



FACTORS INFLUENCING THE UPTAKE OF MEDICAL TREATMENT AMONG EPILEPTIC PATIENTS AT MUKONO GENERAL HOSPITAL, MUKONO DISTRICT, UGANDA

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ABSTRACT: *Background: In Uganda, it is estimated that epilepsy affects between 2.2 to 12.6 individuals per 1000 population with a treatment uptake gap of 78%. The purpose of the study was to determine factors influencing the uptake of medical treatment among epileptic patients at Mukono General Hospital, Mukono District. Methodology: The study used a descriptive cross-sectional study design that involved quantitative data collection methods. A sample of 30 respondents was recruited using a simple random sampling method and data was collected using questionnaires which were analysed and presented into tables, graphs and pie charts using Microsoft Excel 2020. Results: Individual factors were: 15 (50%) mentioned that medical treatment is important in management of epilepsy, 30 (100%) experienced side effects with epileptic drugs, and 21 (70%) sometimes forgot the scheduled follow up visits. Health facility related factors included: 23 (76.7%) lived in a distance of 10–50 kilometres from the health facility, 16 (53.3%) waited for three hours or more at the epileptic clinic, and 20 (66.7%) reported that drugs used in the management of epilepsy were available sometimes. Socio-cultural factors reported were: 14 (46.7%) experienced high stigma, 22 (73.4%) were advised to visit traditionalists/herbalists by their culture and, 14 (46.7%) reported that family members were sometimes supportive. Conclusion: There is a need for national public awareness campaigns to combat stigma and misinformation, alongside health system reforms to decentralize services, ensure consistent drug availability, and train healthcare workers in patient-centred care. Ultimately, success depends on a coordinated strategy that simultaneously targets community beliefs, financial barriers, and the quality of care within health facilities.*



INTRODUCTION

Epilepsy is a chronic non-communicable neurological disorder characterized by recurrent, unprovoked seizures, affecting approximately 50 million people worldwide (World Health Organization, 2024). It is a significant global public health issue, contributing substantially to morbidity, mortality, and socioeconomic burden, particularly in low- and middle-income countries (LMICs) where the majority of cases are found. The condition transcends mere health implications, often leading to profound social stigma, discrimination, and reduced quality of life for those affected (Mushi et al., 2024).

A critical challenge in epilepsy management is the vast treatment gap of the proportion of people with epilepsy who require treatment but do not receive it. This gap can exceed 75% in many parts of Africa and Asia (Wagner et al., 2020). For the majority of patients, anti-epileptic drugs (AEDs) are highly effective, allowing up to 70% of individuals to achieve complete seizure control (Bekele & Gezimu, 2022). However, the mere availability of treatment is insufficient. The ultimate goal of reducing the treatment gap and improving patient outcomes hinges on successful uptake, which encompasses initiation, adherence, and retention in care. Failure to achieve this leads to uncontrolled seizures, which increases the risk of injury, status epilepticus, cognitive decline, and premature death (Kariuki et al., 2015). The uptake of medical treatment for epilepsy is not a simple act but a complex behaviour influenced by a dynamic interplay of multiple factors. Research across diverse settings has consistently categorized these influencing factors into several key domains as explained below.

Hasiso and Desse (2016) and Liu et al. (2013) stated that patient-related factors include knowledge and beliefs about epilepsy and its treatment, fear of side effects, forgetfulness, and the presence of co-morbidities like depression. A lack of understanding about the chronic nature of the disease often leads to poor adherence once symptoms subside.

Socio-economic and cultural factors like poverty remain a major barrier, as the cost of medication and transportation to clinics can be prohibitive (Govil et al., 2021; Wagner et al., 2016). Deeply entrenched cultural beliefs and stigma are also powerful deterrents; many may first seek help from traditional healers, perceiving epilepsy to be a spiritual affliction rather than a medical condition (Kaddumukasa et al., 2019; Mushi et al., 2024).

Healthcare system and provider factors such as availability, accessibility, and quality of epilepsy care services are paramount. Factors such as long waiting times, frequent drug stock-outs, distant health facilities, and a lack of trained specialists significantly hinder consistent treatment uptake (Dika et al., 2021; Nigatu et al., 2024; Wabulya et al., 2024). The quality of the patient-provider interaction, including the time spent on counselling and education, is also a critical determinant (Ezunu et al., 2022).

Adal et al. (2021) mentioned that the complexity of dosing regimens and the side-effect profile of AEDs can directly impact a patient's willingness and ability to continue treatment.

Despite the known efficacy of AEDs, a significant proportion of epileptic patients do not initiate or sustain treatment, leading to poor health outcomes and perpetuating the epilepsy treatment gap. While previous studies have examined this, such as adherence, knowledge, and perception of patients and medical care teams, there remains a need for a comprehensive synthesis that explores the full spectrum of factors (patient, socioeconomic, cultural, and



systemic) that collectively influence treatment uptake. Understanding this intricate web is essential for designing targeted, multi-level interventions.

This study aims to identify and analyse the key factors influencing the uptake of medical treatment among epileptic patients attending Mukono General Hospital in Mukono district. By elucidating these barriers and facilitators, the findings will provide an evidence base for healthcare policymakers and practitioners to develop effective strategies to improve treatment initiation, adherence, and overall management of epilepsy, thereby reducing the treatment gap and its associated burdens.

METHOD AND MATERIALS

Study Design and Rationale

A descriptive cross-sectional study design that involved quantitative data collection methods was used because it required a short time to get results.

Study Setting and Rationale

The study was carried out at Mukono General Hospital. The hospital is located in Mukono municipality, Mukono District about 20 kilometres along Kampala-Jinja highway from

Kampala city centre at coordinates of: 0°21'40.0"N, 32°44'49.0"E. It offers general outpatient and inpatient services like psychiatry, antenatal, family planning, immunization, and postnatal, medical, surgical, dental, sonography and laboratory services. The hospital had experienced a tendinous dropout of epileptic patients from routine follow-up and non-utilization of services, creating the need to determine the factors influencing the uptake of medical treatment services.

Study Population

The study population were epileptic patients at Mukono General Hospital.

Sample Size Retermination

A sample size of 30 respondents was used. This was based on Yemen's formulae of 1962 with precision of 5%, with confidence level of 95%.

Sampling Procedure

The simple random sampling procedure was used to ensure that every one had an equal chance of being selected. Each individual was assigned a unique identifier, and a random number generator was used to select the 30 individuals who participated in the study.

Inclusion Criteria

The study included patients aged 18 years and above with confirmed diagnosis of epilepsy by a neurologist or physician, patients who have been on anti-epileptic drugs for at least six months and attending the psychiatric patient's clinic for follow-up, and patients willing and able to provide informed consent during the research period.



Exclusion Criteria

The study excluded patients with major comorbid psychiatric conditions or cognitive impairments that preclude them from providing reliable information, as well as critically ill patients who are unable to participate in an interview.

Research Instrument

A structured questionnaire was used to collect information from respondents. The questionnaire was made up of four sections: demographic characteristics, individual factors, health facility-related factors, and socio-cultural factors designed with open-ended and closed-ended questions. The tool was pretested among 5 epileptic patients at Namirembe Hospital, Mukono and necessary corrections and adjustments were made.

Data Collection

Following approval to collect data by the research committee of Mukono General Hospital, the researcher explained the purpose and procedure of data collection to the respondents. Each questionnaire took about 15 minutes to be filled, and they were given to the respondents before they went in to see the psychiatrist. Literate participants filled the questionnaire alone with clarification from the researcher where they did not understand. Those who were unable to read were asked questions by the researcher and she filled in their responses.

Data Analysis

Responses on questionnaires were coded and entered into Microsoft Excel 2019 for analysis and presentation into tables, graphs, and pie charts.

Ethical Considerations

Permission was sought and granted from the principal of Kawempe Community School of Health Sciences and the research committee of Mukono General Hospital. Upon approval of the study, the researcher offered explanations about the study to the respondents so as to obtain informed consent. Privacy, confidentiality and anonymity was paramount during data collection and this was achieved by not indicating the names of participants anywhere on the questionnaires.

Objectives of the Study

- 1) To determine the individual factors influencing the uptake of medical treatment among epileptic patients at Mukono General Hospital, Mukono District.
- 2) To identify the health facility related factors influencing the uptake of medical treatment among epileptic patients at Mukono General Hospital, Mukono District.
- 3) To identify the socio-cultural factors influencing the uptake of medical treatment among epileptic patients at Mukono General Hospital, Mukono District.

Significance of the Study

The study findings will enable the Ministry of Health to identify the potential areas which still require improvements in funding, development, and sensitization programs with regard to the

factors hindering the uptake of medical care services. The study will also help the nursing profession to understand and bridge the gap in provision of nursing care in epileptic patients, thereby modifying their practice to attract many to seek care services

The results of this study will be added to the existing literature that may be a valuable reference point for researchers to carry out future studies on this topic.

RESULTS

Demographic Characteristics of the Respondents

Table 1: Demographic Characteristics n = 30

Variable	Responses	Frequency (f)	Percentage (%)
Gender	Male	12	40
	Female	18	60
	Total	30	100
Age (years)	18 – 19 years	5	16.7
	20 – 30 years	11	36.7
	31 – 40 years	10	33.3
	41 and above	4	13.3
	Total	30	100
Marital status	Single	21	70
	Married	7	23.3
	Separated/divorced	2	6.7
	Total	30	100
Level of education	Never went to school	8	26.7
	Primary	16	53.3
	Secondary	5	16.7
	Tertiary	1	3.3
	Total	30	100
Religion	Christian	22	73.3



	Muslim	8	26.7
	Total	30	100
Occupation	Unemployed	15	50
	Employed	1	3.3
	Self - employed	14	46.7
	Total	30	100

Table 1 shows that the majority of the respondents 18 (60%) were females while the minority 12 (40%) were males. Most of the respondents 11(36.7%) were aged 20–30 years while the least 4 (13.3%) were aged 41 years and above. The majority of the respondents, 21 (70%), were single while the minority, 2 (6.7%), had separated/divorced. Most of the respondents, 16 (53.3%), had attained primary education while the least, 1 (3.3%), had attained tertiary education. The majority of the respondents, 22 (73.3%), were Christians while the minority, 8 (26.7%), were Muslims. Half of the respondents, 15 (50%), were unemployed while only 1 (3.3%) was employed.

INDIVIDUAL FACTORS INFLUENCING UPTAKE OF MEDICAL TREATMENT AMONG EPILEPTIC PATIENTS

Table 2: Knowledge about Epilepsy (n = 30)

Variable	Responses	Frequency (f)	Percentage (%)
Meaning of epilepsy	A mental illness	24	80
	A punishment from the gods	4	13.3
	A neurological disorder characterized by repeated seizure attacks	2	6.7
	Total	30	100
Cause of epilepsy	Witch craft	14	46.7
	Demonic possession	1	3.3
	Abnormal electrical activity in the brain	5	16.7
	Do not know	10	33.3



	Total	30	100
Whether medical treatment is important in management of epilepsy	Yes	15	50
	No	13	43.3
	Do not know	2	6.7
	Total	30	100

Table 2 shows that the majority of the respondents, 24 (80%), knew that epilepsy is a mental illness while the minority, 2 (6.7%), knew that epilepsy means a neurological disorder characterized by repeated seizure attacks. Most of the respondents, 14 (46.7%), mentioned that epilepsy is caused by witchcraft while the least, 1 (3.3%), mentioned demonic possession. Half of the respondents, 15 (50%), mentioned that medical treatment is important in the management of epilepsy while the least, 2 (6.7%), did not know.

HEALTH FACILITY-RELATED FACTORS INFLUENCING UPTAKE OF MEDICAL TREATMENT AMONG EPILEPTIC PATIENTS

Table 3 below shows that the majority of the respondents, 23 (76.7%), lived a distance of 10–50 kilometres from the health facility, while the minority, 3 (10%), lived a distance of more than 50 kilometres. Most of the respondents, 16 (53.3%), waited for three hours or more at the epileptic clinic while the least, 6 (20%), waited for less than one hour. The majority of the respondents, 18 (60%), reported that health workers were rude while 4 (13.3%) reported that health workers were unbothered. Most of the respondents, 20 (66.7%), reported that drugs used in the management of epilepsy were available sometimes while only 1 (3.3%) mentioned that drugs used for management of epilepsy were always available.

Table 3: Distance, Waiting Times, Attitude of Health Workers, and Availability of Drugs at the Health Facility (n = 30)

Variable	Responses	Frequency (f)	Percentage (%)
Distance of health facility from home	Less than 10 kilometres	4	13.3
	10 – 50 kilometres	23	76.7
	More than 50 kilometres	3	10
	Total	30	100
Waiting time, at the epileptic clinic	Less than one hour	6	20
	Two hours	8	26.7



	Three hours or more	16	53.3
	Total	30	100
Attitude of health workers at the epileptic clinic	Rude	18	60
	Welcoming	8	26.7
	Unbothered	4	13.3
	Total	30	100
Availability of drugs used in management of epilepsy	Always	1	3.3
	Sometimes	20	66.7
	Never	9	30
	Total	30	100

SOCIO-CULTURAL FACTORS INFLUENCING THE UPTAKE OF MEDICAL TREATMENT AMONG EPILEPTIC PATIENTS

The study revealed that stigma and sociocultural beliefs present significant barriers to medical treatment for epilepsy. A substantial proportion of respondents (46.7%) reported experiencing high levels of stigma when seeking medical care for their condition, underscoring the social challenges faced by individuals with epilepsy.

Cultural and religious beliefs were found to heavily influence treatment pathways. A strong majority of the respondents (73.4%) reported that their culture advised them to visit a traditionalist or herbalist for care, promoting a reliance on non-biomedical interventions. Conversely, only a very small minority (3.3%) were advised to pursue an integrated approach combining medical treatment and herbs.

Religious teachings also played a pivotal role. While most respondents (83.3%) indicated that their religious community advised using prayer in conjunction with medical treatment, a small but notable segment (6.7%) were advised to use prayer and herbs, again sidelining conventional medicine.

Furthermore, pervasive community beliefs about the aetiology of epilepsy were identified as a major barrier. An overwhelming 70% of the respondents reported that it is commonly believed within their community that epilepsy is caused by witchcraft and therefore cannot be healed by medicines. This deeply entrenched belief fundamentally undermines the perceived effectiveness of medical treatment. A minority of the respondents (3.3%) also reported the use of stigmatizing labels, such as being called "mad people."



These findings highlight a treatment environment where medical care for epilepsy is profoundly challenged by high stigma, cultural preferences for traditional healing, and widespread community beliefs that attribute the condition to supernatural causes, thereby devaluing biomedical solutions.

Table 4: Socio-cultural Factors Influencing the Uptake of Medical Treatment among Epileptic Patients (n = 30)

Variable	Responses	Frequency (f)	Percentage (%)
Stigma experienced while seeking medical treatment for epilepsy.	Low	6	20
	Moderate	10	33.3
	High	14	46.7
	Total	30	100
Advised management of epilepsy according to cultural teachings	Encourage use of herbs	7	23.3
	Visiting traditionalist/herbalist	22	73.4
	Use both medical and herbs	1	3.3
	Total	30	100
Religious teaching about treatment for epilepsy	Prayers to God only	3	10
	Use herbs and prayers only	2	6.7
	Prayers and medical treatment	25	83.3
	Total	30	100
Myths about epilepsy in community	Epilepsy is caused by witch craft therefore cannot be healed by medicines	21	70
	Epileptic patients should not engage in social services	8	26.7
	Epileptic patients are made people	1	3.3
	Total	30	100



DISCUSSION OF RESULTS

Demographic Results

The findings of the study reveal that most of the respondents 16 (53.3%) had attained primary education. This might be due to stigma experienced in schools among epileptic patients, which makes them drop out of school, associated with limited awareness on the benefits of utilizing medical care service. This agrees with a study by Koltai et al. (2021) done in Uganda; it was identified that illiteracy of the caregivers was leading to the inability to acknowledge and utilize medical treatment for epilepsy. Half of the respondents, 15 (50%), were unemployed. This could lead to unemployed patients lacking personal money needed to pay for transport costs and some medication at the facility, which hinders their ability to seek care regularly. This is in agreement with a study by Wagner et al. (2016), which revealed that, it was reported that 92% of unemployed epileptic patients and caretakers experienced financial challenges which created incapability to afford medical treatment.

Individual Factors Influencing the Uptake of Medical Treatment Among Epileptic Patients

The findings of the study revealed that the majority of the respondents, 24 (80%), knew that epilepsy is a mental illness. This could be because they were told that epilepsy is a disease that affects the brain; hence, they were able to identify it as a mental illness. This is supported by a study by Hasiso and Desse (2016) which showed that respondents knew that epilepsy was a mental illness.

Study results showed that half of the respondents, 15 (50%), mentioned that medical treatment is important in the management of epilepsy. This might be due to the relief on recurrence of symptoms experienced when epileptic patients utilize drugs offered at the facility, making them regard the services as important. Similarly, a study by Nigatu et al. (2024) found out that 63.8% of caretakers, who were aware that medical treatment is beneficial in the management of epilepsy, were able to utilize it.

According to the study findings, the majority of the respondents, 25 (83.3%), had epilepsy affecting the entire body. This implies that patients had generalised epilepsy, which might have created understanding and fear among patients that their disease was severe and required prompt utilization of medical treatment. These results are in agreement with a study done by Adal et al. (2021) conducted in Ethiopia; it was revealed that 98.5% of patients with generalized tonic seizures were associated with non-compliance with antiepileptic treatment.

The findings of the study revealed that almost all the respondents, 27 (90%), had been diagnosed with epilepsy for 3 years and above. This long duration since the time of diagnosis would make them tired of visiting the health facility frequently and hence start missing some schedules. This is supported by a study by Rasmussen et al. (2023) carried out in Denmark, which showed that long duration of medical treatment of more than 2 years (75.8%) was causing frustration among patients seeking medical treatment, which makes them abandon care.

All the respondents, 30 (100%), experienced side effects with epileptic drugs and most of them, 17 (56.7%), had low energy levels. These could scare them from taking the drugs as prescribed because they would not wish to encounter these side effects. This agrees with a study by Gong



et al. (2024) carried out in China, which identified that patients who experienced side effects with anti-epileptic medication were non-adherent to treatment and regular follow-up.

The majority of the respondents, 21 (70%), sometimes forgot the scheduled follow-up visits. This might be due to altered memory that is caused by the diseases, which makes them forget some schedules. This is in line with a study by Ezunu et al. (2022) conducted in Nigeria about epilepsy care, which revealed that 12% of patients defaulted on medical treatment for epilepsy due to forgetfulness of the appointment dates. Similarly, a study carried out in China discovered that 69.6% of epileptic patients defaulted on medical treatment because they had forgotten their treatment schedules (Liu et al., 2013).

Health Facility Related Factors Influencing the Uptake of Medical Treatment Among Epileptic Patients

The study identified several critical health system barriers that hinder the uptake of medical treatment for epilepsy. A significant majority of respondents (76.7%) lived 10–50 kilometres from the health facility, a distance associated with high transport costs that can lead to low utilization of care, a finding supported by studies in Nigeria and Uganda (Ezunu et al., 2022; Olinga, 2021).

Furthermore, long waiting times were a considerable deterrent. Over half of the respondents (53.3%) waited three hours or more at the clinic, which creates a perception of wasted time and discourages regular attendance, a barrier confirmed by Govil et al. (2021). The attitude of healthcare providers also emerged as a key factor, with 60% of the respondents reporting that health workers were rude. This aligns with findings from Uganda (Kaddumukasa et al., 2019) on how negative staff attitudes limit treatment utilization, contrasting with studies from the United States that highlight the positive impact of supportive staff (Yu et al., 2023).

Drug stock-outs were another major obstacle, as 66.7% of the respondents reported that anti-epileptic drugs were only sometimes available. This inconsistency leads patients to miss follow-up appointments and seek medication from private pharmacies, a problem also documented in Ethiopia (Nigatu et al., 2024). Finally, the inconsistent availability of specialized care was a concern, with 76.7% noting that the psychiatrist was only sometimes present. This lack of consistent, specialized oversight prevents necessary treatment adjustments and negatively impacts uptake, underscoring the importance of available specialists, as noted in South Africa (Wagner et al., 2020).

Socio-cultural Factors Influencing the Uptake of Medical Treatment among Epileptic Patients

Findings reveal that stigma is a significant barrier to care, with nearly half (46.7%) of the respondents experiencing high levels of stigma when seeking medical treatment for epilepsy. This finding is supported by research from Uganda and South Africa, which also identified stigma and discrimination as major contributors to treatment non-utilization (Olinga, 2021; Wagner et al., 2020). Cultural beliefs were found to heavily influence treatment pathways, as a large majority of the respondents (73.4%) reported being advised by their culture to visit a traditionalist or herbalist. This aligns with a study in Ugandan referral hospitals, which found that over half of patients occasionally sought care from traditional healers, often due to beliefs that epilepsy is caused by witchcraft (Koltai et al., 2021).



While most respondents (83.3%) stated that their religious teachings advised using both prayer and medical treatment, this finding contrasts with studies in other contexts. Research in Ethiopia and Rwanda indicated that strong religious beliefs could discourage medical care by promoting reliance solely on divine intervention through prayer and fasting (Koltai et al., 2021; Wabulya et al., 2024).

Finally, the study found that family support was inconsistent, with less than half (46.7%) of the respondents reporting that family members were only sometimes supportive. This stands in disagreement with a study from Denmark, which found that high social support was positively associated with the uptake of medical treatment (Rasmussen et al., 2023).

CONCLUSION

This study conclusively demonstrates that the uptake of medical treatment for epilepsy in this setting is hindered by a complex interplay of multifaceted barriers, which can be categorized into health system, sociocultural, and socioeconomic factors. Health system deficiencies, including long distances to health facilities, drug stock-outs, long waiting times, inconsistent specialist availability, and negative attitudes from healthcare workers, create a significant access and quality-of-care challenge. Concurrently, deeply entrenched sociocultural factors, such as high levels of stigma, cultural beliefs favouring traditional healers, and influential religious teachings, powerfully shape health-seeking behaviours and often divert patients from biomedical care. The resultant low and inconsistent treatment uptake perpetuates the high epilepsy treatment gap, leading to poor health outcomes, increased morbidity, and preventable suffering for individuals living with epilepsy. Addressing this crisis requires a coordinated, multi-level intervention strategy.

RECOMMENDATIONS

1. Nursing Practice

Patient Education and Counselling: Nurses should be at the forefront of providing structured, continuous health education to patients and their families during every clinic visit. This education must demystify epilepsy, explain its biological causes, and emphasize the importance of adherence to anti-epileptic drugs to combat misinformation and cultural myths.

Stigma Reduction and Advocacy: Nurses must adopt a patient-centred, empathetic, and non-judgmental approach to care. They should actively counsel patients on coping mechanisms for stigma and act as advocates for patients within the health facility and the wider community.

Adherence Support: Implement simple adherence support strategies, such as pill calendars, follow-up phone call reminders, and scheduling the next appointment before the patient leaves the clinic, to help patients manage their treatment regimens.

2. Recommendations to Healthcare Administrators (Hospital Level)

Decentralization of Services: To address the barrier of long distances, administrators should advocate for and support the integration of epilepsy diagnosis and drug refill services into



lower-level health centres (e.g., HC IIIs and IVs) through training and mentorship of general healthcare workers, bringing care closer to the people.

Improve Drug Supply Chain: Ensure a reliable and consistent supply of first-line anti-epileptic drugs by strengthening forecasting, ordering, and inventory management systems to eliminate stock-outs and build patient trust in the system.

Reduce Waiting Times: Implement operational improvements such as dedicated clinic days for epilepsy, efficient patient scheduling systems, and task-shifting to nurses to conduct routine follow-ups, thereby drastically reducing waiting times.

Staff Training and Support: Organize regular sensitivity and communication skills training for all staff, including clinicians, nurses, and support staff, to address the issue of rude and unpleasant attitudes. Additionally, implement stress management and burnout prevention programs for staff working in high-stress environments like psychiatric clinics.

3. Recommendations to the Ministry of Health and Policymakers

National Public Awareness Campaigns: Design and fund nationwide mass media campaigns to increase public awareness, reduce stigma, and correct misconceptions about epilepsy, its causes, and the effectiveness of modern treatment. These campaigns should involve community leaders, religious figures, and cultural institutions as ambassadors.

Policy on Traditional Healer Collaboration: Develop clear policies and guidelines for a collaborative framework between the biomedical health system and traditional healers. This could include training traditional healers to recognize epilepsy and refer patients to health facilities, fostering a synergistic rather than competitive relationship.

Workforce Strengthening: Invest in training more neurologists and psychiatric clinical officers and create incentives for them to work in regional hospitals to improve the consistent availability of specialized care across the country.

Fund Operational Research: Commission and fund further research to pilot and evaluate the effectiveness of the proposed interventions, such as the decentralized care model and collaboration with traditional healers, to generate evidence for scale-up.

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