified the shortage of antibiotics as a key challenge to effective SAM treatment (Tadesse et al., 2016).

Insufficient transfer to inpatient Care

Effective management of SAM often requires timely transfers from outpatient care to inpatient facilities, especially for children who fail to meet recovery criteria. However, the lack of a structured system for transferring these children to inpatient settings has been recognized as an OTC challenge(United Nations Children's Fund, 2013).

Inadequate home visits

Inadequate home visits present another challenge to OTC programs. Limited follow-up can result in missed opportunities for intervention, thereby negatively impacting the success of SAM management (United Nations Children's Fund, 2013).

2.4 Conclusion

The literature shows that default from outpatient management of severe acute malnutrition is common in low-resource settings, with rates frequently exceeding the <15% threshold recommended for acceptable programme performance. Default has been associated with multiple child, caregiver and health-system factors, including young age, severe wasting or low MUAC, HIV infection, long distance to facilities, transport costs, stock-outs of RUTF and medicines, sub-optimal counselling and weak follow-up systems. However, there is very limited evidence from Northern Uganda, a post-conflict setting with high poverty, population mobility and constrained health services, and existing Ugandan studies either pre-date recent IMAM scale-up or do not focus specifically on OTC default.

Furthermore, while previous work has described reasons for default mainly from caregivers' perspectives, few studies have systematically examined health workers' experiences and perceptions of OTC delivery or how these influence implementations of national guidelines in routine practice. Explicit theoretical models linking individual, community and health-system determinants of default are also rarely applied. This study addresses these gaps by (i) providing updated facility-level estimates of OTC default and associated factors at a regional referral hospital in Northern Uganda, and (ii) using an explanatory sequential mixed-methods design to integrate quantitative risk-factor analysis with a phenomenological exploration of health worker experiences and perceptions.

CHAPTER THREE: METHODOLOGY

3.0. Introduction

This chapter outlines the methodological approach employed in the study. It details the study design, study area, study population, eligibility criteria, and sampling procedures. It also describes the variables of interest, data collection methods and tools, data management and analysis strategies, ethical considerations, and the research dissemination plan.

3.1 Study design

This study adopted an explanatory sequential mixed-methods design. The quantitative component consisted of a retrospective chart review of records for children aged 6–59 months who were enrolled in the OTC program for malnutrition at GRRH during the financial years 2022/2023 and 2023/2024. This design enabled the assessment of treatment default rates and the identification of factors associated with treatment default within the OTC program.

Following the quantitative analysis, a qualitative phase was conducted using a phenomenological approach to explore the lived experiences of health workers engaged in the OTC program.This facilitated contextual understanding of operational barriers, service delivery gaps, and drivers of treatment default. The design allowed for integration of quantitative trends with qualitative insights.

3.2 Study area

The study was conducted at GRRH, a regional referral hospital located in Gulu City, Northern Uganda. The OTC clinic, within the pediatric ward, operates biweekly and offers screening, RUTF provision, medications, counselling, and follow-up. In the 2023/2024 financial year, the unit managed 690 cases of SAM. Services are delivered by a multidisciplinary team of pediatricians, nutritionists, nurses, and medical officers.

3.3 Study population

3.3.1 Quantitative (Objective 1 and 2)

The study population comprised all children aged 6–59 months who were enrolled in the OTC program at GRRH between 1 July 2022 and 30 June 2024. This period was selected to align with the reporting structure of the Integrated Nutrition Register (INR), the primary data source, which is organized by financial years and adheres to the Ministry of Health Uganda's age-based eligibility criteria for OTC program admission.

3.3.2 Qualitative (Objective 3)

The qualitative study population comprised health workers directly involved in OTC program delivery at GRRH, including nutritionists, nurses, medical officers and the pediatrician overseeing the unit. At the time of data collection, the OTC team consisted of 4 nutritionists, 5 nurses, 2 medical officers and 2 pediatricians assigned to the pediatric ward and OTC clinic. From this pool, we purposively selected health workers with at least one year of continuous involvement in OTC services to ensure sufficient program experience.

3.4 Eligibility criteria

3.4.1 Inclusion criteria

1. *Quantitative*: All records of children aged 6–59 months enrolled in the OTC program between July 2022 and June 2024, irrespective of district of residence.

2. *Qualitative:* Health workers directly involved in OTC service delivery at Gulu Regional Referral Hospital with at least 12 months of continuous experience in the programme prior to data collection.

3. *3.4.2 Exclusion criteria*

1. *Quantitative:* Records were excluded if key variables were missing or incomplete.

2. *Qualitative:* Health workers unavailable due to illness or unable to provide information.

3.5 Sample size determination

3.5.1 Quantitative (Objective 1 and 2)

The required sample size was calculated using the Kish Leslie formula for cross-sectional studies (Kish, 1965). A prevalence of treatment default of 58%, derived from prior evidence in Uganda, was used (ssekajja et al., 2022), with a 95% confidence level and a 5% margin of error as calculated below;

$$n = \frac{Z^2 xpq}{E^2}$$

Where:

n = sample size

Z = Z-score for the desired confidence level (1.96 for 95% confidence)

p = Estimated treatment default rate (0.58)

q = 1 - P (0.42)

E = Desired precision level (0.05)

n = (1.96^2 * 0.58 * 0.5) / 0.05^2 which equals to 374

To mitigate the effect of incomplete or missing records, a 10% non-response adjustment was applied (Charan & Biswas, 2013):

n(final) = 374 * 1.10 = 411 children.

3.5.2 ***Qualitative (Objective 3)***

The qualitative sample size was determined using the principle of data saturation.Recruitment ceased once thematic saturation was achieved, indicating that no new information was emerging from additional interviews.

3.6 Sampling methods

3.6.1 Quantitative (Objective 1 and 2)

A sampling frame of 676 eligible children aged 6–59 months who were enrolled in the OTC program during the study period was established using data extracted from the integrated nutrition register (INR). From this sampling frame, 411 records were selected through simple random sampling, employing randomly generated numbers in Microsoft Excel. The sampling process is illustrated in Figure 2 (Study Flow Diagram).

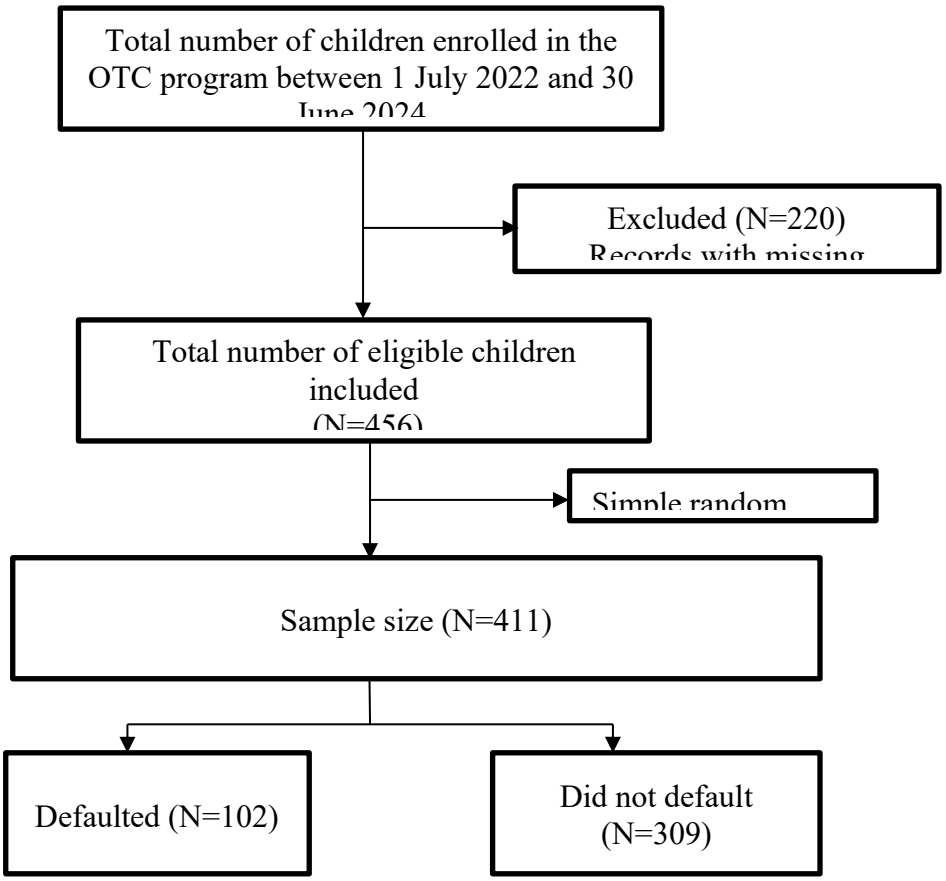


Figure 2:study flow diagram

3.6.2 Qualitative (Objective 3)

We used maximum variation purposive sampling to capture a wide range of perspectives across cadres, gender, age, and duration of service in the OTC program. The hospital director and Head of Pediatrics provided a list of all eligible staff involved in OTC. From this list, we purposively approached health workers to ensure representation of nutritionists, nurses, medical officers and the pediatrician. Two eligible staff were not interviewed (one on leave and one transferred). Recruitment continued until thematic saturation was reached, which occurred after nine in-depth interviews when no new codes or themes were emerging from the data.

3.7 Variables

3.7.1 Dependent variable

The dependent variable in this study was *treatment default*, defined as failure to attend two consecutive scheduled OTC follow-up visits. Default information was obtained from the Integrated Nutrition Register (INR), which routinely documents child attendance and discharge outcomes for all OTC clients.

3.7.2 Independent variables

Independent variables included child-level sociodemographic and clinical characteristics: age (in months), sex, address (within Gulu vs. outside Gulu), infant feeding practice (complementary feeding, mixed feeding, no longer breast feeding and replacement feeding), admission weight and height, and mid-upper arm circumference (MUAC). Additional variables included HIV status (positive, negative,

unknown), admission type (new vs. readmission), referral status (self-referred vs. facility-referred), and nutritional classification at enrollment (severe acute malnutrition with or without oedema).

All continuous variables exhibited non-normal distributions; therefore, median-based and evidence-informed thresholds were applied to enhance interpretability and comparability with existing literature. Specifically, age < 24 months captured the critical infant–toddler period associated with elevated risk of malnutrition and default (Muftah, 2016) ; MUAC < 11 cm reflected the WHO diagnostic cut-off for severe acute malnutrition used in prior studies (Muftah, 2016) ; and weight < 7 kg represented the study median, consistent with thresholds used in comparable OTC program evaluations.

3.8 Data Collection

3.8.1 Quantitative (Objective 1 and 2)

Data were extracted using a structured data abstraction tool adopted with modification from a study from Southwest Ethiopia and designed in alignment with the Uganda national OTC reporting format (Wondie et al., 2022) (appendix I). Three trained research assistants reviewed the INR to extract information on demographic, anthropometric, clinical, and program variables. Daily reviews for accuracy and completeness were done by the principal investigator. Personal identifiers were excluded to maintain confidentiality.

3.8.2 Qualitative (Objective 3)

All qualitative interviews were conducted by the principal investigator, a medical doctor and Master of Public Health candidate with prior training in qualitative research, supported by a research assistant with a background in social sciences and experience in health research. Before data collection, the team underwent a two-day refresher training covering research ethics, qualitative interviewing skills, and reflexivity. The Semi-structure interviews were conducted in English using an interview guide developed from a review of relevant literature (appendix II). The guide was piloted with two

nutritionists from Lacor Hospital, a regional non-profit referral facility in the same region. Prompts were used to explore key areas of interest in greater depth, allowing participants to share experiences freely.

Interviews lasted between 19 minutes 30 seconds and 42 minutes 28 seconds, with an average duration of 29 minutes 21 seconds. Prompts were used to explore key areas of interest in greater depth, allowing participants to share experiences freely.

All interviews were conducted face-to-face in a private setting, ensuring confidentiality and participant safety. Memos and analytical notes were taken throughout to capture reflections and emerging patterns. With informed consents (appendix III and IV), all interviews were audio-recorded, transcribed verbatim, and independently verified for accuracy. Transcripts were anonymized and returned to participants for member checking. Data collection continued until thematic saturation was reached. The decision to conclude data collection was made collaboratively by the research team.

3.9 Data management and analysis

3.9.1 Quantitative (Objective 1 and 2)

Data were entered into Microsoft Excel, cleaned for completeness and consistency, and subsequently exported to STATA version 17 for analysis.

Descriptive statistics were used to summarize socio-demographic and clinical characteristics of participants. Categorical variables such as sex, age group (<24 vs. ≥24 months), address (within vs. outside Gulu city), infant feeding practice (complementary, mixed, replacement, or ceased breastfeeding), admission type (new vs. re-admission), referral status, HIV status (positive, negative, or unknown), nutritional status at enrolment (SAM with or without edema), MUAC category (<11 cm vs. ≥11 cm), and weight category (<7 kg vs. ≥7 kg) were presented as frequencies and percentages.

Continuous variables such as age (in months), MUAC (cm), weight (kg), and height (cm) were assessed for normality and summarized as medians with interquartile ranges (IQR) due to skewed distributions

Bivariate analysis assessed associations between independent variables and OTC treatment default. Pearson's chi-square test was used for categorical variables with sufficient cell sizes such as age group, sex, address, MUAC and weight category, nutritional status. Fisher's exact test was applied to sparse categorical variables such as referral status, admission type, HIV status, and infant feeding practice. The Wilcoxon rank-sum test was used for continuous variables such as age, MUAC, weight, height. Variables with $p < 0.20$ were considered for multivariable analysis.

For the multivariable analysis, logistic regression was used as the primary modelling approach to estimate crude and adjusted odds ratios (cOR and aOR) with 95% confidence intervals for factors associated with default. Variables with $p < 0.20$ at bivariate analysis and those identified a priori from the literature (age, sex, residence) were included in the initial multivariable model. The category with the highest frequency was specified as the reference group for each exposure. Model fit was acceptable and assessed using the Pearson goodness-of-fit test.

Given the relatively high prevalence of default, we conducted a sensitivity analysis using a modified Poisson regression model with robust variance to estimate crude and adjusted prevalence ratios. The magnitude and direction of associations in the modified Poisson models were comparable to those from logistic regression and no covariate reached statistical significance in either approach. As the choice of model did not change the inference and logistic regression had been pre-specified and is widely used in similar SAM/OTC studies, we retained the multivariable logistic regression model as the main analysis and report the modified Poisson results as a sensitivity check in the text. Statistical significance was set at $p < 0.05$.

3.9.2 Qualitative (Objective 3)

Inductive thematic analysis was conducted to examine health workers' perceptions and experiences of the OTC program for malnutrition (Terry et al., 2017). This involved familiarization, coding, theme development, review, and reporting. Transcripts were read repeatedly, and initial codes were developed inductively. Codes were grouped into themes through iterative discussion among the research team. Key themes and the analytic framework were refined collaboratively and validated through participant feedback to ensure credibility. Data interpretation was further strengthened through peer debriefing and team consensus.

3.10 Ethical consideration

Ethical approval for this study was obtained from the Gulu University Research Ethics Committee (GUREC), under approval number GUREC-2024-977 (figure 4). Administrative clearance was also granted by the Hospital Director of Gulu Regional Referral Hospital on 10 January 2025 (figure 5).

For the qualitative component, written informed consent was obtained from all participants prior to the interviews. Additional consent was obtained for audio recording after participants agreed to participate.

For the quantitative component, a waiver of informed consent was granted due to the retrospective nature of the study and its reliance on routinely collected program data. All data were de-identified prior to analysis, and strict measures were taken to ensure confidentiality and data security. Access to identifiable information was restricted to authorized members of the research team only.

This study was conducted in accordance with the principles of the Declaration of Helsinki and the national ethical guidelines for health research in Uganda.

3.11 Research dissemination plan

The dissemination plan for these research findings includes multiple strategic steps: publishing in a reputable journal for broader accessibility, presenting at conferences, presenting to the relevant department, and subsequently to the Gulu University Research and Ethics Committee (GUREC) for expert review and scrutiny. This approach aims to integrate our findings into the existing body of research and ensure they reach and benefit the wider community.

CHAPTER FOUR: RESULTS

4.0 Introduction

This chapter presents the findings of the study, organized in line with the stated objectives. The Quantitative results are illustrated using tables and graphs, while qualitative findings are presented thematically, with emergent themes and subthemes supported by direct verbatim quotations. Both sets of findings are structured to address the following aims: to determine the OTC treatment default rates, identify the associated factors, and explore the experiences of health workers involved in the implementation of the OTC program at Gulu Regional Referral Hospital.

4.1. Quantitative findings on prevalence and factors associated with OTC treatment default

This section presents the quantitative results addressing the first two study objectives to determine the OTC treatment default rates and to identify factors associated with treatment default among children aged 6–59 months enrolled in the OTC program for malnutrition at GRRH.

4.1.1 Socio-demographic and other clinical characteristics of participants.

A total of 411 children were enrolled in the study (table 1). The median age was 18 months (interquartile range [IQR]: 12–25 months), with the majority (66.2%, n = 272) aged below 24 months. More than half of the participants were male (57.2%, n = 235) and resided outside Gulu city (57.2%, n = 235).

Complementary feeding was reported by 47.0% (n=193) of the participants, while 44.3% (n=182) had stopped breastfeeding. Mixed feeding and replacement feeding were less common, with rates of 6.3% (n=26) and 2.4% (n=10), respectively.

Most participants (98.5%, n=405) were newly admitted to the OTC program, while only 1.5% (n=6) were re-admissions. At enrolment, 67.6% (n = 278) had SAM without edema, while 32.4% (n = 133) had SAM with edema.

HIV status was unknown for 53.8% (n = 221) of participants; 42.1% (n = 173) were HIV-negative, and 4.1% (n = 17) were HIV-positive.

The median MUAC was 11 cm (IQR: 10.4–11.4), with 43.7% (n=122) having a MUAC less than 11 cm. The median weight of the participants was 6.9 kg (IQR: 5.8 – 8.2), with 50.6% (n=208) categorized as having a weight of less than 7kg. The median height was 73.5 cm (IQR: 68.3 – 78.1).

Table 1: Socio demographic and other clinical characteristics of the participants (n=411)

Variable	Frequency	Percentage
Age, months		
<24	272	66.2
>=24	139	33.8
Sex		
Female	176	42.8
Male	235	57.2
Address		
Outside Gulu	235	57.2
Within Gulu	176	42.8
Infant feeding practice		
Complementary feeding	193	47.0
Mixed feeding	26	6.3
No longer breast feeding	182	44.3
Replacement feeding	10	2.4
Admission		
New admission	405	98.5
Re-admission	6	1.5
Referral status		
Referral	15	3.7
Non-referral	396	96.3
Nutritional status at enrollment		
SAM with edema	133	32.4
SAM without edema	278	67.6
HIV status		
Negative	173	42.1
Positive	17	4.1
Unknown	221	53.8
MUAC* category, cm		
<11	122	43.7
>=11	157	56.3
Weight, Kgs		
<7	208	50.6
>=7	203	49.4

**Mid upper arm circumference.*

4.1.2 Prevalence of OTC Treatment default.

The overall OTC treatment default rate was 24.8% (n=102) (Figure 1). The median duration of stay in the OTC program before default was 46.5 days (IQR: 34–65).

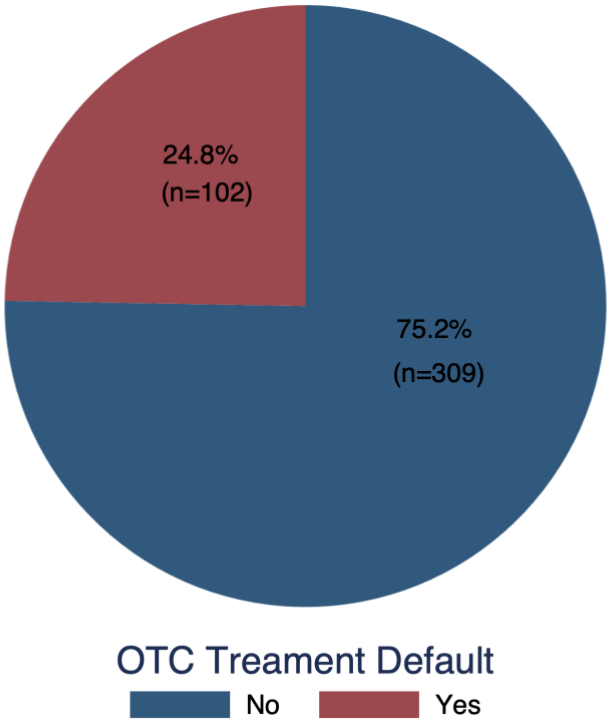


Figure 3:OTC treatment default rates among the participants

4.1.3. Factors associated with OTC treatment default.

At Bivariate level, analyses were conducted to examine the relationship between selected demographic and clinical characteristics and treatment default among children enrolled in OTC. (*Table 2*).

A statistically significant association was observed between HIV status and treatment default (p = 0.010). None of the HIV-positive children defaulted, whereas 50% of those who defaulted had unknown HIV status.

Admission weight also showed a statistically significant association with default. Children who defaulted had a significantly lower median weight at enrolment (6.4 kg; IQR: 5.5–8.1) compared to those who completed treatment (7.0 kg; IQR: 6.0–8.2) (p = 0.018). When analyzed categorically, children with a weight <7 kg had higher default rates (59.8%) than those ≥7 kg (40.2%) (p = 0.032).

Infant feeding practices were marginally associated with treatment default (p = 0.172). Higher default rates were observed among children on complementary feeding compared to other feeding categories. Nutritional status at enrolment also showed a borderline association (p = 0.143), with a higher proportion of defaulters presenting with SAM without edema.

Residence status (within or outside Gulu city) was not statistically significant but approached the threshold for inclusion (p = 0.219), with a slightly higher default rate observed among children residing within the city.

Other variables—including age group (p = 0.399), sex (p = 0.443), admission type (p = 0.641), referral status (p = 0.770), MUAC category (p = 0.548), and height (p = 0.213)—were not significantly associated with treatment default.

These findings together with the literature review informed the selection of variables for inclusion in the multivariate logistic regression model, using a threshold of $p < 0.20$ for initial consideration.

Table 2: Bivariate analysis of factors associated with OTC treatment default among participants (n = 411)

Variable	OTC treatment default		Pearson chi2 (degrees of freedom) χ^2 (df)	P value
	No (n=309) n (%)	Yes (n=102) n (%)		
Age (months)				
<24	201(65.1)	71(69.6)		
>=24	108(34.9)	31(30.4)	0.71 (1)	0.399
Sex				
Female	129(41.8)	47(46.1)		
Male	180(58.2)	55(53.9)	0.59 (1)	0.443
Address				
Outside Gulu	182(58.9)	53(52.0)		
Within Gulu	127(41.1)	49(48.0)	1.50(1)	0.219
Infant feeding practice				
Complementary feeding	136(44.0)	57(55.9)	--	
Mixed feeding	21(6.8)	5(4.9)		**0.172**
No longer breast feeding	145(46.9)	37(36.3)		
Replacement feeding	7(2.3)	3(2.9)		
Admission				
New admission	305(98.7)	100(98.0)		
Re-admission	4(1.3)	2(2.0)	0.24(1)	0.641
Referral status				
Referral	11(3.6)	4(3.9)		
Non-referral	298(96.4)	98(96.1)	0.03(1)	0.770

Table 2 (continued): Bivariate analysis of factors associated with OTC treatment default among participants (n = 411)

**Mid upper arm circumference.*

Variable	OTC treatment default		Pearson chi2 (degrees of freedom) χ^2 (df)	P value
	No (n=309) n (%)	Yes (n=102) n (%)		
Nutritional status at enrollment				
SAM with edema	106(34.3)	27(26.5)		
SAM without edema	203(65.7)	75(73.5)	2.15(1)	**0.143**
HIV status				
Negative	122(39.5)	51(50.0)	--	
Positive	17(5.5)	0(0)		**0.010**
Unknown	170(55.0)	51(50.0)		
MUAC*, cm				
<11	87(42.7)	35(46.7)		
>=11	117(57.3)	40(53.3)	0.36(1)	0.548
Weight, Kgs				
<7	147(47.6)	61(59.8)		
>=7	163(52.4)	41(40.2)	4.59(1)	**0.032**

Multivariable logistic regression was conducted to identify independent factors associated with OTC treatment default participants (*Table 3*). After adjusting for age, sex, residence, nutritional status, and weight category, none of the variables were independently associated with treatment default. A sensitivity analysis using modified Poisson regression with robust variance, specifying the highest-frequency category as the reference for each covariate, produced similar effect estimates and likewise identified no statistically significant associations, confirming the robustness of the main findings.

Children with an admission weight <7 kg had 1.52 times higher odds of default compared to those with weight ≥7 kg, although this was not statistically significant (AOR = 1.52; 95% CI: 0.90–2.56; p = 0.119). Similarly, no statistically significant associations were observed for age <24 months (AOR = 0.99; 95% CI: 0.58–1.66; p = 0.957), female sex (AOR = 1.16; 95% CI: 0.73–1.82; p = 0.529), residence in Gulu city (AOR = 1.25; 95% CI: 0.79–1.98; p = 0.338), or SAM without edema (AOR = 1.17; 95% CI: 0.67–2.04; p = 0.590).

Although the model was not statistically significant overall (LR $\chi^2(5) = 6.42$; p = 0.268), it showed acceptable goodness-of-fit (Pearson $\chi^2(329) = 335.82$; p = 0.386), indicating that the predicted probabilities fit the observed data well. However, the model explained only 1.4% of the variation in treatment default (pseudo $R^2 = 0.0139$).

Table 3: multivariable logistic regression analysis of factors associated with OTC treatment default among participants (n = 411)

Variable	Unadjusted Odds Ratio (95% Confidence interval)	P value	Adjusted Odds Ratio (95% Confidence interval)	P value
Age				
>=24	Reference		Reference	
<24	1.23(0.76-1.99)	0.39	0.99 (0.58-1.66)	0.95
Sex				
Male	Reference		Reference	
Female	1.19(0.76-1.87)	0.44	1.2 (0.73-1.82)	0.52

Address				
Outside Gulu Within Gulu	Reference 1.32(0.85-2.08)	 0.22	Reference 1.25 (0.79-1.98)	0.33
Nutritional status at enrollment				
SAM with edema SAM without edema	Reference 1.45 (0.88-2.39)	 0.14	Reference 1.16(0.67-2.03)	 0.59
Weight, Kgs				
>=7 <7	Reference 1.64 (1.04-2.58)	 0.03	Reference 1.52(0.89-2.56)	 0.11

4.2. Qualitative findings on health workers' experiences in the OTC program

This section presents the qualitative results addressing the third study objective to explore the experiences of health workers involved in the OTC program for malnutrition at GRRH.

4.2.1. Socio-demographic and other clinical characteristics of health workers in the OTC program.

Nine health workers participated in the study, comprising five females and four males aged 27–56 years (mean: 36 years). The majority were nutritionists (n = 4), while others included medical officers, nurses, and a pediatrician. Most held diploma or bachelor's degrees, with one participant possessing a master's degree. Work experience ranged from 1.6 to 11 years (mean: 4 years). Interviews lasted for 19 minutes 30 seconds to 42 minutes 28 seconds**,** with an average duration of 29 minutes and 21 seconds. Characteristics of participants are presented in Table 4.

Table 4: characteristics of health workers in the OTC program.

Id	Age	Gender	Cadre	Position	Qualification	Duration of employment	Interview duration
01	32	Female	Nutritionist	Nutritionist	Bachelor of science in human nutrition and dietetics	4 years	42 minutes 28 seconds
02	51	Male	Nutritionist	Senior nutritionist	Bachelor of science in human nutrition and dietetics	11 years	42 minutes 23 seconds
03	34	Male	Medical officer	Medical officer	Bachelor of medicine and bachelor of surgery	1.6 years	27 minutes 52 seconds
04	38	Female	Pediatrician	Pediatrician	Masters of medicine in pediatrics and child health	7 years	20 minutes 50 seconds
05	29	Male	Nutritionist Assistant	Nutritionist Assistant	Diploma in human nutrition and dietetics	3 years	38 minutes
06	27	Male	Nutritionist Assistant	Nutritionist Assistant	Diploma in human nutrition and dietetics	3 years	23 minutes 36 seconds
07	56	Female	Assistant nursing officer	Nutrition ward in charge	Diploma in nursing	4 years	29 minutes 15 seconds
08	29	Female	Enrolled nurse	Ward nurse	Certificate in nursing	1.6years	19 minutes 30 seconds
09	29	Female	Enrolled nurse	Ward nurse	Certificate in nursing	1.6 years	20 minutes 13 seconds

4.2.2. Overview of themes and subthemes.

Six core themes emerged from the analysis. The first theme, organisation of the OTC program, included two subthemes. The second, causes of OTC treatment default, comprised four subthemes. The third theme, consequences of OTC treatment default, included two subthemes. The fourth, management and prevention of default, comprised two subthemes. The fifth theme, OTC program challenges, included two subthemes. Lastly, recommendations for OTC program strengthening consisted of three subthemes. The following sections describe these themes and subthemes with their quotes. The themes and subthemes are presented in Tables 5.

Table 5: Overview of themes and subthemes with illustrative quote

Theme	*Subtheme*	*Illustrative quote*
Outpatient therapeutic care program organization	***Structured OTC program days***	*"For the newly identified, we conduct the OTC program from Monday to Friday. And those who are returning for their visits, we hold the clinic on Tuesday and Thursday every week". (interview 01)*
	Comprehensive patient management	*"But, for both severely malnourished and moderately malnourished, nutrition counselling and education is a must. We do for both. Our main responsibility is just nutrition counselling and health education". (interview 06)*
		"We also conduct HIV testing and TB screening for all our patients in OTC care so that we know how best to manage them just in case they have those conditions. And then we give the therapeutic feeds, the RUTF for a length of about two weeks……..... So apart from that, we also do deworm and vitamin A for the children who are eligible and those who have not gotten other antigens, we send them to the young child clinic for immunization". (interview 01)
		"Then apart from initiating the newly identified, we also do follow up for those who have been on program running. Obviously when they return, we do the same, we do the nutrition assessment, we also ask about the progress of the child and then we probe for those who don't seem to be improving. Then we take them to see a medical officer or clinical officer or pediatrician, depending on who is available that day on the ward for screening, just in case". (interview 01)
		"So, after conducting appetite test, if the child or patient has passed, then we enroll you and take your bio data, we take the contact of your caregiver so that we stay in touch. The village, district where the patient is coming from". (interview 01)

Table 5 (continued): Overview of themes and subthemes with illustrative quote

Theme	*Subtheme*	*Illustrative quote*
Causes of OTC treatment default	***Structural and systemic barriers***	*"Some of them come from very far, they're not within the residence, you find they are coming from far away, even Amuru, far. So, someone tells you, I didn't come because I didn't have transport to bring me to the hospital". (interview 08)*
		"A third one I can talk of is probably seasonality in our agricultural activity. Most times when the rains come, or just to break it down, planting and harvesting season, you may find someone who's based in Gulu city, but they dig in a more neighboring district, like Amuru or more. So, time for visits, like the return date comes, they are in the garden". (interview 05)
	Caregiver health literacy gaps	*"we also have reasons of what I would call negligence from the caretakers. This has been common to patients of children who have been taken care of by the stepmoms where they will not follow the instructions that are given by the healthcare workers. The other issue is still under the point of ignorance. Some patients think that when they come for OTC, again they will be hospitalized. So, they tend to remain home, and by the time they come, the child is not doing well……. The other pattern that we have seen is an issue of low education of the family members or the caretakers. Most of them are uneducated, and they may not follow the instructions". (interview 03)*
	Caregiver socio economic constraints	*"Then others, when they reach home, the friends or the family members or the elderly people will tell them, this child, let's go and see a witch doctor somewhere and we first do try that. The child is being bewitched by one of the cowives". (interview 01)*
		"Poverty is quite common in most of our patients that we enroll. And they really have quite a number of children". (interview 01)
	Child clinical factors	*"Some of them have underlying problems, yes, that can make them again relapse. Because cases like, you know, TB can reoccur. We even know HIV is a problem. And then we have conditions like CP—cerebral palsy. These are cases that normally easily default. And you know, things like cerebral palsy is a very, very difficult condition to manage because this effect is for life. So, the attendants tend to, you know, get tired and eventually, you know, they just—let me say—they desert the baby and leave it there to die". (interview 07)*

Table 5 (continued): Overview of themes and subthemes with illustrative quote

Theme	*Subtheme*	*Illustrative quote*
Consequences of OTC treatment default	***Morbidity***	*"So, if they default on treatment and yet they are on the way to recovery, there is a possibility they can reverse back to their initial condition and they can even present with even more severe symptoms. Two, they can even develop other opportunistic infections because malnutrition is a state of immunosuppression. So, meaning you are prone to getting other infections or opportunistic infections along the way". (interview 4)*
	Life-threatening Complications	*"And then they actually get the medical complications, which will now be life-threatening. Others do die, especially if they realize that the child has developed medical complications late and they don't come early. Others die". (interview 01)*
	Prolonged hospitalization	*"So, I would conclude by saying the repercussions that we have seen from treatment default from OTC is the issue of prolonged hospital stay". (interview 03)*
	Developmental Impacts	*"Others may slip away with it and remain normal, but they would be mentally retarded...And I mean, if it is a girl, the malnutrition will be carried on now to teenage age, to motherhood, and the cycle of malnutrition will automatically continue".(interview 01)*
Management and prevention strategies for OTC default	***Case management approaches for treatment defaulters***	*"But then also, we have an improvision of getting the phone number of the caretaker and one other phone next to kin, of the patient, that when they default from the treatment, we make a phone call follow up of that patient". (interview 03)*
	Preventive measures to enhance OTC treatment retention	*"The community outreaches help us in sensitizing the communities about the severe acute malnutrition, about the treatment of severe acute malnutrition and adherence...And in community outreaches, we also see those patients who have been enrolled in OTC and we bring the service closer to them. So that also prevents them from defaulting". (interview 01)*
		We also do nutrition, health education and counseling. Then, yeah, we talk to the caretaker. We tell them the value of attending the OTC. And we encourage them not to default again until they have been discharged or the child is cured. (interview 06)

Table 5 (continued): Overview of themes and subthemes with illustrative quote

Theme	*Subtheme*	*Illustrative quote*
Outpatient therapeutic care program challenges	***Resource limitations***	*"Then on the side of the hospital the challenges which we've been experiencing mainly it has to do with supplies. So we've had stock outs of supplies, plumpy nuts which directly is mainly utilized in the OTC setting. So sometimes patients come, they don't find them." (interview 04)*
		"Now, leaving the issue of patients alone, coming to the issues of the healthcare workers, there is a poor patient-staff ratio. The number of staff are few. We are actually depending on the interns from the nutritional schools, who are planning to become nutritionists. So the number of staffs is low". (interview 03)
		First and foremost, I want to begin by saying we have a conducive working environment for us to do our part. But structurally, it's not adequate. Ideally, a nutrition unit should be having a place for rehabilitation, adequate place for play, adequate play material for developmental milestone, which is lacking. (interview 02)
		"We are not supported to do the food demonstrations that we would love to do. We are not supported to do the home visits, like the way we would love to do them, to do community sensitizations that we would love to do, because of budget constraints, majorly". (interview 01)
	Misuse of RUTF at household level	*"Number one, we have recorded scenarios where caretakers go ahead and misuse the therapeutic feeds. Actually, I can confidently tell you the RUTF is the most abused therapeutic feed countrywide, not just in this region…. Secondly, also, just in line with misuse, you get households where there are a number of young children. Once we get this patient back at home, most times they tend to share, and that directly impacts on the treatment". (interview 05*
		"So, we have always to remind them, that is our main role, to remind them of the importance of what these therapeutic feeds. It shouldn't be shared at home, right? It should not be sold. We know some of them sell it. It shouldn't be sold. These are drugs which should be used for the patient." (Interview 07)
	not using data collected	*"And I think also we've had challenges with the use of, the utilization of the data that we have. We are actually not utilizing it to inform us so that we can actually improve on our intervention". (Interview 04)*

Table 5 (continued): Overview of themes and subthemes with illustrative quote

Theme	*Subtheme*	*Illustrative quote*
Recommendations for OTC program strengthening	***Strengthening Program Resources and Institutional Capacity***	*"So, first of all, we need to have all the supplies and resources we need to provide the services. The nutritional supplies, the medical supplies that we need to use to treat the opportunistic infections. So that these patients don't have to run away because of lack of some of these supplies". (interview 04)*
		"So, I would recommend for the program, one, to get the right number of staff to work on the program". (interview 01)
	Strengthening Nutrition-Sensitive Preventive Interventions	*"And I would also recommend a lot of prevention measures, you know, encourage on good hygiene and sanitation, emphasize on exclusive breastfeeding, timely, complimentary feeding. Now, that would reduce on our numbers". (interview 01)* *"When we have zero hunger, we have zero malnutrition. One is to allow household food security. How do we do this? Increase awareness on productivity at household level. Improve household level health, call it water, sanitation, food security. People should be having a store for food. Another one is to prevent sales of food. Harvest, keep it for feeding of the family". (interview 02)*
	Strengthening follow-up systems and decentralization of services	*"Yes, the other additional things that I would talk about is the issues, if we can have our patients' information that are digitalized in a soft copy, that we can easily follow up our patients, and we can easily know where they are in a soft copy". (Interview 03)* *"We are yet losing so many of the children because we don't have the support for them to come back for review. And we have very few centers providing the services. So, it's mainly at the regional referral. And yet you find some people come from very far away. So, if they don't have transport to come back, that means they cannot reach. So, if we can actually decentralize some of these services, maybe to a health center, four health centers, three levels, so that they are able to access it from their nearest facility". (interview 04)*

Theme 1: Organization of the OTC Program

This theme describes how OTC services are structured and delivered.

Structured OTC program days

Participants reported a fixed schedule with distinct days for new admissions and return visits, ensuring systematic service delivery.

"For the newly identified, we conduct the OTC program from Monday to Friday. And those who are returning for their visits, we hold the clinic on Tuesday and Thursday every week." (Interview 01)

Comprehensive patient management

Health workers mentioned that outpatient therapeutic care involved assessment, appetite testing, nutritional counselling, RUTF provision, HIV/TB screening, deworming, referrals, and regular monitoring.

"We do the anthropometry measurement to find out if the child is really malnourished… we do what is called an appetite test… when the child passes, we enroll the child on the programme." (Interview 06)

Theme 2: Causes of OTC treatment default

This theme explored the multidimensional barriers to treatment adherence.

Structural and systemic barriers

Long distances, transport costs, RUTF stockouts, staff absenteeism, and seasonal farming were mentioned by participants to interfer with clinic attendance.

"And then the other factor is stockout of supplies. There are times parents come, they don't find supplies… like plumpy nut. And if they come once, twice, they don't find it, the next time they will choose not to come back." (Interview 04)

Caregiver socio-economic constraints

Participants mentioned domestic violence, family separation, poverty, inadequate social support, and cultural beliefs (e.g., attributing illness to witchcraft) were major deterrents.

"Because of GBV also at home, makes them to abandon their children, and most of these children are with their grandmothers… not the true parent." (Interview 02)

Caregiver health literacy gaps

Participants mentioned caregiver negligence, misinformation causing fear of hospitalization, and misconceptions about the program leds to dropouts.

"We also have reasons of what I would call negligence from the caretakers. This has been common to patients of children who have been taken care of by the stepmoms where they will not follow the instructions that are given by the healthcare workers. … under the point of ignorance, some patients think that when they come for OTC, again they will be hospitalized.… The other pattern… low education of family members or caretakers. Most of them are uneducated, and they may not follow the instructions" (Interview 03)

Child clinical factors

Health workers mentioned comorbidities such as HIV, TB, and cerebral palsy made management complex and contributed to caregiver fatigue.

"Some of them have underlying problems, yes, that can make them again relapse. Because cases like, you know, TB can reoccur. We even know HIV is a problem. And then we have conditions like CP—cerebral palsy. These are cases that normally easily default. And you know, things like cerebral palsy is a very, very difficult condition to manage because this effect is for life. So, the attendants tend to, you

know, get tired and eventually, you know, they just—let me say—they desert the baby and leave it there to die" (interview 07).

Theme 3: Consequences of OTC treatment Default

Morbidity

Health workers mentioned that children defaulting from OTC treatment frequently experience relapse, deterioration of nutritional status, intensified symptoms, and heightened vulnerability to opportunistic infections due to compromised immunity associated with malnutrition:

"So, if they default on treatment and yet they are on the way to recovery, there is a possibility they can reverse back to their initial condition and they can even present with even more severe symptoms. Two, they can even develop other opportunistic infections because malnutrition is a state of immunosuppression. So meaning you are prone to getting other infections or opportunistic infections along the way." (Interview 04)

Life threatening complications

Participants mentioned that default increases the risk of serious, life-threatening complications. Delays in re-engagement with care often lead to severe medical conditions and, in some cases, death.

"And then they actually get the medical complications, which will now be life-threatening. Others do die, especially if they realize that the child has developed medical complications late and they don't come early. Others die." (Interview 01)

Prolonged hospitalization

Health workers noted that children readmitted following treatment default face extended hospital stays, require more intensive medical management, and incur higher treatment costs:

"So, I would conclude by saying the repercussions that we have seen from treatment default from OTC is the issue of prolonged hospital stay." (Interview 03)

Developmental impacts

Participants mentioned that untreated malnutrition from default has lasting effects, including stunted physical and cognitive growth. These developmental deficits can persist into adulthood, perpetuating a transgenerational cycle of malnutrition

"Others may slip away with it and remain normal, but they would be mentally retarded… And I mean, if it is a girl, the malnutrition will be carried on now to teenage age, to motherhood, and the cycle of malnutrition will automatically continue." (Interview 01)

Theme 4: Management and prevention of default

This theme describes interventions aimed at improving treatment continuity.

Case management approaches

Health workers used phone calls and home visits to trace and re-engage defaulters.

"We conduct home visits for our patients in care. So, if you miss an appointment, we record you down and then we conduct a home visit. See what is happening. Is everything okay? Is the child still there? Have you shifted? And then we refer you back to the hospital now." (Interview 01)

Preventive measures

Preventive strategies included health education, community outreach, and linking patients to nearby OTC centers.

"Then the other one is if you're coming from far away, we attach you to a nearby health facility which has OTC services so that we transfer you there. You start getting the services from there. Instead of you

having to come back, travel a long distance and sometimes get a knock over. And I would say the one that is working best for us right now is transferring them to the nearest health facility." (Interview 01)

Theme 5: Outpatient therapeutic care program challenges

This theme highlights resource and system-level limitations affecting program effectiveness.

Resource limitations

Participants noted shortages of RUTF, limited funding for education/outreach, insufficient staff, and inadequate infrastructure.

"Then on the side of the hospital, the challenges which we've been experiencing mainly have to do with supplies. So, we've had stock outs of supplies, plumpy nuts which directly is mainly utilized in the OTC setting. So sometimes patients come, they don't find them." (Interview 04)

Misuse of RUTF at household level

Participants mentioned household-level misuse of RUTF, including inappropriate sharing among siblings and, in certain instances, sale of therapeutic products.

"Number one, we have recorded scenarios where caretakers per se go ahead and misuse the therapeutic feeds. Actually, I can confidently tell you the RUTF is the most abused therapeutic feed countrywide, not just in this region... households where there are a number of young children... they tend to share, and that directly impacts on the treatment." (Interview 05)

Not using data collected

Participants mentioned that despite routine data collection, there were challenges in using data to guide decision-making and improve program implementation.

"And I think also we've had challenges with the use of, the utilization of the data that we have. We are actually not utilizing it to inform us so that we can actually improve on our intervention." (Interview 04)

"We are yet losing so many of the children because… we have very few centers providing the services… If we can decentralize some of these services… to health center IVs, health center IIIs… they are able to access it from their nearest facility." (Interview 04)

Theme 6: Recommendations for program strengthening

This theme captures proposed solutions by the participants to reduce default and improve care delivery.

Strengthening program resources and capacity

Participants called for increased staff, stable RUTF supply, supportive supervision, updated guidelines, and peer learning.

"And the other issue that I want to talk about is the issue of strengthening the lower facilities. ... we can do support supervision and strengthen the lower facilities to improve on their nutritional clinics. I think the program can support us in issues of enabling us to have still continuous medical education in nutrition, having updated guidelines in management of malnutrition…we can do exchange visits…with centers of excellence that are performing well in management of malnutrition, especially OTC…and come back with new knowledge that we have learned.". (interview 03)

Enhancing preventive interventions

Recommendations included integration of WASH, breastfeeding, complementary feeding, and community sensitization.

"Okay, number one recommendation, as I told you, health education. Then also integrating the community members in the care, the VHTs, the LCs, so that they are there with these people in the community, even when they are home". (interview 09)

Improving follow-up and decentralization

Participants proposed digitalizing patient records and extending OTC services to lower-level health facilities.

"So, me, I think one recommendation is proper follow-up of these patients… doing proper follow-up will be one of the things." (Interview 08)

CHAPTER FIVE: DISCUSSION

5.0 Introduction

Severe acute malnutrition remains a major public health concern in Uganda, with the Acholi sub-region reporting an OTC treatment default rate of 21.9%, surpassing the WHO threshold of 15% (WHO, 2004; Ministry of Health Uganda, 2024). Defaulting compromises treatment outcomes, increases child morbidity and mortality, and strains health system resources (Bahwere, 2012; Puett & Guerrero, 2015). This study aimed to determine the default rates, identify factors associated with treatment default among children aged 6-59 months enrolled in the OTC program for malnutrition during the financial years 2022/2023 and 2023/2024, and explore health workers' experiences of OTC at GRRH. This chapter discusses the study findings on the prevalence and factors associated with treatment default, as well as health workers' experiences in the OTC program at GRRH, in the context of existing literature and implications for program improvement.

5.1. Summary of main findings

This study found a high treatment default rate among children aged 6–59 months enrolled in the OTC program at GRRH. This rate surpasses both the WHO-recommended maximum default threshold of 15% and Uganda's national average of 19% (Ministry of Health, 2024; Young & Harvey, 2004). Over half of the children enrolled were under 24 months, weighed <7 kg, had SAM without edema, and nearly half had ceased breastfeeding. Bivariate analysis showed significant associations between default and HIV status, lower admission weight, and weight <7 kg. In multivariable analysis, no factor was independently associated with default, though weight <7 kg showed a non-significant trend. The model fit was acceptable but explained little variance, indicating other unmeasured factors likely contribute to OTC treatment default.

Qualitative findings identified Six core: organization of the OTC program, causes of treatment default, consequences of default, management and prevention strategies, programmatic challenges, and recommendations for program improvement. Many health workers described multiple causes of default, including health system constraints (e.g., long distances, transport costs, RUTF stockouts, staff absenteeism, and seasonal farming), caregiver-level challenges (e.g., Domestic violence, family separation, poverty, inadequate social support, and cultural beliefs), health literacy gaps (e.g., misinformation, misconceptions and negligence), and child-level clinical complications (comorbidities e.g., HIV, TB, cerebral palsy).

5.2. Discussion of quantitative findings

This section discusses the quantitative results addressing the first two study objectives which were to determine the prevalence of treatment default and to identify factors associated with default among children aged 6–59 months enrolled in the OTC program for malnutrition at GRRH.

5.2.1. Prevalence of OTC treatment default.

The reported default rate in this study aligns with evidence from other low-resource settings. The observed prevalence aligns with evidence from other low-resource settings. High default rates have been reported in Kabale District of Western Uganda (58.6%), Ghana (49.1%), and Yemen (55%) settings similarly constrained by inadequate health infrastructure, poverty, and poor access to care(Ssekajja et al., 2022; Al-Amad et al., 2017; Saaka et al., 2015). By contrast, markedly lower default rates—such as the 8% reported at St. Mary's Hospital Lacor in Northern Uganda—have been attributed to better-resourced health systems and active follow-up strategies, including telephone reminders for missed appointments (Nyeko et al., 2016). These high rates reflect structural barriers within the program such as logistical constraints and limited caregiver engagement that continue to undermine the effectiveness of outpatient therapeutic care (Young & Harvey, 2004). These comparisons suggest that disparities in health system resources and patient-tracking mechanisms may contribute to variations in treatment retention across settings.

5.2.2. Factors Associated with OTC treatment Default.

Descriptive findings indicated a highly vulnerable population including younger children, those with low body weight, and cases of SAM without edema, patterns associated with delayed recovery and increased risk of dropout (Bahwere, 2012). Additionally, nearly half had ceased breastfeeding at admission, suggesting compromised nutritional resilience and greater dependency on therapeutic support (Victoria et al., 2021; Puett & Guerrero, 2015). These clinical characteristics likely contribute to the high default rate observed and state the need for early risk stratification and tailored follow-up within OTC programs.

Admission weight <7 kg as the variable was found most strongly associated with treatment default. Although not statistically significant in multivariable analysis, the point estimate suggests a clinically meaningful increased risk which is aligns with previous research indicating that children with severe wasting or very low weight-for-height are more prone to default from care (Al-Amad et al., 2017; Muftah, 2016). Severely underweight children require more intensive care and frequent monitoring. In resource-limited settings, this places additional pressure on caregivers, who often face transport constraints, food insecurity, and competing household responsibilities(Victora et al., 2021). These demands may exceed their capacity, contributing to disengagement from care. Furthermore, underweight children are more susceptible to illness and complications, which can further interrupt continuity in outpatient therapeutic care(Bahwere, 2012). These findings state the importance of proactively identifying high-risk children at the point of admission and prioritizing them for intensified follow-up and tailored support.

Although HIV status did not remain in the adjusted model due to complete separation, bivariate analysis revealed an intriguing pattern. None of the HIV-positive children defaulted, likely reflecting enhanced

retention through parallel ART and nutritional support services at GRRH. This observation highlights the benefit of integrating SAM and HIV care, although small sample size prevents definitive inference. This is contrary with literature from Ethiopia and Zimbabwe suggests that HIV-positive children are at higher risk of treatment default due to stigma, pill burden, and recurrent illness (Yebyo et al., 2013; Nyadzayo & Tshimanga, 2018). The apparent inverse trend in our data likely results from the small number of HIV-positive cases and enhanced clinical attention to this subgroup. Moreover, a considerable proportion of records had unknown HIV status due to incomplete documentation, the need for better integration of HIV testing and SAM data systems.

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Unlike some previous studies, this study did not find significant associations between treatment default and other variables such as child age, sex, address, nutritional status, MUAC at admission, or entry point into care (Muftah, 2016a; Burza et al., 2015; Yebyo et al., 2013; Al-Amad et al., 2017). While service delivery at GRRH has improved through biweekly operations, multidisciplinary staffing, and enhanced counselling, the persistently high default rate suggests that structural and socioeconomic barriers continue to affect adherence. The absence of associations therefore likely reflects contextual influences beyond individual characteristics rather than complete programmatic success.

5.3. Discussion of qualitative findings

This section discusses the qualitative results addressing the third study objectives which is exploring the experiences of health workers on OTC program for malnutrition at GRRH. Six core themes were identified: (1) Organisation of the OTC Program, (2) Causes of OTC Treatment Default, (3) Consequences of Default, (4) Management and Prevention Strategies, (5) Programmatic Challenges, and (6) Recommendations for Program Strengthening. These findings highlight the complex interplay

of structural, systemic, and care giver related factors influencing OTC treatment default and program effectiveness in resource-constrained settings.

5.3.1. Organization of the OTC Program

Health workers reported a structured OTC service aligned with WHO and national IMAM guidelines for managing uncomplicated SAM at the community level (WHO, 2013; Ministry of Health Uganda, 2021). Service delivery differentiated between new admissions and follow-ups, offering a standardized package that included anthropometry, clinical assessment, RUTF provision, deworming, HIV/TB screening, immunisation referrals, caregiver counselling, and regular monitoring.

This organisation reflects global best practices, where biweekly RUTF distribution and essential medications are paired with follow-up and caregiver education to promote adherence and early detection of complications (WHO, 2004; Amin et al., 2023; WFP, 2017). While such structured services improve treatment continuity, their effectiveness depends on accessibility and consistent implementation challenges still present in remote settings (Briend & Berkley, 2016; Alflah, 2022).

5.3.2. Causes of Treatment Default

Despite a structured service, multiple barriers to OTC treatment adherence were reported. Structural factors including long distances to health facilities, high transport costs, and seasonal agricultural demands were major contributors to default, consistent with evidence from Yemen, Zambia, and India, where children living outside program catchment areas or requiring transport were significantly more likely to default (Al-Amad et al., 2017; Burza et al., 2015; Moramarco et al., 2018). Seasonal farming activities, though less frequently reported in literature, emerged as a prominent contextual factor disrupting follow-up in this setting. Systemic issues such as frequent RUTF stockouts and staff absenteeism further eroded caregiver trust and program reliability. Similar constraints have been

documented in Ethiopia and Yemen, where therapeutic supply gaps and workforce limitations directly impacted treatment continuity (Tadesse et al., 2016; Al-Amad et al., 2017).

The study's findings align with the Health Belief Model, particularly the construct of perceived benefits versus perceived barriers. Participants reported that although caregivers initially acknowledged the value of OTC services, competing socio-economic pressures and prior negative experiences diminished their perceived benefits, thereby increasing the risk of treatment discontinuation. Key caregiver-related vulnerabilities including poverty, domestic violence, family instability, and limited social support were frequently cited as barriers to follow-up. Additionally, stigma, cultural beliefs and misconceptions about malnutrition contributed to non-adherence; some caregivers feared hospitalization, while others interpreted early clinical improvement as a signal to discontinue care. Low health literacy, particularly among stepmothers and guardians, further contributed to poor comprehension of treatment protocols and the chronic nature of malnutrition. These findings are consistent with existing evidence highlighting caregiver education, socio-economic adversity, misconceptions and cultural beliefs as significant determinants of default in community-based SAM programs (Puett & Guerrero, 2015; Burza et al., 2015; Mwanza et al., 2016).

Finally, Health workers also highlighted the vulnerability of children with underlying comorbidities including HIV, TB, and cerebral palsy who were more likely to default due to prolonged treatment needs and caregiver fatigue. Although HIV status was not statistically associated with default in this study, qualitative accounts reinforce earlier findings from Ethiopia and Zimbabwe, where children with comorbidities exhibited higher default risks (Yebyo et al., 2013; Nyadzayo & Tshimanga, 2018).

5.3.3. Consequences of Default

The consequences of treatment default described by participants were profound, including increased morbidity, prolonged hospitalization, life threatening complications, and developmental impacts. These

findings are consistent with global evidence linking default to elevated mortality risk, morbidity, prolonged hospitalization and long-term developmental and intergenerational consequences of

untreated SAM (Bahwere, 2012; Akparibo et al., 2017; Puett and Guerrero,2015; Victora et al., 2021).

5.3.4. Management and Prevention Strategies

Health workers implemented case management and preventive strategies, including follow-up calls, home visits, community outreach, coordination with Village Health Teams (VHTs) and linkage to the nearest health centres. These practices are aligned with global recommendations advocating for decentralized and community-embedded interventions to improve adherence and reduce default Ministry of Health Uganda, 2021; Amin et al., 2023; Alflah, 2022).

5.3.5. Outpatient therapeutic care programmatic challenges

Nonetheless, significant programmatic challenges persist. Health workers identified resource limitations as a major barrier to effective OTC service delivery. Frequent stockouts of RUTF and essential supplies disrupted care, consistent with findings from Ethiopia where supply chain issues undermined SAM management (Tadesse et al., 2016). Limited funding for activities such as food demonstrations and home visits was also reported, reflecting global concerns on underfunded community-based nutrition programs (UNICEF, 2013).Infrastructure gaps and staff shortages further hindered child rehabilitation efforts, representing context-specific challenges in this setting.

Household misuse of RUTF through sharing or selling was also noted, echoing prior reports of therapeutic foods being consumed as general household food (Tadesse et al., 2015).

Additionally, participants highlighted systemic underutilisation of routinely collected data, which limited opportunities for evidence-based planning and continuous program improvement.

5.3.6. Recommendations for Program Strengthening

Three key recommendations emerged: enhancing program resources and institutional capacity, integrating nutrition-sensitive interventions, and strengthening follow-up systems and decentralisation. Participants recommended scaling up human resources, consistent in-service training, reliable supply of therapeutic commodities, and peer learning through exposure visits. These strategies are aligned with global health system strengthening approaches and WHO's framework for service delivery (WHO, 2020; Waruguru & Kamau, 2024).

Integrating nutrition-sensitive interventions including WASH promotion, exclusive breastfeeding, household food security, and community nutrition education was seen as essential for improving adherence and reducing default. This reflects international best practices for embedding prevention within SAM treatment models (WFP, 2017; Waruguru & Kamau, 2024).

Finally, participants highlighted the need to strengthen follow-up mechanisms and decentralise services to lower-level facilities. These adaptations are consistent with evidence showing improved program coverage and retention through proximity-based care and consistent tracking (Alflah, 2022; Amin et al., 2023; Waruguru & Kamau, 2024).

5.4 Strengths and Limitations

This study employed a mixed-methods design, integrating quantitative analysis with qualitative insights from frontline health workers involved in the OTC program. The use of saturation-based sampling strengthened the credibility of qualitative findings, while triangulation enhanced the depth and validity of the overall results.

This study had several limitations. First, its retrospective design and reliance on routine OTC data restricted the analysis to variables routinely captured in the Integrated Nutrition Register, excluding caregiver characteristics (e.g., maternal education, household income, perceptions of malnutrition), socio-cultural factors, and programmatic inputs (e.g., home visits, RUTF stock-outs), which are known to influence default. To minimize bias, data were cross-checked with weekly facility reports, and incomplete records were systematically excluded after double verification.

Second, the INR at GRRH did not consistently record standardized anthropometric indices such as weight-for-height (WHZ) or weight-for-age (WAZ) Z-scores. Consequently, the analysis relied on available absolute anthropometric measures (weight, height, and MUAC).

Third, as a single-site study conducted at Gulu Regional Referral Hospital, generalizability to lower-level facilities may be limited. However, GRRH serves as the referral hub for the Acholi sub-region, providing a reasonable regional representation.

Fourth, incomplete documentation—especially for HIV status and infant feeding—posed challenges to full inclusion in multivariable analysis. Finally, this study did not assess post-default outcomes (e.g., mortality or re-enrollment), which would be necessary to quantify the full burden of attrition..

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

This chapter provides the key conclusions from the study examining treatment default among children aged 6–59 months in the OTC program for severe acute malnutrition at GRRH. The chapter concludes with evidence-based recommendations aimed at informing clinical practice, operational planning, and policy formulation to enhance treatment adherence and improve child nutrition outcomes in similar low-resource settings.

6.2. Conclusion

This study found a high treatment default rate of 24.8% among children aged 6–59 months enrolled in the OTC program at Gulu Regional Referral Hospital, exceeding both national and WHO-recommended thresholds. Although none of the assessed factors were statistically significant in multivariable analysis, low admission weight (<7 kg) demonstrated a strong and consistent association with treatment discontinuation, warranting need for early identification and prioritization of high-risk cases. Qualitative findings revealed that treatment default is driven by a complex interaction of structural, caregiver-level, and health system barriers. These include limited access to services, socioeconomic constraints, gaps in caregiver support, and inconsistencies in program delivery. Addressing these multifaceted challenges requires a coordinated, systems-level approach to improve adherence and optimize outcomes in community-based management of acute malnutrition.

6.3. Recommendations

Based on the findings of this study, the following recommendations are made to reduce treatment default and improve outcomes in the outpatient management of severe acute malnutrition:

- Decentralisation of OTC services should be prioritized by extending service delivery to Health Centre IIIs and IIs. These lower-level facilities should be adequately resourced with trained

personnel, therapeutic commodities, and appropriate infrastructure to reduce geographic and financial barriers to access.

- Defaulter tracing systems should be institutionalized through the integration of community health structures such as Village Health Teams (VHTs), supported by mobile follow-up and digital surveillance tools. This will enhance early identification of absentees, improve retention in care, and support timely recovery.
- Health workforce capacity should be strengthened through structured in-service training, continuous mentorship, and performance-based supportive supervision to ensure fidelity to treatment protocols and improve the quality of care delivered.
- Supply chain systems must be enhanced to ensure uninterrupted availability of RUTF and essential medicines. This includes improved forecasting, timely procurement, stock monitoring, and coordinated distribution at all levels of the supply chain.
- Caregiver education and psychosocial support should be scaled up using culturally appropriate information, education, and communication (IEC) strategies, including community dialogues and tailored messaging. These interventions should address common misconceptions, stigma, and social barriers to treatment adherence.
- Digital health innovations should be adopted by integrating OTC-specific data into electronic registers and national systems such as DHIS2. This will enable real-time tracking of defaulting cases, facilitate timely decision-making, and improve program accountability and responsiveness.

These actions, aligned with Uganda's IMAM guidelines and WHO recommendations, are essential to strengthen the OTC program, reduce default rates, and improve child survival outcomes in high-burden setting.

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APPENDICES

Appendix I: Data abstraction checklist

(Adopted with modification from a study by (Wondie et al., 2022)

DATE: ……	SERIAL NUMBER			
INSTRUCTIONS				
All questions are to be filled				
Shade only one box using ball point pen where applicable				
Fill in clear handwriting where applicable				
Serial No.	**Question**	**Response**		
1	Client Number:			
2	Date of Registration/Enrolment:			
	Client Address:			
	District:			
3	Sex (M/F):			
4	Age (Months):			
5	Infant Feeding Practice (if applicable):			
6	Pregnancy/Lactating Status (if applicable):			
7	Type of Admission:	- New Admission [ ] - Re-admission [ ]		
8	Type of Management:	- ITC [ ] - OTC [ ] - SFP [ ]		
9	Entry Care Point:			
10	Nutrition Status at Enrolment:	- MAM [ ] - SAM without oedema [ ] - SAM with oedema [ ] (Specify oedema grade: _____)		
11	HIV Status at Enrolment:	- Positive [ ] - Negative [ ] - Unknown [ ] - Exposed [ ]		
12	ART Services at Enrolment:	- ART [ ] - Pre-ART [ ] - NA [ ]		

Serial No.	Question	Response
13	MUAC Colour and Measurement:	- Red (SAM) [ ] - Yellow (MAM) [ ] - Green (Normal) [ ] - Measurement (cm): _____
14	Weight (kg):	
15	Height (cm):	
16	Type of Therapeutic/Supplementary Feeds Given:	- RUTF [ ] - F-75 [ ] - F-100 [ ] - ReSoMal [ ] - Other: _____
17	Counselling Code:	
18	Assessment at Exit:	- Oedema [ ] - Weight (kg): _____ - Height (cm): _____
19	Target Exit Criteria:	- MUAC ≥ 12.5 cm [ ] - Weight-for-height/length z-score ≥ -2 SD [ ]
20	Exit Outcome:	- Cured [ ] - Non-response [ ] - Defaulted [ ] - Transferred to IPD [ ] - Died [ ] - Transferred to another facility [ ]
21	. Exit Date:	

Appendix II: Semi-structured interview guide.

Introduction:

Thank you for allowing to participate in this study. We want to understand your experiences as a health worker involved in the Outpatient Therapeutic Care (OTC) program for malnutrition at Gulu Regional Referral Hospital (GRRH). This interview aims to explore your day-to-day experiences regarding the care of malnourished children, with the ultimate goal of improving the program. The interview will last approximately 45 minutes. Your responses will remain confidential. You are free to withdraw at any time without any consequences.

A. **Personal and professional background within the OTC Program:**

Could you please start by telling me about your professional background and your current role within the OTC program here at GRRH?

- How long have you been in this role?

B. Interview Questions:

1. Day-to-Day Experiences and Responsibilities in the OTC Program:

Can you describe a typical day working in the OTC program?

- What are your main responsibilities when interacting with patients and their
- caregivers?
- How do these responsibilities align with your expectations of the role?

(Probing questions: What tasks are particularly challenging? How do you prioritize your activities throughout the day?)

2. Experiences with Treatment Default among OTC Patients:

Can you share your experiences dealing with treatment default in the OTC program?

- How common is it for patients to default from the treatment regimen, and what do you believe are the primary reasons behind this?

(Probing questions: What patterns have you noticed among patients who default? How does treatment default impact the outcomes for these children?)

3. Management and Prevention of Treatment Default:

   How do you and your team currently address cases where patients default from treatment? (Probe: whether it is being done as recommended by policy)

- Are there specific strategies that have been put in place to minimize the occurrence of defaults?
- In your experience, how effective have these strategies been?

(Probing questions: What could be done differently to reduce the default rate? What role do community outreach or follow-up play in preventing defaults?)

4. Challenges Faced in the OTC Program:

   What are the main challenges you encounter in your work within the OTC program, particularly concerning the management of malnutrition and patient defaults?

- How do these challenges influence your ability to provide care and meet program objectives?

(Probing questions: What resources do you feel are lacking? Are there external factors, such as socio-economic conditions, that exacerbate these challenges?)

Reflecting on your time in the OTC program, how satisfied are you with the overall

functioning of the program, especially in terms of its ability to retain patients and deliver effective care?

- Are there specific aspects of the program you believe could be improved or strengthened?
- How do you feel about the level of support you receive from the hospital administration or other external bodies?

(Probing questions: What improvements would you suggest in terms of program structure, staffing, or resources? How do you cope with the workload and emotional demands of this job?)

5. Recommendations for Program Improvement:

   Based on your experience, what recommendations would you offer to improve the OTC program, particularly in terms of addressing treatment default and enhancing patient outcomes?

- How can the program better support health workers like yourself in managing patient care and ensuring treatment adherence?

(Probing questions: What additional support or training do you think would be beneficial? Are there policy-level changes that could make a difference?)

Closing:

Thank you very much for your time and for sharing your experiences with us. Your insights will contribute significantly to improving the OTC program for malnourished children at GRRH. If there are any additional comments or thoughts you would like to share, feel free to do so now. If you have any questions about the research process or the next steps, please don't hesitate to ask.

Appendix III: informed consent for the key informant interviews.

Title of the Study:

Treatment Default Among Children Aged 6-59 Months in Outpatient Therapeutic Care for Malnutrition at Gulu Regional Referral Hospital

Principal Investigator:

Kamulegeya David Peterson

Master of Public Health Candidate, Gulu University

Contact Information: kamudavid093@gmail.com

Introduction:

You are invited to participate in a research study conducted by Kamulegeya David Peterson as part of his Master of Public Health program at Gulu University. The study aims to evaluate treatment default among children aged 6-59 months enrolled in the Outpatient Therapeutic Care (OTC) program for malnutrition at Gulu Regional Referral Hospital. Your participation in this interview is essential in understanding these factors from the perspective of health workers involved in the OTC program.

Purpose of the Study

The purpose of this study is to assess the default rates and identify the factors associated with treatment default among children in the OTC program and to explore the perceptions and experiences of health workers regarding the program. The findings will help inform interventions aimed at reducing treatment default and improving health outcomes for malnourished children.

Procedures

If you agree to participate, you will be asked to take part in a semi-structured interview. The interview will be conducted in English and will last approximately 30-60 minutes. Questions will

focus on your experiences and insights related to the OTC program. The interview will be audio-recorded for accuracy, and your responses will be transcribed verbatim.

Confidentiality

Your participation in this study is entirely voluntary. All information you provide will be kept strictly confidential. The data will be anonymized, and no personal identifiers will be included in the final report. Your identity will not be disclosed in any publication or presentation resulting from this study. The data on this study can be requested by GUREC and UNCST whenever necessary in addition to the research team.

Voluntary Participation

Participation in the research study is voluntary and you may join on your own free will. You have a right to withdraw from the study at any time without penalty.

If you have any issues pertaining to your rights and participation in the study, please contact the Chairperson, Gulu University Research Ethics Committee, Dr. Julaina A. Obika Tel: No., 0772964491; email: j.obika@gu.ac.ug ; or the Uganda National Council for Science and Technology, on plot 6 Kimera road, Ntinda, Kampala on Tel 0414705500

Potential Risks and Discomforts:

There are no foreseeable risks associated with participating in this study. If any question makes you uncomfortable, you may choose not to answer it.

Potential Benefits

While there are no direct benefits to you for participating in this study, your input will contribute to improving the OTC program and enhancing the care provided to malnourished children.

Compensation

There will be compensated 20,000shs for your time and participation in this study.

Questions

If you have any questions about this study or your rights as a participant, please contact Kamulegeya David Peterson at kamudavid093@gmail.com. You may also contact the Gulu University Research and Ethics Committee for more information about your rights as a research participant.

Consent

By signing this form, you acknowledge that you have read and understood the information provided above and that you voluntarily agree to participate in this interview.

Participant's Statement

I have read the information provided, and I understand that my participation is voluntary. I agree to participate in this study.

Name of participant……. Signature……...Date…….

Name of interviewer…… Signature……Date……

Appendix IV: Statement of consent for audio recording

STUDY TITLE: Treatment Default Among Children Aged 6-59 Months in Outpatient Therapeutic Care for Malnutrition at Gulu Regional Referral Hospital**.**

AUDIO RECORDINGS:

During the interview, your voice will be recorded with a digital voice recorder to ensure accuracy during translation and transcription for coding and thematic analysis. Voice recordings will be stored on a password-protected computer. You will be offered a copy of the audio recording upon request. Your voice recording will not be shared with anyone outside the study team and will not be used for any activity other than this study. All audio recordings will be destroyed three years after the study concludes.

Statement of Consent to be Audiotaped:

I understand that audio recordings will be taken during the study. *(For the statement below, please choose YES or NO and insert your name and initials in the relevant space)*

- I agree to be audio recorded **Yes** ☐
  No ☐
- I agree to be photographed: **Yes** ☐
  No ☐

Name of Participant (please print)	Signature/thumbprint	Date
Name of witness (please print)	Signature/thumbprint	Date
Name of researcher Obtaining Consent	Signature	Date

GULU UNIVERSITY
P.O. Box 166, Gulu (U)
Website: www.gu.ac.ug
Email: gurec@gu.ac.ug
Tel: +256 471 432 096
Fax: +256 471 432 913
Mob: +256 772 964 491
+256 776 812 147
RESEARCH ETHICS COMMITTEE

07/01/2025

To: Kamulegeya peterson

Gulu University
0771200234

Type: Initial Review

Re: GUREC-2024-977: TREATMENT DEFAULT AMONG CHILDREN AGED 6-59 MONTHS IN OUTPATIENT THERAPEUTIC CARE FOR MALNUTRITION AT GULU REGIONAL REFERRAL HOSPITAL.

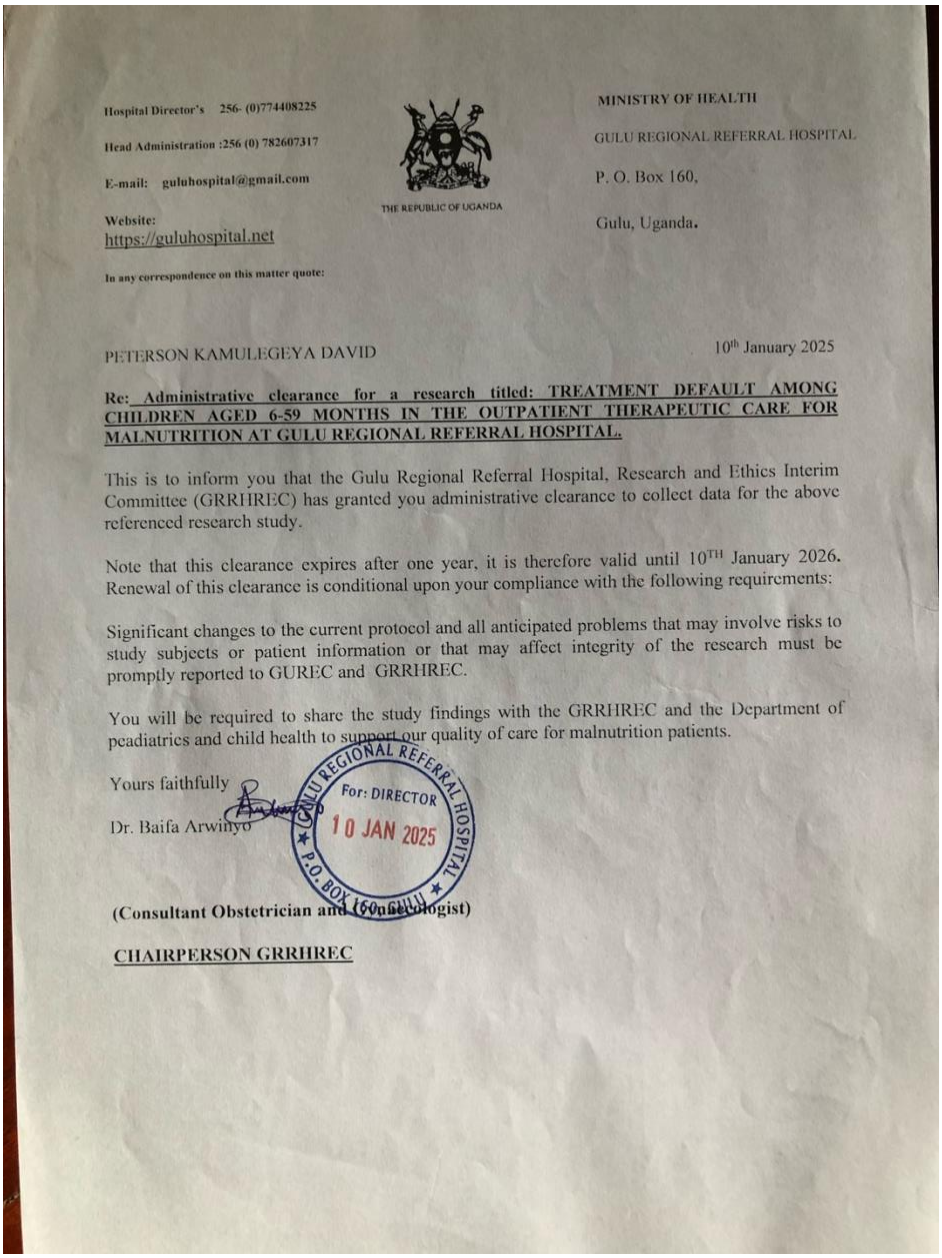
I am pleased to inform you that at the **119th** convened meeting on **17/10/2024**, the Gulu University REC meeting voted to approve the above referenced application.
Approval of the research is for the period of **07/01/2025** to **07/01/2026.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **07/01/2026** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Gulu University REC:

FIGURE 4:ETHICAL APPROVAL FROM THE GUREC



Hospital Director's 256- (0)774408225
Head Administration :256 (0) 782607317
E-mail: guluhospital@gmail.com
Website:
https://guluhospital.net
In any correspondence on this matter quote:

THE REPUBLIC OF UGANDA

MINISTRY OF HEALTH
GULU REGIONAL REFERRAL HOSPITAL
P. O. Box 160,
Gulu, Uganda.

PETERSON KAMULEGEYA DAVID

10th January 2025

Re: Administrative clearance for a research titled: TREATMENT DEFAULT AMONG CHILDREN AGED 6-59 MONTHS IN THE OUTPATIENT THERAPEUTIC CARE FOR MALNUTRITION AT GULU REGIONAL REFERRAL HOSPITAL.

This is to inform you that the Gulu Regional Referral Hospital, Research and Ethics Interim Committee (GRRHREC) has granted you administrative clearance to collect data for the above referenced research study.

Note that this clearance expires after one year, it is therefore valid until 10TH January 2026. Renewal of this clearance is conditional upon your compliance with the following requirements:

Significant changes to the current protocol and all anticipated problems that may involve risks to study subjects or patient information or that may affect integrity of the research must be promptly reported to GUREC and GRRHREC.

You will be required to share the study findings with the GRRHREC and the Department of peadiatrics and child health to support our quality of care for malnutrition patients.

Yours faithfully

Dr. Baifa Arwinyo

GULU REGIONAL REFERRAL HOSPITAL
For: DIRECTOR
10 JAN 2025
P.O. BOX 160 GULU

(Consultant Obstetrician and Gynecologist)

CHAIRPERSON GRRHREC

FIGURE 5:ADMINISTRATION CLEARANCE FROM GRRH

Work Plan

ACTIVITY	March to august 2024	September 2024	October 2024-January 2025	February-March 2025	April 2025	May 2025	JUNE - JULY 2025	Responsible persons
Literature review and proposal writing	X							Peterson
Submission to GUREC and approval		x	x					Peterson and Supervisors
Clearance from the hospital (GRRH)				x				Peterson and Hospital
Data collection					x			Peterson
Data analysis						x		Peterson and Supervisors
Dissertation writing							X	Peterson
Submitting to supervisors to read through and making corrections							X	Peterson and Supervisors
Submitting to graduate school for marking							X	Peterson and Supervisors

Research Budget

Table 6:research budget

S/N	Item	Quantity	Total Cost (UGX)
Research Fees			
01	Institutional Review Board (IRB) Approval	Lump sum	100,000
Scholastic Materials			
02	Pens	20	30,000
03	Pencils	10	10,000
04	Erasers	05	7,500
05	Notebooks	05	25,000
06	Ruled Papers (1 ream)	01	20,000
07	Binding (final copies)	10 copies	200,000
Data Collection & Management			
08	Data Collection Sheets	Lump sum	50,000
09	Training for Research Assistants	Lump sum	100,000
10	Transport for Data Collection	Lump sum	150,000
11	Refreshments for Participants	Lump sum	100,000
12	Compensation for Key Informants	20	400,000
Transport, Communication, and Internet			
13	Internet Bundles	Lump sum	150,000
14	Airtime	Lump sum	50,000
15	Transport for Research Dissemination	Lump sum	200,000
Research Dissemination			
17	Research Publication	Lump sum	900,000
18	Printing and Binding of Final Report	10 copies	200,000
Total Cost			2,692,500