THE INFLUENCE OF THE LEVELS OF EDUCATION AND KNOWLEDGE ON THE PERFORMANCE OF COMMUNITY HEALTH WORKERS IN SOY SUB-COUNTY, KENYA

Mitei J. Olive[*], Owino Phyllis Osodo and Marion Mayende

Catholic University of Eastern Africa (CUEA), Gaba Campus; P. O. Box 908-30100, Eldoret Kenya

ABSTRACT: *Community health workers (CHWs) the world over help to alleviate the shortages of health workers in the health sector. They are involved in the delivery of health services to the community and constitute the first point of contact on health-related issues in many low- and middle-income countries (LMICs). The performance of CHWs is often hampered by various factors. The purpose of the study was to investigate the socio-cultural factors influencing the performance of CHWs in Soy Sub-County. Based on the study, this paper explores the influence of CHWs' level of education and knowledge on their performance in Soy Sub-County. A correlation research design was used in the study with systematic sampling method being used to identify the respondents. In total, 98 respondents were given questionnaires to fill. Qualitative data was also collected from 7 heads of community health management team (CHMT) using key informant interviews. The collected data was then presented using frequency distribution tables while inferential statistics were computed using regression and correlation to determine the relationship between socio-cultural factors and performance of community health workers. Qualitative data was analysed manually to generate trends, sub-themes and themes from which conclusions were inferred regarding the performance of CHWs. The research findings showed that there was a significant (p= .000; α = 0.05) relationship that exists between education and knowledge and CHWs' performance. Based on the findings, it was recommended that a strategy should be developed to incorporate all the stakeholders that affect the performance of community health workers in coming up with a training programme for CHWs. Moreover, there should be a policy shift in Kenya to encourage male CHW to scale up delivery of health services at community level. The findings of the study support decision-making on CHWs' training programmes and also constitute the basis of transformation of implantation of community strategy in Soy Sub-County.*

KEYWORDS: Influence, Level, Education, Knowledge, Community Health Workers, Performance, Soy Sub-County, Kenya

INTRODUCTION

The use of community health workers is one strategy in addressing the growing shortage of health workers, especially in developing countries. In 2009, the Community Health Worker Section of the American Public Health Association (APHA) described CHWs as follows:

> Frontline public health workers who are trusted members of and or have an unusually close understanding of the community served. This trusting relationship enables CHWs to serve as a liaison, link or intermediary between health or social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery. CHWs also build individual and community capacity by increasing health knowledge and self-sufficiency through

a range of activities such as outreach, community education, informal counselling, social support and advocacy (APHA, 2009).

The World Health Report on "Global Experience of Community Health Workers for Delivery of Health Related Millennium Development goals" argues that community health workers (CHWs) have the potential to be part of the solution to the human resource crisis affecting many countries (WHO, 2010). CHWs provide a variety of functions, including outreach, counselling and patient home care and represent a resource to reach and serve disadvantaged populations (Bhutta, 2006). Another bulletin of the World Health Organization on "Community Health Worker Programmes after the 2013-2016 Ebola Outbreaks" also states that community health workers provide health education, gather information and deliver basic curative and preventive services at the community and household levels (WHO, 2017).

Education Levels and Performance of CHWs

With increasing recognition of the role that CHWs play in providing health services in low- and middle-income countries, there is a rising need to ensure that CHWs possess the necessary knowledge and competencies to satisfactorily perform their expanding roles. Effective training of new CHWs, as well as training for existing CHWs in new topics and skills, ensures that health workers have the capacity to provide quality health education and services to their target populations. There is need for appropriate training of CHWs for them to handle some health tasks on the community. This call has been reiterated in the research works on CHWs' performance. Salam *et al.* (2016) conducted a qualitative exploratory study was undertaken in February-July 2012 in two districts, Hyderabad and Matiari, in the southern province of Sindh, Pakistan. Altogether the researchers held 33 focus group discussions (FGDs) and reviewed the CHW curriculum and training materials. They used audio-recorded data, which they then transcribed verbatim for thematic analysis using QSR NVivo-version 10. From the review of the CHW curriculum and training programme, the researchers noted that, in the existing community delivery system, CHWs were responsible for identification of pregnant women, screening women for danger signs and referrals for antenatal care.

Salam *et al.* (2016) further observed that CHWs are the first point of contact for women in pregnancy and provide nutritional counselling along with distribution of iron and folic acid supplements. Their findings from FGDs suggested that CHWs did not carry a blood pressure device or antihypertensive medications; they referred to the nearest public facility in the event of a pregnancy complication and also provide tetanus toxoid in pregnancy. The health advice provided by lady health workers was highly valued and accepted by pregnant women and their families. Many supervisors of CHWs recognized the need for increased training regarding pre-eclampsia and eclampsia, with a focus on identifying women at high risk. The study concluded that there is a potential for training and task-sharing to CHWs for providing comprehensive antenatal care; specifically, for the identification and management of pre-eclampsia. However, the implementation needed to be combined with appropriate training, equipment availability and supervision (Salam *et al.*, 2016).

Another study in Zambia was conducted by Sinyangwe *et al.* (2016) to assess the quality of care for pneumonia in integrated community case management. In this study, cross-sectional mixed methods approach was used, 1,497 consultations, conducted by 90 CHWs in two districts of Luapula province, Zambia, were directly observed, with measurement of respiratory rate for children with suspected pneumonia recorded by video. Using the video footage, a retrospective reference standard assessment of respiratory rate was conducted by experts.

Counts taken by CHWs were compared against the reference standard and appropriateness of the treatment prescribed by CHWs was assessed. To supplement observational findings, three focus group discussions and nine in depth interviews with CHWs were conducted. The findings supported existing literature that CHWs are capable of measuring respiratory rates and providing appropriate treatment, with 81% and 78% agreement, respectively, between CHWs and experts. The conclusion of the study was that accuracy in diagnosis could be strengthened through further training and the development of improved diagnostic tools appropriate for resource-poor settings (Sinyangwe *et al.*, 2016).

In Zaire, a study conducted by Delacollette, Van der Stuyft and Molima (1996) to evaluate the potential to reduce malaria morbidity and mortality demonstrated that there is a need to train CHWs on how to handle malaria cases. Data was collected quantitatively from households sampled through simple random sampling. The results of the study showed that there was an increased in health seeking behaviour. However, CHWs desired further training and to be a part of health system. They increased the workload of health care staff. Community expectations were higher, often dis-satisfied with the limited service, least interested in contributing to the efforts of CHWs, administrative control over CHWs, no motivation by CHWs community participation in Malaria control (Delacollette *et al.*, 1996).

Kalyango, Rutebemberwa, Alfven, Ssali, Peterson and Karamagi (2012) compared post-training knowledge gains between CHWs in Uganda who were trained in the management of both malaria and pneumonia with knowledge gains of CHWs trained exclusively in malaria case management. While 88 percent of CHWs trained in the dual case management and 94 percent of those trained in malaria-only management reported the training as sufficient, knowledge assessments found that both groups scored an average of only 70 percent on malaria knowledge and the dual case management group scored only 60 percent on the pneumonia assessment. The study not only demonstrated that both CHW groups could benefit from additional training, but also that CHW perceptions of the quality of the training and their own knowledge and competency level do not necessarily align with actual knowledge. The routine provision of refresher trainings is also important in reinforcing and updating skills and knowledge (Kalyango *et al.*, 2012).

A study in Madagascar by Gallo, Walldorf, Kolesar, Kourtis, Jamieson and Finlay (2013), on CHW contraceptive knowledge assessment, found out that additional refresher courses were associated with a 13.2 percent increase in a CHW's score. This was a cross-sectional evaluation using a systematic sample of 100 CHWs trained to provide contraceptive counselling and short-acting contraceptive services at the community level. CHWs were interviewed on demographics, recruitment, training, supervision, commodity supply, and other measures of programme functionality; tested on knowledge of injectable contraception; and observed by an expert while completing five simulated client encounters with uninstructed volunteers. A CHW performance score (0-100%) based on the number of counselling activities adequately met during the client encounters was developed and a multivariable linear regression was used to identify correlates of the score. The results of the study indicated that CHWs had a mean performance score of 73.9%. In the research, more training, more weekly volunteer hours, and receiving a refresher training correlated with a higher performance score (Gallo *et al.*, 2013).

In Uganda, Wanduru *et al.* (2016) report findings of a cross-sectional mixed methods study undertaken by Global Health Action to investigate the performance of 393 eligible CHWs in the Lira district of Uganda. In the study, case scenarios were conducted with a medical officer observing CHWs in their management of children suspected of having malaria, pneumonia, or

diarrhoea. Performance data were collected using a pretested questionnaire with a checklist used by the medical officer to score the CHWs. The primary outcome, CHW performance, is defined as the ability to diagnose and treat malaria, diarrhoea, and pneumonia appropriately. Participants were described using a three group performance score (good vs. moderate vs. poor). A binary measure of performance (good vs. poor) was used in multivariable logistic regression to show an association between good performance and a range of independent variables. The qualitative component comprised seven key informant interviews with experts who had informed knowledge with regard to the functionality of CHWs in Lira District.

The results of the study showed that most CHWs (88.3%) had poor scores in managing malaria, diarrhoea, and pneumonia, some (6.6%) had moderate scores, and a few (5.1%) of them had good scores. The factors that were positively associated with performance were secondary-level education and meeting with supervisors in the previous month. Those factors negatively associated with CHW performance included: serving 100-200 households, serving more than 200 households, and an initial training duration lasting 2-3 days. The qualitative findings reinforced the quantitative results by indicating that refresher training among others were determinants of performance (Wanduru *et al.*, 2016). The Global Health Action (as cited in Wanduru *et al.*, 2016) conclude that the performance of CHWs in Lira was inadequate. They recommend the need to consider pre-qualification testing before CHWs are appointed. Providing ongoing support and supervision, and ensuring that CHWs have at least secondary education can be helpful in improving their performance. Finally, although short training programs are beneficial to some degree, they were not sufficient and should be followed up with regular refresher training (Wanduru *et al.*, 2016).

In Western Kenya, East Africa Dermatosis (EAD) conducted a study to determine the extent and severity of diseases in school and pre-school children in a rural community treatment by trained CHWs. Two separate epi surveys were conducted in 13 primary schools with a total population of 5780 children from 4-16 years were examined for skin disease. Only typical cases were counted and were treated with 12 CHWs. The evaluation was done in 2005 slight decrease in dermatoses between 2003(32.4%) and 2005(29.6%). Bacterial skin infections reduced from 12.7% to 10.8%, but the most impressive change was a marked reduction in the extent and severity of skin diseases. This study demonstrated that CHWs are able to deal successfully with the most important dermatoses in rural areas after a short training period (Schmeller, 1998). Another study conducted in Kenya by Kelly *et al*. (2001) investigated childhood illness and sought to characterize CHW performance using an algorithm for managing common childhood illness, a 3 cross-sectional hospital based evaluation. Observations of consultations was made using a checklist CHW documentation of assessments findings, classification, and treatment for each sick children in standard form Repeat examination by clinician. Each CHW was evaluated with 1 or 2 OP /IP cases depending on the availability, 90% of CHWs made right diagnosis of malaria many failed to identify symptoms, illness and administering right drugs. The study concluded that lack of regular supervision by professionals, continued education, complexity of the training modules led to poor performance of the CHWs (Kelly *et al*., 2001).

Statement of the Problem

Despite their vast experience, the performance of CHWs continues to pose a major challenge as burden of disease continues to increase in magnitude and diversity and relatively little scientific evidence is available to answer basic questions. This puts to question the performance of CHWs as one of the key strategies of health care delivery. Within the community, numerous factors do hinder or improve CHWs' ability to effectively provide services to beneficiaries.

Soy Sub-County is a cosmopolitan area. One of its towns (Eldoret) and the surrounding is experiencing an elevating population growth rate of about 3.8% which is higher than the Nation population growth rate of about 2.9% (CGU, 2013). As the County (Uasin Gishu) is growing in population, there are plans to increase the number of CHWs. Even with the growing number of community health workers in Soy Sub-County, there is still a problem with disease management. The number of community members receiving health education is low compared to the number of community health workers available. The referral to the health facility rate is also low, and there are problems of poor communication between CHWs and patients among other issues.

It is because of these that the study attempted to examine socio-cultural factors that influence the performance of CHWs in Soy sub-county. CHWs are faced with various challenges in their service delivery. Most studies globally and even in Kenya have studied the general factors like: economic factors, environmental factors health systems and policies and socio- cultural factors impacting the general performance of community health workers such studies have failed to narrow down to the specific factors in order come up with a solution that will lead to the achievement of Vision 2030 in Kenya. This study focused on socio-cultural factors which included, the level of education and knowledge of CHWs, religious beliefs and societal norms that affects the performance of community health workers in Soy Sub-County located in Uasin Gishu County. These factors have been overlooked yet they could be the genesis of poor performance among community health workers. The study therefore investigated the socio-cultural factors influencing the performance of CHWs in Soy Sub-County.

MATERIALS AND METHODS

The research adopted a correlation research design. It targeted 355 individuals comprising 348 community health workers from Soy Sub-County and seven heads of community health management teams (CHMTs), one from each ward. The study adopted a cluster random sampling method where the population of CHWs was subdivided into groups based on wards. Moreover, the heads of the district health management teams were purposively selected to participate in the study.

Table 1: Sampling Frame

Sampling technique	Ward	CHWS	Proportion ($n = \frac{Ni}{N} * ni$)	Sample size
Cluster	Kuinet/Kapsuswa	46	$\frac{46}{348} * 105$	13
	Moi's Bridge	62	$\frac{62}{348} * 105$	19
	Soy	57	$\frac{57}{348} * 105$	16
	Kipsomba	45	$\frac{45}{348} * 105$	12
	Segero/Barsombe	47	$\frac{47}{348} * 105$	13
	Ziwa	49	$\frac{49}{348} * 105$	14
	Kapkures	41	$\frac{41}{348} * 105$	11
Purposive	DHMTs	7		7
Total		**355**		**105**

Source: Researchers (2014)

The research used questionnaires and key informant interviews to collect the required data. After collection, the quantitative data was cleaned, fed into a computer, coded and analysed using descriptive inferential statistics with the aid of statistical package for social scientists (SPSS Version, 20). The results were presented descriptively using frequency tables while inferential statistics was computed inferential statistics was computed using regression and correlation to determine the relationship between socio-cultural factors and performance of community health workers. Qualitative data was analysed manually to derive trends, sub-themes and themes from which conclusions were inferred regarding the performance of CHWs.

RESULTS

The Influence of Level of Education and Knowledge of CHWs on the Performance of CHWs

The study sought to establish how the level of education and knowledge of CHWs influenced the performance of CHWs in Soy Sub-County, Kenya. The analysis opens with the descriptive statistics (frequency and percentage) for the level of agreement on a five point Likert scale of the level of education and knowledge (Table 2), where 1=strongly disagree, 2=Disagree, 3=Undecided, 4= Agree and 5= Strongly Agree.

Table 2: Influence of Level of Education and Knowledge of CHWs on their Performance

Statements		SD	D	U	A	SA	Total
I am trained as a community health worker.	F	9	6	8	36	32	91
	%	9.9	6.6	8.8	39.6	35.2	100.0
I have attended a refresher course.	F	0	15	6	37	33	91
	%	0.0	16.5	6.6	40.7	36.3	100.0
I feel the training I have undergone is adequate to perform my duties as a Community health worker.	F	3	3	15	31	39	91
	%	3.3	3.3	16.5	34.1	42.9	100.0
Skills acquired enhances my job performance as a community health worker.	F	2	10	4	30	45	91
	%	2.2	11.0	4.4	33.0	49.5	100.0
Knowledge acquired increases my job performance.	F	12	7	5	34	33	91
	%	13.2	7.7	5.5	37.4	36.3	100.0
I have knowledge of common disease conditions.	F	2	9	7	33	40	91
	%	2.2	9.9	7.7	36.3	44.0	100.0

Source: Researcher (2017)

Table 2 shows that 36(39.6%) of the respondents agreed with the statement that they were trained as a community health worker, 32(35.2%) strongly agreed, 9(9.9%) strongly disagreed, 8(8.8%) of the respondents were undecided and 6(6.6%) of the respondents were in a disagreement with the statement. The study findings suggested that the most 68(74.8%) of the respondents believed that they were trained as a community health worker.

Similarly, 37(40.7%) of the respondents agreed with the statement that they had attended a refresher course, 33(36.3%) strongly agreed, 15(16.5%) disagreed, 6(6.6%) of the respondents were undecided and none 0(0.0%) of the respondents strongly agreed with the statement. It emerged from the study that most 70(77.0%) the respondents opined that they had attended a refresher course. This finding was supported by one of the interviewee who said:

> … Accuracy in diagnosis could be strengthened through further training and the development of improved diagnostic tools appropriate for resource-poor settings… (Personal Communication, Male Participant, 32 years, Head of Community Health Management Team, 2017).

Additionally, 39(42.9%) of the respondents strongly agreed with the statement that they felt the training they underwent was adequate to enable them perform their duties as Community Health Workers, 31(34.1%) agreed, 15(16.5%) of the respondents were undecided, 3(3.3%) disagreed and a similar 3(3.3%) of the respondents were in a strong disagreement with the statement. The study findings suggested that majority 70(77.0%) respondents felt that the training they underwent was adequate to enable them perform their duties as a Community health worker.

On whether or not the skills acquired enhanced their job performance as a community health worker, 45(49.5%) of the respondents strongly agreed with the statement, 30(33.3%) agreed, 10(11.0%) disagreed, 4(4.4%) of the respondents were undecided and 2(2.2%) of the respondents had a strong disagreement with the statement. The study findings suggested that most 75(82.8%) of the respondents believed that the skills acquired enhanced their job performance as a community health worker.

Likewise, 34(37.4%) of the respondents agreed with the statement that the knowledge acquired increased their job performance, 33(36.3%) strongly agreed, 12(13.2%) strongly disagreed, 7(7.7%) disagreed and 5(5.5%) of the respondents were undecided on the statement. It emerged from the study that most 70(73.7%) the respondents opined that the knowledge acquired increased their job performance.

Lastly, 40(44.0%) of the respondents strongly agreed with the statement that they had knowledge of common disease conditions, 33(36.3%) agreed, 9(9.9%) disagreed, 7(7.7%) of the respondents were undecided and 2(2.2%) of the respondents were in a strong disagreement with the statement. It emerged from the study that most 73(80.3%) the respondents opined that they had knowledge of common disease conditions.

Table 3: Regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.950	0.306		6.374	0.000		
Education and knowledge	0.707	0.052	0.678	13.489	0.000	0.516	1.937

Results of the regression coefficients presented in Table 3 shows that the estimates of β values and give an individual contribution of each predictor to the model. The β value for education

and knowledge (0.678) was positive. The results further revealed the standardized regression coefficient for education and knowledge at $\beta1=0.678$, which implies that an increase of 1 standard deviation in education and knowledge is likely to result in a 0.678 standard deviations increase in CHWs' performance. These findings indicate that education and knowledge significantly affect CHWs' performance in Soy Sub-County. These results imply that education and knowledge is an important predictor for CHWs' performance.

Hypothesis Test Results

The study hypothesized that there is no significant effect of education and knowledge on CHWs' performance in Soy Sub-County, Kenya. Multiple regression analysis showed that a significant ($p= .000$; $\alpha = 0.05$) relationship existed between education and knowledge and CHWs' performance. Therefore, the null hypothesis was rejected ($p<0.05$). This implies that there is a significant effect of education on knowledge on CHWs' performance in Soy Sub-County, Kenya.

DISCUSSION

On the influence of the level of education and knowledge influence CHWs performance, the study findings suggested that the most of the respondents believed that they were properly trained as community health workers. This implies that the trainings attended by the community health workers' health them to improve their job performance. The findings were in line with those of Kalyango, Rutebemberwa, Alfven, Ssali, Peterson and Karamagi (2012), that the routine provision of refresher trainings is also important in reinforcing and updating skills and knowledge. Besides, it emerged from the study that most the respondents opined that they had attended a refresher course. This implies that the refresher trainings and other trainings attended by the community health workers' health them to improve their job performance. This is in line with the findings of Wanduru *et al*. (2016) although short training programs are beneficial to some degree, they were not sufficient and should be followed up with regular refresher training.

Similarly, the study findings suggested that majority 70(77.0%) respondents felt that the training they underwent was adequate to enable them perform their duties as a Community health worker. This implies that when a Community Health Worker undergo training, the skills will improve, thus, enhanced job performance. This concurs with the findings of Schmeller (1998) that CHWs are able to deal successfully with the most important in rural areas after a short training period. The study findings suggested that most 75(82.8%) of the respondents believed that the skills acquired enhanced their job performance as a community health worker. This implies that when a Community Health Worker acquired relevant skills with adequate training, the job performance is likely to be enhanced. This concurs with the findings of Sinyangwe *et al.* (2016) who observe that accuracy in diagnosis could be strengthened through further training and the development of improved diagnostic tools appropriate for resource-poor settings.

It also emerged from the study that most the respondents opined that the knowledge acquired increased their job performance. Similarly, most the respondents opined that they had knowledge of common disease conditions. This implies that when a Community Health Worker acquires relevant knowledge on common disease conditions, their job performance is likely to

be enhanced. This is in line with the findings of Gallo *et al*. (2013) that more education, more weekly volunteer hours, and receiving a refresher training correlate with a higher performance score. Lastly, multiple regression analysis showed that a significant relationship exists between education and knowledge and CHWs' performance. This means that there is a significant effect of education on knowledge on CHWs' performance in Soy Sub-County, Kenya. This reiterates the findings of Salam *et al.* (2016) that education and knowledge affect the CHWs' performance.

CONCLUSION AND RECOMMENDATIONS

Based on the research findings on the effect of level of education and knowledge on CHWs' performance, the study concluded that education and knowledge have a positive and significant influence on the performance of Community Health Workers. In other words, when community health workers are provided with refresher trainings, adequate trainings, acquired skills and knowledge, they will effectively perform their duties, thus, improved job performance. From the research findings, conclusion and the knowledge from the literature review, it was clear that training factors influence the performance of Community Health Workers. The study therefore recommends that, to improve community health workers' performance, policy makers, the government and other stakeholders, led by the Ministry of Health, the County Government and non-governmental organizations, need to develop a clear contextualized Community Health Workers' training manual. This strategy should incorporate all the stakeholders that affect the performance of community health workers. Moreover, there should be a policy shift in Kenya to encourage male CHW to scale up delivery of health services at community level.

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