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DISTANCE LEARNING APPROACH TO TRAIN HEALTH SCIENCES STUDENTS AT THE UNIVERSITY OF NAIROBI

ABSTRACT

Background: The University of Nairobi (UoN) College of Health Sciences (CHS) established Partnership for Innovative Medical Education in Kenya (PRIME-K) programmeme to enhance health outcomes in Kenya through extending the reach of medical training outside Nairobi to help health sciences students enhance their hands-on skills. The institution partnered with 18 hospitals in rural and urban centers as the UoN teaching hospitals referred to as decentralised training sites and appointed medical staff from these sites as adjunct faculty of the University of Nairobi to train health sciences students on hands-on skills. Webcasts presentations were conducted by undergraduate students from all the schools at the College of Health Sciences during their elective term and clinical rotations at the decentralised training sites to present on the ground health issues.
Objective: To describe how the University of Nairobi (UoN) used the distance learning platform from the Medical Education Partnership Initiative (MEPI) grant to outspread medical education to the underserved communities located in rural and urban surroundings across the country.
Design: A cross-sectional study
Setting: The University of Nairobi College of Health Sciences
Subjects: Health Sciences students of the College of Health Sciences, University of Nairobi and Hospital staff in 18 hospitals in rural and urban centers
Results: A total of 670 health sciences students participated in the decentralised learning, a total of 549 health sciences students participated in webcast presentations over a period of four years from 2012 to 2015, and a total of 48 medical consultants and specialists from the decentralised training sites were appointed as Adjunct Faculty of the College of Health Sciences – University of Nairobi.
Conclusion: Webcast presentations provided information on priority health conditions afflicting the communities at the decentralised sites which would not be the case in the institution's teaching hospital. Adjunct faculty at the decentralised training sites provided a platform enabling students to enhance their practical skills in line of health profession and offered mentorship on coping in rural settings where there is scarcity of medical equipment and disposable materials in the health facilities and lack of constant electric power supply and clean water among others

INTRODUCTION

Educational institutions are moving toward the use of internet for delivery of distance learning. This is an expensive move but for the institutions to make this move, there must be an understanding of the benefits of online distance learning (1). The University of Nairobi (UoN) formed Partnership for Innovative Medical Education in Kenya (PRIME-K) through a successful grant application from the National Institute of Health (NIH) with longstanding partners University of Washington and University of Maryland

Baltimore.

The aim of the PRIME-K programme was to improve the health outcomes in Kenya through innovation in the field of medical education and clinical research. This would be achieved through improving the quality of medical education, extending the reach of medical training outside Nairobi, increasing retention of UoN faculty by providing opportunities for postgraduate research and supporting UoN research structures(2,3). The UoN College of Health Sciences (CHS) student population is increasing and the numbers have outpaced the training facilities at the teaching hospital which is Kenyatta National Hospital (KNH)(Kibore, 2014 May). This called for the innovative use of ICT to extend facilities for increasing training facilities. The University of Nairobi implemented decentralised training for the health sciences students modeled after the WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) medical education programme at the University of Washington in the United States. Key elements of the WWAMI model were adapted to provide students with opportunities to enhance their hands-on skills at hospitals country wide(4). The faculty at the Florida State University College of Medicine has a similar model for fourth-year elective term students(5). The university of Nairobi increased the number of teaching facilities by partnering with 18 hospitals as decentralised training sites and appointed doctors, nurses, pharmacists and dentists from these decentralised sites as adjunct faculty. The mandate of these appointments was to mentor, supervise and support hands on activities during the elective term. The adjunct faculty positions were advertised to the participants of a training conducted by the university of Nairobi PRIME-K programme on Innovative Teaching Methods and Mentorship. Interested participants applied, consideration was made based on the qualification criteria, and successful candidates were appointed for one year contract renewable on mutual agreement. Use of webcast sessions for student case presentations during the elective term and clinical rotations was adopted by the University to encourage interaction outside the classroom setting and share findings of health issues in communities outside the institution's teaching hospital.

Higher learning education institutions in Kenya are moving toward the use of internet for delivery of distance learning which is a costly move but there is an understanding of the benefits of online distance learning (6). Distance learning has a long history in the broader field of education and a related body of literature that speaks to the importance of engaging in rigorous and theoretically informed studies (7). Benefits of distance learning for learners that there is no limitation as far as time, location and space are concerned, access to online materials can be done anytime, anywhere. Decentralised training at the UoN, College of Health Sciences sought to achieve the programmeme's mandate in Kenya through increasing the range of options of medical teaching health facilities to medical students; reduce inequalities in access to quality education; increase learning outcomes; increase the match of classroom lectures to society needs and build health workers capacity at the county level.

This study sought to demonstrate the effect of distance learning approach through the use of the Adjunct faculty and Webcast sessions at the decentralised training sites of the University of Nairobi for health sciences students.

MATERIALS AND METHOD

We conducted a study to collect information on consultant and medical student clinical experiences within this pilot programmeme. Focus groups and questionnaires were used to collect data. The questionnaire collected the student's demographic data, which was analysed to generate statistics of the group. This evaluation of the decentralized training programmeme was approved by the KNH/UoN Ethical Review Committee. Participants provided verbal consent after they were accepted into the sponsored elective term and the focus groups were informed that they were part of the programmeme's monitoring and evaluation process. Participants were assured that their responses would remain anonymous. The focus groups were formed to assist in generating in-depth discussion as participants elaborate and their experiences. The focus groups discussions were audio-recorded and notes were taken as well. The team discussed individual findings as a group, and then these findings were triangulated to confirm the findings presented here.

Health Care Workers at the decentralised training sites: After undergoing training on Innovative Teaching Methodologies and Mentorship workshop by the programmeme, the consultants were offered an opportunity to apply for the position of adjunct faculty at the UoN. The position of adjunct faculty is similar to that of an honorary lecturer where the consultants agreed to teaching and mentoring of the students in return for access to other training programmemes, fellowships and research seed money from the UoN. Out of the 228 staff who underwent the training from the 18 decentralised sites, 48 met the selection criteria and were confirmed as adjunct faculty. The students were mentored and assessed in ward rounds, while undertaking procedures, during community activities, and in academic presentations. The students were evaluated using the logbooks for each rotation. Faculty from the UoN visited the sites once or twice in the course of the rotation and met with students and adjunct faculty to discuss students' progress and review challenges to implementation of the programme.

The donor programmeme had funding for 16 hospitals, hence UoN opted to reach out to district and provincial hospitals in each of the then eight provinces of Kenya. Hospitals that took in interns and had consultants based in their facilities were selected.

The appointed adjunct faculty were linked to the institution's department heads, deans and directors for introductions. (3).

Webcast Presentations by Students on Elective Term and Clinical Rotations: Learning for the health sciences students was expected to continue even when away from the institution, hence the use of webcast to showcase teaching at the decentralised training sites. To participate in decentralised training, the health sciences students from the four schools at the College of Health Sciences were required to apply following on advert posted by the University of Nairobi PRIME-K Programme. Successful applicants would be sent to respective decentralised training sites depending on the slots available for student intake at the facility.

Selection of presenters for the online webcast presentations was done per school per site per elective term and rotation. The presentations were based on case studies developed by students at the sites. Facilitation was done by the university lecturers who had been appointed by the Department heads, Deans and Directors of the respective departments and schools to guide the students on their presentations and comment on the presentations. The facilitators shared their input after every presentation and advised on further reading. A score sheet was not used during the webcast sessions rather the case presentations from each of the sites where students were rotating was considered mandatory. To ensure that these webcast sessions materialized, the students carried their modems to the decentralised training sites for internet connection during the PowerPoint presentations and for sending the slides to the Administrator prior to the date of presentation. The participants were advised to login 30-40 minutes ahead of the appointed time for internet connection testing. Internet connection was interrupted due to network fluctuations in some areas though the PowerPoint presentations were availed to all even after the webcast sessions. The facilitators were from the 5 schools at the College of Health Sciences – University of Nairobi with one supervisor per session.

RESULTS

Student Demographics: The programme sponsored 670 students from School of Medicine, School of Pharmacy, School of Dental Sciences and School of Nursing over the period 2011-2015. This comprised of 321 women and 349 men. The students completed their rotations at 17 public hospitals and one mission hospital in Kenya participating in the decentralised training

programme: Coast Provincial General Hospital; Garissa Provincial General Hospital; Mbagathi District Hospital; Naivasha District Hospital; Karatina District Hospital; Busia County Referral Hospital; Kisii level 6 Hospital, Kitui District Hospital; Pumwani Maternity Hospital; AIC Litein Mission Hospital; Isiolo District Hospital; Mama Lucy Kibaki Hospital; Tigoni District Hospital ; Homabay District Hospital; Machakos Level 5 Hospital; Embu County Referral Hospital; Kibwezi Sub-County Hospital and Kajiado County Referral Hospital. (Figure 1). The eighteen hospitals are located in different areas of the country with diverse communities, geography, ethnicity, culture and religion.

Figure 1
Map of Kenya with the Decentralised training sites in 2015
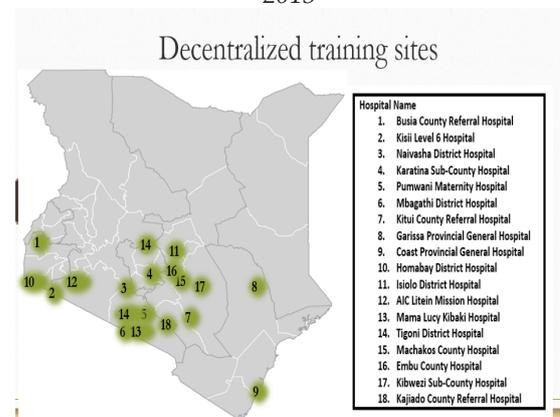
Adjunct Faculty: A total of 48 medical consultants and specialists were appointed as Adjunct Faculty of the College of Health Sciences – University of Nairobi. Training and appointing of the adjunct faculty from the decentralised training sites has increased awareness of the University of Nairobi in the rural settings and prompted an increase in patient in-take at these health facilities as reported by the Medical Superintendent Kajiado County Referral Hospital "Patients had more confidence in seeking medical and other health services at the hospital the moment word went out that the University of Nairobi is partnering with our facility."

Students reported that the staff at these facilities received them warmly because they were prepared to handle them at the sites. Linkages between the adjunct faculty and the University faculty were facilitated to discuss student rotations at the sites and deliverables per department and school.

Some of the adjunct faculty's feedback on the impact of the training:

"It has helped me organize training session at work for a short time daily and improved my training capability, and reasoning. Am aware of creating a conducive environment for micro-learning session but need to improve on visual aid teaching. The course

was necessary for training in teaching hospitals" – Senior Nursing Officer- Homabay District Hospital trained in August 2013

"The training helped in mentorship of the students and other health worker and directly had an impact on my relationship with the other health workers" - Medical Superintendent – Karatina District Hospital trained in May 2014

"Am now more actively involved in teaching internship doctors both in theatre and in other forums. This influenced my decision to become the Intern Coordinator in the year 2013 which enabled me to read leading to use of current best practices in my field of Anaesthesia. Am more careful in my medical practice because am aware that junior doctors imitate some of my behaviours. I also see myself as a potential mentor and I'm more involved in investigating the personal lives of my students because I know they influence their output. I understand that teaching is important as it's the means of transferring knowledge to others, and its intake by students depends on the teacher and the environment." - Consultant Anesthesiologist – Karatina Sub-County Hospital trained in August 2012

"The relationship between the students and my job improved because I'm able to mentor them as I work. I gained knowledge on mentorship and different ways of mentorship therefore, I'm able to handle learners in a practical setting and ensuring they perform procedures as per the guidelines. The course was very useful to me since as a nurse manager I'm expected to mentor students" – Senior Nursing Officer – Kianjokoma Sub-County Hospital trained in May 2014

"It improved my training and teaching skills. I can effectively prepare and deliver a lesson also improving the efficiency of my work. I acquired skills and knowledge on teaching hence has given me confidence in teaching and I consider learners when training to ensure they are following the lesson." – Principal – AIC Litein Mission Hospital trained in May 2014

"It has greatly helped me improve my bedside teaching skills so I'm able to manage my time better as I set objectives to achieve daily and monthly" – ACNO – Embu Level 5 Hospital trained in May 2014.

Webcast Presentations: A total of 549 students participated in webcast presentations over a period of 4 years from 2012 to 2015. School of Medicine -290 (Male -56%, Female- 44%); School of Nursing Sciences – 90(Male-32%, Female -68%); School of Pharmacy –139(Male-51%, Female-49%) and School of Dental – 30(Male – 57%, Female – 43%).
11 webcasts were done by students from School of Medicine; 6 from School of Nursing Sciences; 4 from School of Pharmacy and 2 from School of Dental Sciences.

The adjunct faculty at the decentralised training gave guidance and training prior to the presentations then discussed the feedback with the students after the webcast presentations. Most CME rooms at the decentralised training sites were used as the venues for the webcast presentations though this varied depending on the strength of the internet signal. The students who proceeded for the elective term at the decentralised training sites got exposure to medical and health conditions that are prevalent in the surrounding communities. They got a chance to do more research on these conditions. Some of the student's responses on the decentralised training:

"The decentralised training experience was very insightful and useful in encouraging me to be open to providing health services in the grassroots" – Pharmacy student who rotated Pharmacy in Kisii Level 6 in the year 2013

"The decentralised programme really helped make me better fit for a rural district hospital setting "- Nursing student who rotated in Garissa PGH in 2014

"I really appreciate the opportunity I got to be part of PRIME-K during my electives because it gave me a great experience that is very useful now in my internship and my career in general" – Medical student who rotated in Karatina District Hospital in 2013

"In return for what PRIME-K offered me during the Elective term, I would be glad to offer assistance in various areas of research that PRIME-K is currently doing or plan to. Be it data analysis, proposal development, questionnaire design, etc. "-Medical student who rotated in Busia DH in 2013

"Thank you so much for the support PRIME-K accorded me to enable me become who I am today. In case of anymore details, I'll be more than willing to help get them. "- Pharmacy student who rotated in Homabay DH in 2014.

DISCUSSION

This qualitative evaluation demonstrated that decentralised training contributed to the professional development of students by integrating clinical knowledge, skills and mentoring in the provision of patient care. The activity demonstrated that exposure to short-term clinical training experiences in non-tertiary settings during health profession training helped to build knowledge and essential clinical skills required for future medical practice. Students also expressed increased confidence in management of patients with various conditions and positive experiences as integral members of patient management teams. The decentralised learning provided enhanced exposure to patient management and the development of clinical skills necessary for safe health practice.

Adjunct faculty supervision and assessment is still being used and is being considered a sustainable development measure for distance learning. There are many other non-formal options of student interactions using technology at the decentralised training sites like WhatsApp, Google plus and Facebook and which they have tried using on few occasions. They were particularly interested in using the computers with adobe connect platform for distance learning. In a study by Welch et al, they found out that participants

were aware that they had many options for distance education technologies in their surroundings so they were eager to try as many as possible for distance learning (5). MacLeod acknowledges in his study that distance learning has experienced growth in the past decade(7). As high education institutions seek new approaches to deliver lecture classes without requiring the physical presence of students, the University of Nairobi distance learning approach can be a resource for health workers and students in the medical professions to advance studies at an affordable cost and save on time.

This mode of learning by mentorship and hands-on skills acquisition cannot be underestimated in developing quality skills and professional attitudes in the practice of health sciences.

From this programmeme, it was noted that there was need to train more doctors in the setting of having limited university faculty coupled with limited resources for expansion of training facilities. There is also need for other cost-effective sustainable methods of increasing the quantity of medical doctors while maintaining high quality training. The evaluation of the decentralised learning has shown that use of non-tertiary facilities with consultant preceptors to mentor students is a recommended method of doing so. Studies have demonstrated that motivations to practice medicine in rural or underserved areas are positively influenced by being raised in a rural areas (8). Students' motivation to intern in a decentralised site was based on their perceived opportunities to gain the clinical skills as well as the support they needed to practice their profession.

This study's limitation that affected student and consultant experiences was while the programmeme attempted to evaluate the students' general performance, there was no official rating of individual students' performance. Future plans for the programmeme included integrating this training into the actual student curriculum with official examinations and formal evaluation of performance.

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