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Original Research Article

Effects of community performance-based financing on community health workers' service delivery in Kayanza health district, Burundi

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ABSTRACT

Background: In many low- and middle-income countries, community services are often provided on a volunteer basis. To make their work more effective in the communities, some of them including Burundi adopted community performance-based financing as form of motivation of community health workers (CHWs). The study aimed to demonstrate the relationship between the community performance-based financing and health service delivery by the community health workers.
Methods: It was a cross-sectional study using a comparative approach to assess the relationship with the performance-based financing scheme and the community services delivery. We used a stratified random sampling and inferential statistics used chi square and logistic regression.
Results: The occupation of CHWs was significantly associated with counselling for early ANC (p=0.002), women attending early ANC and 4 ANC visits (p=0.000). Female were about 3 times likely to refer FP clients for FP methods uptake [p=0.043, CI= (1.030; 7.462), OR=2.773]. Farmers were 11 times as likely to perform this task as CHWs with other functions [p=0.000, CI= (3.890; 32.733), OR=11.284]. The CHWs who received 9 equipment and above [p=0.037, CI= (1.101)].
Conclusions: The community performance-based financing has a significant relationship with the community health workers service delivery and should be enhanced by trainings, formative supervision, and provision of equipment. Occupation was identified as to predict this association. But further studies be conducted to establish other factors that complement the community performance-based financing in community services delivery.

Keywords: Community health workers, Community health worker's Cooperative, Community performance-based financing

INTRODUCTION

In the line with the world health organization (WHO) which suggested that the selection of community health workers should consider the preservice education, and health system, governments in low-and middle-income countries (LMICs) have adopted health policies which aim to increase the utilization of health services and improve nature of wellbeing administrations, among them, the performance-based financing.[1] In Benin, the performance-based financing (PBF) was started in 2012 by a world bank project. Execution of performance-based financing was seen as promising as far as impact, possession, and supportability are concerned; and less assets burning-through. In any case, numerous nations are judged by the incorporation of the methodology in ordinary working of nearby wellbeing frameworks.[2]

The experience from Uganda showed that after the start of PBF, there was a positive trend in performance of the

PBF-implementing health facilities relative to the controls. There was a positive trend in performance in the selected indicators in the PBF health centers (H/Cs). Nevertheless, a rigorous, regular, and independent data verification plan built within the implementation process has been highly recommended.[3]

Rwanda is one of the pioneers in implementing PBF beginning with a pilot phase in Cyangugu and Butare provinces. It was started by remunerating facility staff based on services delivered and by empowering them to identify creative ways to improve those services. Results from this initial phase showed improvement in terms of coverage, quality, and impact on health service delivery.[4]

In Burundi, after the government adopted the free care for childbirth and pregnant women in 2006, the workload for health workers increased significantly, but without commensurate increase in staff numbers. This affected the quality of, especially, maternal, family planning (FP) and reproductive health services. To solve this problem, a pilot phase of community performance-based financing was set up in southern province of Makamba.[5,6] This study assessed the effect of performance-based financing in delivering community health services. Results from the study will hopefully inspire decision makers, health district leaders and health professionals to set proper strategies to work with CHWs in improving community health indicators. The findings herein should help public health leaders from the Ministry of Health to review policies and guidelines on CHWs' work and incentives.

The objective of the study was to investigate the effects of community performance-based financing on CHW's service delivery in Kayanza health District, Burundi.

METHODS

Study area and population

The cross-sectional study was undertaken in Kayanza and Matana health districts in Burundi. Kayanza health District is in Kayanza health province, north of Burundi, bordered by the Republic of Rwanda. Matana health district, the comparative study area, is in Bururi province, south of Burundi. The study aimed to demonstrate the relationship between the community performance-based financing and health service delivery by the community health workers. The population was constituted of 634 CHWs, 340 working in Kayanza health district and 294 working in Matana health district. The CHWs were from 15 health centers of Kayanza Health district and 23 health centers of Matana health district.

Study period

The study focused on the period of the implementation of community performance-based financing in Kayanza health district, beginning from January 2019 up to June 2020. This took into consideration a period of 18 months (one and half years).

Sampling, data collection and tools

Stratified random sampling method was used to select the participants (CHWs) from the 38 health centers in the health district of Kayanza (intervention area) and Matana (control area), and the commune entity constituted the stratum in the study. The size (234) for the study was constituted by sample sizes from each health district so that the sample size each (stratum) commune was proportionate to the population (CHWs) to the stratum. The research was a cross-sectional study. The study explored the level of services delivered by CHWs in terms of counselling, referral, and community-based distribution of commodities in maternal, child and reproductive health.

Quantitative data was collected using a pre-formulated questionnaire, and reports and registers were analysed to evaluate the level of achievement of services by CHWs. It was a structured questionnaire, guided on how to answer to avoid ambiguity. The researcher met respondent (CHWs) at health center where he also collected secondary data from registers and reports. The focus group discussions (FGDs) within which community health workers' supervisors and health providers were involved were conducted to give their appreciation on the level of leadership within CHWs' groups and the perception of CHWs on the in-kind incentives received by CHWs and their influence on the performance. Key informant interviews were conducted where FGD were not appropriate.

Variables

The services delivered by CHWs at community level were designed in dependent variables scored on level of the target reached or not. For maternal health, nine variables were created. The visit for pregnant women, the counseling for early first antenatal care, at risk pregnancies referred to health facility, and the early ANC attendance were evaluated. The study also evaluated the attendance for 4 standards of ANC. First, deliveries carried out at health facilities by health professionals, upon clients being accompanied by CHWs. Secondly, home deliveries referred immediately to health facilities by CHWs, then early post-partum visits as well as obstetrical fistula. For child health, services on the recovery of abandoned vaccination were evaluated. For reproductive health and FP, four variables were created such as the counseling on reproductive health services, referral for FP methods, commodities distributed in the village by CHWs and the recovery of abandoned use of contraceptive methods. Additionally, there was a variable of whether CHWs referred patients to health facilities for other health problems.

The independent variables were grouped in two components. One in the socio-demographic characteristics with variables of age divided into 20 to 34 years, 35 to 49 years, and 50 years and above, gender (Male and female), and religious affiliations divided in to Catholic, Protestant, Muslim and Adventist. Then there was occupation divided into famer, farmer and other jobs, and other jobs; marital status divided into single, widow/widower, married and divorced; and the level of education divided into primary, secondary, college and university. The second is the in-kind motivation divided into trainings and supervisions to CHWs and the equipment distributed to CHWs (umbrella, raincoat, registers, bicycle, bag, t-shirt), and leadership of CHW's groups.

Analysis

Data was cleaned and entered SPSS version 21 for analysis. Descriptive statistics were computed and the inferential statistics using chi-squared test to evaluate the co-relationships between independent and dependent variables. The logistic regression using the STATA was conducted to identify the influence of independent variables on the dependent variables.

Ethics approval and consent to participate.

The study involved human participants. It was approved by the Mount Kenya university ethics committee ref MKU/ERC/1834, Number 907. Before taking part in the study, participants gave informed consent in the participation. Participant were required to sign consent form before being in the research. During data collection and analysis, an identification code replaced personal and identifying information such as names, and the final report to protect identity and to avoid disclosing personal and identifying information. Through signing the informed consent, they were assured that information given was solely for the purpose of the study.

RESULTS

Socio-demographic characteristics of participants

The Table 1 summarizes the results from sociodemographic characteristics analysis. The majority of CHWS were aged between 36- 50 years (Matana: 53.2% and Kayanza: 65.6%). Most participants were female (51.4% in Kayanza and 59.2% in Matana) and most of them were married (91.7% in Matana and 98.4% in Kayanza). The CHWS with primary school were 40.4% in Kayanza and 80.8% in Matana had, 44% in Kayanza and 17.6% in Matana had college level, while those with secondary school were 15.6% in Kayanza and 0.8% in Matana. Those whose occupation was farmer were 67.9% in Matana and 48.8% in Kayanza while 51.2% were combining farming and business. Most of participants were Catholics (61.5% in Matana and 75.2% in Kayanza).

Table 1: Socio-demographic characteristics of participants.

Items	Categories	Matana		Kayanza	
		Frequency	Percentage	Frequency	Percentage
Age (years)	20-35	27	24.80	12	9.60
	36-50	58	53.20	82	65.60
	51-65	24	22.00	31	24.80
Gender	Female	56	51.40	74	59.20
	Male	53	48.60	51	40.80
Marital status	Single	4	3.70	0	0.00
	Widow/widower	5	4.60	1	0.80
	Married	100	91.70	123	98.40
	Divorced	0	0.00	1	0.80
Level of education	Non-formal or primary	44	40.40	101	80.80
	College	48	44.00	22	17.60
	Secondary	17	15.60	1	0.80
	University	0	0.00	1	0.80
Occupation	Farmer	74	67.90	61	48.80
	Others e.g. business, government employee	1	0.90	0	0.00
	Farmer and business	34	31.20	64	51.20
Religion affiliation	Catholic	67	61.50	94	75.20
	Protestant	42	38.50	27	21.60
	Muslim	0	0.00	3	2.40
	Other: Adventist	0	0.00	1	0.80

Association of different variables and achievement

Analyses were conducted with logistic regression and results from Table 2 shows that gender, function, equipment, and non-financial motivation were not significant predictors of service delivery by CHWs in terms of visiting all pregnant women at home. On the other side, Table 1 shows that female CHWs were about 3 times as likely to refer FP clients for FP methods uptake [p=0.043, CI= (1.030; 7.462), OR=2.773], and CHWs whose occupation was famer were 11 times as likely to perform this task as CHWs with other occupations [p=0.000, CI= (3.890; 32.733), OR=11.284]. In terms of home, deliveries referred immediately at the health facility, Table 1 shows that CHWs with farming as occupation were as likely to perform as others [p=0.003, CI= (0.005; 0.344), OR=0.042] while CHWs who perceive equipment and non-financial motivation provided to them to be high are about 5 times as likely to perform the task of home deliveries referred immediately at health facility [p=0.037, CI= (1.101; 22.429), OR=4.969].

Association of occupation and achievement of CHWs

Table 3 shows a significant relationship between the occupation of CHWs and visit of all pregnant women 3 times in the village (p=0.001), women counseled for first antenatal care (p=0.002), women who attended the early ANC before 3 months (p=0.000), women who completed 4 standards ANC (p=0.000), FP clients referred for FP methods uptake (p=0.000), home deliveries referred immediately to a health facility (p=0.001), FP commodities distributed to women and men in the village by CHWs (p=0.000), recovery of abandoned vaccination (p=0.003), recovery of abandoned use of contraceptive methods (p=0.007).

Comparison of performance of community health workers' services delivery at Kayanza and Matana health districts

Table 4 shows that the counseling on reproductive health services, counseling women on early antenatal and early attendance of ANC (before 3 months) were highly associated with implementation of CPBF (p=0.000) in Kayanza health district than in Matana health district. The similar results were noted on the indicators on health facility delivery, FP clients referred for FP methods uptake, and home deliveries referred immediately to a health facility, women presented in post-partum consultation within 15 days after delivery; where FP commodities were distributed to women and men in the village by CHWs; and to pregnant women who received prevention against tetanus (p=0.000).

Overall, the results from the chi-square analysis revealed that there was a significant association between the performance level of CHWs and the CPBF implementation scheme in Kayanza Health district (p=0.000) for all variables), where it has been implemented.

Table 2: Logistic regression on various variables.

Visit all pregnant women 3 times at home in the village	Odds ratio	P>|Z|	95% CI
Gender	0.800	0.714	0.244; 0.2629
Function	3.149	0.066	0.929; 10.671
Equipment and non-financial motivation	0.46	0.239	0.127; 1.672
FP clients referred for FP methods uptake			
Gender	2.773	0.043	1.030; 7.462
Function	11.284	0.000	3.890; 32.733
Equipment and non-financial motivation supervisions	0.382	0.064	0.138; 1.059
	1.158	0.859	0.230; 5.833
Home deliveries referred immediately at health facility			
Gender	0.378	0.13	0.107; 1.333
Function	0.042	0.003	0.005; 0.344
Equipment and non-financial motivation supervisions	4.969	0.037	1.101; 22.429
	1.526	0.747	0.116; 19.997
Recovery of abandoned vaccination			
Gender	2.551	0.127	0.765; 8.503
Function	0.095	0.001	0.023; 0.389
Equipment and non-financial motivation	0.284	0.052	0.079; 1.013
Recovery of abandoned use of contraceptive methods			
Gender	1.058	0.915	0.377; 2.964
Function	0.218	0.007	0.072; 0.658
Equipment and non-financial motivation supervisions	0.651	0.431	0.225; 1.888
	5.755	0.131	0.593; 55.758

Table 3: Association of occupation and achievement of CHWs.

		Famer		Farmer and other jobs (trade or official)		χ^2	P value
		Prevalence	Percentage	Prevalence	Percentage		
Visit all pregnant women 3 times in the village	Target not reached	11	18.0	4	6.3	14.865	0.001
	Target reached	38	62.3	27	42.2		
	Target overreached	12	19.7	33	51.6		
Women counselled for early first antenatal care	Target not reached	10	16.4	2	3.1	12.817	0.002
	Target reached	39	63.9	33	51.6		
	Target overreached	12	19.7	29	45.3		
Family planning clients referred for FP methods uptake	Target not reached	30	49.2	6	9.4	24.373	0.000
	Target reached	24	39.3	42	65.6		
	Target overreached	7	11.5	16	25.0		
Home deliveries referred immediately a health facility	Target not reached	46	75.4	63	98.4	14.855	0.001
	Target reached	14	23.0	1	1.6		
	Target overreached	1	1.6	0	0.0		
Family planning commodities distributed to women and men in the village by CHWs	Target not reached	29	47.5	2	3.1	35.148	0.000
	Target reached	20	32.8	48	75.0		
	Target overreached	12	19.7	14	21.9		
Recovery of abandoned vaccination	Target not reached	45	73.8	61	95.3	11.3496	0.003
	Target reached	15	24.6	3	4.7		
	Target overreached	1	1.6	0	0.0		
Recovery of abandoned use of contraceptive methods	Target not reached	45	73.8	59	92.2	9.88498	0.007
	Target reached	13	21.3	2	3.1		
	Target overreached	3	4.9	3	4.7		
Patients referred for other health problems	Target not reached	61	100.0	64	100.0	2.22928	0.328
	Target reached	57	93.4	63	98.4		
	Target overreached	3	4.9	1	1.6		
Women who attended the early ANC (before 3 months)	Target not reached	1	1.6	0	0.0	19.1423	0.000
	Target reached	27	44.3	34	53.1		
	Target overreached	13	21.3	27	42.2		

Perception and opinions about leadership in CHWs' groups

Key informants interviewed gave various factors that could increase performance in service delivery by CHWs apart from the community performance-based financing. These included regular training, materials, and support from local administration and health officials. They stated thus: "*quarterly refresher training provided by our health facility providers and materials provided with the district team used to keep us knowledgeable on how to provide family planning services*" (KII with CHWs leader in Kayanza). They further observed that good leadership within the cooperative was important in keeping CHWs motivated to perform desired tasks, adding that: "*this is essential in implementing the income-generating activities for our cooperatives, enabling us to fulfill our domestic needs*" (Female CHW in Matana during KII).

Focus group discussions revealed that other CHWs' incentives came from the psychosocial satisfaction that they got from the satisfaction of community members with their performance, a fact that made the population to pay for their services. "*The consideration of our work by the community shows how our contribution was important in improving community health, and the population pays courtesy in our activities*" (FGD with supervisors of CHWs).

Finally, the workload of each CHW was a hindrance to their performance. Given the planning and monthly activities of CHWs' groups, viewed against what they could potentially perform within the community and the need to work for their daily subsistence, some activities were abandoned. To overcome the ensuing challenges and for better performance by CHWs, there was need for good leadership that could coordinate all planned activities and services considering that the CHWs also needed to cater for their families "*suppose our group's leadership is not strong enough to coordinate our activities well. We could change it because we also must fulfill the family's duties apart from being CHW*" (KIs on leadership in CHWs' groups.

Table 4: Comparison of effects of CPBF for CHWs in Kayanza and Matana health district.

		Kayanza		Matana		χ^2	P value
		Frequency	%	Frequency	%		
Counselling on reproductive health services	Target not reached	7	5.6	18	16.5	56.380	0.000
	Target reached	64	51.2	89	81.7		
	Target overreached	54	43.2	2	1.8		
Visit all pregnancy women 3 times in the village	Target not reached	15	12.0	23	21.1	32.116	0.000
	Target reached	65	52.0	80	73.4		
	Target overreached	45	36.0	6	5.5		
Women counseled for early first antenatal care	Target not reached	12	9.6	44	40.4	48.752	0.000
	Target reached	72	57.6	61	56.0		
	Target overreached	41	32.8	4	3.7		
Women who attended the early ANC (before 3 months)	Target not reached	24	19.2	46	42.2	43.128	0.000
	Target reached	61	48.8	62	56.9		
	Target overreached	40	32.0	1	0.9		
Women who completed 4 standards ANC	Target not reached	28	22.4	7	6.4	249.530	0.000
	Target reached	63	50.4	75	68.8		
	Target overreached	34	27.2	27	24.8		
Deliveries at health facilities by health professionals	Target not reached	8	6.4	97	89.0	398.812	0.000
	Target reached	96	76.8	12	11.0		
	Target overreached	21	16.8	0	0.0%		
Family planning clients referred for FP methods uptake	Target not reached	36	28.8	56	51.4	281.415	0.000
	Target reached	66	52.8	52	47.7		
	Target overreached	23	18.4	1	0.9		
Home deliveries referred immediately a health facility	Target not reached	109	87.2	14	12.8	368.536	0.000
	Target reached	15	12.0	64	58.7		
	Target overreached	1	0.8	31	28.4		
Women presented in post-partum consultation within 15 days after delivery	Target not reached	5	4.0	62	56.9	82.736	0.000
	Target reached	106	84.8	46	42.2		
	Target overreached	14	11.2	1	0.9		
Family planning commodities distributed to women and men in the village by CHWs	Target not reached	31	24.8	102	93.6	112.464	0.000
	Target reached	68	54.4	4	3.7		
	Target overreached	26	20.8	3	2.8		
Pregnant Women who received prevention against the tetanus	Target not reached	122	97.6	6	5.5	201.125	0.000
	Target reached	2	1.6	102	93.6		
	Target overreached	1	0.8	1	0.9		
At risk pregnancies referred to health facility	Target not reached	123	98.4	18	16.5	163.04	0.000
	Target reached	2	1.6	87	79.8		
	Target overreached	0	0.0	4	3.7		
Obstetrical fistula	Target not reached	124	99.2	81	74.3	33.219	0.000
	Target reached	1	0.8	28	25.7		
	Target overreached	0	0.0	0	0.0		
Recovery of abandoned vaccination	Target not reached	106	84.8	1	0.9	165.143	0.000
	Target reached	18	14.4	100	91.7		
	Target overreached	1	0.8	8	7.3		
Recovery of abandoned use of contraceptive methods	Target not reached	104	83.2	23	21.1	97.703	0.000
	Target reached	15	12.0	82	75.2		
	Target overreached	6	4.8	4	3.7		
Patients referred for other health problems	Target not reached	120	96.0	6	5.5	193.558	0.000
	Target reached	4	3.2	102	93.6		
	Target overreached	1	0.8	1	0.9		
	Total	125	100.0	109	100.0		

DISCUSSION

The study aimed at demonstrating the relationship between the community performance-based financing and health service delivery by the community health workers

Results on age revealed that most CHWs working in Matana (53.2%) and Kayanza (65.6%) districts were between 36 and 50 years old. No CHW was above 65 years since, in MOH Burundi policy, CHWs retires at the age of 65 years. The study conducted by Denys in Rwanda on the assessment of CHWs incentives on maternal and newborn health services performance in Rwinkwavu health district explained that the majority of CHWs were aged between 36 and 50 years.[7]

The study revealed that most respondents were female (51.4% in Kayanza and 59.2% in Matana). The study of Denys in Rwanda found the same trend of gender dominance where 100% were female.[6] However, it contrasts with a study in Kenya on the effects of selected socio-demographic characteristics of CHWs on the performance of home visits during pregnancy, it reported that 58% were male. The study showed that most of CHWs were married.[8] While the majority of CHWs in our study had primary school level of education studies in Rwanda and Kenya showed that most CHWs had a secondary level of education and confirmed that a high level of education is associated with good record keeping.[7,8]

Farming as an occupation associated with community services. This means that CHWs live within the community and this in accordance with the Burundi policy. The policy in place emphasizes that CHWs should be chosen by community members and the fact that the majority of Burundian depend on agriculture and business.[6]

Results showed that community services delivery in Kayanza health district was significantly associated with community-based financing. The results were different from the study conducted in Rwanda where he found that there was no relationship between the community performance-based financing and the performance of CHWs services delivery.[7] He explained that there was low provision of other incentives like training, income generated activities and materials in his study. The provision of equipment to CHWs was a significant prediction of performing the task of home deliveries and immediately referral at the health facility. The study in western Kenya identified that providing incentives like a bicycle for transportation, uniform, training materials, training skills on home base lifesaving and provision of first aids kits would increase the engagement in community maternal and new born services delivery where monetary allowances were not available.[9] In Morogoro Region, Tanzania a qualitative study on the sources of community health worker motivation found that apart from the financial motivation, material supplies support (for example, notebooks and pens) from community members motives them for working as CHWs.[10]

Drawing from qualitative findings, community health workers' services delivery was dependent upon other incentives provided. In Rwanda and Kenya, results on qualitative studies revealed that provision of refresher training and in-kind incentives from community members contributed to better performance on community care of pneumonia.[7,11] The CHWs might be motivated to deliver community health services if community programs were adapted to local settings, including the provision of training and materials, and supporting the system of governance in the cooperatives. The study recommends that further study could evaluate more factors that complement the community performance-based financing in community services delivery.

The training and supervision provided to CHWs were found as a factor that increases motivation. In India, they found that the CHWs considered motivation through getting regular supportive supervision and streamlining of the means of strengthening their responsibilities and they added that identifying and training more experienced volunteers for CHW's supervision in resource-constraint settings was very challenging.[12] Those items were complements of motivating our participants in terms of achieving community services. These finding were consistent within previous research where was found that CHWs considered understanding their voluntary role when supported by the facilities.[13] According to this literature and results from this study, it is evident that training, supervision visits, and material provision to CHWs were important for the motivation of CHW's works.

The focus groups and the KIIs were used as additional data collection tools apart the question and those are sometimes subjected to potential limitations. The main limitation was the unwillingness of the respondents to give true information of the questions of the questionnaires especially on the amount each CHW can get with PBF system.

CONCLUSION

The community performance-based financing had a significant association with the community health worker's service delivery. In Kayanza, farming as an occupation was highly predicting this effect of CPBF on CHWs service delivery, and this was independent of the age, education, religious affiliation, and marital status of community health workers.

However, this effect was also predicted by other incentives provided to CHWs like training, supportive supervision, provision of materials that were important and helpful in improving the community services delivery.

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