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Research Capacity Building Program for Clinicians and Staff at a Community-Based HIV/AIDS Clinic in Uganda: A Pre/Post Evaluation

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Abstract

Developing capacity for HIV research and clinical practice is critically needed in resource-limited countries. The purpose of this study was to evaluate a research capacity building program for community-based participants in preparation and conduct of mHealth interventions. A descriptive, cross-sectional design was used. Participants completed self-report surveys at three time points. Thirty-three participated in the situational analysis and all (100%) felt that the research training was needed. For the interim evaluation, over 96.8% (n=30) reported increased knowledge and confidence and attributed this to the training. Fourteen participants completed the final evaluation. Dedicated time from work was an important factor to facilitate recruitment and data collection followed by financial incentives to commute to data collection sites. Expertise through supervision and mentorship for participants and sustained funding for research projects are critical to innovation for improved HIV prevention and care outcomes.

Keywords

Capacity building; evaluation; HIV/AIDS; human resources; resource-limited country; training

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Introduction and Background

Developing capacity for HIV research and clinical practice is critically needed in resource-limited countries, particularly those in Sub-Saharan Africa (Lansang & Dennis, 2004; Stein et al., 2008). As the UNAIDS reports, global progress has been made in addressing the HIV and AIDS epidemic through scaling-up of services in resource-limited settings (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2008). However, health sectors in these settings are still overwhelmed with long-term HIV treatment, care, and support needs that have increased the human resource crisis (Stein et al., 2008). Task shifting is being used to decrease health worker shortage and increase the human resource pool by providing job opportunities to those with the required training but no professional qualifications (Cooke, 2005; Lehmann, Saunders, VanDamme, & Barten, 2009; UNAIDS, 2008). However, one important and under addressed aspect of the human resource crisis is insufficient capacity to conduct intervention research in resource-limited settings to inform HIV practice and policies (Cooke, 2005). One strategy to address this gap is to develop research capacity among locally-based HIV staff and clinical providers in order to “task shift” research activities from more developed clinical researchers to those with less research experience.

Capacity building is “any action that improves the effectiveness of individuals, organizations, networks, or systems – including organizational and financial stability, program service delivery, program quality, and growth; thereby, improving public health results” (AIDSTAR-TWO, 2010, p.2). Building research capacity addresses the human resource competence critically needed to increase and maintain global health and research initiatives because it builds and strengthens existing health programs and facilitates novel ones (Cooke, 2005).

Reach Out (RO) is a large HIV and AIDS care and service program in Kampala, Uganda whose primary mission and strength is focused on HIV prevention, support, treatment, and care. While RO has had research experiences collaborating with outside investigators, most of whom are from developed countries, focused research capacity building has not been undertaken (Chang et al., 2009). A proposal to conduct formative research to assess the feasibility of a novel mHealth (mobile phone-based) intervention at RO provided such an opportunity.

mHealth was identified by RO as an opportunity to expand human resource capacity through task shifting. Specifically, the Electronic Mobile Open-source Comprehensive Health Application (eMOCHA), is a smartphone-based software application developed by the Johns Hopkins Center for Clinical Global Health Education (www.emocha.org) and its use by community health workers (CHWs) was being considered by RO leadership and collaborators. Prior to implementing the mHealth intervention, an initial formative study using key informant interviews, focus groups, direct observations, and short surveys was planned to determine feasibility and perceptions of RO staff and clients.

Reach Out’s leadership and academic collaborators agreed that developing local research capacity would enable the team to best conduct this formative evaluation study, which could have long-term benefits. For example, having staff and clinical providers take the lead in framing the research process could entrench sustainable human resource research capacity to ultimately improve HIV care and policies. A research capacity building (RCB) training was therefore undertaken prior to and in conjunction with the formative evaluation study. There is limited evidence demonstrating rigorous process and outcome evaluation of RCB efforts in resource-limited settings (AIDSTAR-TWO, 2010; Cooke, 2005; Tumiel-Berhalter, McLaughlin- Diaz, Vena, & Crespo, 2007). Therefore, the objective of this study was to

evaluate a research capacity building program for community-based participants in preparation and conduct of mHealth (mobile phone-based) interventions.

Methods

Conceptual framework

Cooke's (2005) Research Capacity Building and Evaluation Framework (RCBEF) provided conceptual background for the RCB planning, design, and implementation. The RCBEF has two core dimensions: (a) structural levels for development of capacity; and (b) principles for capacity building. When compared to other RCB evaluation models (Bailey, Veitch, Crossland, & Preston, 2006; Farmer & Weston, 2002), the RCBEF uses a comprehensive and precise approach and was deemed appropriate to guide this program.

The RCBEF addresses RCB at four critical structural levels which are individuals, teams, care-giving organizations, networks and support units (Cooke, 2005). Building research capacity at these four critical structural levels is achieved using six principles: building skills and confidence; developing linkages and partnerships; conducting research close to practice; developing appropriate dissemination; investing in infrastructure; and building elements of sustainability and continuity (Cooke, 2005). The RCBEF was used effectively in building research capacity at different structural levels among clinicians in the United Kingdom (Cooke, Nancarrow, Dyas, & Williams, 2005). The RCBEF model was found to be appropriate because of the transferability of the structural levels and principles in the context of RO.

These principles were integrated throughout the design and implementation of the RCB training program as noted under relevant sections in this manuscript. Specifically, in addressing (a) the building skills and confidence principle – this was the basis of the RCB program. Participants received training through didactic and application of skills to develop knowledge and confidence to actively participate in a formative evaluation study. In addition, survey instruments used to collect data to evaluate outcomes were developed using the RCBEF; (b) in developing linkages and partnerships, a multidisciplinary team of trainees was sought to be part of the study. Beginning relationships were initiated between Makerere University Department of Nursing and Reach Out as well as Johns Hopkins University School of Nursing and Reach Out. As noted in the multidisciplinary training team section, other relationships were already established; (c) conducting research close to practice was clearly demonstrated by RO's agreement to collaborate with academic researchers to develop research capacity when staff, clinicians, and administrators identified it as an important need. It was also demonstrated by the research topics generated from participants' responses to the surveys; (d) developing appropriate dissemination is still in progress and would be evaluated to determine long term outcomes of the RCB program; (e) investing in infrastructure was clearly identified as an essential ingredient for sustainability from study findings; and (f) building elements of sustainability and continuity will require sustained mentorship and research support through grants. Funding would be instrumental in addressing research gaps identified by the participants.

Even though preliminary elements of the RCBEF were identified and integrated in this study, the evaluation process will be ongoing and long-term outcomes will be determined through future research.

Study setting

The study was conducted at RO Mbuya Parish HIV/AIDS Initiative in Kampala, Uganda, a community-based, non-governmental (NGO) program. Reach Out started in May 2001 and currently serves over 3,000 people living with HIV and AIDS. Approximately 53% of RO

employees are people living with HIV. Employees at Reach Out are clinicians, administrative staff, and community health workers, as well as volunteers who may be in either category. RO provides comprehensive, holistic, community-based care to poor people living with and/or are affected by HIV and AIDS. Its services are out of Mbuya, Kinawataka, Kasaala, and Banda located within and around the Kampala district. Specific services include, but are not limited to clinical, community, nutritional, and educational services. The RCB training was conducted at two of the four RO sites, Mbuya and Kinawataka. These sites were considered to be the most accessible for trainees to attend the RCB training sessions.

Participants and recruitment strategy

An open invitation was disseminated to all RO employees through formal announcements at group gatherings, word of mouth, as well as flyers posted on notice boards. Participants who voluntarily attended the orientation session were enrolled as trainees for the RCB project. Participants were eligible if they were 18 years of age and older, worked as permanent employees or volunteered at Reach Out, and consented to participate in the study.

Participants who attended the first session comprised of a convenient sample of 43 clinicians, community health workers, and administrative staff who agreed to participate and attend training sessions. Participants who failed to attend a minimum of four out of the six training sessions; and failed to participate in both the didactic and practice component of the training were not included in computing the final results.

Multidisciplinary leadership training team

Five authors were trainers for the RCB program and were approached individually and asked to join the team by the lead facilitator. The intent was to garner a multidisciplinary team from both government and non-governmental (NGO) institutions. Another important goal was to initiate a partnership between the clinic NGO and an academic governmental institution within Kampala consistent with the principle, developing linkages and partnerships. To that end, expertise was sought at Makerere University Department of Nursing and two of the authors were invited to participate as trainers. Cooke (2005) posits that partnerships are critical in sustaining the development of research capacity. Therefore, it was important to develop and enhance partnerships for research sustainability and future clinical and research-related collaborations. It is important to note that Johns Hopkins University School of Medicine and Public Health has existing and ongoing collaborations with Makerere University and Reach Out. However, the Makerere University Department of Nursing and the Johns Hopkins University School of Nursing were new partners in this important collaboration with Reach Out.

The RCB multidisciplinary training team was from nursing, medicine, psychology, biology, public health and international health. The trainers provided participants with clinical research training through didactic classroom instruction and application of knowledge by trainee participation in a formative evaluation research study. Details about the training are provided in the following section.

Implementation of the RCB training

Pre-service training—Prior to this RCB training, one author was involved in providing research training to RO employees that lasted over a 6-month period. Training was conducted twice a month lasting 1.5 to 2 hours. It was reported by the lead facilitator that participation was inconsistent and decreased from 30 to five participants. As a result, it was difficult to determine the effects of the training. Lessons learned from that initial training

was integrated to inform the planning and design of the RCB training program including length of RCB program, training location, and schedule.

RCB training—The RCB program started in mid-May, 2010 and lasted for approximately five weeks. The RCB training program was implemented in two parts.

The first component was an intensive six-day, 90-minute basic research didactic training. The didactic training was based on a needs assessment, which was conducted using situational analysis survey. RCB training curriculum content included: (a) an overview of the research process; (b) qualitative designs, specifically addressing – recruitment strategies and process and sampling methods; (c) qualitative interviewing with key informants, focus group interviews, and field research and direct observations; (d) enhancing data quality in qualitative research; (e) ethical considerations including the informed consent process; (f) qualitative data analysis and interpretation; (g) quantitative methods; and (h) disseminating research findings.

To facilitate the training sessions, trainers used power point presentation slides and incorporated teaching methods such as group discussions, lectures, case studies, practice interviewing, practice transcription of key informant and focus group interviews, review of recruitment flyer, review of informed consent, and review of sample structured and unstructured abstracts. Table 1 provides more detailed information.

The second component of the RCB training was the application of didactic training. Participants were prepared to apply knowledge and skills gained, from the didactic training, in practice. Participants actively participated in the recruitment (posting of flyers, speaking to potential participants); the informed consent process, enrollment, and data collection (interviewing participants using audiotapes) process as well as transcribing digitally-recorded interviews. Trained participants were actively involved in the mHeath (smart phone) formative evaluation study which was designed to determine feasibility of implementing an mHealth intervention among staff and clinicians to improve HIV care and service outcomes at RO. Participants used the approved study protocol to implement the formative evaluation study.

Informed Consent Process—Participants were informed that agreeing to participate was voluntary and that not participating in the RCB training and evaluations will not have any negative consequence to their employment at RO. Permission was obtained from the Uganda Virus Research Institute Science and Ethics Committee, Makerere University School of Public Health, and the Johns Hopkins Medical Institutions Institutional Review Boards for all study activities.

Instruments used for RCB training evaluations—The situational analysis, interim and final evaluations were completed in a classroom format. The evaluation instruments (situational analysis, interim, and final evaluations) were designed with focus on the unique research needs at RO. Items on all three instruments were designed to reflect the principles of the RCBEF (Cooke, 2005) and included open-ended questions, with few dichotomous – yes, no questions, fill in the blanks, and check lists. Open-ended questions provided trainees with the opportunity to share their thoughts about research needs at RO, perceptions and feelings about knowledge and skills gained from the RCB program, experiences gained after conducting the formative evaluation study, and thoughts on the entire RCB program. Instruments can be made available upon request. Below are details for each component of the evaluation.

Situational analysis—The objective was to determine the specific research needs of participants at RO. The situational analysis was conducted during an orientation session (the first day) in which the mHealth formative evaluation study was introduced. Additionally, attendees were informed of the sequence in which the RCB training and formative study would be conducted. Examples of questions included in this instrument were: “What kind of research information do you think you need at Reach Out? What are some of the barriers or challenges that would prevent successful implementation of the research capacity training program?”

Interim evaluation—The objective of the interim evaluation was to determine the extent to which the research needs that trainees identified during the situational analysis were addressed and successfully integrated in the RCB training. This evaluation was conducted on the last day of the 6-day, 90-minute didactic training. Survey items included: “Give examples of topics from the training session that will help you participate in the mHealth formative evaluation study. Do you feel more confident in the research knowledge you have gained? Why or why not?” Recruitment and data collection assignments for the applied component of the training were determined based on attendance to ensure that trainees had the basic knowledge needed to maintain study fidelity.

Application of didactic training—The formative evaluation study using mHealth (smart phone) technology provided an opportunity for trainees to apply their knowledge and skills gained from the didactic training. It was important that trainers paired trainees (volunteers with permanent employees) during the recruitment and collect data process to be certain that permanent employees have information from the RCB training after volunteers have left thus facilitating sustainability, an important principle in the RCBEF. Trainers collaboratively determined when it was appropriate to allow trainees to conduct interviews independently. Trainers ensured that each paired group included participants fluent in the local languages in which the formative evaluation surveys and informed consent forms were written.

The trainees conducted 20 individual key-informant interviews using short surveys, 6 focus group interviews, and 10 direct observations among community health workers, staff, and clients at RO for the formative evaluation study. Trainees were closely supervised by pairing with trainers and mentored by trainers to maintain study quality and assess competency.

Final evaluation—The objective of the final evaluation was to determine the extent to which the RCB program successfully addressed training objectives; as well as trainees’ experiences in participating in the recruitment and data collection process. The final evaluation was conducted after trainees completed the didactic training, recruitment, and data collection for the study. Table 1 presents detailed information on the research content areas taught, RCB training objectives, teaching methods, and short-term outcome measures for each objective. Examples of questions in the instrument were: “What is your confidence and skill level now after completing the training and participating in the mHealth study? How easy would you say it was for you to conduct the assigned interviews? What do you consider to be most important in helping you perform well in the mHealth formative evaluation recruitment and data collection process?” RCB training completion awards were presented to trainees by the three institutions.

Data analysis

Evaluations were completed by trainees who attended the orientation, the last didactic training, and the final session. Therefore, the number of trainees who completed the evaluations at each time point is different and is presented in the findings.

Qualitative and quantitative data analyses were led by one of the authors in collaboration with other team members. Analyses of qualitative responses for all three evaluation components (situational analysis, interim, and final evaluations) were conducted using qualitative methods. Specifically, qualitative data were organized in matrix format to compare and contrast responses. Data were compared line by line between participants to identify differences and similarities in an iterative process. Similar response patterns that were substantively related were grouped in categories and conceptualized to reflect response data. Although it was not possible to conduct member checking by returning the categories to trainees to validate them, team members had the opportunity to review the data and provided ongoing feedback.

Descriptive statistical analyses such as frequencies and percentages were used for dichotomous and categorical outcomes such as RCB participant characteristics.

Results

Number of participants during the course of the RCB training

Thirty-three participants completed the situational analysis during the orientation; 43 completed the interim evaluation after the 6-day didactic training; and 25 attended the wrap-up session when the final evaluation was completed. Because the final evaluation survey included both the didactic and application components of the training, 14 participants were eligible to complete the final evaluation. Therefore, the number of trainees varied with each data collection point and was identified as a limitation in this study. Differences in the number of participants at each data collection time point were found due to reasons explained in detail under the discussion section.

Forty-three participants attended at least two RCB training sessions out of six sessions that were offered. Participants who failed to attend a minimum of four out of the six training sessions; and failed to participate in both the didactic and practice component of the training were not included in computing the study results. Results found at each data collection time point are presented.

Situational analysis

Thirty-three trainees were at the orientation session and completed the situational analysis. All 33 responded “yes” to the question asking whether RCB training was needed at RO. The reasons given for “yes” responses included: (a) develop more research skills; (b) increase knowledge and better understanding of clinical and social issues thereby improving quality of care and service delivery; (c) empower others to conduct research by equipping them with research skills; and (d) to increase professional growth and development. With regard to research areas that RO clinical providers needed, 18 (54.5%) out of 33 trainees reported that training should focus on qualitative and quantitative research methods; and 6 (18%) out of 33 wanted more training on the research process.

Although trainees reported enthusiasm for the RCB program, they indicated that barriers exist that could prevent effective RCB program implementation. These were grouped in the categories of: (a) language barriers related to the diverse ethnic representation of RO’s employees; (b) multiple educational levels and limited research knowledge base of trainees; (c) insufficient dedicated time to participate in the training and data collection process; (d) financial constraints to travel between RO clinics and data collection sites; and (e) lack of commitment and teamwork. Trainees also suggested factors that could facilitate the implementation of the training. When clustered into categories, these factors were comparable to those that would nullify the barriers reported and subsequently, could help improve implementation and effectiveness of the training. Comparison of the barriers and

facilitating factors is presented in Table 2. Additionally, this survey asked if trainees were interested in taking up leadership positions if a research committee was developed. Almost 85% (n=28) reported that they were interested in a leadership position.

Interim evaluation

Of the 43 trainees who attended at least 2 didactic training sessions, 16 attended all the sessions and 7 attended five. Thirty-one trainees were present on the last day of the didactic training and completed the RCB interim evaluation. Over 67% (n=21) trainees felt that the length of the training was “about right.” After the RCB training, over 51% (n=16) reported having increased their level of knowledge. Fourteen reported no change in knowledge level. However, 96.8% (n=30) trainees reported increased confidence in conducting research and attributed this to the knowledge and skills they gained from the RCB training. Additionally, trainees suggested topics (see Table 3) for HIV research within the context of RO’s practice setting.

Final evaluation

The final evaluation was attended by 25 trainees and 56% (n=14) actively participated in the didactic training as well as the recruitment and data collection process. The 14 trainees completed the final evaluation survey which was comprised of items addressing both components of the training. Over seventy-one percent (n=10) reported that the training increased their knowledge, skills, and confidence in being able to participate in the formative evaluation study. Trainees conducted a minimum of one interview and a maximum of three interviews and/or observations. Work schedule conflicts prevented some trainees from completing more than one interview. When asked about the ease with which they completed the interviews, most (85.7%; n=12) trainees reported the process to have been “easy” to “very easy” and cited the training as the primary reason for the positive experience. Two trainees who reported “difficulty” in conducting the interviews noted factors such as language barriers and outside noise during the interview.

Overwhelmingly, dedicated time from other work obligations was viewed as an important factor to facilitate recruitment and data collection followed by transportation fares to commute to data collection sites, financial incentives, and lastly, cell-phone costs to communicate with trainers about study-related issues. When trainees were asked about the factors that facilitated the data collection process responses included physical resources such as increased knowledge and skills from the training, favorable time and location, and motivation to learn more about research. Thirteen (92.9%; n=14) participants provided positive feedback about the training such as “great – learned research knowledge and skills”; “confidence built, great experience to learn something new”; “very educative, feel like I am part of a process to improve the lives of other people ...”; “learned basic use of mobile phone.” One reported that it was “good – ready to move on.”

Trainees’ responses about how best to ensure sustainability of research in the setting ranged from implementing a research committee to creating incentives to motivate trainees. These responses were further explored to determine how strongly they desired a structured research committee. Over 71% (n=10) responded that they felt “very strongly” and 21.4% (n=3) responded that they felt “strongly” about having a research committee. Reasons they provided included: (a) skill building and strengthening research projects; (b) chance to become great researchers; and (c) opportunities for continuing research education.

Discussion

This RCB study contributes to the current state of the science in capacity building in resource-limited settings. It provides information on process and short term outcomes of a RCB training program conducted in Kampala, Uganda in partnership with a local NGO. Study findings support the use of an RCB evaluation framework which relies on the principles of building skills and confidence, developing partnerships, ensuring research close to practice, and building sustainability (Cooke, 2005). Specifically, from the situational analysis conducted to determine trainee needs, a focused RCB training program was successfully designed and implemented. Trainees at RO expressed the need for RCB training in order to develop more research skills and to increase their knowledge and understanding of clinical and social issues so as to improve HIV care and services. Through an extension of partnerships to a local academic governmental institution, sustaining capacity was initiated and trainees gained concrete, applicable skills in formative research methods.

Our study suggests barriers to effective RCB training such as dedicated time to participate in research as well as financial constraints. These findings were found in previous studies (Hartwig, Humphries, & Matebeni, 2008) substantiating the need for administrators to invest in capacity building activities while focusing efforts to reduce barriers to career development and improved HIV services. Although during the situational assessment, participants were asked about appropriate times and locations for the training, responding to these recommendations failed to totally eliminate the time barrier identified by trainees.

With regard to integrating evidenced-based practice during the training, case studies were used emphasizing the context of the HIV practice setting, thus supporting this principle in the model (Johnson et al., 2004). The research topics suggested by the trainees reflect the level of research competence achieved after the training and may corroborate trainees' understanding of the link between research competence and improving quality HIV care outcomes. This notion was also reflected in trainees' responses from the situational analysis when asked to identify reasons they felt were important to build research capacity at RO. Furthermore, it reflects Cooke's (2005) principle of research consistent with clinic practice needs that emerged from trainees' HIV practice.

Practice and research implications

The training resulted in increased staff and clinical providers' knowledge, skills, and confidence necessary for operational and implementation research in HIV treatment and care. To sustain such benefits, governmental and non-governmental organizations need policies and incentives to motivate HIV providers to obtain training and participate in research. Such policies could address constraints such as lack of resources (financial and time) which hinder participation in research endeavors that have been reported here and in the literature (AIDSTAR-TWO, 2010; Hartwig, Humphries, & Matebeni, 2008; Lansang & Dennis, 2004).

Administrators are important infrastructural support units within the context of the RCBEF and could facilitate research-related activities by providing trainees with financial incentives from research grants, available space conducive to conducting interviews, and dedicated time for research to avoid work schedule conflicts. Therefore, development of institutional infrastructure, such as administrative leadership and establishing policies and procedures, will be ongoing to enable trainees to participate in HIV research.

Two limitations were identified: (a) external validity - findings can only be generalized to trainees with similar HIV clinics and providers; and (b) some trainees who participated in

the entire RCB program were unable to attend the final session and complete the final evaluation. Therefore, it is difficult to determine their perceptions and experiences at the end of the program. In spite of these limitations, the RCB training program is well supported by Cooke's evaluation framework and the preliminary results warrants progress to the next steps.

Conclusions

Providing long-term access to research information will be critical to maintain ongoing research interest and commitment among trainees at RO. The tripartite partnerships among Johns Hopkins, Makerere University, and RO will continue in order to provide expertise through supervision and mentorship for trainees and funding for research projects to improve HIV care outcomes in Uganda. Funding for research projects could provide HIV providers with dedicated time from work to fully participate in the research process without conflicting with regular work schedule. The variation in active participation by trainees throughout the RCB training program substantiates this important need in order to achieve sustainable research capacity development within the context of resource-limited settings where they are most needed.

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Clinical Considerations

- There is a dire need to develop research capacity training programs that focus on HIV clinicians and staff in similar resource-limited countries to strengthen human resource competence in the area of HIV research and practice
- The study underscores the importance of developing institutional infrastructures in limited-resource countries to support clinicians and staff in their efforts to implement and sustain HIV capacity building programs
- The study provides information on process and short-term outcome evaluation of a research capacity training program that clinicians can use to initiate programs in similar resource-limited countries

Table 1

Overview of the research capacity building program and evaluation

Research Focus Area	Training Objective	Teaching Methods	Short-term Outcome Measure
Research needs assessment	Identify specific research needs to design the research capacity building program.	Discussion	Situational analysis.
Study overview –eMOCHA^a study	Describe the importance of mobile phone formative evaluation study in addressing health care needs of HIV -infected individuals through task shifting.	Lecture/discussion.	Knowledge development. Questions/answer session on previously taught material.
Overview of the research process	Identify the components and steps of the research process. Discuss the role of research in increasing knowledge, understanding, and improving health outcomes.	Lecture/discussion.	Interim evaluation. Knowledge development. Question/answer session on previously taught material.
Qualitative designs	Apply mixed methods (qualitative and quantitative) in a mobile phone formative evaluation study (design, recruitment strategies, data collection, and findings).	Lecture / discussion.	Interim evaluation Question/answer session on previously taught material.
Recruitment process & sampling methods		Review of sample recruitment flyer.	Successful recruitment of trainees
Qualitative interviewing with key Informants, Focus group interviews Field research and direct observations		Practice interviewing.	Successful data collection process with key informants, FGD ^b , and direct observations. Knowledge, skills, and confidence development.
Enhancing data quality in qualitative research	Describe strategies used to ensure quality in data collection and management in qualitative research.	Lecture / discussion.	Interim evaluation. Final evaluation.
Ethical considerations – informed consent process	Identify the three core principles of research ethics. Apply knowledge of the three principles in identifying the various components of the informed consent form.	Lecture /discussion. Case study discussion. Review the eMOCHA study informed consent form.	Quality RCB ^c training. Interim and final evaluations. Knowledge, skills development. Confidence in obtaining consent from trainees during the data collection process. Interim and final evaluations.
Qualitative data analysis and interpretation	Apply knowledge of qualitative data analysis in analyzing data from the mobile phone formative evaluation study.	Transcribe key informant and focus group interview data	Successful completion of transcriptions. Knowledge and skills development.
Quantitative methods	Describe key differences between quantitative and qualitative research methods.	Lecture/discussion	Successful completion of data collection using short surveys. Interim and final evaluations.

Research Focus Area	Training Objective	Teaching Methods	Short-term Outcome Measure
Disseminating research findings	Identify the different strategies used to disseminate research findings.	Review sample structured and unstructured abstracts.	Long-term evaluation (grant funding, participation on entire proposed research studies). Long-term evaluation (abstract submissions, conference presentations, publications).

Notes:

^a eMOCHA – Electronic Mobile Open-source Comprehensive Health Application

^b FGD – Focus group discussion

^c RCB – Research capacity building

Table 2
Comparison of barriers and facilitating factors for implementing an RCB^a program

Barrier	Facilitating Factor
Language barrier related to diverse ethnic representation	Good communication skills
Multiple educational levels and limited research knowledge	Strong RCB ^a training program
Lack of protected time to fully participate in training	Suitable training schedule
Financial constraints limiting ability to commute to sites	Financial incentives
Lack of commitment and teamwork	Commitment and willingness

^aRCB – research capacity building

Table 3

Research topics suggested by the participants

Research Topic
1 Impact of HIV/AIDS Diagnosis on staff performance
2 Exploring Support for Teens and Youths Born with HIV
3 Effect of Clinic Services on Client Outcomes and Strategies to Improve Client Care
4 Use of mobile phone interventions to Diagnose Childhood Malnutrition
5 HIV Disclosure Processes among Clients
6 Effects of Clinic Services on Decreasing HIV Prevalence Rates
7 Factors Affecting the Initiation of Antiretroviral Treatment among Clients
8 Influence of Clinical provider/Client Relationships on Client Care Satisfaction
9 Relationship Between Prophylactic Treatment and Adherence Behaviors
10 Use of mobile phone technologies in Improving Health Services and Closing Gaps Between Clinicians, Community Health Workers, and Clients