

## Research Article

**Cite this article:** Mkubwa B, Angwenyi V, Pacione L, Nzioka B, John M, Kibirige N, Gichuki J, Newton CR, Sijbrandij M and Abubakar A (2025). Contextualization and adaptation of the child and adolescent mental and behavioural disorders module of the mhGAP-IG in Kilifi and Nairobi counties in Kenya. *Cambridge Prisms: Global Mental Health*, 12, e92, 1–12

<https://doi.org/10.1017/gmh.2025.10049>

Received: 06 February 2025

Revised: 05 July 2025

Accepted: 30 July 2025

### Keywords:

contextualization; adaptation; child and adolescent mental health; mhGAP-IG; mental health system

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# Contextualization and adaptation of the child and adolescent mental and behavioural disorders module of the mhGAP-IG in Kilifi and Nairobi counties in Kenya

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## Abstract

The Mental Health Gap Action Programme Intervention Guide (mhGAP-IG) was developed by the World Health Organization as a key tool for delivering evidence-based mental healthcare in non-specialized settings. The mhGAP-IG requires contextualization and adaptation to ensure local relevance. However, evidence on adapting the Child and Adolescent Mental Disorders (CMH) module of the mhGAP-IG is limited. This study contextualized and adapted the 2016 mhGAP-IG CMH module through two workshops with local mental health experts and stakeholders, preceded by six in-depth interviews exploring the child and adolescent mental health contexts in Nairobi and Kilifi. Data were analysed in NVivo-Lumivivo® software. Interviews with mental health stakeholders revealed significant challenges in both counties, including a shortage of mental health specialists, frequent medication stockouts, stigma and inadequate resources. Key adaptations to the module included using locally acceptable terms (e.g., replacing ‘failure to thrive’ with ‘suboptimal growth’); expanding training to five days; adding the mhGAP-IG Essential Care and Practice module to address culturally sensitive communication in mental healthcare provision; streamlining referral pathways; and incorporating aspects of self-harm/suicide and substance use linked to the CMH module content. Contextualizing the CMH module is crucial for effective implementation, but sustaining impact will require addressing systemic barriers beyond capacity-building.

## Impact statement

The contextualization and adaptation of the Child and Adolescent Mental and Behavioural Disorders module is a critical step in addressing the treatment gap for child and adolescent mental health (CAMH) in the unique contexts of Nairobi and Kilifi counties in Kenya. The process ensures cultural relevance, local applicability and sustainability of the intervention. By identifying health system barriers, such as resource shortages and workforce limitations, this study not only tailors evidence-based training and guidelines but also advocates for policy changes to improve access to CAMH services. The study findings contribute to a growing body of knowledge on contextualizing global mental health programmes, highlighting the importance of culturally sensitive and locally adaptable solutions in addressing global health disparities. This work sets the foundation for scaling up CAMH interventions in Kenya and offers a model for similar adaptations to other resource-limited settings worldwide.

## Introduction

Access to mental healthcare services for children and adolescents poses a significant challenge in low- and middle-income countries (LMICs), necessitating innovative solutions. The World Health Organization (WHO) published its first Mental Health Gap Action Programme-Intervention Guide (mhGAP-IG) in 2010, revised in 2016, and updated in 2023 (World Health Organization, 2010, 2016, 2023). The mhGAP-IG provides algorithms to assess and manage priority mental,



neurological and substance use (MNS) conditions for healthcare workers (HCWs) in non-specialist healthcare settings.

The mhGAP-IG includes (i) an introduction section; (ii) an Essential Care and Practice (ECP) module; and (iii) assessment, management (psychosocial and pharmacological interventions), referral and follow-up for priority MNS conditions (World Health Organization, 2016). The Child and Adolescent Mental Behavioural Disorders (CMH) module is among the modules for priority MNS conditions included in the mhGAP-IG (World Health Organization, 2016). The CMH module outlines the assessment and management of developmental, behavioural and emotional disorders. For adolescents, assessment and management of emotional disorders are linked to other priority MNS conditions, such as self-harm/suicide and substance use.

The mhGAP-IG requires contextualization and adaptation to ensure its relevance for use in non-specialist healthcare settings (World Health Organization, 2018; Faregh *et al.*, 2019; Gómez-Carrillo *et al.*, 2020; Searle *et al.*, 2022). Contextualization refers to the addition of specific elements to existing guidelines or training materials to suit local needs, such as those of a particular country (Dizon *et al.*, 2016). Adaptation is the process of modifying existing guidelines or training materials to cater to local needs and conditions; for example, changing language to ensure cultural relevance (Fervers *et al.*, 2006). Adaptation has been shown to foster a sense of ownership among local HCWs and stakeholders (Mutiso *et al.*, 2018; Bitta *et al.*, 2020), which is vital for the successful and sustainable implementation of the mhGAP-IG (Doherty *et al.*, 2020).

With over 90 countries using the mhGAP-IG since its initial publication, there are only a few documented studies on its contextual adaptation, including Nigeria (Abdulmalik *et al.*, 2013), Sri Lanka (Doherty *et al.*, 2020), China (Zheng *et al.*, 2025) and Pakistan (Khan *et al.*, 2023), where adaptations led to improved training outcomes. In Kenya, mhGAP-IG version 1.0, which was published in 2010, was contextualized for clinical use in Makueni County and was found to be feasible, effective and well-received, supporting its scale-up (Mutiso *et al.*, 2018, 2019). The mhGAP-IG version 2.0 was later contextualized and pilot-tested in Kilifi, coastal Kenya, and reported a significant improvement in trained HCWs' knowledge (66.3–76.6%,  $p < 0.001$ ; Bitta *et al.*, 2020). However, the CMH module was excluded because the child and adolescent mental health (CAMH) disorders were not considered priority MNS conditions in Kilifi (Bitta *et al.*, 2020). This lack of recognition likely reflects limited knowledge rather than a low disease burden, as 13% of children in Kilifi were found to have behavioural and emotional problems (Kariuki *et al.*, 2017; Bitta *et al.*, 2020). Although informative, these studies did not include the CMH module, a gap with policy implications in Kenya, given the rising burden of CAMH disorders (Mutiso *et al.*, 2018; Bitta *et al.*, 2020). Building on these efforts, the current study aimed to contextualize and adapt the mhGAP-IG CMH module and its training materials for use in Nairobi and Kilifi counties, involving key stakeholders.

## Methods

### Study design

A qualitative approach was used to adapt and contextualize the CMH module and its training materials. This process was preceded by a situational analysis to understand the CAMH systems and services in Nairobi and Kilifi (Abdulmalik *et al.*, 2013; Faregh *et al.*, 2019; Bitta *et al.*, 2020). Two workshops were then held for the contextualization and adaptation process.

### Study context

This study was conducted in the Kilifi and Nairobi counties. Kilifi County (population 1.45 million in 2019) is predominantly rural, with high poverty (68%) and widespread mental health misconceptions (Bitta *et al.*, 2020; City Population, 2019; Kariuki *et al.*, 2017). Nairobi County (5.54 million residents) has a stronger economy but faces overcrowding, service delivery gaps and limited CAMH care access, despite having over 1,200 healthcare facilities (Kumar *et al.*, 2021; Wambua *et al.*, 2022; Mbithi *et al.*, 2023; World Population Review, 2024).

### Sampling procedures

Purposive sampling and snowballing were used to identify participants for the situational analysis and adaptation workshops. The initial participants were selected based on their roles in mental health planning and service delivery in the two counties, with additional participants identified through referrals. These sampling strategies ensured the inclusion of experts and stakeholders, who provided valuable insights throughout the study.

### Participants

The situational analysis involved six key informants. The first workshop had 13 participants, all of whom returned for the second workshop, except for the psychiatrist who was represented by a counselling psychologist. In the second workshop, a caregiver of a child with autism and a paediatrician were invited based on recommendations of their inclusion from delegates in the first workshop; however, the paediatrician did not attend. Of all the participants, three were involved in the situational analysis as well as both the workshops. Table 1 provides details of the participants' characteristics.

### Data collection

The paragraphs below describe how data were collected for the situational analysis, the adaptation workshops and Training of Trainers and Supervisors (ToTS) conducted between January and February 2024, steps summarized in Figure 1.

#### *Situational analysis of the CAMH system and services in Nairobi and Kilifi counties*

In-depth interviews were conducted to understand the broader mental health system context in Nairobi and Kilifi counties. CAMH service availability, resources and existing policies were also assessed. The interview guide (Supplementary Material S1) was drafted using a brief questionnaire from the WHO's Assessment Instrument for Mental Health Systems (WHO-AIMS; World Health Organization, 2005) to ensure systematic data collection.

#### *Preliminary review of the CMH module's materials*

In preparation for the workshops, B.M. and B.N. reviewed the CMH module and its training materials. Second, areas that required expert deliberation were identified based on the contextualization questionnaire provided in the mhGAP operations manual on page 85 (World Health Organization, 2018). Third, a final template was developed to guide discussions during workshops (Supplementary Material S2). The participants were then provided with the CMH module and training materials for review before the first workshop. The key areas identified for adaptation shaped the agenda of the first workshop.

**Table 1.** Summary of participants

Participant category	Total	Primary place of work
<i>Situational analysis: Key informant interviews</i>		
	<i>n</i> = 6	
County health managers	2	County health department
Clinical psychologist	1	Public mental health clinic
Psychiatric nurse	1	Public mental health clinic
Psychiatric clinical officer	1	Public mental health clinic
Clinical officer	1	Private hospital providing mental health services
<i>Contextualization workshop 1</i>		
	<i>n</i> = 13	
Psychiatrist	1	Research organization and mental health clinic
Clinical psychologists	7	Public mental health clinic, private mental health clinic
Counselling psychologists	2	Private mental health clinic
Psychiatric nurse	1	Public mental health clinic
Psychiatric clinical officer	1	Public mental health clinic
Mental health coordinator	1	A youth-based organization
<i>Contextualization workshop 2</i>		
	<i>n</i> = 14	
Clinical psychologists	7	Public mental health clinic, private mental health clinic
Counselling psychologists	3	Private mental health clinic
Psychiatric nurse	1	Public mental health clinic
Psychiatric clinical officer	1	Public mental health clinic
Mental health coordinator	1	A youth-based organization
Parent of a child with autism	1	–

### *First consultative workshop to contextualize and adapt the CMH module and training materials*

The first workshop was conducted on January 18, 2024. Written informed consent was obtained from all participants. Then, an overview of the study and the CMH module was provided. Subsequently, guided small group discussions were conducted. Each group comprised four to five participants assigned to review the content of their professional expertise, and one study team member. For instance, participants with clinical experience examined sections such as the common presentations of CMH disorders. Their input into specific sections of the CMH module and training materials ensured that the adaptations were relevant to the local

context. Finally, each group presented key points to the larger group, which was moderated by B.M., and the session was audio-recorded.

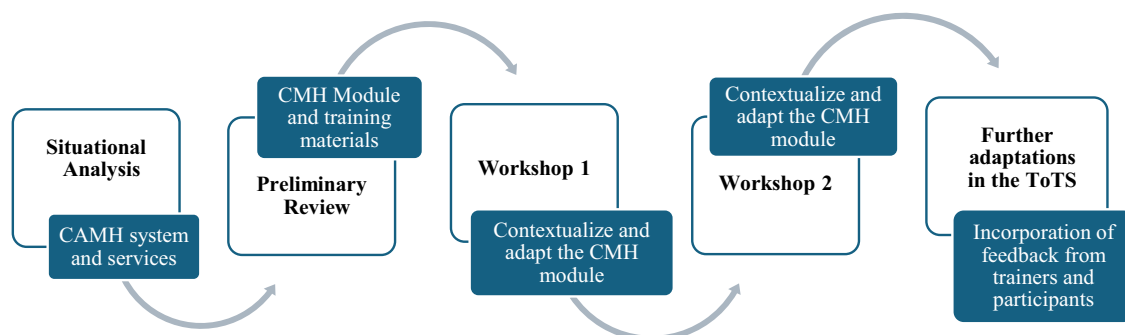
After the first workshop, content analysis to summarize the key findings from the discussions and deliberations was consolidated by B.M. and V.A. The emerging themes informed the planning and agenda of the second adaptation workshop. This initial analysis provided timely feedback that supported iterative adaptation. The full thematic analysis was conducted retrospectively using the approach by Braun and Clarke (2006), owing to time and resource constraints.

### *Second consultative workshop to contextualize and adapt the CMH module and training materials*

The second workshop was held on February 13, 2024, to discuss the changes suggested in the previous workshop and reach consensus on the study team's interpretation of the feedback from the previous workshop. Consent was obtained from the two participants who were not present at the initial workshop. The outputs from the first workshop were then discussed by the entire group, and each suggested change was debated, with the final adaptations reflecting the agreement of the larger group. Whenever there were disagreements, participants were encouraged to share their perspectives until a compromise was reached. Consensus was achieved through facilitated discussions, in which all views were welcomed. Although no formal consensus-building techniques (e.g., Delphi or nominal group methods; McMillan et al., 2016) were used, differing opinions were discussed and documented to ensure that minority voices were considered and bias was minimized. This participatory approach ensured that the final adaptations reflected the views of a broad range of stakeholders. B.M. facilitated the discussions, which were audio-recorded.

### *Further adaptations during the training of trainers and supervisors training*

Discussions from the workshops were shared with the WHO CAMH international trainer, L.P., a child and adolescent psychiatrist, to obtain expert feedback on how best to integrate stakeholder input into the mhGAP-IG guidelines and training content. Building on this, adaptations made during the workshops were revisited during the ToTS sessions held from February 19–23, 2024, which included seven of the same mental health experts and stakeholders in the earlier contextualization workshops. Additional suggestions emerged during the ToTS sessions, including inputs from L.P., who drew on experiences from other CMH module implementation contexts. These proposals were deliberated collectively with local stakeholders during the ToTS sessions, ensuring

**Figure 1.** Contextual adaptation process for the mhGAP-IG CMH module.

alignment with the contextual priorities. Final adaptations were agreed upon by consensus, paving the way for subsequent training of HCWs.

### Data management

All qualitative data were audio-recorded, with written informed consent obtained from the participants. Audio recordings were transcribed verbatim, and all identifying information was removed. Transcribed data and audio recordings were securely stored on a password-protected laptop that was accessible only to the research team. The data were anonymized by assigning each participant a unique identifier.

### Data analysis

Guided by Braun and Clarke (2006), thematic analysis was conducted using the original transcripts to extract emergent, recurring themes, using the NVivo-Lumivero© 15 software. A line-by-line reading of a subset of transcripts (two in-depth interviews and one workshop) was conducted to identify emerging codes and develop the codebook. This involved B.M., B.N. and J.M. Systematic coding in NVivo was done by B.M., and the preliminary categories and themes developed were reviewed and discussed with V.A. All other researchers participated in reviewing the results and interpretations. This collaborative process ensured credibility and coherence of the findings.

### Results

The subsequent sections highlight the key findings of the situational analysis and adaptations made to the CMH module and the training materials.

### Situational analysis of the CAMH services in Kilifi and Nairobi

Findings on the CAMH system and services are organized according to the six domains outlined in the WHO-AIMs tool, presented below and summarized in Table 2.

#### Policy and legislative framework

Since the 2013 devolution in Kenya, the County Health Departments have been responsible for managing healthcare services. In mental health, the mandate is guided by national frameworks, such as the Mental Health Policy 2015–2030 (Ministry of Health, 2015), Mental Health Action Plan 2021–2025 (Ministry of Health, 2021) and the amended Mental Health Act of 1989, revised in 2023 (Republic of Kenya, 2023).

While Kilifi has a costed Mental Health and Disability Action Plan 2022–2026 (Kilifi County, 2022) and Nairobi recently launched its Mental Health and Strategic Action Plan 2025–2030 (Nairobi City County, 2025), both counties lacked a CAMH-specific policy or action plan. They rely on the National Mental Health Policy and Action Plan (Ministry of Health, 2015, 2021). One participant highlighted:

*“...we do not have an existing policy for child and adolescent mental health...as a county we have the action plan we narrowed down from the national one...”* (KII02\_County Health Manager)

A limited CAMH policy focus leads to inadequate funding, with CAMH often deprioritized compared to other health programmes. A respondent reported:

**Table 2.** Key sub-themes from the situational analysis of the child and adolescent mental health in Nairobi and Kilifi

Themes	Sub-themes
Policy and legislative framework	<ul style="list-style-type: none"> <li>- Presence of CAMH-specific policy in the country</li> <li>- General mental health action plan use/reliance</li> <li>- Budget allocation for mental health</li> </ul>
Mental health services	<ul style="list-style-type: none"> <li>- Mental health services for children and adolescents (inpatient and outpatient)</li> <li>- Availability of essential psychotropic</li> <li>- Service location within facilities (privacy and care quality)</li> </ul>
Mental health in PHC settings	<ul style="list-style-type: none"> <li>- Integrated mental health services in the PHC setting</li> <li>- Inclusion of the CMH module in the mhGAP training</li> <li>- Role of other cadres in MH services within the PHC setting</li> </ul>
Human resource	<ul style="list-style-type: none"> <li>- Availability of CAMH specialists</li> <li>- Mental health staffing alternatives (volunteers, interns and NGOs)</li> <li>- Staff workload and burnout</li> </ul>
Public education and links to other sectors	<ul style="list-style-type: none"> <li>- Stigma towards mental health and help-seeking</li> <li>- Families seeking traditional or religious help before formal care</li> <li>- Public awareness campaigns on CAMH</li> <li>- Role of private sector stakeholders in supporting mental health services</li> </ul>
Monitoring and research	<ul style="list-style-type: none"> <li>- Availability of disaggregated data for CAMH-specific planning</li> <li>- Insufficient data for funding advocacy</li> <li>- Limited research on CAMH</li> </ul>

*“...One of the challenges is inadequate resources towards mental health services specifically focusing on adolescents and children...”* (KII01\_County Health Manager)

#### Mental health services

Access to quality CAMH services in the two counties was limited, with care offered through outpatient clinics and few inpatient options. In Nairobi, referrals for severe presentations of mental disorders are directed to national-level facilities, such as the Mathari National Teaching and Referral Hospital and private facilities. In Kilifi, the absence of a local inpatient facility necessitates referrals to Mombasa County's mental health unit, which is more than 90 km away. One respondent reported:

*“...we do not have any [county] inpatient services...we refer to private clinics... Mathari [Hospital] does not admit those who are under eighteen [years]...that is the major challenge...especially when we get [adolescents] who have attempted suicide...self-harm...experiencing psychosis...”* (KII03\_Clinical Psychologist)

Second, frequent stockouts of essential psychotropic medications lead to delayed treatment and poor adherence, especially for those facing financial constraints. One participant pointed out the following:

*“...Even the most desired antidepressant fluoxetine [for adolescent depression], I have never seen the government supply...”* (KII04\_Psychiatric Nurse)

Third, the participants pointed out the lack of dedicated clinical space for mental healthcare services. Often, clinic spaces are shared,



compromising privacy and care quality. Additionally, stigma and dismissive behaviour from HCWs have been reported.

*“...there’s a lot of stigma and discrimination...I wish we could sensitize staff (HCWs) to treat mental health [disorders] like any other disease...”* (KII03\_Clinical Psychologist)

### *Mental health in primary healthcare settings*

Participants highlighted improvements in mental healthcare in Primary Healthcare (PHC) settings, such as hiring counsellors and psychologists, establishing new clinics and service integration. For example, psychotherapy services for children and adolescents are offered at a child-friendly outpatient clinic in a health centre in Nairobi. Additionally, community health promoters (CHPs), who are recognized by the Ministry of Health as service providers at the community level, were seen as playing a critical role in the early identification of CAMH disorders and referral to PHC facilities. One participant noted:

*“... I have received so many of them (children/adolescents with CAMH disorders) through the CHPs...”* (KII04\_Psychiatric Nurse)

However, key gaps remain. Capacity-building initiatives, such as mhGAP-IG trainings, often exclude the CMH module and minimize HCWs’ preparedness at the PHC level to manage CAMH disorders.

*“...For child and adolescent... we have not received training on that...”* (KII02\_Clinical Psychologist)

Further, specialist mental health services, such as speech and occupational therapy, remain concentrated at higher-level facilities, limiting access at the PHC level.

*“...occupational therapy, speech therapy is offered not in health centres and dispensaries, it would be level 4 and above...”* (KII03\_Clinical Psychologist)

### *Human resources*

A lack of human resources, especially mental health specialists, was reported in both counties. Facilities often rely on volunteers, interns or temporary support from Non-Governmental Organizations (NGOs) because of chronic staffing shortages.

*“...We are understaffed... I am the mental health specialist for the entire sub-county...”* (KII05\_Psychiatric Clinical Officer)

*“...I work alone, but I have volunteers...and every three months we get interns...I train them...”* (KII03\_Clinical Psychologist)

Despite ongoing capacity-building efforts, such as psychiatry training for medical doctors, neither county has employed a child and adolescent psychiatrist. The scarcity of specialists results in overwhelming workloads. A participant reported:

*“...We are so much overwhelmed. Seeing 40 patients alone leads to significant burnout...”* (KII04\_Psychiatric Nurse)

These staffing constraints were further compounded by budgetary restrictions that limited recruitment.

*“...The biggest challenge with staffing is the budget...you can only do a maximum of 35% for personnel to the recurrent budget...recruitment is limited....”* (KII01\_County Health Manager)

### *Public education and links with other sectors*

Respondents noted that stigma and harmful cultural beliefs hindered access to CAMH services, and mental health was often considered a taboo topic. A participant stated:

*“...Some parents say they observed certain behaviours for quite a long time but were afraid to seek help...their children may be labelled with*

*mental issues or fear of community gossip...”* (KII04\_Psychiatric Nurse)

Consequently, families often turn to traditional healers or religious leaders before seeking formal healthcare, which can delay treatment and worsen their outcomes. Participants noted limited community awareness of CAMH, which hinders early identification and care.

Participants noted the valuable role that NGOs and private sector stakeholders play in strengthening mental health service gaps by providing scholarships, antipsychotics and psychotherapy. One participant explained:

*“...the [mentions organisation] NGO is supporting mental health in terms of a scholarship for a higher diploma in mental health...”* (KII04\_Psychiatric Nurse)

### *Monitoring and research*

Participants highlighted the absence of mental health monitoring tools and CAMH-specific indicators in PHC facility registers and reports, which limits the visibility and strategic planning for CAMH.

*“...Whenever we are doing the general report, it won’t show that you’ve seen a child who has anxiety, depression... we don’t have that indicator...”* (KII03\_Clinical Psychologist)

This lack of disaggregated data weakens advocacy for CAMH funding and programme development.

*“... you need that disaggregated data for planning and intervention programmes.”* (KII0\_County Health Manager)

### *Summary of mhGAP CMH module and training materials adaptations considered*

Adaptations aimed to improve clarity, contextual fit and usability for non-specialist HCWs in PHC, covering (1) training materials and (2) the CMH module content.

#### *Adaptations to the CMH module training materials*

Several adaptations were made to enhance the delivery of the training and support the application of knowledge and skills into practice. A summary of these adaptations is presented in Table 3.

The Training of Healthcare Providers (ToHP) was extended from the mhGAP-IG’s recommended 5.8 h minimum to a 5-day schedule, allowing for videos, group discussions and role plays to promote active learning. The revised schedule, drafted by L.P. and reviewed by B.M. and V.A., incorporated inputs from the WHO technical staff based on prior training experience and local stakeholders. The extended training duration also allowed for the inclusion of the ECP module, which equips HCWs with skills for respectful, culturally responsive communication and assessment, enabling them to engage with traditional beliefs and explanatory models without reinforcing stigma. Additional mhGAP content on mania, suicide/self-harm and substance use further broadened the coverage to address the CAMH specialist shortage and limited prior training.

Training presentation slides were also revised to improve structure and trainee engagement, and instructions for small group activities and discussions, previously in the trainer’s manual, were added directly to the slides to ensure clarity and smooth facilitation. In addition, the slide sequence was reorganized by the disorder category: developmental, behavioural and emotional disorders, with each discussed sequentially from assessment to follow-up protocols. This replaced the previous flow, which grouped all assessments, all management and all follow-up steps across conditions. The revised structure supported deeper learning and improved familiarity

**Table 3.** Contextual adaptations to CMH training materials

Training component	Before adaptation	After adaptation
Training duration	Short training: CMH module allocated ~5.8 h (as per mhGAP-IG), insufficient time for role plays or contextual discussions	Extended to 5 days; included mhGAP introduction, ECP module and interactive exercises (e.g., videos and role plays)
Content scope and mhGAP Essential Care and Practice (ECP) module integration	CMH module only. Excluded related content (e.g., suicide, mania and substance use), although referenced in the CMH module	Incorporated relevant content on the mania, suicide/self-harm module and substance use module into the CMH training. Also, included the ECP module that emphasizes communication, promoting dignity and human rights in assessment
Training slides: Group/activities instructions	Instructions for group discussions and activities were only in the mhGAP trainer's manual	Instructions added directly into presentation slides for trainee clarity
Training slide sequence/flow	Based on the mhGAP-IG flow: Assessment of all conditions → Management → Follow-up	Reordered by disorder type: developmental → Behavioural → Emotional disorders, with full protocol (assessment, management and follow-up) per category for clarity
Role-play content	Standardized role-play content, not tailored to the local context	Adapted role plays using local names and culturally relevant scenarios – e.g., Role-play 4 emphasized private adolescent interviews
Developmental milestones checklist	Generic developmental checklists from the mhGAP	Recommended to use Kenya's Ministry of Health developmental milestone checklist in the mother–child health (MCH) booklet

with the CMH protocols, making it easier for non-specialist HCWs to apply them in practice.

Supporting training materials, such as roleplays and personal stories, were also adapted. For example, role-play four was revised during ToTS in consultation with L.P. and stakeholders to reinforce the mhGAP-IG recommendation of interviewing adolescents alone during assessment. In addition, the developmental milestones checklist from the mhGAP was replaced with that found in Kenya's Ministry of Health Maternal and Child Health booklet, ensuring alignment with national tools already in use at the PHC level.

Together, these adaptations aimed to improve the contextual fit, acceptability and practical utility of the mhGAP training for HCWs in resource-limited and high-need settings, such as Kilifi and Nairobi.

#### Changes made to the CMH module of the mhGAP-IG

This section outlines key modifications to the terminology, differential diagnosis, psychosocial and pharmacological interventions and referral pathways in the CMH module. Details of the CMH adaptations are in Table 4.

The situational analysis identified stigma as a major barrier to the early identification of CAMH disorders. In response, some stigmatizing terms, as noted by the stakeholders, were rephrased to support more respectful and culturally sensitive communication. For example, in the “Common Presentations” section (p. 71) of the CMH, “failure to thrive” was rephrased to “sub-optimal growth”. Participants articulated the following:

“...Failure is a bit harsh...” (P8\_Counselling Psychologist)

“...some of these words (failure to thrive) can perpetuate stigma...” (P1\_Mental Health Coordinator at a Local Organization)

A suggestion by stakeholders during the ToTS was to create a “CMH Overview” (mhGAP-IG, p. 70) poster outlining steps for assessment, management and follow-up in the CMH module. Consequently, to enhance the usability of the poster at PHC facilities, L.P. recommended adding page numbers for quick referencing and slight rephrasing adjustments. For example, “Assess for developmental disorders” became “Assess development and functioning.” These changes helped HCWs better understand specialized terms.

An adapted CMH Overview page is provided in [Supplementary Material S3](#).

The differential diagnosis sections in the CMH module were updated to help non-specialist HCWs ensure diagnostic accuracy. For example, diabetes was added to the conditions to rule out when assessing emotional disorders because it resembles or exacerbates emotional disorders. These changes support comprehensive care amid limited CAMH care services.

The psychosocial interventions in the CMH module were retained, even for those that were expected to become available in the future. Stakeholders emphasized the need for practical alternatives to physical discipline, reflecting a common challenge in the community. They suggested that ToHP should reinforce strategies that caregivers can realistically apply at home. One participant said:

“...one parent asked me ‘if you don’t want me to cane my child then what exactly should I do to help rectify the behaviour?... you need to give them options to practice when they get back home...’” (P1\_Mental Health Coordinator at a Local Organisation)

Stress-reduction techniques already in the CMH module, such as breathing techniques and progressive muscle relaxation, were recommended for children, caregivers and HCWs, given the risk of burnout and emotional fatigue from staff shortages noted in the situational analysis. A psychologist said:

“...I just found out that this [breathing] technique works wonders for adolescents and even adults...” (P8\_Counselling Psychologist)

A new recommendation was added to the “Simple Tips” section (p. 89) of the CMH module, advising teachers to closely supervise paired students. This builds on the existing guidance to support learners with classroom difficulties through peer pairing and volunteer involvement.

Pharmacological guidance was revised to align with the national policy and prescription capacity of non-specialist HCWs. Fluoxetine was retained as a first-line antidepressant for adolescents with moderate to severe depression. A note was added to protocol 6 (p. 86) of the CAMH module, stating that fluoxetine or other antidepressants should be used only after psychological interventions fail and with specialist involvement. The stakeholders agreed that non-specialist HCWs should prescribe methylphenidate only

**Table 4.** Contextual adaptations to the mhGAP-IG CMH module

Page	Section	Original	Adapted	Reason for adaptation
Page 70 CMH module	<i>Quick overview</i>	<i>Assessment</i> >Assess for problems with development >Assess for problems with inattention or overactivity >Assess for problems with emotions. If an adolescent, evaluate for moderate to severe depression >Assess for repeated defiant, disobedient and aggressive behaviour >Assess for the presence of other priority MNS conditions >Assess the home environment >Assess the school environment <i>Management</i> >Management protocols >Psychosocial intervention <i>Follow-up</i>	Slight rephrasing and added page numbers for referencing the CMH module: <i>Assessment</i> >Assess development and functioning (p. 73) >Observe and assess for problems with inattention or overactivity (p. 74) >Assess for problems with behaviour – e.g., repeated defiant, disobedient and aggressive behaviour (p. 76) >Assess for problems with emotions (p. 78) >If an adolescent, evaluate for moderate to severe depression (p. 80) >Assess for the presence of other priority MNS conditions (p. 81) >Assess for thoughts/acts of self-harm in adolescents with depression and youth over age 10 who have a priority MNS condition, chronic pain, or acute distress >Assess the home environment (p82). >Assess the school environment (p84). <i>Management</i> >Management Protocols (p85.) >Psychosocial Intervention (87) Added a general psychoeducation tip for all CAMH disorders – “2.1 Guidance to promote child/adolescent wellbeing and functioning.” <i>Follow-up (p90)</i>	Adding page numbers, rephrasing content and including specific details in the mhGAP-IG manual enhance usability, ensure clarity and support comprehensive, effective care by addressing physical health, psychosocial well-being and self-harm risks
Page 71 on the CMH module	<i>Common presentations of developmental disorders in infants and young children under age 5 years</i>	Failure to thrive	Sub-optimal growth	Ensures the language is more precise, relevant to the setting and less stigmatizing for families
Page 72 on the CMH module	<i>Assessment of common presentations</i>	No mention of abuse	Added: “Ask about sexual/physical abuse”	Children and adolescents are prone to sexual and physical abuse
Page 73 on the CMH module	<i>Assessment algorithm for developmental disorders</i>	1. “Assess for developmental disorder”	“Step 1. Assess development and functioning”	It emphasizes holistic assessment of development while broadening the scope to allow for multiple potential diagnoses
Page 74 on the CMH module	<i>Assessment algorithm problems with inattention or hyperactivity</i>	2. “Assess for problems with inattention or hyperactivity”	“Step 2. Observe and assess for problems with inattention or overactivity”	It emphasizes holistic assessment of behaviour while broadening the scope to allow for multiple potential diagnoses
Page 76 on the CMH module	<i>Assessment algorithm for conduct disorder</i>	3. “Assess for conduct disorder”	“Step 3. Assess for problems with behaviour – e.g., repeated defiant, disobedient and aggressive behaviour”	It emphasizes holistic assessment of behaviour while broadening the scope to allow for multiple potential diagnoses
Page 78 on the CMH module	<i>Assessment algorithm for emotional disorders</i>	4. “Assess for emotional disorders”	“Step 4. Assess for problems with emotions”	It emphasizes holistic assessment of emotions while broadening the scope to allow for multiple potential diagnoses
Page 73 on the CMH module	<i>Suspect developmental delay/disorder</i>	Did not list chronic illnesses when assessing for additional signs and symptoms that might be causing the developmental delay/disorder	Added to the list of signs and symptoms provided: “Other chronic illnesses”	To identify other chronic illnesses present that might be contributing to delayed development is essential for accurate diagnosis, comprehensive care planning, and tailored interventions
Page 74 on the CMH module	<i>Assessing development and functioning</i>	When a child is suspected to have a visual and/or hearing impairment: “Consult with a specialist for evaluation”	Added more information: “REFER to a specialist in the eye or ENT Clinic. Facilitate booking and follow up to ensure referral was taken”	To strengthen referral mechanisms

(Continued)

Table 4. (Continued)

Page	Section	Original	Adapted	Reason for adaptation
Page 74, 75, 77, 79, 80 and 81	PROTOCOLS 1–6	“Go to PROTOCOL 1”	Added details and page numbers: “Management Go to PROTOCOL 1, Developmental Delay/Disorder, page 85” Changed for all protocols, 1 – 6	Enhance clarity by specifying the exact content and page number, improving usability and navigation for health workers
Page 75 on the CMH module	<i>Assessing problems with inattention or overactivity</i> Rule out physical conditions that can resemble ADHD	No mention of specific mimics of ADHD symptoms	Added: 1. Drug and substance use/withdrawal effects – e.g., cigarette and cannabis 2. Medication side effects – e.g., phenobarbital	To identify and rule out medication side effects that may resemble ADHD and ensure that an accurate diagnosis is given
Page 81 on the CMH module	CLINICAL TIP	“Delusions or hallucinations may be present. If present, treatment for depression needs to be adapted. CONSULT A SPECIALIST”	Details added: “Delusions or hallucinations may be present. If present, treatment for depression needs to be adapted. CONSULT A SPECIALIST. Refer to mental health clinic. Facilitate booking and follow up to ensure referral was taken”	To strengthen referral mechanisms
Page 81 on the CMH module	IF THERE IS IMMINENT RISK OF SUICIDE, ASSESS AND MANAGE before continuing. Go to » SUI	IF THERE IS IMMINENT RISK OF SUICIDE, ASSESS AND MANAGE before continuing. Go to » SUI	Added information: “IF THERE IS IMMINENT RISK OF SUICIDE, ASSESS AND MANAGE before continuing. Go to » SUI. Assess for thoughts/acts of self-harm in adolescents with depression and youth over age 10 who have a priority MNS condition, chronic pain or acute distress”	It ensures thorough assessment and management of self-harm risk in adolescents and youth experiencing depression or other mental, neurological or substance use (MNS) conditions, chronic pain or acute distress
Page 86 on the CMH module	PROTOCOL 6 – Emotional disorder or depression	“When psychological interventions prove ineffective, consult a specialist for Fluoxetine (no other SSRIs or TCAs). Go to » DEP for medication details”	Slight rephrasing to: “When psychological interventions prove ineffective, refer to a mental health specialist for Fluoxetine or other antidepressants. Go to » DEP for medication details”	It broadens the treatment options by recommending consultation with a mental health specialist for Fluoxetine or other antidepressants, allowing for more flexible approaches to treatment related to the context-specific availability of the antidepressants
Page 90 on the CMH module	Follow-up	“If on medication, consider gradually reducing medication dose in consultation with a specialist”	Added information: “If on medication, consider gradually reducing medication dose in consultation with a specialist. If on medication go to step 3 on page 92”	There are additional details for reducing medication doses in consultation with a specialist
Page 91 on the CMH module	Follow-up for conduct disorders	If no improvement or predicted danger to the adolescent » REFER TO SPECIALIST	Added “other people” to the statement: “If no improvement or predicted danger to the adolescent or other people. » REFER TO SPECIALIST”	Adolescents with conduct disorders could also pose a danger to others
Page 92 on the CMH module	Monitoring pharmacological treatment	Fluoxetine and methylphenidate monitoring unspecified: “Additional monitoring if the adolescent has been prescribed fluoxetine or methylphenidate”	For fluoxetine: All information retained and added: N/B: Taper off medication only in consultation with a specialist For methylphenidate: All retained information and added: “Monitor children/adolescents MONTHLY” rather than the recommended every three months	To educate health workers on tapering fluoxetine to prevent withdrawal, monitor symptom recurrence, minimize side effects and ensure a smooth transition To emphasize the importance of closely monitoring children and adolescents on methylphenidate for safety, growth tracking, side-effect management and treatment adjustment

in consultation with a mental health specialist, citing safety concerns, side effects and the need for close monitoring. One participant noted:

“...considering the side effects of methylphenidate, mhGAP trained HCWS would prescribe in consultation with a specialist...”  
(P3\_Psychologist)

Referral pathways were clarified by specifying referral points, for example, Ear, Nose and Throat or ophthalmology for hearing or vision concerns, instead of a general instruction to “consult a specialist.” These streamlined referrals improve follow-up and support continuity of care in under-resourced settings, as is the case in the study setting.



Together, these adaptations improved the CMH module alignment with the needs and constraints of PHC settings in Kilifi and Nairobi counties.

## Discussion

The study contextualized and adapted the mhGAP-IG CMH module and associated training materials for implementation in Nairobi and Kilifi counties. Key adaptations included refining the language to ensure cultural sensitivity, feasibility and contextual relevance of the CMH module for use in PHC settings. This study aligns with global efforts to tailor the mhGAP-IG to local contexts (Katchanov and Birbeck, 2012; Humayun et al., 2017; Mutiso et al., 2018; Bitta et al., 2020; Searle et al., 2022). For example, Sri Lanka re-filmed the mhGAP training videos that aligned with their cultural norms and communication styles, while Tunisia conducted stakeholder consultations to contextualize training content and identify systemic barriers to implementation (Spagnolo et al., 2018). In China, adaptations to the depression and CMH modules incorporated culturally relevant practices, including family involvement, revised referral pathways and the integration of traditional Chinese medicine in diagnostic pathways (Doherty et al., 2020; Searle et al., 2022; Zheng et al., 2025).

Building on these international examples, the contextualization process in Nairobi and Kilifi acknowledged the significant role of traditional and spiritual beliefs in shaping help-seeking behaviour in mental health conditions. Rather than viewing these beliefs purely as barriers, the adaptation process aimed to foster respectful engagement. To this end, the ECP module was included in the training to support culturally responsive assessment and communication, enabling providers to engage families in ways that reduce stigma, while respecting local norms. This approach aligns with global evidence supporting the integration of cultural beliefs into mental healthcare. For example, Zimbabwe's Friendship Bench study trained lay workers to deliver therapy rooted in local traditions, improving acceptability and reducing stigma (Chibanda et al., 2016). Culturally grounded care has been shown to enhance the acceptability, uptake and effectiveness of mental health interventions (Kohrt and Mendenhall, 2015; Patel et al., 2018). Thus, the adapted CMH module contributes to a culturally responsive, system-integrated model of care.

While cultural relevance enhances acceptability, the sustainability and practicality of mhGAP implementation also depend on alignment with systemic and resource realities. Cultural and contextual adaptation is essential for addressing barriers such as limited human resources, medication availability and organizational challenges (Faregh et al., 2019). Training activities must align with local realities (Faregh et al., 2019; Gómez-Carrillo et al., 2020) to ensure the effective and sustainable implementation of mhGAP. The adaptation of the CMH module aligns the guidelines with the realities of the limited CAMH resources in Nairobi and Kilifi, thereby enhancing its feasibility in these settings. Practical recommendations enable HCWs to make informed treatment decisions even when resources are scarce. For example, while mhGAP permits the prescription of methylphenidate at the PHC level, it is recommended that its use be restricted to mental health specialists or done in consultation with one. This reflects the complexities of paediatric psychopharmacology in LMICs, where children require weight-based dosing, ongoing monitoring and coordination with caregivers and schools, often beyond the capacity of PHC facilities in LMICs (Patel et al., 2013; Rohde, 2013). While task shifting helps

address the shortage of mental health specialists, it raises concerns about overburdening non-specialist HCWs. Ensuring safety and effectiveness requires adequate training, supervision and support (Le et al., 2022).

Despite the limited published evidence on the adaptation of the CMH module, broader implementation research shows that tailoring the mhGAP-IG enhances its effectiveness (Spagnolo et al., 2016, 2018; Mutiso et al., 2018; Faregh et al., 2019; Bitta et al., 2020). In Mexico, online mhGAP training improved knowledge and skills across diverse HCW groups (Félix Romero et al., 2023) and a social media-delivered distance mhGAP programme significantly improved knowledge scores among PHC providers (Aldana López et al., 2024). In Mozambique, an adapted mhGAP-IG led to increased identification and follow-up of epilepsy cases, with over 60% of the cases involving children and adolescents (Dos Santos et al., 2019). A scoping review of CAMH training further highlighted that non-specialist HCWs value locally adapted case discussions, role plays and clinical demonstrations (Raj et al., 2022), which improve engagement and understanding (Petagna et al., 2023).

This global evidence resonates with the findings from Kenya, where the effectiveness of the adapted mhGAP-IG for adult modules has been demonstrated (Bitta et al., 2020; Mutiso et al., 2021). In Kilifi, pilot testing of an adapted mhGAP-IG version 2 led to significant improvement in knowledge scores (66.3–76.6%,  $p < 0.001$ ; Bitta et al., 2020). In Makueni, the adapted mhGAP-IG led to reduced disability, improved seizure control and greater parental awareness of children's mental health symptoms, narrowing the treatment gap (Mutiso et al., 2021). These findings highlight the potential of well-adapted mhGAP materials to improve knowledge, clinical outcomes and CAMH awareness in diverse settings.

Taken together, these findings suggest that implementing mhGAP-IG interventions in sub-Saharan Africa shows promise for improving access to mental healthcare, but significant challenges remain. Sustainable integration into PHC requires capacity building, regular supervision and ongoing in-service training of HCWs (Petagna et al., 2023; Mkubwa et al., 2024).

## Policy implications

The findings of this study highlight the need for policies that support the integration of CAMH services into PHC in Kenya and other similar settings. Aligned with task-sharing and PHC priorities, the adapted CMH module can inform updates to CAMH training curricula to strengthen early identification, diagnosis, management and referral of CAMH disorders at the PHC level. Continued investment in implementation research is essential for monitoring progress, guiding future adaptations and supporting the scale-up of CAMH services at the PHC level.

## Study limitations

This study has several limitations that are common to mhGAP adaptation research. First, focusing solely on Nairobi and Kilifi, counties with distinct, unique healthcare and cultural contexts, limits generalizability across Kenya. As noted in a prior study in Kilifi, effective adaptations in one region may not be translated to others due to contextual differences (Bitta et al., 2020). However, the adaptation process itself may offer a framework, even if specific content requires local tailoring. Further research in diverse settings is required to ensure broader applicability.

Resource and time constraints prevented the translation of the mhGAP training videos (available only in Arabic with English

subtitles) into Swahili or English. Additionally, the absence of a real-time thematic analysis between the first and second adaptation workshops may have limited the integration of immediate stakeholder feedback.

While the participatory approach improved cultural relevance, it may have introduced bias, with more vocal or experienced participants influencing the outcomes. The careful selection of workshop participants and skilled moderation helped mitigate this by encouraging inclusive contributions. Finally, future adaptations could further enhance cultural relevance by directly engaging traditional and religious perspectives in the refinement of the CMH module.

## Conclusion

The contextualization and adaptation of the CMH module and its training materials aligned with local cultural beliefs, health system capacities and resource realities have the potential to improve HCW knowledge, promote culturally sensitive care and enhance service delivery for CAMH disorders. The process reinforced the importance of engaging stakeholders, incorporating context-specific content and addressing systemic challenges, such as medication access, workforce limitations and supervision structures. These findings contribute to a growing body of evidence supporting the adaptation of global mental health interventions to ensure the relevance, acceptability and sustainability in LMICs. Future research should focus on piloting and evaluating the adapted module within PHC settings in Nairobi and Kilifi, including the integration of routine supervision and mentorship for trained HCWs.

**Open peer review.** To view the open peer review materials for this article, please visit <http://doi.org/10.1017/gmh.2025.10049>.

**Supplementary material.** The supplementary material for this article can be found at <http://doi.org/10.1017/gmh.2025.10049>.

**Data availability statement.** The qualitative data generated and analysed during this study are not publicly available to protect participant confidentiality. However, de-identified excerpts relevant to the study findings are available from the corresponding author upon reasonable request, with appropriate ethical approval.

**Acknowledgements.** The authors would like to thank all the stakeholders and participants who contributed to this study. Special appreciation goes to the government representatives from Nairobi and Kilifi counties for their invaluable support in facilitating access to healthcare systems and providing local expertise.

**Author contribution.** A.A. and C.R.N. conceptualized and obtained funding for the study. B.M., A.A., M.S., C.R.N. and V.A. provided input on the study design and methodology. B.M. and M.J. conducted the situational analysis interviews. B.M. and B.N. conducted the initial review of the CMH module and training materials before the workshop. L.P. provided further guidance on adaptation before and during the ToTS training. J.G. and N.K. provided input on the healthcare system in Nairobi and Kilifi, and contributed to the contextualization and adaptation process. M.J. transcribed audio recordings from interviews and workshops. B.M. analysed the findings of the studies in NVivo while A.A., M.S. and V.A. supervised and provided guidance throughout the process. All authors contributed to the drafting and reviewing of the manuscript. B.M.'s ORCID id: 0000-0002-2058-3325.

**Financial support.** This research was commissioned by the National Institute for Health and Care Research (NIHR) (NIHR200842) using UK aid from the UK Government. The views expressed in this publication are those of the author(s) and not necessarily those of the NIHR or Department of Health and Social Care. B.M. and A.A. also received support in part from the Science for Africa Foundation through grant number DEL-22-002, with funding from the Wellcome Trust and the UK Foreign, Commonwealth and Development Office. This

support is part of the EDCTP2 programme supported by the European Union. The funders were not involved in the study design, data collection, analysis, data interpretation or development of the manuscript.

**Competing interests.** The authors declare none.

**Ethics statements.** Ethical approval was obtained from the Aga Khan University Institutional Scientific Ethics Committee (Protocol Ref:2022/ISERC-104 (v3)). All participants provided written informed consent, and confidentiality was maintained throughout the study.

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