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#### **Original Research Article**

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### Role of community health volunteers in promoting uptake of cervical cancer screening among women of reproductive age, Nairobi City, Kenya

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#### **ABSTRACT**

**Background:** Cervical cancer is a significant cause of mortality among women, particularly in developing countries. Africa has highest number of cases, with 85% occurring in developing nations. In Nairobi, low uptake of cervical cancer screening has been realized. Study explores role of CHVs in promoting screening, aiming to reduce cervical cancer incidence and mortality rates in Nairobi and similar settings.

Methods: Descriptive cross-sectional study design was used. Stratified random sampling and simple random sampling methods were used. Sample size was 363 CHVs. Data collection involved collection of primary data using a self-administered questionnaire and FGDS. Data analysis was carried out through both descriptive statistics and inferential analysis. Findings were presented in percentages, pie charts.

Results: Results indicated that while CHVs can play critical role in counselling women on importance of cervicalcancer screening, significant proportion of respondents had not counselled women on this topic. Similarly, while referrals are an important aspect of promoting cervical-cancer screening, majority of respondents did not refer cases of cervical-cancer screening to other CHVs.

Conclusions: Study identified significant social, economic, and cultural barriers that influence cervical cancer screening participation among women. It revealed these barriers affect how CHVs promote screening. Furthermore, considerable health system obstacles hinder effective promotion of this crucial preventive measure.

Keywords: CHVs, Cervical cancer screening, Women of reproductive age

#### INTRODUCTION

Cervical-cancer is the fourth common type of cancer among women and is estimated to affect 572,624 new cases each year. 85% of cervical-cancer burden globally is found in developing nations and contributes to 7.9% of all cancers in women.<sup>2</sup> Worldwide 7.5% of all deaths result from cervical cancer in women.<sup>3</sup> The mortality rate is found to be high in regions that underutilize or have limited screening and treatment services.4

Cancer of the cervix can be prevented. On the contrary, it has been found to be the major cause of women death in Africa. Every year in African countries, cervical-cancer is found to account for 22% of all cases of female cancers and about 12% of all cancer cases that are newly diagnosed. Further, out of every 100000 women, 25 women are diagnosed with cancer of the cervix and out of these about 23 dies from the disease every year in Africa.<sup>5</sup> Most of these women get diagnosed when the cancer is at its advanced stage as a result of poor outcomes in early tests. Therefore, cervical-cancer has remained to be the

most common cancer among women in Eastern Africa and Central Africa.<sup>6</sup>

In Kenya however, the case of cervical-cancer is becoming a threat for the survival of women as the number of new cervical-cancer cases equal the number of deaths indicating that close to all women who get cancer die of the same disease. This disease burden implies that women are likely to die of cervical-cancer. In every week, about fifteen new cases of cervical-cancer are reported in Nairobi.<sup>7,8</sup> For girls, cervical-cancer can be prevented through vaccination and the disease can be treated successfully if detected early. Considerable efforts have been made in the last 15 years to get better alterative screening services for cervical-cancer for settings with minimal resources. Such alternatives include Visual inspection with acetic acid (VIA) since it requires a little training and can be conducted by physicians, nurses, or midwives. Treatments for detected abnormalities are provided during the screening visit which eliminates the need for multiple visits to health facilities.

In developed nations, the participation of CHVs in promoting the uptake of cervical cancer screening is high. Previous study showed that CHVs in developed nations are actively involved in enlightening women concerning early cervical cancer screening to detect premalignant lesions and ensure that proper management is implemented early to prevent development, to reduce the disease.<sup>9</sup>

In African countries the participation of CHVs in promoting the uptake of cervical cancer screening is above average despite the fact that they face various challenges. These include inadequate facilities for their work and low government support. Previous studies have showed that over 60% of community health workers in Africa work as volunteers, and that CHVs are actively involved in sharing with women on the government interventions aimed at enhancing knowledge of cervical cancer and promoting screening intentions and uptake among ethnic minority women. <sup>10,11</sup>

#### **Objectives**

Main objective

Main objectives were to investigate the role of CHVs in the uptake of cervical-cancer screening among women of reproductive age in Nairobi, Kenya.

Specific objectives

Specific objectives were to determine the roles of CHVs in promoting the uptake of cervical-cancer screening among women of reproductive age in Nairobi, Kenya, to assess the barriers for the participation of CHVs who play a role in cervical-cancer screening among women of reproductive age in Nairobi, Kenya and to determine the effects of health and community systems barriers on the

level of participation of CHVs in enhancing the use of cervical-cancer screening among women of reproductive age in Nairobi, Kenya.

#### **METHODS**

Study used descriptive cross sectional study design to describe role of CHVs in cervical-cancer screenings. Because cervical-cancer screening is carried out in health facilities. Study was facility based.

Study was in Nairobi from October, 2018 to January 2019. All selected (CHUs) linked health units in Nairobi were involved. Nairobi consists of people with varying ages, level of education, marital status, religion and economic status. Youths make up largest percentage of population in Nairobi. Christianity accounts to 84.8% of residents with remaining percentage of Muslim, Baha'i, Buddhism, Hinduism and traditional religions.

Community health units representing 17 CHUs in Nairobi was the target population. CHVs who operate in selected community health centers formed the unit of study. Kenya master health facility list estimates that each CHU carries about 50 CHVs. Since all sub-counties have more than 1 CHU, and each have 50CHV's (130CHU's X 50CHV's), this gave study population to be 6,500. Respondents were CHVs who operate in selected CHUs.

To ensure all 17 sub-counties in Nairobi were well represented, study employed stratified random sampling while simple random sampling technique allowed for selection of individual CHUs and a census of all CHVs from selected sub-counties. This gave sample of 363. Stratified random sampling ensured that all parts of population were represented in the sample and which helped increase efficiency in estimation that is error of estimation. Sub counties formed the strata. Population was first categorized into strata with each stratum having similar characteristic. Sample was then obtained from each stratum which was pre-specified.

Fisher formula was employed in getting the sample. Fisher formula was.

$$n = \frac{z^2 p(1-p)}{d^2}$$

Where;

N is sample size

z is value for standard normal deviate for level of confidence set at 95% for this study whose value is 1.96.

d is level of precision at 0.05 for CI at 95%

p is proportion to be estimated, which for this study was 0.5.

0.5 was used since this is proportion in target population estimated to have characteristic of interest the researcher.

Sample size was therefore arrived at as

$$n = \frac{(1.96^2)(0.5)(1 - 0.5)}{(0.05)^2}$$

n = 384

N=6,500, total population size

However, since population was less than 10,000, Cochran formula was used to adjust sample size further.

$$n_0 = n/(1 + ((n-1)/N))$$

$$n_0 = 384/(1+((384-1)/6,500))$$

n<sub>0=</sub>363, desired sample size

The study included CHVs who gave informed consent to participate in study, CHVs who had been operating in the region for at least one year and CHVs who were of eligible group for cervical-cancer screening and reporting to the selected health centres. The study excluded CHVs who met inclusion criteria but were sick at time of study.

Data Analysis involved descriptive statistical analysis which used percentages to describe variables under study and results presented in form of bar charts and frequency tables. Qualitative data on the other hand was analyzed thematically. Inferential statistics involved chi square and logistic regression analysis. Statistical package for social sciences (SPSS) was used to conduct descriptive as well as inferential statistics. Chi square and logistic regression were used to achieve objectives.

Ethical clearance was granted by Kenyatta University ethical review committee, Kenya while the national commission for science, technology and innovation, Kenya provided the research permit to conduct the study in Nairobi County, and Nairobi City County health service provided an authorization letter and a written

informed consent was obtained from each participant before conducting the interviews.

#### RESULTS

Roles of CHVs in promoting uptake of cervical-cancer screening among women of reproductive age, counselling and referrals

Respondents were asked to indicate whether they have counselled women of reproductive on uptake of cervical-cancer screening. Results in Table 1 showed majority (78%) indicated they had not counselled women of reproductive on uptake of cervical-cancer screening while remaining (22%) indicated that they had counselled women of reproductive on uptake of cervical-cancer screening.

Respondents asked to indicate whether they refer to other CHVs' cases of cervical-cancer screening. Results in Table 1 indicated that majority of respondents (78%) did not refer to other CHV cases of cervical-cancer screening.

Table 1: Counselling and referrals.

Variables	Yes (%)	No (%)
Counselling	22	22
Referrals	78	78

Social economic barriers and level of participation of CHVs in enhancing the use of cervical-cancer screening among women of reproductive age

Chi square findings indicated a significant relationship between income level and participation level ( $\chi^2$ =19.539; p=0.000). Chi square findings indicated a significant relationship between transport expenses and participation level  $\chi^2$ =38.225, p=0.000). Chi square findings indicated a significant relationship between daily expenses and participation level ( $\chi^2$ =5.9; p=0.05). Results were in line with Mupepi et al who asserted that socio-economic impact of cervical-cancer is considerable and has negative consequences in participation on promotion of uptake of cervical cancer screening among women.<sup>12</sup>

Table 2: Social economic barriers and level of participation.

Social economic barriers	S	Low	High	Total	Chi square	Sig
D 4	No	184	28	212	19.539	0.000
Renumeration	Yes	102	49	151	19.559	0.000
Total		286	77	363		
	Low extent	111	17	128	38.223	0.000
<b>Transport expenses</b>	Moderate extent	117	17	134	36.223	0.000
	High extent	58	43	101		
Total		286	77	363		
	Low extent	98	30	128		
Daily expenses	Moderate extent	100	34	134	5.9	0.050
	High extent	88	13	101		
Total		286	77	363		

#### Odd ratio regression between social economic barriers and level of participation of CHVs in enhancing the use of cervical-cancer screening among women of reproductive age

Odds of high participation are 2.870 times higher for those with income as renumeration compared to those who did not receive income as volunteers (Odds=2.870, p=0.001). Extent of ability to cater for transport expenses is significant predictor for participation levels (p=0.000). Odds of high participation are for 3.754 higher for those who indicated that they are able to afford transport cost to a higher extent as compared to those who indicated to a low extent. Extent of ability to cater for daily expenses is significant predictor for the participation levels (p=0.000).

#### Social cultural barriers and level of participation of CHVs in enhancing the use of cervical-cancer screening among women of reproductive age in Nairobi County, Kenya

Chi square findings indicated significant relationship between Appreciation by community and level of participation by CHVs ( $x^2$ =92.26; p=0.000). Chi square findings indicated significant relationship between churches support and level of participation by CHVs ( $x^2$ =2.88; p=0.000). Results were in line with Ndejjo et al who investigated the community-based factors that influence cervical cancer screening uptake in rural Uganda. Study found that lack of social support and community stigma associated with cervical cancer were significant barriers to screening uptake among women in rural Uganda. <sup>13</sup>

#### Odd ratio regression between social cultural barriers and level of participation of CHVs in enhancing the use of cervical-cancer screening among women of reproductive age

Odds of high participation are 1.127 times higher for those who indicated to a moderate extent that they are appreciated by their community for promoting the uptake of cervical-cancer screening among women of reproductive age as compared to those who indicated low extent, (Odds=1.127, p=0.000). Odds of high participation are 2.112 higher for those who indicated to a higher extent that they are appreciated by their community for promoting the uptake of cervical-cancer screening among women of reproductive age as compared to those who indicated moderate extent (Odds=2.112, p=0.000).

View of CHVs' job in promoting uptake of cervical-cancer screening among women of reproductive as productive was a significant predictor for participation levels (p=0.000). Odds of high participation are 4.190 times higher for those who indicated to a moderate extent that they viewed work of the CHVs in promoting uptake

of cervical cancer screening among women of the reproductive as productive as compared to those who indicated the high extent, (Odds=4.190, p=0.000). Local Churches supportive of the CHVs who promoting uptake of the cervical-cancer screening among women is significant predictor for the participation levels (p=0.000).

## Health system barriers as well as the level of the participation of CHVs in enhancing the use of cervical-cancer screening among women of the reproductive age

Chi square findings indicated significant relationship between the health system barriers as well as the level of the participation ( $x^2$ =26.354, p=0.000;  $x^2$ =61.061, p=0.000;  $x^2$ =79.763, p=0.000;  $x^2$ =76.856, p=0.000 and  $x^2$ =58.762, p=0.000). Results were in line with Ogbuanu et al who investigated the impact of health system factors on the utilization of cervical cancer screening services among immigrant women in the United States. Study found that lack of the health insurance as well as the limited access to healthcare services were significant barriers to the screening utilization among the immigrant women. <sup>10</sup>

# Odd ratio regression between health system barriers and level of participation of CHVs in enhancing the use of cervical-cancer screening among women of reproductive age

Odd ratio results indicated that availability of training on the promotion of the cervical cancer screening is significant predictor for the participation levels (p=0.047). Odd ratio results indicated that availability of CHV training manual is significant predictor for participation levels (p=0.008). Odd ratio results indicated that availability of screening services is significant predictor for participation levels (p=0.001). Odd ratio results indicated that accessibility of health system programs is significant predictor for participation levels (p=0.000).

## Socio-demographic barriers and level of participation of CHVs in enhancing the use of cervical-cancer screening among women of reproductive age

Chi square findings indicated an insignificant relationship between social demographic barriers and level of the participation ( $x^2$ =0.941, p=0.815;  $x^2$ =4.871, p=0.181;  $x^2$ =7.18, p=0.127). Results did not agree with Mwaka et al who aimed to investigate the socio-demographic factors associated with the cervical cancer screening in the Sub-Saharan Africa as well as the study found that older age, higher education level, higher household wealth, urban residence as well as the having had multiple sexual partners were significant predictors of cervical cancer screening uptake among women in sub-Saharan Africa.

Table 3: Odd ratio.

Variables in the equation		В	S.E.	Wald	Df	Sig.	Exp	95% CI for exp (B)	
							<b>(B)</b>	Lower	Upper
	Renumeration (Yes)	1.054	0.308	11.696	1	0.001	2.870	1.568	5.252
	Transport expenses (Ref=low extent)			19.433	2	0.000			
G4	Transport expenses (Moderate extent)	-0.065	0.384	0.029	1	0.865	0.937	0.441	1.990
Step	Transport expenses (High extent)	1.323	0.364	13.220	1	0.000	3.754	1.840	7.658
1a	Daily expenses (Ref=low)			28.573	2	0.000			
	Daily expenses (Moderate extent)	1.420	0.421	11.378	1	0.001	4.136	1.813	9.437
	Daily expenses (High extent)	2.202	0.413	28.438	1	0.000	9.040	4.025	20.305
	Constant	-3.630	0.454	63.822	1	0.000	0.027		

a. Variable(s) entered on step 1: Renumeration, transport expenses, and daily expenses.

Table 4: Social Cultural Barriers and level of participation.

Factors		Level of par	ticipation	Total	Chi	C!a
ractors		Low	High	Total	square	Sig
	Low extent	130	12	142		
	%	91.50	8.50	100		
Appreciation by	Moderate extent	112	11	123	92.26	0.00
community	%	91.10	8.90	100	92.20	0.00
	High extent	44	54	98		
	%	44.90	55.10	100		
Total		286	77	363		
	Low extent	82	27	109		0.235
	%	75.20	24.80	100		
Attitude towards	Moderate extent	95	18	113	2.88	
CHVs job	%	84.10	15.90	100	2.88	
	High extent	109	32	141		
	%	77.30	22.70	100		
Total		286	77	363		
	No	219	17	236		
<b>Churches support</b>	%	92.80	7.20	100	79.288	0.000
to CHVs	Yes	67	60	127	19.200	0.000
	%	52.80	47.20	100		
Total		286	77	363		

Table 5: Odd ratio.

Variables	S.E.	Wald	Df	Sig.	Exp (B)	95% C.I.for Lower	exp (B) Upper	P
Appreciation by community (Low	extent)		36.243	2	0.000			
Appreciation by community (Moderate extent)	-2.067	0.417	24.568	1	0.000	1.127	0.056	0.287
Social appreciation by community (High extent)	-2.193	0.433	25.7	1	0.000	2.112	0.048	0.26
Attitude towards CHVs job (Low 6	extent)		18.188	2	0.000			
Attitude towards CHVs job (Moderate extent)	-1.663	0.436	14.58	1	0.000	4.19	0.081	0.445
Attitude towards CHVs job (High extent)	-1.384	0.412	11.287	1	0.001	2.251	0.112	0.562
Churches support to CHVs (Yes)	-1.939	0.362	28.754	1	0.0000	0.144	0.071	0.292
Constant	1.73	0.362	22.783	1	0.0000	5.639		

Table 6: Association between health system factors and level of participation in promotion of cervical cancer screening.

Hoolth gratem bounions		Level of partic	cipation	Total	Chi	C:a
Health system barriers		Low	High	Total	square	Sig
Availability of training on promotion of cervical cancer screening	No	188	25	213		
	%	88.30	11.70	100	26.354	00
	Yes	99	51	150	20.334	00
screening	%	66	34	100		
Total		287	76	363		
	No	214	20	234	61.061	
Availability of CHV training	%	91.50	8.50	100		0.00
manual	Yes	73	56	129		0.00
	%	56.60	43.40	100		
Total		287	76	363		
	No	229	20	249	79.763	0.00
Availability of screening	%	92	8	100		
services	Yes	58	56	114		
	%	50.90	49.10	100		
Total		287	76	363		
	No	219	17	236		
Accessible health system	%	92.80	7.20	100	76.856	0.00
programs	Yes	68	59	127	/0.830	0.00
	%	53.50	46.50	100		
Total		287	76	363		
	No	190	13	203		
Skilled and competent	%	93.60	6.40	100	50.763	0.00
health workers	Yes	97	63	160	58.762	0.00
	%	60.60	39.40	100		
Total		287	76	363		

Table 7: Odd ratio.

Variables in the equation (Step 1a)	В	S.E.	Wald	F	Sig.	Exp (B)	95% CI fo	r exp (B) Upper
Availability of training on promotion of cervical cancer screening-Yes	-0.647	0.325	3.960	1	0.047	1.524	0.277	0.990
Availability of CHV training manual- Yes	-0.904	0.343	6.934	1	0.008	3.405	0.207	0.794
Availability of screening services-Yes	-1.275	0.370	11.860	1	0.001	2.280	0.135	0.577
Accessible health system programs-Yes	-1.563	0.352	19.754	1	0.000	3.209	0.105	0.417
Skilled, competent health workers-Yes	-0.268	0.326	0.677	1	0.411	0.765	0.404	1.448
Constant	0.939	0.280	11.264	1	0.001	2.556		

a. Variable(s) entered on step 1: Availability of training on promotion of cervical cancer screening, availability of CHV training manual, availability of screening services, accessible health system programs, skilled and competent health workers.

**Table 8: Cross tabulation.** 

Crosstab		Participation	on levels	Total	Chi aguaya	Q!a
Crosstab		Low	High	Total	Chi square	Sig
	Below 30	10	4	14		
	%	71.40	28.60	100		
	31-40	105	29	134		
Age (In	%	78.40	21.60	100	0.041	0.015
years)	41-50	87	20	107	0.941	0.815
	%	81.30	18.70	100		
	Above 50	84	24	108		
	%	77.80	22.20	100		
Total		286	77	363		

Continued.

Cuasstak		Participation	on levels	Total	Chi agrana	C:a
Crosstab		Low	High	Total	Chi square	Sig
Level of	Secondary	14	3	17		
	%	82.40	17.60	100		
	Diploma	92	28	120		
	%	76.70	23.30	100	4.871	0.181
education	Undergraduate	94	16	110	4.0/1	0.161
	%	85.50	14.50	100		
	Masters	86	30	116		
	%	74.10	25.90	100		
Total		286	77	363		
	0-3	92	19	111		
	%	82.90	17.10	100		
	4-6	65	29	94		
	%	69.10	30.90	100		
Duration	7-9	86	20	106	7.10	0.127
(Years)	%	81.10	18.90	100	7.18	0.127
	10-12	18	4	22		
	%	81.80	18.20	100		
	Above 12	25	5	30		
	%	83.30	16.70	100		
Total		286	77	363		

#### **DISCUSSION**

The results indicate that while CHVs can play a critical role in counselling women on the importance of cervicalcancer screening, a significant proportion of respondents had not counselled women on this topic. The majority of respondents did not refer cases of cervical-cancer screening. The majority of the respondents were not receiving remuneration, and a significant proportion of them found it difficult to cater for their transport and daily expenses. Furthermore, given the significant relationship between transport expenses, daily expenses, and participation, interventions aimed at providing support for CHVs to cater for their transport and daily expenses could be beneficial in enhancing their participation. The results showed that a significant number of CHVs were not appreciated enough by the community and local churches were not supportive of CHVs' work, which affected their participation levels. Similarly, local churches' support to CHVs was a significant predictor of participation levels. Findings suggest that social-cultural barriers significantly affect the participation of CHVs in promoting cervical cancer screening uptake in Nairobi. The results indicated that health system barriers that hindered the effective promotion of cervical cancer screening, including lack of availability of training, CHV training manuals, screening services, accessible health system programs, skilled and competent health workers. This finding supports previous research that has shown that health system factors such as lack of health insurance and limited access to healthcare services are significant barriers to screening utilization among women.14

The study investigated the relationship between sociodemographic barriers and participation level of (CHVs). The findings indicated that there was no significant relationship between socio-demographic barriers (age, level of education, and duration of service) and the level of participation. This suggests that socio-demographic factors may not be barriers to CHV participation. The results are not consistent with the previous study, which found that older age, higher education level, higher household wealth, urban residence, and having had multiple sexual partners were significant predictors of cervical cancer screening uptake among women in sub-Saharan Africa. However, it is important to note that the present study was focused on the level of participation of CHVs, rather than individual predictors of screening uptake among women. <sup>15,16</sup>

#### **CONCLUSION**

Study concluded that social economic barriers, social cultural barriers and health system barriers significantly influences participation level of CHVs as this confirmed by study participants and that social demographic barriers do not affect level of participation. Addressing these barriers to enhance role of CHVs could motivate them to participate more actively in promoting cervical cancer screening. Additionally, policies that support CHVs participation level could enhance their participation.

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Institutional Ethics Committee

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