

Contribution of Community Health Volunteers in Immunization Uptake in Pokot South, Sub-County, Kenya

Samuel Kipunaa Lopar, RN, BScN^{1,3}, John Arudo, MPH/Epi, MSc¹,
John M. Okoth, RN, PhD²

1=Department of Nursing Research, Education and Management, School of Nursing, Midwifery and Paramedical Sciences, Masinde Muliro, University of Science and Technology, Kenya

2=Department of Clinical Nursing and Health Informatics, School of Nursing, Midwifery and Paramedical Sciences, Masinde Muliro, University of Science and Technology, Kenya

3=Health Department, County Government of West Pokot

Corresponding author: Samuel Kipunaa Lopar

Abstract: Community Health Volunteers are key in increasing immunizations uptake. One of their roles include identifying those who need immunization and referring them to health facilities for further care. In Kenya, KDHS 2014 report indicates basic vaccination coverage reduced from 77 percent in 2008 to 71 percent in 2014 and the proportion of children who were fully immunized in West Pokot is only 31%. Little is known about the contribution of Community Health Volunteers in utilization of immunization services in Kenya and Pokot South, Sub-County is not an exception. This study, therefore, sought to determine the factors influencing performance of CHVs in utilization of immunization services in Pokot South, Sub-County of West Pokot County. A cross-sectional research design using mixed methods of data collection was adopted targeting CHVs and the households served in the community units. The study employed multi-stage sampling method to select villages, community units and the households that were randomly sampled. The sample size calculation was based on Yamane's formula (1967) with resultant total of 184 CHVs and 356 caregivers who took part in the study. Data was collected using structured questionnaires for quantitative data and key informant interview schedules for qualitative data. Quantitative data was analyzed using SPSS Version 21.0. Qualitative data was analyzed through coding and content analysis. CHVs respondents comprised 67.4% males and 32.6% females. Mean age was 37.6 and ranged between 23 to 63 years. Majority (96.2%) were married with nearly two thirds (64.1%) having attained primary education. The results revealed that CHVs who were supervised by CHEWs were 4.5 times more likely to have performed better (OR: 4.5; 95%CI: 1.5 – 13.7; $p = 0.01$). Similarly, those who agreed that they had been supervised were four times more likely to have had better performance than those who were not (OR: 4.0; 95%CI: 1.3 – 12.0; $p = 0.02$). This study highlighted that training is an important factor affecting the CHVs' services. Households that were visited by CHVs were 1.7 times more likely to have had fully immunized children than those that were not (OR: 1.7; 95%CI: 1.1 – 2.8; $p = 0.03$). The same was true where caregivers stated that CHVs discussed vaccine preventable diseases during household visits (OR: 1.6; 95%CI: 1.0 – 2.5; $p = 0.05$). Continued training and refresher courses should be standardized and take the stipulated number of days. Given the significant positive effect that supervision can have on CHVs' performance, it is worth investing on community strategy to enhance performance of CHVs in immunization program.

Keywords: Immunization, Performance, Community Health Volunteers, Pokot South Sub- County, Kenya

Date of Submission: 18-11-2019

Date of acceptance: 04-12-2019

I. Introduction

Community health volunteers (CHVs) play an important role in promoting child immunization in developing countries and their demand has increased after the introduction of community strategy. The roles of CHVs are to facilitate discussions on health topics, refer children for immunization and health checks, maintain a record of health activities at the household level and report this to local health facilities. The approach of incorporating CHVs in the health care system is believed to improve and intensify immunization services thus improving coverage (Olayo *et al.*, 2014). However, in spite of the efforts made, immunization coverage still remains worrying in marginalized communities. Community Health Volunteers are community members who are chosen to serve in their respective communities. They are often selected during community meeting (baraza) consisting of family elders in conjunction with opinion leaders (MOH, 2006) and supervised by Community Health Extension Workers (CHEWs) and sub-location or sub-county leaders. The criteria for selection of CHVs include; literacy and ability to read and write, so that they can help motivate others in their respective villages. In total, they undergo nearly 6 weeks of main and quarterly refresher training (MOH, 2006). Each community unit,

consisting of approximately 5000 people, is supported by 50 CHVs and 2 CHEWs. Approximately 25 CHVs are controlled by one CHEW (MOH, 2006). Besides guiding and conducting trainings for CHVs, CHEWs are required to visit the assigned CHVs on a monthly basis (Oliver M, & Geneits, 2015). Community health volunteers provide a critical and essential link with health care systems and are a powerful force in promoting healthy habits in resource limited settings. Given the massive shortage of health workers in sub-Saharan Africa coupled with inequitable distribution of workers within the countries, CHVs have the potential of improving the health of populations and accelerating the process of achieving universal health coverage (Zullinger, 2012).

Inadequate immunization coverage is recognized as a major public health concern as it accounts for about 17 % of all preventable deaths in children under five, globally. In Kenya, statistics indicate that in the last two decades, there has been a continuous decline in immunization coverage levels across counties. Worse trends have been documented in marginalized areas such as West Pokot County (KDHS, 2008). KDHS 2014 report indicates basic vaccination coverage declined from 77 percent in 2008 to 71 percent in 2014 and the proportion of children who were fully immunized in West Pokot was 31%. The disparities in immunization coverage in Kenya reflect the country's inequities in access to health care services. Most of the children who have missed immunization are from poor and under-developed counties especially the arid and semi-arid areas such as West Pokot County where Pokot South Sub-County is located. The vulnerable and marginalized populations contribute to the high number of under or un-vaccinated children in Kenya. Report from District Health Information System2 (DHIS2) indicates that West Pokot County is lagging behind as its immunization coverage has been low. For instance, in the 2015 the coverage was 69.7%, while in 2016 it was 58.1% and in 2017, 43%. In Pokot South Sub-County, the coverage has been recorded as follows: 2015 (70.5%), 2016(58.1%) and 2017 (50.2%). Little is known about the performance of CHVs in utilization of immunization services in Pokot South Sub-County and hence the need to determine the performance of CHV in utilization of immunization services in Pokot South Sub-County of West Pokot County, Kenya.

II. Materials And Methods

Study design

The study used cross-sectional research design as that was suitable in providing a picture of immunization services of the population on children under two years of age at a particular point in time. Mixed approach was used in data collection.

Study area

The study was carried out in Pokot South Sub-County of West Pokot County, Kenya. It has four county assembly wards out of which two practice pastoralism/nomadism while the other two are farmers. The road network in the sub-county is poor and becomes impassable during the rainy season. The rugged and hilly terrain which characterizes the landscape poses challenges for community members including CHVs in accessing health care services or making household visits.

Community Strategy initiative was started in the sub-county by the county government of West Pokot in partnership with the World Vision Kenya in 2015 as a component of Timing Spacing and Immunization project (TSI) for a period of three years. The project ended in February 2018 but was further extended for another two years.

Sampling procedure and sample size

The study employed multi-stage and simple random sampling method where the sub-county that was implementing timing spacing and immunization (TSI) project was selected purposively. Simple random sampling technique was used to select CHVs who work in the study area. Total number of community health volunteers in the 13 functional units was 344. According to KNBS population estimates 2018, the total numbers of mothers with children under two years was 10,788. The study sample size calculation was based on Taro Yamane's formula (1967). A total of 386 and 185 CHVs were randomly selected and took part in the study.

Data collection methods

A structured questionnaire was adopted from a study on CHW in Sergipe, Brazil (Juraci, & Cesar, 2005) was modified and adopted while qualitative data was collected through key informant interview schedule.

Data analysis

Data was entered and cleaned using SPSS version 21.0. The performance of CHV on immunization uptake was assessed based on uptake of under-five immunization. The score was based on the following role requirements: availability of immunization card by caregiver, completion of all the vaccinations (BCG, polio, DPT/HiB, PCV 10, Rotavirus), knowing assigned CHV, CHV visits, monthly visit, have heard of importance of

child immunization, CHV being the source of information on immunization and CHV discusses on immunization issues. Performance was categorized into 2 levels of high and low performance using its median as cut-off point. CHV whose role performance score was above the median (>3.9) was categorized as high performance and vice versa. Bivariate analyses followed by logistic regression models were applied using the same data analysis software to examine the association between explanatory factors and CHV performance. Odds ratios with 95% confidence interval were calculated to test the significance of association between each independent and the dependent variable. P value less than 0.05 was considered statistically significant. Qualitative data were processed by analyzing themes from key informant interviews.

III. Results

Socio-demographic characteristics of CHVs

Table 1 shows socio-demographic characteristics of community health volunteers. A total of 184 CHVs were interviewed and their data were available for analysis. Most of the respondents were males (67.4%; 124/184) compared to the female counterparts (32.6%; 60/184). About half (48.4%) were aged between 35 – 44 years followed by those aged 25 – 34 years (32.4%). The average age was 37.6 with a SD of 7.2 and ranged between 23 to 63 years. Majority (96.2%) were married with nearly two thirds (64.1%) having attained primary education. Almost, nine out of ten (89.1%) relied on CHV as an occupation.

Table 1: CHVs Socio-demographic characteristics (n=184)

Variable	Responses	n	%
Gender of respondent	Male	124	67.4
	Female	60	32.6
Age group of respondents (years)	15 – 24	2	1.1
	25 – 34	63	34.2
	35 – 44	89	48.4
	≥55	30	16.30
Mean age±SD (Range)		37.6±7.2 (23.0 – 63.0)	
Marital status of respondent	Married	177	96.2
	Single	5	2.7
	Widow	2	1.1
Level of education	Primary	118	64.1
	Secondary	66	35.9
Occupation	CHV	164	89.1
	Agriculture	12	6.5
	Teacher	3	1.6
	Other	5	2.7

Contribution of community health volunteers in immunization uptake

Table 2 presents the contribution of the community health volunteers. As part of background information, CHVs were asked when they were recruited. Majority (96.2%) were recruited between 2008 and 2015. Community strategy was rolled out in the country in 2008 while free maternal services were introduced in 2013. Mass recruitment of CHVs in West Pokot was done between 2013 and 2015 which corresponds with the period when most of the CHVs were enlisted.

Majority (95.7%) were recruited by the community which is in line with government policy on the recruitment of community health volunteers.

“Each CHV was nominated by village leaders and elected by vote in a public meeting... for one to be voted as CHV he/she needed to be literate, to be known and respected by other village members, to have a sense of service, and to love their community... They were supposed to be residents in their respective community units and readily available for the assignment”. (Respondent, 2).

Table 2: Contributions of CHV in increasing immunization uptake (n=184)

Report by CHVs	Categories	n	%
Year started working as CHV	2008 – 2015	177	96.2
	≥2016	7	3.8
Recruited by	Community	176	95.7
	MoH	6	3.3
	NGO	2	1.1
Number of households assigned	10 – 19	4	2.2

	20 – 29	68	37.0
	30 – 39	60	32.6
	≥40	52	28.3
Mean age±SD (Range)		32±10	(10 – 50)
Key roles	Sharing health messages	46	25.3
	Defaulter tracing	18	9.9
	Referral of children	32	17.6
	Home visiting	86	47.2
Number of households visited last month	None	15	8.2
	<10	90	49.2
	≥10	78	42.6
Actions taken when visiting households	Advice on immunization	11	6.0
	Breastfeeding	12	6.5
	Defaulter tracing	26	14.1
	Hospital delivery	15	8.1
	Hygiene and sanitation	86	46.7
	Referral	34	18.5
Number of clients referred last month for immunization services	None	63	34.4
	Only one	17	9.3
	2 -5	79	43.2
	6 and above	24	13.1
Action taken when referring severely sick children	Write a referral note	159	86.9
	Help arrange transport	14	7.6
	Other (specify)	10	5.5

While initially, CHVs were supposed to be in-charge of 50 households, the current results show that more than two-thirds (69.6%) were responsible for between 20 – 39 households with an average of 32 households per CHV and ranging between 10 - 50. Most of the CHVs were assigned a fewer number of households due to the poor terrain which pose challenges due to poor road network.

Regarding their roles, about half (47.2%) conducted home visiting which is non-specific. More specifically, 25.3% share health messages while 17.6% refer children to the health facility for immunization services. One month prior to the study, 49.2% had visited less than 10 households in contrast to 42.6% who had visited at least 10 households. The expectation is that a CHV should have visited each household in his/her catchment area in one month. This was further explained by one of the CHEWs as follows:

“Community health volunteer’s role is to visit households and share health messages on monthly basis. Home visit must be made at least once a month for each household.... though with this kind of set up it may not be possible at times to cover all the assigned households as the workload is heavy. Most of the times they lack fare and cannot take a motorbike as they are not paid any salary for the services they offer. Therefore, they can only visit fewer numbers of households that they are able to reach. We do not push them harder to meet the monthly home visit target because we do understand howdifficult it is to move in this kind of rough terrain”. (Respondent, 2)

On exploring the actions taken when CHVs visit households, most of them (46.7%) shared information on hygiene and sanitation. This was followed by 18.5% and 14.1% who referred children or conducted defaulter tracing, respectively.

This is supported by one of the supervisors who had this to say:

“CHVs usually go to the health facility to check on the immunization register every month and those children who have defaulted are noted on volunteer’s notebook. Defaulters are then followed up to their respective homes. When found, they are encouraged to continue receiving the appropriate health care services”.(Respondent, 2)

Community strategy which is implemented through CHVs is one of the important approaches used in identifying immunization defaulters. Usually, CHVs generate the list of defaulters then follow them up in the community as explained by one of the CHEWs:

“Community Health Volunteers usually conduct defaulter tracing of children who have dropped from the immunization program. They usually work in collaboration with officers at their designated health facility and check immunization register.....Child Welfare Clinic register and identify children who have not come for the next vaccination date. They extract the names of those who didn’t honour the return date for immunization, follow them in the villages and refer them back to the facility”.(Respondent, 5).

A surprise finding is the smaller proportion of CHVs who share information on immunization (6%). CHVs provide services to various organizations including government and non-governmental agencies. During their training, they cover upto 12 modules which make effective implementation of most of the modules, vaccination included, a big challenge. That could explain why response on sharing information on immunization never ranked highly. A follow up question on the number of referred children revealed that 43.2% of the CHVs had referred between 2 to 5 in the last month prior to the study. The following was an explanation from one of the CHEWs further clarifies the unexpected response on the smaller proportion of CHVs who share information on immunization with the caregivers in the study area:

“Community health volunteers talk to mothers at household level on the importance of immunization of the child and why it is important to complete immunization schedule and the consequences of not completing the process. However, they are trained on a lot of other areas making it difficult for them to focus on immunization, alone”.(Respondent, 6).

Community Health Volunteer motivational factors

This study examined motivational factors for the performance of CHV roles in the community. Being respected by both community and family members (77.6%; n=183) and provision of motorcycles were the important motivational factors cited by CHVs. Less than 4% and 2%, respectively, recognize making money through selling drugs or getting salary as contributing to their motivation and performance as illustrated in figure 1..

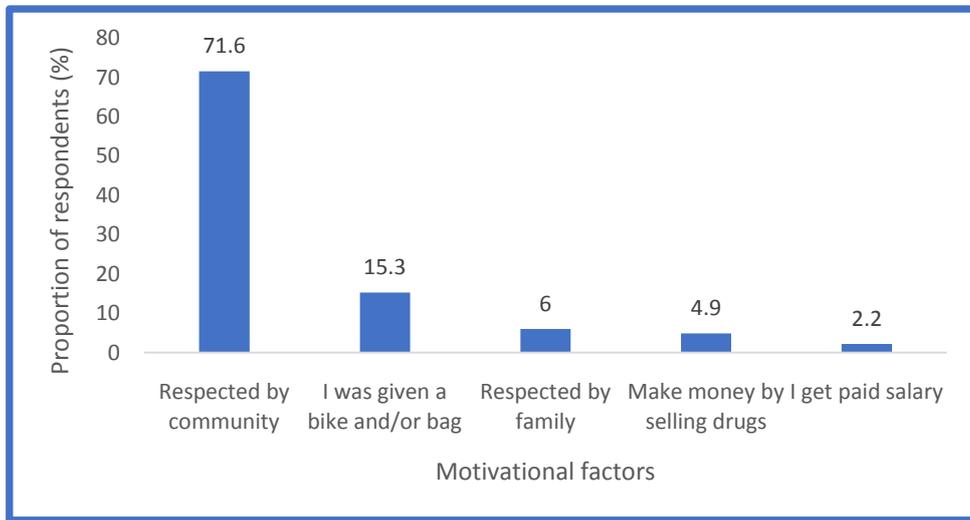


Figure 1: Motivational factors

Demotivating factors

Figure 2, shows demotivating factors that affect CHVs performance in the community. The reasons for CHV demotivation included not getting paid any money (59.6%; n=183), not having time to do their own work (9.9%), the fact that they have to work hard (9.8%) and people saying bad things about them (2.7%). In spite of all that, 18% did not cite any demotivational factors.

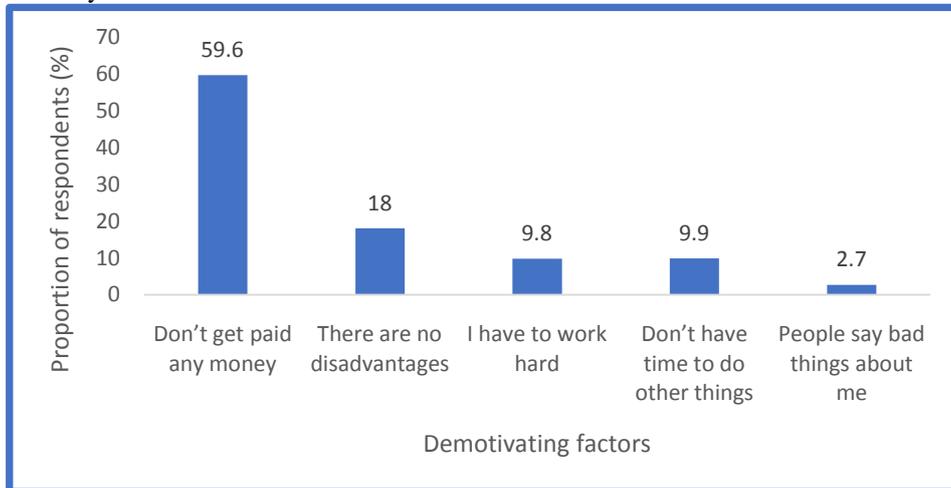


Figure 2: Demotivating factors CHV

Source of support to CHVs

In pursuit of their work, 70.2% of CHVs get support while 29.8% do not. Among the former, 45.8% get support from the community compared to 42% and 21.2% who are supported by health care workers and family members, respectively. Such support included but not limited to recognitions of the CHVs by the community (45.8%), support supervision at the community level by the community health committees (42%) and provision of financial and non-financial incentives (12.2%) as shown in figure 3.

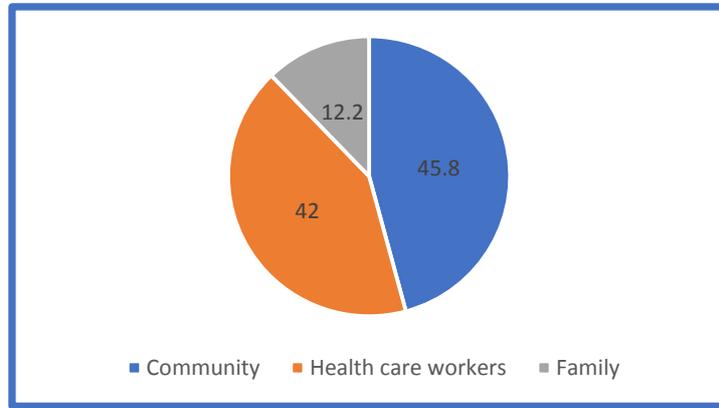


Figure 3: Source of support

Factors influencing performance of community health volunteers in immunization uptake

Table 3 presents factors influencing performance of CHVs in immunization uptake. In view of the role performance scores being normally distributed, role performance was categorized into 2 levels of high and low performance using its median as cut-off point. CHV whose role performance score was above the median (>3.9) was categorized as high performance.

Improved performance was noted where recruitment was done before 2013 with a 3.4-fold increase in performance (OR: 3.4; 95%CI: 1.2 - 10.1; p = 0.03) compared to those who were recruited after 2013. Likewise, CHVs who were supervised by CHEWs were 4.5 times more likely to have performed better (OR: 4.5; 95%CI: 1.5 – 13.7; p = 0.01) than the non-supervised category. In addition, those who agreed that they had been supervised were four times more likely to have had better performance than those who were not (OR: 4.0; 95%CI: 1.3 – 12.0; p = 0.02). However, cases where CHVs confirmed they were in charge of less than 30 households (OR: 0.3; 95%CI: 0.1 – 1.0; p = 0.04) were 70% less likely to have posted higher performance.

One of the supervisors had this to say:

“We regularly supervise the CHVs by accompanying them during the home visit and try to improve on the areas of weakness identified”. (Respondent, 7).

In regard to poor performance based on the number of assigned households, another supervisor made the following clarification:

“Most of the CHVs who cover fewer households work in areas with rough terrain which may affect their performance. Besides, the training duration which was meant to cover 5 – 7 days was reduced 3 due to limited funds from the partner. All the 12 modules had to be covered within such a short period”(Respondent 4)

Table 3: Factors influencing performance of community health volunteers in immunization uptake in Pokot South sub-county

Variable	Categories	n	Role performance of CHV		OR	95%CI	p value
			High (%)	Low (%)			
Gender	Male	124	88.7	11.3	0.4	0.1 – 1.5	0.2
	Female	60	95.0	5.0			
Age group in years	<40	112	91.1	8.9	1.1	0.4 – 3.0	0.8
	≥40	72	90.3	9.7			
Marital status	Married	177	90.8	9.2	4.3	0.8 – 24.2	0.1
	Others	7	71.4	28.6			
Level of education	None or primary education	118	91.5	8.5	1.3	0.5 – 3.5	0.6
	Secondary	66	89.4	10.6			
Year recruited	Before 2013	155	92.9	7.1	3.4	1.2 – 10.1	0.03

	After 2013	29	79.3	20.7			
Number of households assigned	<30	87	86.2	13.8	0.3	0.1 – 1.0	0.04
	≥30	97	94.8	5.2			
Number of days trained	≥5	133	90.8	9.2	1.6	0.5 – 4.9	0.4
	<5	39	87.2	12.8			
Supervisor	CHEW	160	93.1	6.9	4.5	1.5 – 13.7	0.01
	Others/CHC	24	75.0	25.0			
Topics covered during training	Immunization	26	80.8	19.2	0.3	0.1 – 1.1	0.07
	Others	158	92.4	7.6			
Refresher training conducted	Yes	100	93.0	7.0	1.8	0.6 – 4.9	0.2
	No	84	88.1	11.9			
Had been supervised	Yes	158	93.0	7.0	4.0	1.3 – 12.0	0.02
	Never	26	76.9	23.1			
Means of transport	On foot	169	91.7	8.3	2.7	0.7 – 11.0	0.1
	Other means	15	80.0	20.0			

IV. Discussion

The study was carried out in a setting characterized by rough terrain and poor road infrastructure that is inaccessible during the rainy season, in many places within the study area where routine immunization is being implemented. The study adds to the body of knowledge in the area where CHVs work is carried out under difficult situations commonly seen in arid and semi-arid areas.

Community health volunteers play an important role in increasing immunization uptake in the study area. They visit households in their catchment areas once per month and share health messages; facilitate referrals and trace immunization defaulters and hence contribute to the uptake of immunization services.

CHV is expected to be responsible for 50 households (MOH, 2006). However, the case of Pokot South is unique. On average, a CHV is assigned 32 households due to poor road network and harsh terrain. Based on the results, about half (47.2%) of the CHVs conduct home visiting. In the last one month prior to the study, 49.2% had visited less than 10 households in contrast to 42.6% who had visited at least 10 households or more. The results also revealed that 73.8% of the households were visited in the last one month. A similar study conducted in Mali reported a much lower number of households (40%) visited by CHVs (Perez, *et al.*, 2009). In another study conducted in Sergipe where CHVs visited 80% of the households, there was an increase in immunization uptake (Juraci, & Cesar, 2005).

From results the number of households visited and provided with health education regarding immunization was 69.6%. This was supported by more than a third of the caregivers (35.4%) who cited CHVs as their source of information regarding immunization. More than a third (43.1%) reported that during home visiting CHVs discuss vaccine preventable diseases. Evaluation of CHV report by UNICEF and MOH in Kenya showed that services offered by CHVs through the community strategy to enhance behaviour change, disease prevention and access to safe water and basic care, include health education (MOH & UNICEF, 2010). Our study findings confirm Gogia, *et al.*, (2011) report that CHVs contribute to improved child health through maternal education. Ryman, *et al.*, (2008) went further to state that CHVs can enhance immunization outcomes, promote adoption and bring care closer to the households.

In the study area, 18.5% of the CHVs conducted defaulter tracing for children who fail to continue with the programme. Defaulter tracing is one of the roles that CHVs are expected to play to improve on uptake of immunization (MOH, 2006). On referrals, the study results show that 14.1% of the children were referred to health care facilities of which 65.6% were referred for immunization services. Out of those who were referred nearly all (86.9%) had a referral note. The referral role of CHVs was confirmed by Smith and others (2014) who reported that the CHVs referred children for immunization services, among others. The functions of CHVs varied from information services aimed at awareness-raising through informing and learning regarding communicable diseases and maternal and child health services, including immunization (Gogia & Sachdev, 2010; Nkonki, *et al.*, 2017).

V. Conclusion And Recommendations

CHVs increasingly are made a formal part of health systems in the 47 counties in Kenya, with expanding tasks that include government and NGO assignments. Although their contribution towards primary health care has been shown in various programmes nationally and globally, there is little evidence on factors that influence their performance in Pokot South Sub-County, West Pokot County, Kenya which is characterized by harsh terrain and poor road network. This study identified several factors that are associated with improved performance of the CHVs in the uptake of child immunization. The factors include year recruited, the number of assigned households, supervision and regular monitoring of their activities by CHEWs and to some extent, topics covered during training. To improve performance of the CHVs in the study area we recommend that

County Ministry of Health and the partners should explore sustainable financial and non-financial *incentives* for CHVs. These may include allowances, transport reimbursement, *recommendations* letters, and certificates of recognition. The Sub-County Department of Health should lobby for more funds for refresher training which is as important as the initial training which was offered for a shorter duration than the recommended required number of days. Shorter training duration due to lack of funds. While CHVs report regular on-going support from the CHEWs, *the number of assigned households is still an issue that needs urgent attention. This applies to CHVs who are covering expansive and rough areas. The number of assigned households should take into consideration the specific contexts of the terrain in which programmes are implemented.* Improvement performance of CHV on the uptake of child immunization is vital in advancing progress to universal health coverage in the study area.

References

- [1]. GilMore (2013). Effectiveness of community Health Workers delivering preventive interventions for maternal and child health in low-and -middle income countries. *BMC Public Health* , 13(1) 847.
- [2]. Glenton (2010). The female health Volunteer programme Nepal: decision makers' perceptions of Volunteersim payment and other incentives. *Social Sciencesand Medicine*, 70(12): 1920-7.
- [3]. Gorgia S, HS Sachdev (2010). Home visits by community health workers to prevent neonatal deaths in developing countries: a systematic review
- [4]. Juraci A. Cesar (2005). Community Health Workers in Sergipe, Brazil: Implications for their future role in maternal and child health. PhD thesis, London School of Hygiene & Tropical Medicine. DOI: <https://doi.org/10.17037/PUBS.01366862>
- [5]. KDHS (2014). *Kenya Demographic and Health Survey*. Nairobi: Kenya National Bureau of Statistics.
- [6]. MOH. (2007). *Reversing the trends The second National Health Sector Strategic Plan of Kenya. A Manual for Training Community Health Workers*. Ministry of Health Nairobi Kenya. Nairobi, Kenya: Ministry of Health.
- [7]. Nkonki, L.L.L, Chola, L.L, Tugendhaft, A.A and Hofman, K. (2017). Modelling the cost of community interventions to reduce child mortality in South Africa using the Lives Saved Tool (LiST). *Health Economics Research*, 7(8).
- [8]. Olayo R, Wafula C, & Aseyo E. (2014). A quasi-Experimental assessment of the effectiveness of the community health strategy on health outcomes in Kenya. *BMC Health services Research* , 15-53.
- [9]. Oliver M, Geniets A, Winters N, Rega I. & Mbae S.M. (2015). What do community health workers have to say about their work, and how can this inform improved programme design? A case study with CHWs within Kenya. *Global Health Action*, 8: 27168. doi: 10.3402/gha.v8.27168 PMID: 26004292
- [10]. Perez, F., Ba, H., Dastagire, S.G. *et al* (2009). The role of community health workers in improving child health programmes in Mali. *BMC International Health Human Rights* 9, 28 (2009).
- [11]. Ryman, TK, Dietz, V and Cairns, K. (2008). Too little but not too late: Results of a literature review to improve routine immunization programs in developing countries. *BMC Health Services Research*, 8(134).
- [12]. Smith P. L, Willey B, & Kedenge S (2014). Community health workers and Stand-alone or integrated case management of malaria: a systematic literature review. *The American Journal of Tropical Medicine and Hygiene*, 91: 461–70
- [13]. UNICEF. (2015). *Assessing the community health worker Role in the polio Eradication initiative's social strategy* . Afghanistan: UNICEF.
- [14]. UNICEF. (2015). *Assessing the Community Health Workers Role in The Polio eradication Initiatives Social Mobilization Strategy in Afghanistan*. Afghanistan: UNICEF.
- [15]. UNICEF. (2010). *Evaluation report on the community Health strategy implementation in Kenya October, 2010*. Nairobi: UNICEF.
- [16]. UNICEF. (2013). *Global Polio Eradication Initiative. Polio eradication and end-game strategic plan (2013-2018)*. Geneva: World Health Organization.
- [17]. WHO/UNICEF. (2015). *Immunization facts and figures Nov. 2015 update Geneva*. Geneva: WHO.
- [18]. Zullinger, H. P. (2012). An overview of current evidence with recommendations for strengthening community health worker programmes to accelerate progress in achieving the health related millenium Development goals. *How effective are community health workers*, 10-24.

Samuel Kipunaa Lopar " Contribution of Community Health Volunteers in Immunization Uptake in Pokot South, Sub-County, Kenya." *.IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, vol. 8, no.06 , 2019, pp. 13-20.