Clinical competency of enrolled community health nurses trained by Kenya Medical Training College in level 2 and 3 public health facilities in Kenya

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ABSTRACT

Community Health Nurses (ECHNs) are a significant proportion of Kenya's nursing workforce and are the first point of contact in dispensaries and health centres, but the increasing number of ECHNs, overcrowded classrooms, lack of resources and low faculty to student ratios have led to concerns about the quality of their preparation. This study assessed the clinical competency of ECHN practitioners trained by Kenya Medical Training College (KMTC). A descriptive cross-sectional mixed-methods survey was carried out in level 2 and 3 public health facilities in seven regions of Kenya (Coast, Central, Western, Eastern, North Eastern, Nyanza and Rift Valley) guided by the product component of the Context, Input, Process and Product (CIPP) evaluation model between April and May 2024. Facilities were stratified by region and size, and all available ECHNs were included by census. Forty ECHNs completed an expert-validated questionnaire rating their ability to perform duties safely, proficiency in critical skills, application of theoretical knowledge and communication on five-point scales; 28 supervisors were key informants. Descriptive analysis of quantitative data was conducted using SPSS and open-ended responses were analysed thematically. Most ECHNs were deployed in maternity (22.5%), medical (15.0%) and ward (15.0%) units. No participant rated any competency domain below the moderate level. 60.0% rated ability to perform tasks safely and to standard as high and 5.0% rated it very high (M = 3.70, SD = 0.56); 62.5% rated critical skills as proficient or highly proficient (M = 3.78, SD = 0.70); 70.0% rated application of theoretical knowledge as effective or very effective (M = 3.85, SD = 0.66); and 87.5% rated communication as improved or very improved (M = 4.03, SD = 0.53). The mean for the composite competency was 3.84 out of 5. The most common demonstrations of competency were resuscitation (20.0%), medication administration (10.0%) and patient counselling (10.0%), and the most common skills requiring improvement were leadership and management (42.5%), stress management (25.0%) and care management and patient evaluation (15.0%). The study found that clinical competency of the ECHNs trained by KMTC was high but not uniform, with a significant proportion of the ECHNs in the moderately competent category (30.0% to 37.5% across domains) and the areas of leadership, stress management and clinical reasoning were identified as areas of weakness. It suggests that KMTC should enhance leadership, management, stress management and critical-thinking components in the ECHN curriculum, and that employers should offer structured continuing professional development for ECHNs in service, in resuscitation and emergency care through simulation-based training.

Keywords: CIPP Model, Clinical Competency, Community Health Nursing, Enrolled Community Health Nurses, Kenya Medical Training College, Nursing Education

I. INTRODUCTION

Nurses make up the largest proportion of the health workforce, and health systems everywhere rely on a workforce that has the knowledge, skills and attitudes to respond to the evolving health needs of populations (World Health Organization [WHO], 2020). The roles that are expected of nurses have expanded as care moves towards primary health care, prevention and the management of chronic conditions in the community (Salmond & Echevarria, 2017). Nurses are the largest cadre of the health workforce in Kenya (Okoroafor et al., 2022), and Enrolled Community Health Nurses (ECHNs) have traditionally accounted for over 70% of the country's nurses (Lakati et al., 2012). ECHNs are often the first, and in many dispensaries and health centres the only, skilled health professionals that patients encounter, making the quality of their assessment, care and decisions critical to health outcomes in underserved areas.

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Kenya Medical Training College (KMTC) is the main public institution that trains middle level health professionals in Kenya including ECHNs at certificate and diploma level. It has a competency-based ECHN programme, which is delivered with a strong practical emphasis (around 70% practical and 30% theory) in campuses adjacent to hospitals that provide clinical training sites, and combines general nursing, midwifery and community health. The graduates are expected to deliver comprehensive preventive, promotive, curative and rehabilitative services, manage health care facilities, undertake continuing professional development and be involved in research. They are deployed in all levels and departments of hospitals and community health services after being licensed by the Nursing Council of Kenya.

Clinical competency is defined as the ability of a nurse to apply knowledge, skills, attitudes and judgement in an integrated manner to function safely and effectively in a specific practice context (Fukada, 2018). Systematic evaluation of the competency of practising nurses helps educators and health managers to describe competency profiles, identify gaps and design professional development strategies (Meretoja et al., 2004; Soares et al., 2019). Assessing the performance of graduates in service is a direct measure of the effectiveness of the training institution's curriculum in producing practitioners who are fit for purpose.

1.1 Statement of the Problem

The demand for nurses in Kenya has significantly increased since the COVID-19 pandemic and the number of students admitted to nursing programmes has followed suit. While higher enrolment helps to meet workforce needs, it also strains training resources. Nurse education in resource-limited settings is plagued by system inadequacies, limited resources, crowded clinical learning environments and inadequate supervision, which creates a gap between theory and practice (Salifu et al., 2019). In KMTC, lecturing is still the main method of instruction in some programmes, and it has been suggested that more investment should be made in simulation laboratories to enhance clinical preparation (Otieno et al., 2025). These pressures can compromise students' access to guidance and supervised clinical practice and, ultimately, the competency of graduates. Previous studies that compared the KMTC nursing curricula indicated that the mode of training influences the clinical competence measured (Kabiru et al., 2009), however, there is a lack of recent evidence on the clinical competence of KMTC trained ECHNs working in level 2 and 3 public facilities. In the absence of such evidence, curriculum review and policy decisions about ECHN training are based on assumptions, not data. This study was undertaken to fill that gap.

1.2 Research Objective

To assess the clinical competency of Kenya enrolled community health nurse practitioners trained by Kenya Medical Training College.

II. LITERATURE REVIEW

2.1 Theoretical Review

The study was conducted using the Context, Input, Process and Product (CIPP) evaluation model developed by Stufflebeam (Stufflebeam & Zhang, 2017). The model sees evaluation as a systematic, iterative and participatory process, which aims to improve programmes and to give accountability. Context evaluation involves the needs, policies and environment a programme serves, input evaluation involves the resources, plans and strategies used, including the curriculum, faculty and facilities, process evaluation involves how the programme is implemented, including teaching methods and clinical training, and product evaluation involves the outcomes the programme achieves against its intended objectives. For the purposes of the present study, the competencies that the ECHN programme expects a graduate to be able to do were used as the standard. The clinical competency of graduates in service was thus considered as a product outcome of the context, inputs and processes of KMTC training. The model is appropriate for informing curriculum review because evidence of competency gaps at the product level leads to the input and process elements that may need to be revised.

2.2 Empirical Review

Self-assessment on multi-domain scales is a common method of measuring nurse competency. For instance, the Nurse Competence Scale measures competencies in seven domains and has demonstrated good validity among practising nurses (Meretoja et al., 2004). A study of 2,083 hospital nurses in Finland using this scale found that overall competence was good and competence increased with age and particularly with work experience (Numminen et al., 2013). Soares et al. (2019) conducted a competence-based evaluation of 45 hospital nurses in Brazil, across the following competencies: professionalism, communication, management, nursing process and problem-solving, and found that the lowest rated

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competencies were communication with administrative staff and participation in research, which the authors argued could help managers and training centres to target development.

Moderate competency has been reported in studies in sub-Saharan Africa. In southern Ethiopia, only 31.2% of nurses in public hospitals were clinically competent, and clinical competence was related to qualification, work experience, critical thinking disposition, clinical self-efficacy and emotional intelligence (Shibiru et al., 2023). A study of 205 nurses in Ethiopia revealed a moderate overall level, with the highest scores in professional development and the lowest in leadership, and previous training and its frequency were among the factors associated with competence (Tura et al., 2024).

In Kenya, KMTC graduates of a skills-laboratory-integrated curriculum were found to perform better than graduates of a traditional curriculum on all competence indicators and were described as critical thinkers (Kabiru et al., 2009). There are reported gaps in key emergency skills: In Kenya, 192 health care providers were found to have only 12% with formal training in neonatal resuscitation and only 35.4% with a satisfactory knowledge score, with nurses scoring lower than clinicians (Murila et al., 2012). In more recent times, 89.9% of Kenyan nurses with degrees indicated that their competencies were less than their duties (Chea et al., 2025). Upgrading from certificate to diploma level has been constrained by fees and other financial commitments (Lakati et al., 2012). These studies, when combined, demonstrate that competency is influenced by training, experience and the practice environment, and that leadership, critical thinking and emergency skills are common areas of weakness. However, none of them studied KMTC trained ECHNs in level 2 and 3 facilities where these nurses are most likely to work with limited supervision.

III. METHODOLOGY

3.1 Research Design

A descriptive cross-sectional survey design with mixed methods was used. The quantitative data on self-rated clinical competency were supplemented by qualitative open-ended responses, which enabled the level and nature of clinical competency to be described.

3.2 Study Area

The study took place in public health facilities (level 2: dispensaries and level 3: health centres) where ECHNs were deployed from April to May 2024. The facilities were selected from seven regions of Kenya namely Coast, Central, Western, Eastern, North Eastern, Nyanza and Rift Valley.

3.3 Study Population and Sampling

The study population consisted of ECHNs trained at certificate or diploma level at KMTC and employed in level 2 and 3 public health facilities. The facilities in the selected regions were stratified by geographical location and size, and all ECHNs available at the sampled facilities at the time of data collection were included by census. The questionnaire was completed by 40 ECHNs. Two supervisors were also interviewed as key informants at each sampled facility, bringing the total number of participants in the study to 68.

3.4 Data Collection Instruments and Procedures

A self-administered semi-structured questionnaire for ECHNs and a key informant interview guide for supervisors were used to collect data. The clinical competency questionnaire section included four 5-point items: ability to perform tasks and duties effectively, safely and in accordance with established standards and guidelines (1 = very low to 5 = very high); proficiency in critical skills such as patient assessment and care planning (1 = not proficient to 5 = highly proficient); effectiveness in applying theoretical knowledge gained during training in real-world clinical situations (1 = not effective to 5 = highly effective); and agreement that the ECHN course had enhanced the ability to communicate effectively in diverse healthcare settings (1 = strongly disagree to 5 = strongly agree). Two open-ended questions were used to elicit a clinical situation where the respondent's competency was well demonstrated and to identify skills that needed to be developed. The tools were reviewed and validated by experts in nursing education prior to use. The participants were informed about the purpose of the study and informed consent forms were signed and the questionnaires were anonymised.

3.5 Data Analysis

The data obtained from the quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS). Frequencies and percentages were calculated for each item, and means and standard deviations were calculated from the five-point scores. Mean scores were interpreted using equal intervals of 0.80: 1.00 to 1.80 very low, 1.81 to 2.60

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low, 2.61 to 3.40 moderate, 3.41 to 4.20 high and 4.21 to 5.00 very high. A composite clinical competency mean was obtained as the average of the four item means. The open-ended items were coded and then grouped into themes and reported as frequencies and percentages of respondents; percentages do not add up to 100 as respondents could name more than one skill to improve. Data were displayed in tables and a figure.

3.6 Ethical Considerations

The study followed the guidelines of the Belmont Report, which outlines the principles of respect for persons, beneficence and justice. The KMTC Research Committee and the Institutional Research Ethics Committee of Masinde Muliro University of Science and Technology approved the study and a research licence was obtained from the National Commission for Science, Technology and Innovation (licence no. P/24/37807). All participation was voluntary, informed consent was obtained from all participants, and anonymity and confidentiality were maintained throughout.

IV. RESULTS AND DISCUSSION

4.1 Characteristics of Participants

The characteristics of the participants are shown in Table 1. ECHNs were used in nearly all service areas, with the highest use in maternity (22.5%), medical (15.0%) and ward (15.0%) units, followed by maternal and child health (10.0%) and surgical (10.0%) units. The majority of participants had a certificate as their highest qualification (58.8%), 39.7% had progressed to a diploma and 1.5% had a bachelor's degree. Most (70.6%) had 11-20 years of experience.

Table 1

Characteristics of Participants

Characteristic	Frequency	Percentage
Department of deployment (ECHNs, n = 40)		
Maternity	9	22.5
Medical	6	15.0
Wards	6	15.0
Maternal and child health (MCH)	4	10.0
Surgical	4	10.0
Outpatient department (OPD)	3	7.5
Injection room	2	5.0
Newborn unit	2	5.0
Comprehensive care clinic (CCC)	1	2.5
Family planning	1	2.5
Immunization	1	2.5
Tuberculosis clinic	1	2.5
Highest qualification attained (all participants, N = 68)		
Certificate	40	58.8
Diploma	27	39.7
Bachelor's degree	1	1.5
Years of experience (all participants, N = 68)		
0 to 10	15	22.1
11 to 20	48	70.6
21 to 30	5	7.4

All 68 participants (40 ECHNs and 28 supervisors) reported their qualification and years of experience.

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The high proportion of ECHNs in maternity is due to the high proportion of maternal and newborn care in the workload of lower level facilities and the midwifery component of the ECHN programme. The high proportion of certificate holders indicates that many ECHNs were not upgraded to diploma level, which is consistent with the financial and other barriers to upgrading reported among Kenyan enrolled nurses (Lakati et al., 2012). The workforce was experienced, and competence tends to grow with work experience (Numminen et al., 2013), which is relevant when interpreting the self-ratings below.

4.2 Self-Rated Clinical Competency

Table 2 summarises the four competency items. No respondent rated any item at the two lowest levels. In terms of ability to perform tasks and duties effectively, safely and to standard, 60.0% rated themselves high, 35.0% moderate and 5.0% very high (M = 3.70, SD = 0.56). In terms of proficiency in critical skills, 47.5% were proficient, 37.5% moderately proficient and 15.0% highly proficient (M = 3.78, SD = 0.70). Regarding the application of theoretical knowledge in real clinical situations, 55.0% rated themselves effective, 30.0% moderately effective and 15.0% highly effective (M = 3.85, SD = 0.66). The majority of respondents agreed (72.5%) or strongly agreed (15.0%) that the ECHN course had improved their ability to communicate effectively in a variety of healthcare settings, with 12.5% being neutral (M = 4.03, SD = 0.53). The mean for all four means was in the high band and the composite clinical competency mean was 3.84.

Table 2

Self-Rated Clinical Competency of ECHNs (n = 40)

Competency item	1–2 f (%)	3 f (%)	4 f (%)	5 f (%)	M	SD	Level
Ability to perform tasks and duties safely and to standard	0 (0.0)	14 (35.0)	24 (60.0)	2 (5.0)	3.70	0.56	High
Proficiency in critical skills	0 (0.0)	15 (37.5)	19 (47.5)	6 (15.0)	3.78	0.70	High
Application of theoretical knowledge in clinical situations	0 (0.0)	12 (30.0)	22 (55.0)	6 (15.0)	3.85	0.66	High
Course enhanced communication in diverse healthcare settings	0 (0.0)	5 (12.5)	29 (72.5)	6 (15.0)	4.03	0.53	High
Composite clinical competency					3.84		High

f = frequency, M = mean, SD = standard deviation. Scale points: ability (1 = very low, 5 = very high); proficiency (1 = not proficient, 5 = highly proficient); application (1 = not effective, 5 = highly effective); communication (1 = strongly disagree, 5 = strongly agree). Levels: 2.61–3.40 moderate, 3.41–4.20 high, 4.21–5.00 very high.

These findings suggest that the ECHNs trained by KMTC perceived themselves as competent, with the highest scores in the areas of communication and transfer of classroom learning to practice. The 70.0% who applied theory effectively or highly effectively indicates that the programme's focus on practical training was having an impact, as evidenced by the fact that skills-based training at KMTC enhances graduates' competence (Kabiru et al., 2009). The levels were higher than the moderate competency reported among nurses in Ethiopia (Shibiru et al., 2023; Tura et al., 2024). There are two reasons that may account for the difference. First, the cohort was experienced, and competency is developed through experience (Numminen et al., 2013). Second, self-ratings are more positive than external ratings, as people often have a poor self-perception of their abilities (Dunning, Heath, & Suls, 2004). The ratings should thus be interpreted as perceived competency.

There was not a uniform competency. On the three clinical items, 30.0% to 37.5% of the respondents rated themselves at the moderate level, and only 5.0% rated their overall ability to perform duties as very high. The responses were most varied for critical skills (SD = 0.70). This is a moderately competent group (approximately 1/3 of ECHNs) and is the primary focus for improvement. The high communication rating is encouraging as effective communication is the basis of patient safety, counselling and teamwork (Kourkouta & Papathanasiou, 2014). The item measured perceived benefit of the course, however, and communication and presentation remained among the skills respondents wanted to develop (Figure 1).

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4.3 Clinical Scenarios: Demonstrated Competency

Respondents reported clinical situations where they felt their competency was well demonstrated (Table 3). Resuscitation (including cardiopulmonary resuscitation and newborn resuscitation) was the most commonly mentioned (20.0%), followed by medication administration and management (10.0%), patient counselling and psychological preparation (10.0%) and understanding of patients and care schemes (10.0%). A quarter of respondents described other individual scenarios, while emergency management, drug administration safety and accuracy, labour and newborn care, family planning and immunization, and communication and advocacy were each cited by 5.0%.

Table 3

Clinical Scenarios in which ECHNs Reported Well-Demonstrated Competency (n = 40)

Scenario theme	Frequency	Percentage
Resuscitation (cardiopulmonary and newborn)	8	20.0
Medication administration and management	4	10.0
Patient counselling and psychological preparation	4	10.0
Understanding patients and care schemes	4	10.0
Emergency management (other than resuscitation)	2	5.0
Drug administration safety and accuracy	2	5.0
Labour and newborn care	2	5.0
Family planning and immunization	2	5.0
Communication and advocacy	2	5.0
Other individual scenarios	10	25.0
Total	**40**	**100.0**

The fact that the resuscitation was the most prominent example of demonstrated competency is important as neonatal resuscitation is a critical skill for newborn survival and previous Kenyan evidence indicated low knowledge and limited formal training among health care providers, especially nurses (Murila et al., 2012). The deployment of many ECHNs in maternity and newborn units (Table 1) means that these nurses are routinely called upon to resuscitate. The high level of medication management and counselling is indicative of the curative and promotive functions of the ECHN in primary care. The scenarios as a whole provide evidence of competence in emergency, curative and preventive care, as described in the ECHN curriculum, which is a broad service role.

4.4 Skills Requiring Improvement

Figure 1 shows the skills that respondents felt they needed to improve. Leadership and management was the most frequently mentioned (42.5%), followed by stress management (25.0%), care management and patient evaluation (15.0%), adaptability and problem-solving (12.5%), technology skills (10.0%) and emergency care and first aid (10.0%). Communication and presentation (7.5%), analytical and critical thinking (5.0%) and mental health assessment (5.0%) were each named by fewer respondents, as were teamwork, patience and vaccines and immunization (2.5% each).

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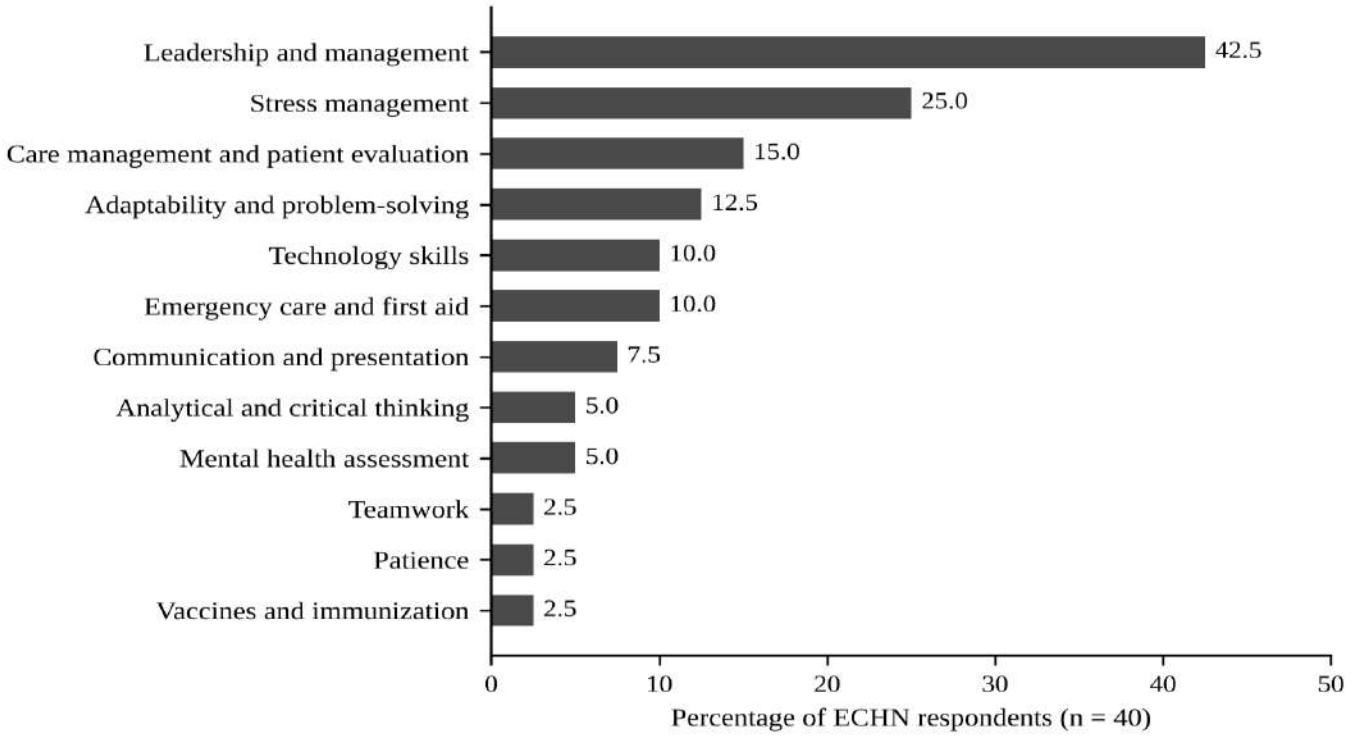


Figure 1.
Skills ECHNs reported needing to improve (multiple responses allowed)

A key finding is the need for leadership and management skills. ECHNs frequently manage units or whole facilities with little supervision in level 2 and 3 facilities, and the management of health care facilities is an explicit outcome of the ECHN programme. Leadership was also identified as the lowest competency domain for nurses in Ethiopia (Tura et al., 2024), and nursing leadership is a global priority (WHO, 2020). Stress management is a sign of the pressure of working in under-staffed facilities with heavy workloads. Needs in care management, patient evaluation, problem-solving and critical thinking are related to clinical reasoning, which has been associated with increased competence (Shibiru et al., 2023) and was a distinguishing strength of KMTC graduates of skills-laboratory based training (Kabiru et al., 2009). The requirement for emergency care and technology skills indicates areas where simulation-based training could enhance preparation (Otieno et al., 2025).

The product evaluation, using the CIPP model, indicates that the ECHN programme resulted in practitioners who generally achieved the clinical outcomes expected of the programme, but who did not achieve the leadership, management and reasoning outcomes expected of the programme. These gaps reflect input and process issues, including the amount of leadership and management content and the amount of simulation and supervised clinical practice, as areas for curriculum review. The results should be interpreted with caution as the data was obtained from self-assessment of a small number of ECHNs available at the time of the survey and therefore describes perceived rather than observed competency and may not represent all KMTC trained ECHNs.

V. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The clinical competency of KMTC trained ECHNs in level 2 and 3 public health facilities was rated high with a composite mean of 3.84 out of 5 and none rated any domain below the moderate level. Their strengths were in communication, putting theory into practice and life-saving skills, particularly resuscitation, as well as medication management and patient counselling. However, there was variability in competency, with approximately one-third of ECHNs self-rating as moderate on the core clinical items, and leadership and management and stress management and clinical reasoning skills being the primary areas of deficiency. The ECHN programme thus largely fulfils its intended clinical outcomes, but graduates require more preparation for the leadership and decision-making positions they take up in lower-level facilities.

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5.2 Recommendations

The study suggests the following based on the findings:

(i) KMTC should enhance leadership, management and stress management in the ECHN curriculum and provide practical exposure to unit and facility management during clinical placements.

(ii) KMTC should increase simulation based and skills-laboratory training in resuscitation, emergency care and patient assessment and incorporate case based learning that fosters critical thinking and problem solving.

(iii) Ministry of Health and county health departments should offer structured, needs-based continuing professional development for ECHNs in service, focusing on leadership, emergency care and digital health skills, especially for the moderately competent group.

(iv) Health Facility Managers should supportively supervise and mentor ECHNs, particularly those in level 2 and 3 facilities who have limited supervision.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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