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SHORT REPORT

Factors influencing the performance of community health workers in Kisumu West, Kenya

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Background: Community Health Workers (CHWs) play a key role in the functioning of Primary Health Care. However, little research on the performance of CHWs has been conducted in Kenya. This study aims to describe their performance and to determine which factors most impacted the performance of CHWs in Kenya. **Methods:** A total of 750 CHWs were identified as potential subjects. However, appropriate data were submitted by 172 CHWs because of rejection and loss of their reporting status. Data on CHWs were collected through questionnaires, and information about their performance was gathered from their supervisors. **Results:** Approximately 60% of the CHWs were active. CHWs over 40 years of age were likely to display good performance in their job ($P < 0.001$). In addition, the performance of CHWs was influenced by training partners ($P < 0.03$). **Conclusion:** Older CHWs were likely to perform well. Furthermore, their performance was influenced by their training partners.

Keywords: community health worker; performance; Primary Health Care

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Introduction

The principle of Primary Health Care (PHC) was introduced in the Declaration of Alma-Ata in 1978 (World Health Organization, 1978). PHC had already been promulgated for over three decades as a global strategy for ensuring essential health care for all people.

Community Health Workers (CHWs) play a key role in the functioning of PHC, especially in a resource-limited setting. Some studies have documented that CHWs can help reduce childhood mortality (Pandey *et al.*, 1991; Sazawal and Black, 1992; Kidane and Morrow, 2000; Jones *et al.*, 2003), particularly in terms of the early detection and treatment of pneumonia (Shann *et al.*, 1984; Deming *et al.*, 1989; Zeitz *et al.*, 1993; Fagbule *et al.*, 1994), malaria (Ruebush *et al.*, 1995), and dehydration resulting from diarrhea (Kumar *et al.*, 1989) and increased immunization coverage (Patel and Nowalk, 2010).

However, it was also reported that CHWs had not played a significant role in decreasing childhood mortality (Menon, 1991) in terms of child health (Bryce *et al.*, 2003), injuries (Bickler and Rode, 2002), mental disorder (Abas *et al.*, 2003), sexually transmitted diseases (Bitera *et al.*, 2002), and diabetes (Whiting *et al.*, 2003). It was also reported that, as the performance of CHWs improves, the use of health services such as immunization (Elisabetta *et al.*, 2005) and treatment of dehydration (Kumar *et al.*, 1989) can potentially be increased.

In Kenya, CHWs in community units (CUs) were identified as Level One of the health systems in Kenya from 2006. They were nominated from

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community members. A criterion to select CHWs was literacy. They got standard training for one week, and some of them might have received additional training and identifications such as T-shirts depending on training partners. Their main activities were door-to-door canvassing to teach health-related preventive methods and collect data of each household. There is no monitoring and evaluation tool to measure CHWs' performance except for their monthly report in Kenya.

There were four training partners in the research area to support the establishment of CUs: Global Alliance for Vaccines and Immunization (GAVI), government agency, international NGO, and community-based organization (CBO). GAVI and international NGO supported government standard training. The GAVI foundation was managed by government officers only. The CUs supported by government agency were conducted government standard training and some additional training in terms of nutrition, and maternal and child health. In addition, the government agency supported monthly meetings, T-shirts, name tags, and reporting tools. The CBO also provided government standard training and continuous demand-based trainings.

The strategic plan for 2008–2012 (Ministry of health systems in Kenya in 2006) stated that the scaling up of community strategy was indispensable, meaning that more well-performed CHWs were required to improve the delivery of health-care services at the community level. However, little research has been conducted in Kenya on the performance of CHWs in improving health services.

This study aimed to describe their performance in terms of the reporting rate and to determine which factors impacted the performance of CHWs in Kenya.

Methods

Study site

This study was conducted in Kisumu West district, Nyanza Province, Kenya in July 2010. This area is mainly inhabited by subsistence farmers and fishermen. This district has about 144 907 residents and the population density per km^2 is 404 according to the national census of 2009 (Kenya Demographic and Health Survey, 2010). The District Health Systems were composed of a district hospital, two sub-district hospitals, three health centers, and 12 dispensaries (Ministry of Health, 2010). Moreover, there were 15 CUs established at Level One of the health system. One CU covers one sub-location, which has a population of around 5000. Each CU theoretically has 50 CHWs and two Community Health Extension Workers who supervise CHWs and collect their monthly reports.

Study design and population

This study consisted of 750 CHWs (potential subjects) in total supported by several partners in this research area. Training partner is the partner who supported and assisted CU establishment and CHWs' training. The training partners were categorized into four groups. The first is GAVI, the second is government agencies, the third is International NGO, and the fourth is the CBO. A total of 350 CHWs in seven CUs were trained by GAVI, and 200 CHWs in four CUs were trained by the International NGO. Government agencies and the CBO trained 100 CHWs in two CUs, respectively. All CHWs were informed of this study by their supervisors and were requested to participate. Out of 750 CHWs, 240 CHWs filled out a structured questionnaire about their socio-economic characteristics and their job satisfaction/motivation. In addition, their supervisors provided us with information related to these subjects' submission of monthly reports within the three months preceding the beginning of the study, as well as information regarding the subjects' training partners. Data related to the submission of 35 CHWs were not recorded. Additional information about reporting rates and training partners was appended to the data gathered by structured questionnaire. The data of 33 CHWs were not appended, because their name as unique key was not written. Thus, 172 CHWs in total were involved in this study. An indicator of the subjects' reporting rate during a three-month period was used to assess the performance of CHWs because submitting monthly reports is one of their main activities, as well as a clear way of measuring their job performance. In the present study, CHWs who submitted all of their required monthly reports in a three-month period were defined as CHWs

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displaying good performance (active CHWs), whereas the CHWs who did not do so were defined as CHWs lacking good performance (non-active CHWs).

Data analysis

Data were stored using Epi info (version 3.5) software. Statistical analysis was performed with STATA version 10 (STATA Corporation, Texas, USA). A χ^2-test was used to compare the differences in proportions for categorical data. If an expected value was lower than 5, a Fisher's exact test was performed. Socioeconomic characteristics were dichotomized and coded, except for those characteristics related to occupations and training partners. Moreover, these factors were analyzed using linear logistic models. Starting with a logistic model including all of these covariates, we selected the most appropriate model on the basis of Akaike's information criterion (Akaike, 1974). Once the most appropriate model was selected, a maximum likelihood estimation of the model parameters was conducted. Then, the odds ratio and the 95% confidence interval were calculated for each covariate in the model.

Ethical considerations

This research was approved by Gluk Ethical Review Board at the Great Lakes University of Kisumu in Kenya. Authorization to carry out the survey was obtained from the Ministry of Public Health and Sanitation in Nyanza province and the district health administrators.

Table 1 Basic characteristics of CHWs in Kisumu West district, Kenya

Variables	Number	%	Mean SD
Sex			
Male	35	20.3	
Female	137	79.7	
Mean age (year old)	40.1		10.9
Marital status			
Married	133	78.7	
Single/widowed	36	21.3	
Education level			
Primary level or lower	85	49.4	
Secondary level or higher	87	50.6	
Mean size of family	7.7		4.5
Economic status (per month)			
Under 1000 ksh	52	30.2	
1001–4500 ksh	73	42.4	
Over 4501 ksh	47	27.3	
Occupation			
Farmers	102	62.6	
Business men/women	22	13.5	
Housewives	5	3.1	
Other	34	20.9	
Coverage household			
⩽20 houses	90	52.3	
>20 houses	82	47.7	
Supporter for training			
GAVI	81	47.0	
Government agency	49	28.5	
International NGO	32	18.6	
CBO	10	5.8	
Reporting status			
None	14	8.14	
Once in three months	21	12.21	
Twice in three months	32	18.6	
All submitted	105	61.05	

CHWs = community health workers; GAVI = global alliance for vaccines and immunization; NGO = non-governmental organization; CBO = community-based organization.

Results

A total of 172 CHWs were respondents in this study. Eighty percent of them were women and 20% were men, as indicated in Table 1. Their mean age was 40 years, and their primary occupation was farming (62%). In all, 78% of them were married and 49% did not graduate from primary school; 52% of them visited fewer than 20 households as CHW. GAVI was the main training partner for 47% of the respondents. A total of 105 CHWs completely submitted their monthly reports within three months. This means that the number of active CHWs was 105 (61%) and non-active was 67 (39%).

In Table 2, we compare active CHWs with non-active CHWs by using univariate analysis. Sixty-one percent of them were active CHWs. Active CHWs were significantly older ($P < 0.001$) and better off financially than non-active CHWs ($P < 0.05$). Moreover, between these two groups, there were few differences in their training partners ($P < 0.06$), as well as the CHWs' occupations ($P < 0.07$). In addition, the proportion of satisfaction among subjects in the two groups was not different ($P < 0.25$).

Furthermore, a logistic regression analysis revealed that CHWs over 40 years of age were likely to exhibit good performance ($P < 0.001$) (Table 3). In addition, the performance of CHWs

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Table 2 Comparison between CHWs with full reporting and CHWs without full reporting

Characteristics	Active CHWs ($n = 105$)	Non-active CHWs ($n = 67$)	*P*-value
	Number (%)	Number (%)	
Sex			
Male	21 (60.0)	14 (40.0)	0.88[a]
Female	84 (61.3)	53 (38.7)	
Age (years)			
<40	39 (46.4)	45 (53.6)	<0.001[a]
⩾40	66 (75.0)	22 (25.0)	
Marital status			
Married	83 (62.4)	50 (37.6)	0.46[a]
Single/widowed	20 (55.6)	16 (44.4)	
Education level			
Primary level or lower	51 (60.0)	34 (40.0)	0.78[a]
Secondary level or higher	54 (62.1)	33 (37.9)	
Family size			
⩽7 persons	61 (58.7)	43 (41.3)	0.43[a]
>7 persons	44 (64.7)	24 (35.3)	
Economic status			
⩽2000 ksh per month	45 (53.6)	39 (46.4)	0.05[a]
>2000 ksh per month	60 (68.2)	28 (31.8)	
Occupation			
Farmers	68 (66.7)	34 (33.3)	0.07[a]
Business men/women	8 (36.4)	14 (63.6)	
Housewives	3 (60.0)	2 (40.0)	
Other	20 (58.8)	14 (41.2)	
Coverage household			
⩽20 houses	56 (62.2)	34 (37.8)	0.74[a]
>20 houses	49 (59.8)	33 (59.8)	
Supporter for training			
GAVI	53 (65.4)	28 (34.6)	0.06[a]
Government agency	28 (57.1)	21 (42.9)	
International NGO	15 (46.9)	17 (53.1)	
CBO	9 (90.0)	1 (10.0)	
Job satisfaction			
Satisfied	88 (59.5)	60 (40.5)	0.25[a]
Not satisfied	11 (78.6)	3 (21.4)	

CHWs = community health workers; GAVI = global alliance for vaccines and immunization; NGO = non-governmental organization; CBO = community-based organization.
[a] χ^2-test.

Table 3 Multivariate analysis of factors influencing performance of CHWs

Influential factors	Odds ratios	95% CI	*P*-value
Age >40 years old	3.54	1.81–6.91	<0.001
Training supporter[a]			
Government agency	1.91	0.74–4.93	0.183
CBO	11.10	1.19–103.23	0.034
GAVI	2.20	0.92–5.28	0.076

CHWs = community health workers; CBO = community-based organization; GAVI = Global Alliance for Vaccines and Immunization; NGO = non-governmental organization.
[a] Base supporter: International NGO.

was influenced by their training partners. On the basis of International NGO as base training partner, the CBO has a significantly good impact on the performance of CHWs ($P < 0.03$).

Discussion

The magnitude of the poor performance of almost half of the CHWs in this study was similar to that found in previous studies (Kelly *et al.*, 2001; Stekelenburg *et al.*, 2003). That is, 40% of

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them were non-active CHWs, even though submitting monthly reports is one of the main duties for CHWs.

Although the performance indicator used in this study was related to literacy, all CHWs were literate, because one of the criteria to select CHWs is literacy. It means that the age is not related with literacy in this study.

Older CHWs in the present study were significantly likely to enhance their performance. There is some evidence that older CHWs are more respected in their communities than their younger counterparts (Ofosu Amaah, 1983). Moreover, some cultures place greater emphasis on ascribed characteristics such as age than on achieved characteristics such as high education and special training (Bhattacharyya *et al.*, 2001). Therefore, it may be relatively easy for older CHWs to conduct their duties at various households, and the respect they receive from community members may act as a form of peer pressure that facilitates their job performance. In addition, older people, especially women, may have more free time than younger persons because the duties of the former related to child care, housekeeping, and farming may decrease as their children grow up.

There were unique relationships between the initial training partners and CHWs' performance, meaning that the subjects' performance varied, depending on their training partners. It was also found in this study that CBOs were better training partners than International NGOs. Differences between training partners were equal in importance to differences in training methods, frequency of supervision and feedback, visual identification, and selection methods of CHWs. As other studies have reported, the complexities of guidelines (Kelly *et al.*, 2001), as well as the frequency of supervision and feedback (Rowe *et al.*, 2005), were key factors in the improvement of CHWs' performance. In addition, visual means of identifications, such as bags and T-shirts (Haines *et al.*, 2007), were related with the performance of CHWs in terms of their motivation. Selection criteria and selection methods for CHWs (Haines *et al.*, 2007) were also influential factors in enhancing their performance because of increased identification as CHWs from community members and their own motivation. Although these factors were not assessed in this study, the 'training partner' variable may be representative of the aforementioned factors. In our opinion, CBOs were more likely to work with CHWs after CHWs had finished their standard training. Furthermore, one advantage of CBOs is that CHWs can easily contact them, which could make it relatively easy for CHWs' supervisors, who are based in CBOs, to find problems related with the performance of CHWs.

As potential limitations of our study, one was the sampling method. In this inquiry, our subjects did not represent the entire population. The percentage of active CHWs may have been overestimated, because non-active CHWs may not have a desire to gather in order to participate in a study of this nature. Second, the performance indicator in this study was the reporting rate. The quality of the CHWs' monthly reports was not assessed because of incidences whereby some CHWs lost these, as well as the lack of defined outcome indicators for measuring their performance. In addition, reporting rate was not enough to measure CHWs' performance, further research focusing on not only reporting rate but also other performance indicators is necessary.

Furthermore, some of the key factors for improvement of CHWs' performance such as supervision and visual identification were not assessed. Although further research focusing on the details of the overall job performance of CHWs is needed, it was clear from the results of our study that immediate action needs to be taken in order to improve their performance, especially their reporting activity.

Conclusion

Older CHWs were likely to display a high level of job performance. Furthermore, the job performance of CHWs was influenced by the effectiveness of their training partners. Although further research on specific details of their job performance is necessary, the aforementioned factors may be important determinants of CHWs' overall job performance.

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