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Costs of Training Community Level Workers Using a Community College Approach in Western Kenya

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Abstract

Introduction: Training of the community level health workforce has posed challenges to the health system, both in providing adequately trained personnel who in most cases are volunteers, in finding a niche for them within the formal health sector and in meeting costs for their training. These cadre, also known as community health workers, community volunteers or lay health workers play key linkage points to households that the formal sector cannot accomplish alone, more so within constrained resources and shortages of formal health workers. Community colleges provide an alternative to formal training especially of lay workers. Great Lakes University of Kisumu introduced the formal community college training program in 2013 where 169 community health workers were enrolled in five sites. The program aimed to increase the number of certified community health workers for improved health uptake and to provide them with a career path. Objectives: This study set out to determine the cost elements related to the community college training program in order to ascertain its viability and long-term sustainability. Methodology: The study used a qualitative approach where data was collected from records of a convenience sample of 140 students enrolled in five community college sites. This information was triangulated with interviews of college tutors and program staff. Results: Most students were interested in the certified training provided by the community colleges. Females (60%) were the majority of students. Trainee ages ranged between 19 to 60 years with the majority in the 21to 30 years age group. Educational entry point varied, with the majority (78%) having secondary level education as compared to those with informal training. The main cost centres for the community college program were transport costs to the training sites (78%), staff wages and allowances (13%), training materials (7%) and refreshments for the trainers (2%). Only 4% of the expected fee revenue had been collected from students at the time of the study, with the balance expected at the end of the training. Conclusion and Recommendations: Community colleges are viable alternatives to formal training of community health workers. Initial training program costs pose constraints to student enrolment and may require alternative pre-funding sources or may have to be provided at a high unit cost until enrolment rises to an economical unit cost.

Keywords

Community College, Community Health Worker, Lay Health Worker, Health Systems, Human Resources, Training Costs

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1. Introduction

Community based interventions are effective platforms for extending health care delivery and improving health outcomes (McCord, Liu & Singh, 2013). Evidence indicates that a well implemented community based health training program could increase human resource for health services. Such a program can further contribute towards reducing infant and child mortality and morbidity; improving health care seeking behaviour; increasing rates of institutional delivery and immunization; and providing low-cost interventions for common maternal and paediatric health problems while improving continuum of care (Lewin, 2010).

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Most of these health outcomes are executed through Community Health Workers (CHWs), who are lay people, living within the community they serve and functioning as critical links between their communities and primary health care systems (Haines, et al., 2007). These workers provide essential support to the health system at the service uptake level. There is evidence that numbers and coverage of professional health workers has a direct link to health outcomes (Anand & Barnighausen, 2004), thus emphasizing the need to train health workers. Consequently the gap in human resource needs to be addressed (Hongoro & McPake, 2004) more so at the service uptake level which is at the community level. While steps have been taken to address the human resource needs to support health service delivery for maternal, newborn and child health (WHO, 2006) and for essential interventions (Chen, Evans & Anand, 2004), gaps exist in providing standardized and accredited training to community level health workers and determining the costs of such training.

The cost effectiveness of community health workers in health interventions such as reducing maternal and neonatal mortality has been demonstrated (Manandhar, Osrin, Shrestha, et al., 2004). For example, improvements in birth outcomes have been recorded in terms of their economic value when engaging women group interventions (Borgi, Osrin, et al., 2005). The training of Community Health Workers (CHWs)is cost effective and also contributes to improved health outcomes. Such training is achievable using models that are practical and cost effective (Kaseje, 2015). In view of the high costs of training doctors and mid-level health professionals, there is need to re-examine the training of lower cadre workers and its cost effectiveness. The question also remains on whether these high costs result in adequate numbers of health workers at the different levels of the health system (Kinfu, Dal Poz, Mercer & Evans, 2009). Hence this study builds on previous evidence to examine the costs of providing a combined academic and experiential training in the localities of the lower cadre of health workers.

There is limited evidence on the cost-effectiveness of training programs for health workers in general (Brown, Belfield and Field, 2002) probably because cost data are much less widely available than data on program outcomes (McCord, Liu & Singh, 2013). In a review of community health worker training programs in the United States of America, only six out of 53 studies provided referenced data on costs; however the authors considered such data to be insufficient to draw any conclusions (Viswanathan, Kraschnewski, Nishikawa& Morgan, 2010). While limited research has been undertaken on costs of training community health workers, there is even less investigation on their training using community colleges.

The few studies on costs of community colleges rank them against university-based courses that have access to various funding from research and student fees, in contrast to community college education that rely on single sources, thereby ending up been more costly than university education.

Community college education that leads to university entry qualifications tends to be more costly than undergraduate education in universities (James, 1978) and has increased over the years. Despite their costs, community colleges offer an alternative route to progressing in ones career. Community colleges are accessible in terms of location, time and costs as compared to regular colleges and universities.

While most high school students plan to follow the traditional route of attending four-year colleges and universities when they consider educational options after graduation, a significant number are open to attending community colleges (Pittsburg, 2014).

In America, almost one-half of all undergraduates at public institutions attended a community college because they offered open and affordable access to post secondary schooling. Students of low income, minority and first generation were more likely to attend community colleges than four-year institutions (Agodini, 2004). Community colleges in America cost more, pay less and receive greater annual financial subsidies (Baum, Little & Payea, 2011). Where tuition at community colleges were less than half that of public universities, there was increased enrolment (Schneider & Yin, 2011). Students at community colleges often lived at home to save on expenses for room and board (Hunt, 2009) indicating the cost factor in choice of learning institutions.

In contrast to sub-Saharan Africa where community colleges are a rarity, community colleges are more common in the United States of America where there are various charging rates, for example, tuition charged per credit rather than by part-time or full-time status. Some community colleges make a college education accessible for students by offering affordable tuition rates based on residency. Almost half of community college students do not receive fee rebates and pay the full cost of college by borrowing, working or withdrawing from their savings (Clerk, 2008).

In Kenya, the financial cost of formal and certified training has been a constraining factor for community health workers. They rely on vertical project funding to provide them with training in specific community level health interventions such as counseling for HIV and AIDs and household visits to provide health information. Such training does not lead to certification or to career progression.

Training institutions in Kenya price their certificate courses

based on costs for delivering core required units and electives for particular courses and average approximately US$700 for a complete course. These costs do not include accommodation, transport and out-of-pocket expenses for the student who often has to re-locate to the locations offering the certificate courses. The cost of certified training has been identified as a major barrier to student enrolment regardless of geographical locations. Some institutions offering certificate courses have established scholarship funds to assist those unable to pay.

This study set out to determine the costs of providing training to the first cohort of enrolled CHWs using a community college approach by Great Lakes University of Kisumu (GLUK). The study further investigated the viability and long-term sustainability of the approach. The two-year certified community college course is offered in community sites, which makes the program more accessible to students as compared to other programs offered in urban institutions.

The enrolled students were taught by graduate assistants who were personnel from the University. The movement of these instructors to the community sites where the colleges were located involved costs for transport, refreshments and training materials which were initially covered by the University and which would be reimbursed by the students before graduation. Since this group was the first of its kind at the University, the institution provided them with a deferment of fees in order to generate interest in the course from other potential students in the communities. Course instructions took place twice a week with students expected to complete the certificate course in two academic years. During the training, the students were expected to develop proposals on Income Generating Activities (IGAs) which were expected to support them in fee payment. The students took 12 units for the whole course at a cost of $352 per year.

2. Methodology

Extensive research has been undertaken on the health outcomes resulting from the engagement of community level workers in household level health services uptake, for example, community health workers engagement in reducing child and maternal mortality rates. However the cost component of training these lay workers has received less attention. Therefore, while this study examined training costs from a given regional setting, investigating training costs of a community college model for training community level health workers is novel and may provide direction to other similar training programs.

Mugenda and Mugenda (1999) describe a survey as an attempt to collect data from the study population with a view to determining the current status of the population regarding certain variables. The study used a qualitative approach with convenience sampling of students to determine whether certified training offered to community health workers through community colleges was a viable alternative to their informal training. The study further examined the costs and sustainability of training this community level health workforce in the five community colleges operated by GLUK. The five community college sites consisted of two rural sites in Western region (Mutoma and Shiatsala) and three sites in Nyanza region where two were rural (Nyahera and Katito) and one was a peri-urban site (Nyalenda).

The survey used administrative data set of a convenience sample of 140 first-time enrolled students from the 169 enrolled students in the five community colleges. The records included data covering 2013 and 2014 and included the following: information from student application letters; high school records; transcripts; post-secondary training; community college semester exams and their accompanying questionnaires; and student financial records. The collected information was triangulated with Key Informant Interviews undertaken with college instructors, program staff and the University's finance staff. A focused group discussion was held with 12 participants from the training sites. The data was analyzed using excel and SPSS computer software.

The research question was: Do the factors of administrative and instructional costs of the community college program contribute to viability of the program and its sustainability? The study investigated the characteristics of the enrolled students in terms of age, gender, level of education, academic performance in the program, urban and peri-urban settings and fee payments by the students against costs of the program. The cost factor of a training program is important for institutions to enable them to provide relevant and cost effective curricula for the most viable numbers of students. Training costs are also important in providing policy direction on training community health workers.

3. Results

3.1. Demographic Characteristics of Community College Students

There were more female than male students in all the training sites (Table 1). A rural site (Mutoma) had the highest number of enrolled trainees (24%) with the peri-urban site (Nyalenda) recording the lowest (18%).

Trainees enrolled with secondary level education and having obtained the Kenya Certificate of Secondary Education (KCSE) or the Kenya Certificate of Education (KCE) was higher in number (78%) as compared to those with informal training. Slightly less than a quarter of the students (43%)

enrolled into the community college course with post-secondary level of education.

Table 1. Demographic characteristics of Community College Students.

Community College Sites	Population	Percent (%)
Katito	27	19
Nyalenda	25	18
Nyahera	29	21
Shiatsala	26	18
Mutoma	33	24
Total	140	100
Gender of students		
Male	58	41
Female	82	59
Total	140	100
Age in Years		
<21	19	14
21-30	51	36
31-40	45	32
41-50	22	16
51-60	3	2
Total	140	100
Level of Education		
Kenya Certificate of Secondary Education (KCSE)	78	56
Post KCSE	43	31
Informal Training	19	13
Student Scores (%)		
Above70	27	19
61-69	44	31
50-60	40	29
Below 50	29	21
Total	140	100

Less than a third (20%) of the students scored marks below 50% while19% scored marks above 70%; the remainder attained a pass mark, illustrating a normal distribution curve in performance.

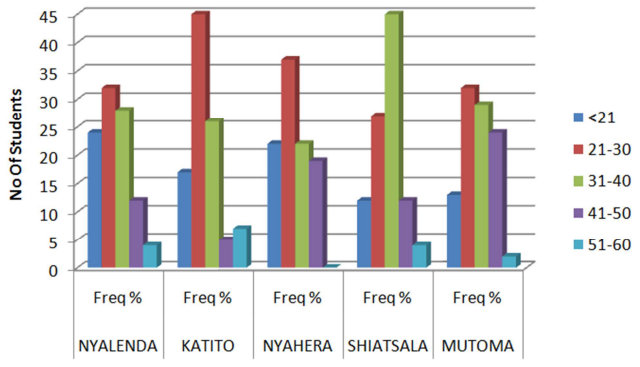

Figure 1. Age groups of Trainee in 5 sites.

Most of the students who attended the community colleges were between 21-30 years (Figure 1). One rural site (Katito) was a long-term community partnership site with the GLUK partnership program, This site had more community health workers who had undergone informal training with the University and who had added interest in obtaining formal certificates.

3.2. Student Performance

More males attained high marks (70 %) compared to females (Figure 2) who mostly attained marks ranging from 61% to 69%.

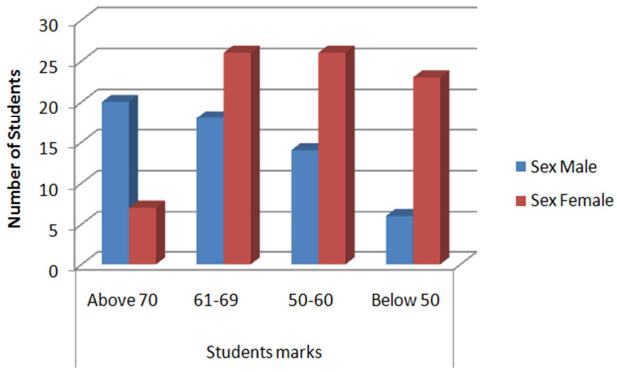

Figure 2. Perfomance by Gender.

Students who had enrolled with secondary level education (Figure 3) performed better compared to those with post-secondary education. This difference in performance may have been due to the fact that students with secondary level qualification had recently completed their schooling and still had the motivation to continue with higher education. Those enrolled with informal training were students who had undergone basic training for health workers provided by various organizations engaged in community health interventions in the communities but had not been issued with formal certificates. Most of them were educated up to the primary level. They were enrolled into the community college program based on their experience in community work.

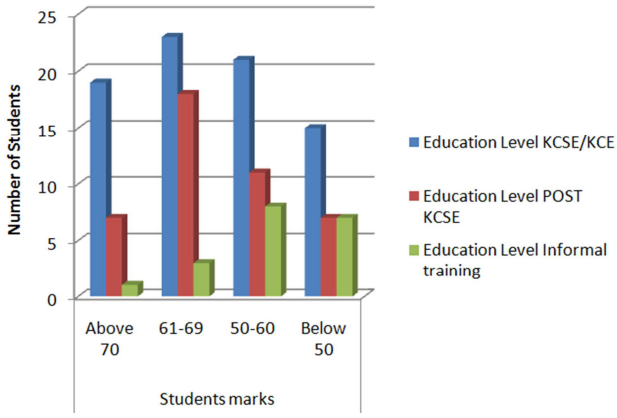

Figure 3. Performance by Education Level.

There was some relationship between education level and performance. While those enrolled with previous informal training did not perform at the same level as those with secondary education, they were still able to obtain acceptable

grades, perhaps due to their previous experience and knowledge in community work.

Students' performances tended to decrease by age, with those below 21 years and above 50 years having low performances (Figure 4). The low performance among the younger group may be due to lack of commitment to studies. The high performance among the age groups 21-30 and 31-40 years may be due to desire to be formally employed and to have a reliable source of income.

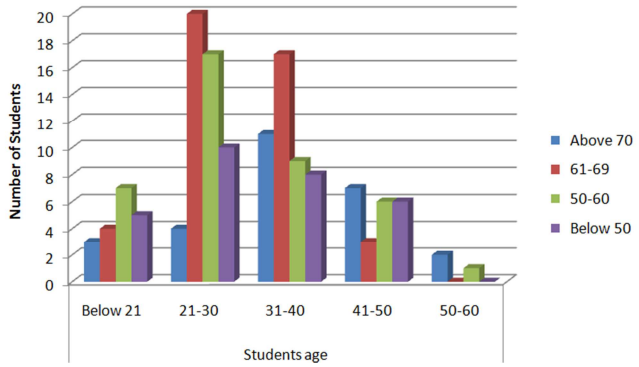

Figure 4. Performance by Age Group.

There was a slight relationship between performance and site; the Katito site noted the highest and best performance where there were no individuals with marks below 50% (Figure 5). This result is perhaps due to Katito being the first site where GLUK introduced community health education and where there was a bigger number of students enrolled with informal training and community work experience.

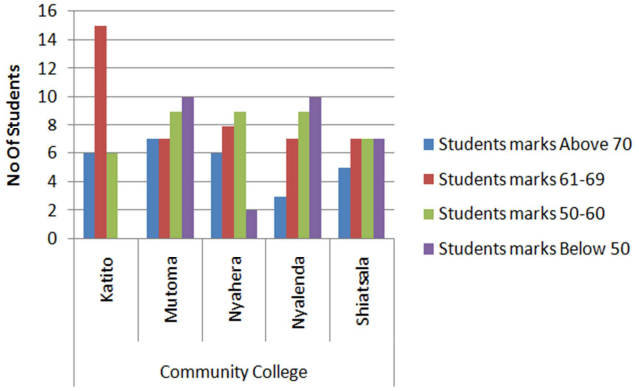

Figure 5. Performance by Sites.

3.3. Fee Payment by Students

Individuals with secondary level education had high fee paymentsfollowed bythose with post secondary education,while those with informal training were the lowest payees(Figure 6).

There was a low degree of correlation between the fee payment and ages of the students (Figure 7), meaning that fee payment and age were unrelated. Most students paid admission fees falling in the range of 1001-10000 Kenya shillings.

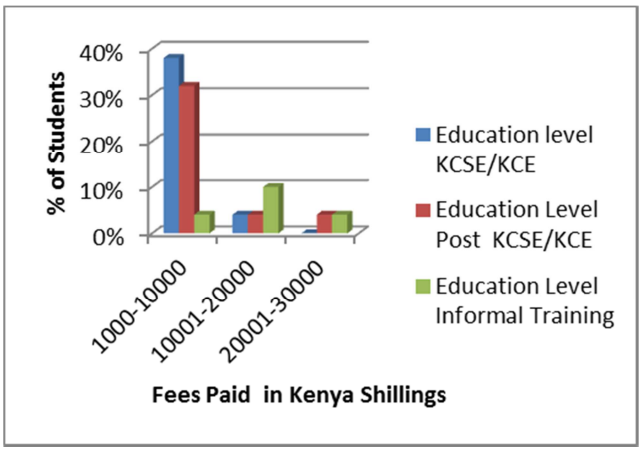

Figure 6. Fee Payment by Education Level.

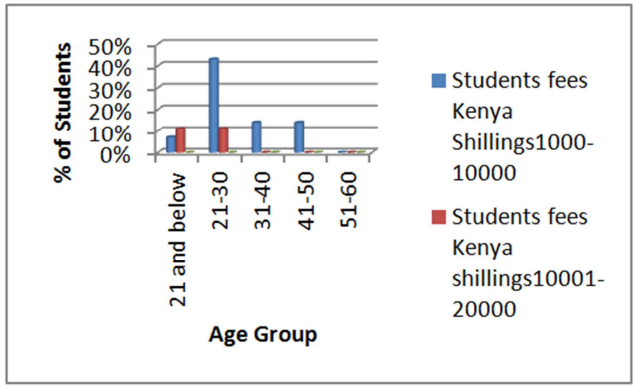

Figure 7. Fee Payment by Age.

Gender was unrelated to fee payment (Figure 8).

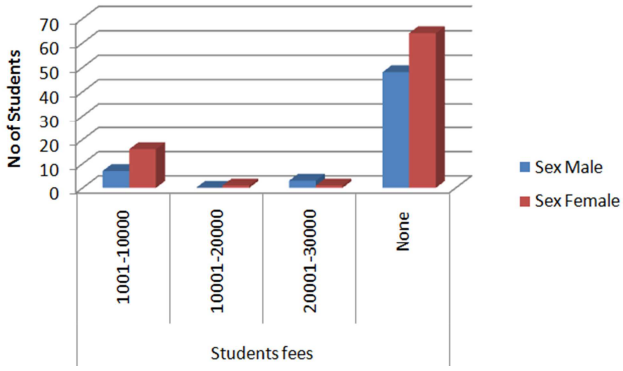

Figure 8. Fee payment by Gender.

There was a slight relationship between fee payment and sites (Figure 9). Nyalenda being a peri-urban site noted the highest fee payment both in the 1001 to 10000 and the 20001 to 30000 Kenya shillings payment groups. Katito noted a slightly higher 1001 to10000 fee payment group. This may have been due to the fact that the students were pioneers of a previous GLUK informal community training and may have therefore appreciated the services more than the other sites.

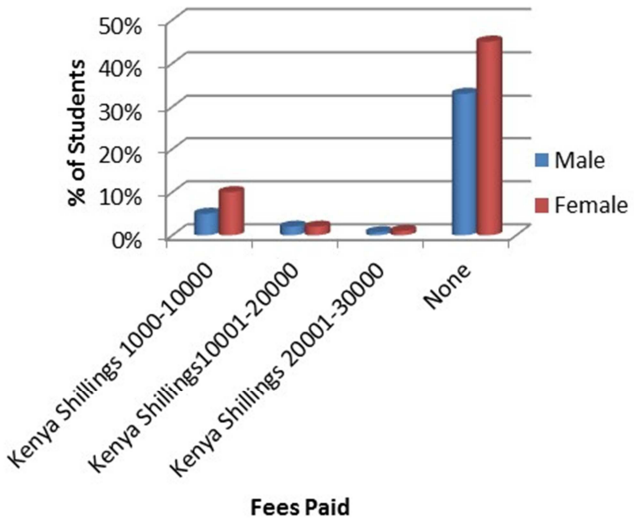

Figure 9. Fee Payment (in Kenya Shilllings) by Training Sites.

4. Overall Expenses

For the overall expenses of the community college training, the program spent more on transport as compared to other expenses (Table 2). This may have been due to the high cost of fuel in the country and the cost of wear and tear of vehicle usage. Katito had the highest total expenditure due to distance covered to the training site. Although Mutoma was the furthest, the expenditure was shared between the two sites of Mutoma and Shiatsala. Staff wages and allowances were the next highest expenditures. Nyahera community college had the highest expenditure on staff wages and allowances since the trainer for this site had a higher University staff rank compared to the other trainers. Training materials came third in the expenditure list with an average of $5.6 per day for 2 days in a week. The least expenditure was for refreshments for trainers while at the training sites.

Table 2. Training Expenses at Community College Sites.

EXPENSE (US $)	Nyahera	Katito	Nyalenda	Shiatsala	Mutoma	TOTAL
Transport	4800	6400	*-	5600	5600	22400 (78%)
Refreshments (drinks & beverages)	96	96	96	96	96	480 (2%)
Training Materials	400	400	400	400	400	2000 (7%)
Staff wages and allowances	1760	1066	266	266	266	3626 (13%)
TOTAL	7056	7962	762	6362	6362	28506 (100%)

Exchange rate Kenya shillings 90 = One United States dollar (US $1).
*Site near GLUK campus therefore no transport costs incurred

4.1. Fees for Community Colleges

Out of the 169 students registered, only 34 students were able to pay the course fee at the start of the program. The expected total amount of fees to be paid from all training sites was $56,333(Table 3).The amount paid was $2,052 for the whole year 2013 with a variance of $54,281. Only 4% of the expected fee for the year 2013 was paid to the University with the balance expected from students at completion of their training.

Table 3. Expected income versus actual income for the Community College.

SITE	EXPECTED (US $)	PAID (US $)	VARIANCE (US $)
Nyalenda	9667	1022	8644
Shiatsala	11000	0	11000
Katito	14000	805	13194
Nyahera	9000	224	8775
Mutomo	12666	0	12666
TOTAL	56333	2052	54281

Exchange rate Kenya shillings 90 = One United States dollar (US $1)

The students had interest to be trained in the community college but could not afford the fees (Table 3). The peri-urban site of Nyalenda had the highest payment of fees followed by rural site of Katito. Shiatsala and Mutomo, both of which were rural sites did not make any payment, partly due to the expectation of sponsorship from an ongoing community project at this site, since they were also performing the role of community health workers for the project.

4.2. Student Contribution to the Community College

In examining what students would have been earning or benefiting if they were not attending the College, the peri-urban site of Nyalenda would have made the highest financial gains compared to the remaining 4 sites.

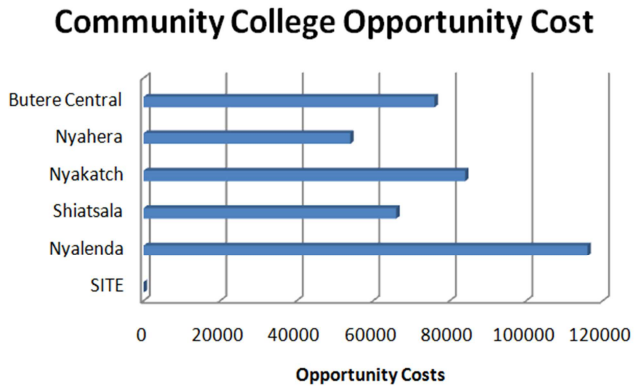

Figure 10. Community College Training Program Opportunity Cost.

5. Discussion

Community colleges are important for training Community Health Workers (CHWs) within their setting and should be made affordable and accessible. CHWs are the frontline public health workers who understand and have a close connection to the communities they serve and are more likely to increase health seeking behavior of households. The trusting relationship enables trained CHWs to serve as a link between health service providers and households, hence the importance of availing easily accessible health training opportunities to them.

This study set out to determine the cost elements related to the community college training program for community level or lay health workers in order to ascertain its viability and long-term sustainability. The study is particularly pertinent for strengthening health systems where resources for training adequate numbers of health professionals are limited and where there is need for additional lay workers to support health professionals at the community level. Moreover, availing community college training at an affordable cost may have implications for improved skills and knowledge, and access to previously unavailable career paths for community level workers.

The study showed that certified community college training is a viable alternative to formal training of community health workers. The academic formal training is acceptable to both rural and peri-urban communities and can be successfully conducted in an informal setting. The indicators of trainee performance and fee payment were generally distributed across gender, age and rural and peri-urban settings. However for sustainability, both the costs and revenue centres of the training program require modifications to suit students.

Demographic characteristics of community college students

The higher number of trainees with secondary level education indicates that the community colleges were relevant to this group of school leavers who were likely unable to attend other colleges due to high costs of tuition, transport and accommodation. The study analysis indicating higher numbers of females in community colleges confirm other studies citing females as more available for voluntary community work and their acceptance in the community (Hunt, 2009). While males have been known to be community volunteers, they tend to acquire additional skills and training that enables them to move to other careers in the formal sector. The relatively young age group of the community college students compared to community selected health workers who are usually older people, may lead to attrition in the long-term due to trainees taking up other careers and moving out of the community.

Rural sites have higher numbers of community volunteers, pointing to the need to provide resources for their training in order to address the human resource gap for adequate numbers and coverage for a strengthened health system. (Anand & Barnighausen, 2004). Peri-urban sites may require particular attention to determine the best approaches for enrolling community workers in community colleges aimed at improving knowledge, skills and health services delivery.

Student performance

While education level had some influence on performance, the overall performance of the community worker is also dependent on previous experience and knowledge of community work. This finding supports the approach of providing community college training to those with varying educational backgrounds and experiental learning.

The performance of students in the community college mirrored the academic performance of students in the formal classes at the University as illustrated in the academic examination pass marks and in the normal curve of their performance. This finding is in contrast to perceptions that community college students would score lower. The retained knowledge, skills and experiences arising from long-term engagement with communities is evident in the higher performance of students from a site (Katito) that had benefited from community partnership with GLUK. This site also registered higher fee payment rates. The GLUK partnership involves training of community volunteers to interact more closely with households for improved health, livelihood activities for increased household income households and facilitated engagement with development partners for resource mobilization. The community college training can benefit from such partnerships with other learning institutions and programmes.

Fee payment

Fee payment is one indicator of acceptability of the training program. In this study, fee payment was not solely related to economic status, as indicated by one rural site, Katito that had long partnership with GLUK. The partnership emphasized community contribution, a factor which may have contributed to their higher performance in fee payment. In other sites, the availability of training by non-governmental organizations as part of project costs related to health promotion and prevention may have created a perception that training is paid for by those providing the training, thus may have influenced their fee payment.

While the initial payment expected from students were not realised, the expectation of completed fee payment at the end of the training program implies that training costs are

affordable in the long-term. However, since the community college program is a new curriculum for training community level workers in the country, the initial costs of running the program may need to be subsidized in the short-term. Thus the program may need to be provided at a high unit cost initially, until enrolment reaches levels for a more economic unit cost. The prospect of graduates being employed readily in Kenya's newly devolved County health system supports the program's acceptability to students.

The high fee payment by those with higher levels of education could be due to the fact these were certificate level holders who relied on their parents and guardians to pay for fees compared to those with informal training who were older and may have had other family and social responsibilities. Those with post secondary education who also demonstrated high fee payments may have been self-employed or employed elsewhere.

While fee payment varied according to sources of income and were unrelated to age and gender, overall the students were able to pay for their fees over time, indicating the viability of community colleges. Competency based training has been found to contribute to retention and completion rates in community colleges (Schneider & Yin, 2011). In this study, both the comptency based training (Kaseje, 2015) and the potential job opportunities in the government health sector may have motivated students to pay for the community college training.

The training of human resources for health is a health systems function with funding sources provided by governments, external funding and private sources. To achieve notable health indicators in line with the Millenium Development Goals and beyond 2015 to achieving Sustainable Development Goals, funding to the health sector by governments will need to be 15% of the total government expenditure (Fryatt, Mills & Nordstrom, 2010). In the absence of such funding commitments, private funding sources such as demonstrated by community college trainees play an importat role in achieving adequate numbers of trained community workers.

Overall expenses

Literature cites the more costly and heavily subsidized community teaching in comparison to university teaching of lower-division students (James, 1978). This study however found that the overall costs of running the community college program were manageable if certain cost items such as transport and trainers are contained within affordable levels.

Acceptability of the community college training program

The community college was offered in the different contexts of rural and peri-urban settings. More females than males and students from rural settings appeared to be willing to enrol in the training program, probably due to the prospects of future employment and career progression. Literature on volunteer workers has documented the greater number of females who work as community health workers or volunteers (Gordon, 2013), as compared to males, a fact that was also evidenced in this study.

Opportunity costs

The community college program used the same content for rural and peri-urban sites, the latter evidencing higher opportunity costs than the rural sites. While the program was based on a part-time basis of attendance, the costs that entailed lost economic opportunities was highest for the peri-urban site that had students who were more dependent on wage earnings. Their counterparts in rural areas had other alternatives of livelihoods such as small-scale farming and a more available social support system to cushion them during non-wage earning periods.

6. Conclusion

This study showed that certified community college training programs are viable and sustainable alternatives to formal training of community or lay health workers. Most of the students were interested in the certified training provided by the community colleges. The academic formal training combined with practical application was acceptable to both rural and peri-urban community or lay health workers and can be successfully conducted in informal settings. Trainee fee payment and performance were generally distributed across gender, age, rural and peri-urban settings. While the community college training program costs were considered to be reasonable as compared to costs in other institutions offering certified training, the initial training costs of providing a certified community college training program proved to be a constraint to student enrolment, resulting in expenditures being higher than the expected income at the start of the program. The program illustrates leveraging of private funds to support additional human resource for a functioning health system.

Recommendations

Since the cost of starting up a community college course is higher than what community level workers are able and willing to pay, initial training program costs may require alternative pre-funding sources or may have to be provided at a high unit cost until enrolment rises to an economical unit cost. Both the costs and revenue centres of the training program require modifications to suit students' ability to pay and to ensure sustainability of the program. The high

transport costs of the program could be reduced through recruitment of qualified trainers from the community college sites. Given the manageable costs and convenient sites of community colleges, these learning sites should be encouraged to train community workers to asssist the devolved County health system for sustainable and effective delivery of community level health services.

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