

## Research Article

# The quality of PMTCT services and uptake of ARV prophylaxis amongst HIV positive pregnant women in Kakamega district, Kenya

Maxwell P. Omondi <sup>a,\*</sup>, Dismas Ongo're <sup>a</sup>, Elizabeth Ngugi <sup>a</sup>, and Ruth W. Nduati <sup>b</sup>

<sup>a</sup> *School of Public Health, University of Nairobi, Kenya*

<sup>b</sup> *Department of Pediatrics, School of Medicine, University of Nairobi, Kenya*

\* **Corresponding author:** School of Public Health, University of Nairobi, P.O. Box 19676-00202, Nairobi, Kenya, or UNHCR Regional Support Hub, P.O. Box 18717-00100 Nairobi, Kenya; **Tel:** +254-72-1208732; **Email:** [maxwellomondi@yahoo.com](mailto:maxwellomondi@yahoo.com)

**Background:** The success of a PMTCT programme depends on the quality of services offered at health facilities. Indicators of quality include the competence and attitude of the counsellor and uptake of ARV prophylaxis.

**Objective:** This study looked at the relationship between quality of prevention of mother to child transmission of HIV (PMTCT) services and the maternal ARV prophylaxis uptake in Kakamega district, Kenya.

**Methods:** The study was a cross-sectional study. Thirty health facilities and health care workers were sampled using multistage sampling. From these health facilities, 119 HIV positive pregnant women were sampled by convenience sampling. The PMTCT counsellors and HIV positive pregnant were interviewed using a structured questionnaire.

**Statistical analysis:** Descriptive data analysis was carried out on all variables. Categorical variables across groups were compared using the Fisher Exact test. Logistic regression was used to identify determinants of uptake of ARV prophylaxis at facility level

**Results:** About 86.7% of the health facilities sampled had satisfactory quality of PMTCT services and 89% of HIV positive pregnant women reported that they received satisfactory PMTCT counselling services. About 90% of the counsellors have received PMTCT training and the mean score in a knowledge test was 77.2%. However, providers generally had a negative attitude towards their clients. On regression analysis, there was no significant association between various aspects of quality and infant ARV prophylaxis uptake. Uptake at facility level was determined by the district and type of health facility.

**Conclusion:** The quality of service in the sampled facilities was generally good but this did not influence the level of uptake of maternal or infant ARV prophylaxis.

**Key words:** Prevention of Mother to Child Transmission (PMTCT), ARV prophylaxis, HIV-positive pregnant women.

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## 1. Introduction

The negative impact of the HIV epidemic on child health is most marked in sub-Saharan Africa that carries 90% of paediatric infections. (UNAIDS,2009). The goal of the Kenyan National Prevention of Mother to Child

Transmission (PMTCT) Program was to reduce the proportion of infants infected with HIV by 20% by 2005 and 50% by 2010. In order to achieve this, there is need for universal coverage of services. Therefore the success of a PMTCT programme depends on ability to deliver the intervention to every eligible pregnant

woman, enabling policies, administrative, and institutional frameworks as well as socio-cultural factors. Uptake of antiretroviral drugs (ARVs), one of the cornerstones of PMTCT, is affected by quality of counselling, availability of trained health care workers to offer the services, and pharmacy support to the PMTCT program (MOH, 2009; Inoue et al, 1994). Periodic studies to determine factors affecting the uptake of PMCT are essential for successful implementation.

This study was carried out in the greater Kakamega district located in Western Province of Kenya. This is one of the most densely populated rural districts in Kenya with a population of 603,422 and an area of 1,395 km<sup>2</sup>. About 5.1% of adult population in Western province is HIV-infected with women being particularly affected (MOH, 2007). PMTCT services in Kakamega district started in 2000 with the provincial hospital being one of the original five PMTCT pilot sites. Since then, scale-up of PMCT services has occurred from five sites in 2003 to twenty one sites in 2007. This represents 39% (21/54) of the health facilities offering antenatal care (ANC) services in Kakamega district. This is way below the national target of scaling up PMTCT services to at least 80% of the health facilities by 2007. In addition, the maternal ARV prophylaxis uptake was 56.1% in 2007 which was below the national average of 64.2% uptake (Mutsotso, 2005). The objective of this study was to evaluate the quality of PMTCT services, the knowledge and attitude of the PMTCT providers and factors that were influencing the uptake of maternal and infant ARV prophylaxis in the greater Kakamega district.

## 2. Methods

### 2.1 Study design

The design was a cross-sectional descriptive study. The study took place in 4 districts that were carved out of the greater Kakamega district. These districts were Kakamega East, Central, North and South. Healthcare workers who were providing PMTCT services and HIV positive pregnant women accessing care in these facilities formed the study population. The study was conducted from January-March 2009.

### 2.2 Eligibility criteria

All public and private healthcare facilities providing PMTCT as per the Ministry of Health/NASCOP guidelines in the 4 districts were included in the study. From each of the facilities, participants who were HIV-positive pregnant women aged between 18 - 49 years, had resided in Kakamega district in the last 5 years and gave written informed consent were recruited. In addition, within each facility, PMTCT counsellors who had worked in any of the 4 districts for at least one year were interviewed.

### 2.3 Sample size and sampling procedure

Multi-stage sampling was used to sample the health facilities from a sampling frame of 38 facilities. In the first stage of sampling, 5 health facilities which served as the local referral centres and had the highest level of service provision were selected. These facilities

included 1 provincial hospital and 4 sub-district hospitals. The rest of facilities were then divided into two categories: public and private/faith based facilities. These groups were further stratified on the basis of the type of facility (health centres and dispensaries). Random sampling was used to select facilities from each of the strata. A total of 30 facilities were sampled.

It was estimated that a minimal sample size of 96 women was required for the exit interview. From the sampled health facilities, HIV-positive pregnant women who met the eligibility criteria were enrolled by until the required numbers of HIV positive pregnant women were attained (N=119).

## 2.4 Data collection

There were three components to the study. The first was regular review of the Ministry of Health (MOH) monthly summary reports throughout the course of the study to determine the levels of maternal and infant ARV prophylaxis uptake for each of the facilities.

The second part of the study was interviews with the health workers to determine their knowledge and attitude regarding PMCT. PMTCT counsellors from each of the sampled facilities filled two self-administered questionnaires. A 20 item questionnaire that had been previously validated in two UNICEF studies in Somalia was used to evaluate their knowledge about PMTCT. The score was converted to percentage of correct scores. A respondent with a score of 75% was considered to have satisfactory knowledge while those with a score of below 75% were considered unsatisfactory.

The attitude of counsellors towards clients and the services that they provide was elicited using a second self-administered questionnaire with responses measured on a Likert scale over the range of 1 - 5, with responses ranging from strongly agree to strongly disagree. The questionnaire had 14 questions assessing their beliefs about promiscuity of HIV-positive clients and their willingness to treat, interact and touch HIV-positive mothers. Questions were also asked on the providers' beliefs about the rights of HIV-positive mothers' access to relevant information, the importance and effectiveness of PMTCT services and the time allocated to provision to PMTCT care relative to other competing services in the health facility. The total score obtained from questionnaire was used to rate the attitude of the counsellors using a cut-off score of 42. The highest total possible score was 70 and the least was 14 marks. A respondent with a score over 42 was considered to have a positive attitude, while a lower score represented a negative attitude.

The third structured questionnaire evaluated the quality of service provided at facility. The indicators of quality were broadly divided into four categories: facility-related factors; perceived attitude, skills and competence of counsellor; content of the counselling session; and access to services and uptake of ARV prophylaxis. Counsellors were interviewed using a structured questionnaire on different aspects of quality of PMTCT service provision. They were required to give either a positive or negative response. These aspects of quality were divided into 7 categories: safety practices:

maintenance of privacy and confidentiality; dissemination of information; client comfort; continuity of care; autonomy in decision making; and accessibility to services. In each category a checklist was used to assess the quality of PMTCT services. The maximum possible score was 100%.

The HIV-positive pregnant women were subjected to an exit interview using a structured tool designed to capture information on client perception of the various aspects of quality of PMTCT services such as waiting time, quality of counsellor-client interaction, attitude of other staff in health facility amongst others.

Other variables of interest were maternal and infant ARV prophylaxis uptake at facility. Socio-demographic traits of the participants such as age, education level, marital status and occupation were also measured.

All the research assistants were trained before the study. A pilot study was conducted to pre-test and validate the survey tools.

## 2.5 Data processing and analysis

Data analysis was done using SPSS (Statistical Package for Social Sciences) version 13.0 and CDC Epi Info version 7. All variables were subjected to descriptive data analysis. Continuous variables were expressed as the mean and standard deviation of the mean. The Fishers exact test was used to test for differences across categorical variables. Logistic regression was used to determine if there was an association between quality of services provided and maternal and infant ARV uptake. *P* values of less than 0.05 were considered to be statistically significant.

**Table 1:** Socio-demographic characteristics of the HIV positive pregnant women respondents

Characteristics	Frequency (n=119)	Percentage
<b>Location</b>		
Urban	31	26.1
Rural	88	73.9
<b>Age in years</b>		
Up to 18 years	3	2.5
18-24 years	39	32.8
24-35 years	67	56.3
Above 35 years	10	8.4
<b>Level of education</b>		
None	9	7.6
Primary and Pre-primary	72	60.5
Secondary	35	29.4
Tertiary	3	2.5
<b>Marital status</b>		
Single	11	9.2
Married	107	89.9

## 2.6 Ethical considerations

Permission to carry out the study was obtained from the Kenyatta National Hospital/University of Nairobi Research and Ethical Committee (KNH/UON ERC). Informed consent was obtained from all participants. Confidentiality was maintained throughout the study.

## 3. Results

### 3.1 Baseline characteristics of the study population

Two of the thirty health facilities were located in an urban area while the rest were rural. Out of the 30 health facilities sampled, 5 (16.7%) were located in Kakamega South district, 6 (20%) in Kakamega North district, 7 (23.3%) in Kakamega East district and 12 (40%) in Kakamega Central district. One of the sampled facilities (3.3%) was a provincial hospital, 2 (6.7%) district hospitals, 2 (6.7%) sub-district hospitals, 10 (33.3%) government health centres, 13 (43.3%) government dispensaries, 1 (3.3%) a mission hospital and 1 (3.3%) a mission dispensary.

Out of the 119 HIV positive pregnant women interviewed, 88 (73.9%) were attending rural health facilities and 31 (26.1%) were attending urban facilities, as shown in **Table 1**. The median age of the pregnant women was 26 years (range 18 - 43 years). Nine (7.6%) of the respondents had no formal education, 1 (0.8%) nursery school level, 71 (59.7%) some primary school education, 35 (29.4%) secondary school while 3 (2.5%) had tertiary level of education. Most (89.9%) of the respondents were married, 11 (9.2%) were single and 1 (0.8%) was separated. A total of 30 PMTCT counsellors were interviewed of whom 9 (30%) were males. The mean age of the PMTCT counsellors was 40.3 years (range 25 - 54 years).

### 3.2 Client perception of the quality of PMTCT counselling services

#### Facility-related factors

Majority (97, 81.5%) of the respondents were seen within 1 hour while 22 (18.5%) were seen after one hour or more of waiting. Fifty six (47.1%) waited for less than 30 minutes to be attended to (**Table 2**). In keeping with MOH policy, the majority of the respondents (85, 71.4%) successfully accessed PMTCT services on the first visit, 28 (23.5%) were successful on the second visit, 5 (4.2%) were successful on the third visit while 1 (0.8%) got PMTCT services on the fourth visit. One hundred and fifteen (96.6%) and 114 (95.8%) of the respondents felt they had visual and auditory privacy during the counselling sessions, respectively. Most of the respondents (116, 97.5%) felt that the counselling rooms were in convenient places while a few (3, 2.5%) felt otherwise (**Table 2**).

#### Perceived attitude, skills and competence of counsellor

Majority of the respondents (106, 89.1%) felt that the attitude of the other staff at the health facility was good, 11 (9.2%) felt that the attitude was fair while 2 (1.7%) felt that the attitude was poor. Most felt that they were

warmly welcomed (80.7%) and over 80% felt that the counsellors listened, understood personal concerns, maintained confidentiality and were sincere, respectful and confident (Table 3).

**Table 2:** Perception of clients about the quality of the counselling environment

Factor	N	%
<b>Waiting time to see the counselor</b>		
Less 30 min	56	47.1
30 min -1 hr	41	34.5
1-2 hrs	15	12.6
Over 2 hrs	7	5.9
<b>Counseling environment</b>		
Visual privacy	115	96.6
Auditory privacy	114	95.8
Counseling room in a convenient place	116	97.5

**Table 3:** Clients perceptions about the attitude of the counsellor

Attributes of the Counselor	N	%
Neutral welcome	23	19.3
Warm welcome	96	80.7
Freely talked about personal issues	113	95.0
Listened to client	117	98.3
Understood concerns and personal issues	107	89.9
Client felt that personal issues remain safe	103	86.6
Respectful to client	119	100
Seemed sincere	109	91.6
Confidence in the job	115	96.6
Time spent with counselor was sufficient	98	82.4

**Content of the counselling session**

One hundred and thirteen (95%) of the respondents received an explanation on what to expect during the counselling session and also felt free to talk about their concerns and personal issues. Six (5%) did not receive an explanation on what to expect in the counselling session. Majority (93, 78.2%) felt they received all the necessary information they needed to know while 26 (21.9%) of the respondents either felt they did not receive all the necessary information they needed to know or were not sure.

The topics covered during the counselling sessions are presented in Figure 1. Half of the clients had a demonstration on condom use; 79%, 87.4%, 88.2% of respondents discussed condom use, disclosure to the partner and risk behaviour, respectively. Most clients

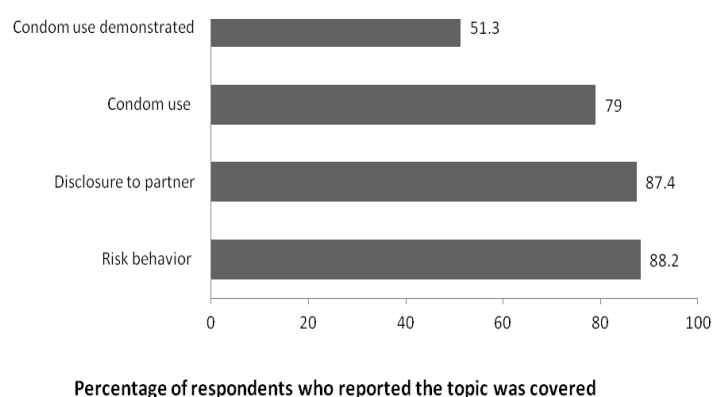
(105, 88.2%) felt the counsellor was comfortable discussing various topics.

**Level of skill in drawing blood samples**

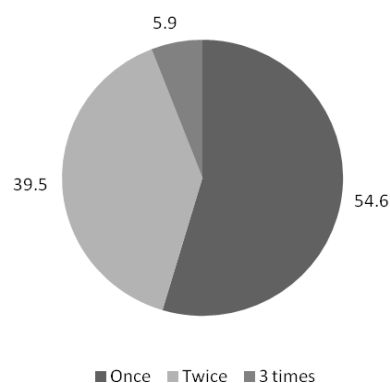
Out of 119 participants, 113 (95%) reported that a blood sample had been taken during the counselling session. About 70.6% felt comfortable while the sample was taken. Just over half (54%) had a sample taken on first attempt compared to 39.5% and 5.9% on second and third attempts, respectively, as presented in Figure 2.

**Aggregate facility score for the quality of PMTCT services**

The participants' responses in each health facility were aggregated to obtain an overall rating for the quality of PMTCT services. The maximum possible score was 100%. The median and mode scores were 92% and 93%, respectively. Facilities with a score of over 80% in the quality of PMTCT counselling services were categorized as having satisfactory quality of PMTCT counselling services while those with lower score were categorized as providing unsatisfactory quality of PMTCT counselling services. On the basis of this rating, the PMTCT services of 11 % of the facilities were rated as unsatisfactory and 89 as satisfactory.



**Figure 1:** Topics covered during the counselling sessions



**Figure 2:** Number attempts required to successfully obtain a blood sample

### 3.3 PMTCT counsellors' knowledge, attitude and perception of quality of services

#### Counsellors' knowledge of PMTCT

Out of the 30 PMTCT counsellors interviewed, most of them (27, 90%) had received PMTCT training. The counsellors did a test to assess their level of knowledge regarding PMTCT. The scores ranged from 45 - 95% with a mean of 77.2% and a standard deviation of 10.4. (95% CI: 73.28 - 81.05%). Out of the 30 PMTCT counsellors, 24 (80%) of them had a satisfactory level of knowledge while 6 (20%) of them had an unsatisfactory level of knowledge.

#### Counsellors' perceptions of the quality of PMTCT services offered at their health facilities

Regarding, safety procedures to minimise contamination, over 95% of the counsellors agreed that they routinely disposed of waste by burning or burying, cleaned instruments with detergent and used sterile equipment. Only 30% agreed that they used heavy duty gloves to clean used instruments.

Over 90% of the counsellors agreed that visual and auditory privacy was maintained during counselling sessions and that staff respected clients' confidentiality. Nearly all counsellors (87%) agreed that male clients who accompanied their partners were treated with respect. All agreed that they did not discuss clients with people not directly involved in patient care. Three respondents noted however that access to patient records was not strictly controlled in their facilities. Up to 57% sites did not have separate records for each client, instead relying on facility level register to document client information.

Over 90% of the respondents stated that they gave health talks at least once a week in the clinic on HIV transmission and prevention. Only 18 (60%) gave scheduled health talks to the community. Apart from health talks, only 14 (47%) counsellors reported the use of videos, flip charts, drama and leaflets to disseminate information. Eight facilities (27%) had a PMTCT poster in a local language in the waiting room. Thirteen facilities (43%) had signs showing where the PMTCT services were located.

Regarding client comfort, 7 (23%) of the respondents did not feel the client waiting areas were clean, well ventilated and had enough seating space. Five (83%) felt the toilets were clean and well ventilated. Ten counsellors did not think the client waiting times were reasonable.

Most counsellors agreed the facilities had practices that ensured access to PMTCT services and continuity of care. Over 93% stated that diagnostic and antenatal services were available at least 5 days a week. In 27 facilities (90%), clients could access PMTCT services regardless of their ability to pay. Access to condoms, however, seemed to be restricted, since only 19 (63%) counsellors reported that clients could pick condoms without asking the providers. Six facilities did not have or were not linked to a HIV/AIDS comprehensive care clinic. Four facilities did not have ARVs. To ensure continuity of care, 27 counsellors reported that they

helped HIV positive clients to contact community support groups. Partners of HIV-positive women could obtain diagnostic and treatment services in 25 (83%) facilities. Counsellors were asked questions regarding clients' rights to make autonomous informed choices. Most (25) stated that after PMTCT counselling, there were opt-out options.

Responses to each of seven categories of quality of services were aggregated to obtain an overall score. A cut-off of 80% was used to rate the quality of services as either satisfactory or poor. **Table 4** depicts the perceptions of the PMTCT counsellors regarding the quality of PMTCT services at the health facilities. The quality of information given at the health facilities rated lowest and patient autonomy to make decisions seemed compromised. With regard to overall quality of care, 26 PMTCT counsellors (86.7%) rated the quality services provided as satisfactory.

#### PMTCT Providers' attitude towards Clients and provision of PMTCT services

Out of the 30 PMTCT counsellors interviewed 14 (47%) of them had a positive attitude while 53% had negative attitude towards their clients and the importance of PMTCT.

**Table 4:** Counsellor assessment of the quality PMTCT services at health facilities

Attribute of Quality of PMTCT service	Counselors who rated their facilities satisfactorily (N=30)
Safety Procedures followed	27 (90%)
Maintenance of Privacy and Confidentiality	26 (86.7%)
Quality of information given to clients	15 (50%)
Services are offered with dignity and comfort	21 (70 %)
Continuity of care	27 (90%)
Access to Services	26 (86.7%)
Clients are allowed to make informed choices	19 (63.3%)
Overall satisfaction with the quality of care	26 (86.7%)

### 3.4 Uptake of ARV prophylaxis

Most (95%) of the HIV pregnant women knew about mother to child transmission of HIV and that ARVs can be used for PMTCT. The maternal and infant ARV prophylaxis uptake was extracted from the facility's monthly reports submitted from the period covering January - March, 2009. Data on uptake was only available for 25 out of the sampled facilities of which 17 (68%) had >80% maternal ARV prophylaxis uptake. The mean maternal ARV prophylaxis uptake was 87.5% for the January - March 2009. The maternal ARV prophylaxis uptake was highest in Kakamega South

district (100%) followed by Kakamega North (85%) and Kakamega Central (74%) districts. The worst performing district was Kakamega East district which had an uptake of 56%.

Facilities with satisfactory maternal ARV prophylaxis were compared to those with unsatisfactory uptake to determine whether there was any association between uptake and quality of PMTCT services as perceived by the clients. Characteristics of the health facilities were also considered (**Table 5**). On bivariate logistic regression, the most important determinants of maternal ARV prophylaxis uptake were the district, type of health facility and counselling on risk reduction. After controlling for confounding, none of these predictors remained statistically significant.

At individual level, there was no statistically significant association between a mother's knowledge of ARV use as a means of prevention of transmission and uptake of ARV prophylaxis.

Sixteen (64%) of 25 facilities had satisfactory uptake of infant ARV prophylaxis of over 80% while 9 had unsatisfactory uptake. There was a strong positive association between infant and maternal ARV uptake at facility level ( $p=0.000$ ). Fourteen of the facilities that had satisfactory infant ARV prophylaxis uptake had good maternal uptake. Logistic regression was performed to determine if attributes of quality of service at facility level were associated with uptake of infant ARV prophylaxis. These attributes included: privacy and confidentiality; continuity of care; access; quality of informed choice; information provided to mothers and observance of safety procedures and client comfort. None these variables were statistically significant predictors for infant prophylactic ARV uptake at facility level.

**Table 5:** Predictors of maternal ARV prophylaxis uptake at facility level

Variable	Odds ratio	95% CI	P-value
District	871.9	3.731 - 203743.	<b>0.015</b>
Individual facility	0.737	0.567 - 0.959	<b>0.023</b>
Urban/rural location	0.093	0.004 - 1.922	0.124
Type of health facility	122.543	6.335 - 2370	<b>0.001</b>
Waiting time at facility	0.376	0.015 - 9.366	0.551

#### 4. Discussion

This study, similar to other studies in Southern India and Vietnam, found that 95% of the HIV positive pregnant women knew that HIV can be transmitted from a HIV-positive pregnant woman to her child (Gondi et al, 2002; Thu et al, 2008). This is in contrast to a study in the neighboring province published 5 years before that found low levels of knowledge among pregnant women (Moth et al, 2005).

The second important finding is that 9 out of 10 women were satisfied with the PMTCT counseling services they received. Three out of four HIV-positive pregnant women felt they received all the necessary information they needed and 8 out of 10 felt warmly welcomed. This compares well with findings from Winfreda et al (2007) in Zimbabwe which found that women were satisfied with counseling services. Women were seen promptly with only 2 out of 10 waiting longer than 60 minutes for services. This contrasts with the study done by Moth et al (2005) carried out in Nyanza Provincial Hospital in Kenya which found that 96% of the respondents waited for more than 90 minutes to receive PMTCT services.

Overall there was relatively high maternal ARV prophylaxis, 87.5% in the greater Kakamega district as compared to the national average of 90%. Determinants of the successful ARV prophylaxis uptake at facility level were the district, type of health facility and individual facilities. Kakamega East district was 7 times more likely to be rated as having unsatisfactory maternal ARV prophylaxis uptake as compared to Kakamega North district ( $p=0.008$ ). This difference may be due to inadequate health provider supervision in this district. According to Ayisi (2007), the district approach to PMTCT supervision is one of the key elements for success of the program in Kenya.

About 90% of the PMTCT counselors interviewed had received formal training on PMTCT. However, this had no significant association on the uptake of maternal ARV prophylaxis. This contrasts with study done by Msuya et al (2004) in Tanzania which concluded that comprehensive PMTCT training of frontline health workers significantly improves PMTCT services delivery in lower level health facilities.

This study revealed that 80% of the PMTCT counselors interviewed had a satisfactory PMTCT knowledge. The mean score on a 20-item knowledge test was 77.2% (95% CI: 73.3 - 81.1%). This compares with the study conducted by Creek et al (2004) that revealed that nearly all PMTCT counselors (90%) had formal PMTCT training with a mean score of 71% on a 24-item knowledge test. About 53% of the PMTCT counselors interviewed had a negative attitude towards HIV-positive clients and PMTCT services. Similar findings have been reported in a study done by Inoue et al (1994).

#### 5. Conclusion

Majority of the HIV positive pregnant women felt that the PMTCT counseling services they received were good. Most of the health facilities had satisfactory maternal ARV prophylaxis uptake of over 80% as per the NASCOP targets. Majority of the PMTCT counselors interviewed were PMTCT trained had a satisfactory PMTCT knowledge and over half had a negative attitude towards HIV positive clients and PMTCT. In conclusion, there is no association between uptake of ARV prophylaxis amongst HIV positive pregnant women and components of quality of PMTCT counseling in the greater Kakamega district.

#### Conflict of Interest declaration

The authors declare no conflict of interest.

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