

Prevention of Mother-to-Child Transmission of HIV/AIDS: Acceptability, Knowledge, Attitude and Implementation at Ratoma CMC-Conakry-Guinea

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Abstract

The objectives of the study were to determine the level of knowledge, acceptability and implementation of Prevention of mother-to-child transmission (PMTCT) of HIV/AIDS at Ratoma communal medical center (CMC). **Patients and Method:** It was a descriptive cross-sectional study with prospective data collection from November 1, 2019 to April 30, 2020 at the maternal and child health department of Ratoma communal medical center. **Results:** The acceptance rate was 85.45%. The average age of our patients was 27 with extremes of 15 and 39. Women doing a liberal activity were the most affected (70.36%), followed by housewives (20%), secondary school (5%) and university students (4.64%). The Caesarean section was cited as a means of PMTCT in 20.84% of cases, taking antiretroviral drugs at the end of pregnancy in 9.94%. Most of our patients accepted the HIV screening, *i.e.* a participation rate of 85.45%. The average age of our patients was 27 with extremes of 15 and 39. Women doing a liberal activity were the most affected (70.36%), followed by housewives, secondary school and university students. The Caesarean section was cited as a means of PMTCT in 20.84% of cases. On the whole, pregnant women had a favorable attitude towards the screening result in 96.5% of cases. Most of the women (73.51%) did not agree to share the serological result with their partner, 16.55% agreed to share the result with their spouse. Sexual transmission was identified by women as the mode of HIV transmission in 61.9% of cases and Mother to Child transmission in 0.68%. Breastfeeding was exclusive in 93.5% of cases due to lack of financial means. **Conclusion:** Accepta-

bility, a high level of knowledge and a favorable attitude towards HIV screening are conditions that favor adherence to the various PMTCT programs.

Keywords

HIV, PMTCT, Acceptability, Knowledge, CMC Ratoma

1. Introduction

Mother-to-child transmission (MTCT) of HIV is the primary mode of contamination of children worldwide [1] [2].

The risk of mother-to-child transmission can be reduced through HIV screening, administration of antiretroviral drugs to both mother and child, and artificial breastfeeding [3]. These practices have reduced vertical transmission of HIV/AIDS in countries in the northern hemisphere to less than 2% [4]. The vertical transmission rate in Canada is below 2% [5]. This is not the case in sub-Saharan Africa.

According to UNAIDS, sub-Saharan Africa accounts for 85.5% of HIV cases in children and 91% of new pediatric infections, and more than 14 million children are orphaned by HIV [6]. Most children under 15 living with HIV were infected before birth, during delivery, or through breastfeeding in 2009 [7].

In Africa, HIV screening services were introduced at the antenatal consultation level [8] [9]. As a result, many women still give birth without knowing their HIV status and cannot benefit from adequate prevention measures in this context.

A study carried out in Guinea revealed a frequency of 6.71% of HIV infection in pregnant women seen in antenatal consultations [10].

In order to combat vertical transmission, Guinea's national policy has integrated the prevention of mother-to-child transmission of HIV (PMTCT) into the ANC activity package. The high prevalence of HIV infection among pregnant women as well as the problems related to the low level of knowledge of PMTCT motivated the realization of this study.

The objectives were to determine the acceptability and the implementation of the PMTCT of HIV/AIDS at Ratoma CMC, more specifically, it aimed to assess the level of knowledge, determine the attitude of pregnant women towards HIV screening and PMTCT at Ratoma CMC and describe the management protocol in the implementation of PMTCT.

2. Patients and Method

It was a descriptive cross-sectional study with prospective data collection from November 1, 2019 to April 30, 2020 at the maternal and child health department of Ratoma communal medical center.

The present study is an intervention that consisted in offering a counseling, a

rapid HIV screening to pregnant women seen in prenatal consultations (ANCs) during the study period, and in evaluating the level of knowledge and women's attitude towards screening. First of all, 12 midwives were trained in counseling and rapid HIV screening. The team of trainers consisted of a biologist from Donka National Hospital, Conakry Teaching Hospital, an HIV specialist, a coordinator of a PMTCT project, and a physician trained in PMTCT. The content of the rapid HIV screening advice for pregnant women consisted of:

Reassuring them about the confidentiality of HIV screening

Assessing their level of knowledge about the modes and risks of mother-to-child transmission of HIV during pregnancy, childbirth and breastfeeding, antiretroviral drugs and other means of prevention available in relation with PMTCT.

Explaining to them the importance of knowing their HIV status and facilitating the implementation of their own health interventions to protect their newborn from possible HIV infection from them (if they are HIV-positive).

Reassuring them that their refusal of the HIV screening test would not compromise their access to care during pregnancy, delivery and even afterwards.

We conducted a comprehensive recruitment of all pregnant women who agreed to participate in the study.

Women admitted to the CMC in labor and whose HIV status was unknown underwent a rapid HIV antibody test during labor or delivery.

In case of positive results, an antiretroviral prophylaxis was immediately initiated intrapartum and postnatally, while awaiting the results of the HIV antibody confirmation test.

We included in this study all pregnant women who accepted the HIV screening.

Patients who refused to do the HIV screening and those whose results were considered undetermined were excluded.

A collection form was developed to collect the data, based on the objectives and variables defined.

Parameters studied were sociodemographic characteristics, the level of knowledge about the modes of HIV transmission, the acceptability of HIV screening, the sharing of status, and the mode of feeding the newborn. Clinical and para-clinical variables included:

Gestational age at the time of screening,

Clinical stages according to the evolution of the disease:

Stage I: asymptomatic patient

Stage II: symptomatic patient, normal activity

Stage III: Bedridden patient with at least one associated pathology

Stage IV: AIDS disease

CD4 count: This is the indicator of the level of immunity and has allowed us to classify the immunodeficient into three categories

CD4 count ≤ 350 cells/mm³ severe deficiency

CD4 count 350 - 500 cells/mm³ advanced deficit

CD4 count > 500 cells/mm³ non-advanced deficit.

The DNA/RNA PCR (polymerase chain reaction) screening was routinely performed in newborns.

Therapeutic variables: the protocol used was the one retained by the national committee for the fight against AIDS, option B plus of WHO, after acceptance of the treatment the following treatment regimens were offered to HIV-positive pregnant women:

First regimen: 2INRT (nucleoside reverse transcriptase inhibitors) + 1INNRT (non-nucleoside reverse transcriptase inhibitor)

AZT (Azidothymidine) + 3TC (Lamivudine) + NVP (Névirapine); TDF (Tenofovir) + 3TC (Lamivudine) + EFV (Efavirenz); (AZT + 3TC) + EFV; D4T (Stavudine) + 3TC + NVP; (TDF + 3TC) + NVP.

Second regimen: 2INRT + 1IP (protease inhibitor)
(TDF + 3TC) + LVP/r (Lopinavir).

An adjuvant cotrimoxazole treatment for opportunistic diseases.

All newborns received: NVP and AZT syrup were routinely offered.

Adjuvant treatment: Cotrimoxazole syrup to prevent opportunistic infections.

For newborns, two protocols were used, depending on the type of HIV in the mother and the weight at birth.

HIV1 positive mother: NVP, weight under 2.5 Kg: 10 mg in a single dose per day during 45 days; if the weight is over 2.5 Kg: 15 mg in a single dose per day during 45 days.

HIV2-positive mother or a combination of HIV1 and HIV2: AZT, weight under 2.5 kg: 10 mg in the morning and in the evening for 45 days; weight over 2.5 kg: 15 mg in the morning and in the evening for 45 days.

Exclusive breastfeeding was defined as feeding the newborn with only the mother's milk.

Strict formula feeding was defined as feeding the newborn with milk substitutes.

Mixed feeding was defined as feeding the newborn with breast milk and milk substitutes.

HIV RNA and DNA PCR tests were performed at birth and at least twice (at 2 different times) after discontinuation of antiretroviral prophylaxis, with an additional HIV RNA and DNA test performed at 6 months of age.

After a manual counting, the microsoft word and excel software of the office pack 2019 were used for data entry, processing and presentation.

3. Results

Status of the screening at Ratoma CMC

During the study period, 1691 ANCs were carried out, 1224 of whom were counseled for screening, *i.e.*, 72.38%. Of these women, 1046 agreed to be screened, *i.e.*, 85.45%. Among these screened women, HIV seropositivity was revealed in 58 patients, *i.e.*, an HIV seroprevalence of 5.54% (**Table 1**).

Average age 27. Extremes 15 - 39

Table 1. Socio-demographic characteristics of screened patients.

Age (Years)	(HIV) Positive Women	(HIV) Negative Women	Number of Cases	Percentage
15 - 19	8	67	75	7.17
20 - 24	34	769	803	76.76
25 - 29	10	104	114	10.92
30 - 34	2	38	40	3.82
35 and over	4	10	14	1.33
Total	58	988	1046	100
Profession/Occupation				
Liberal profession	31	539	736	70.36
Housewives	13	184	197	18.83
Secondary school and university students	12	94	106	10.15
Wage earners	2	5	7	0.66
Total	58	988	1046	100
Educational level				
Not educated	37	487	524	50.09
Primary school level	4	209	213	20.36
Secondary school level	2	44	46	4.41
Vocational/technical level	10	200	210	20.08
Higher education level	5	48	53	5.06

Gestational age at screening.

In most cases screening was performed in the 2nd and 3rd quarter respectively 79.55% and 19.21% and only 1.24% were screened in the 1st quarter.

Type of HIV.

HIV1 was the most frequently encountered type, 55 cases out of 58, *i.e.* 94.83%, followed by HIV2, 2 cases, *i.e.* 3.45%, and 1 case of a combination HIV1 + HIV2, *i.e.* 1.72%.

Clinical stages according to the evolution of the disease.

Stage I: it was by far the most frequently encountered 56/58 cases or 96.55%.

Stage II: it represented 3.45% of cases. The other stages were not encountered.

CD4 count

A proportion of 61.20% had a CD4 count less than or equal to 350 cells/ mm³, 18.81% had a count between 350 - 500/mm³ and 19.99% had a count greater than 500/mm³. The average CD4 count was 603.2 cells/ mm³. The lowest count was 11 cells/mm³ and the highest was 2060 cells/mm³.

Viral load

It was undetectable in 44.62% of cases, less than 500 copies/ml in 4.7% of cases, between 500 - 1000 copies/ml in 25.45% of cases, more than 1000 copies/ml in 25.23% of cases. The highest viral load was 1689 copies per ml.

ARV treatment.

All HIV-positive pregnant women were put on a triple ARV therapy as soon as they were screened according to WHO option B+.

Cotrimoxazole 960 mg was administered in 54 out of 58 patients or 93.1%.

Level of knowledge of pregnant women about HIV.

In 42.17% of cases the level of knowledge was average, in 38.33% it was poor and in 19.50% of cases the level was considered good.

Pregnant women's knowledge of how HIV is transmitted.

Unprotected sexual intercourses were the most frequently cited mode of HIV transmission in 61.95% of cases, while the blood route was cited in 30.90%. Mother-to-child transmission in 0.68% and 6.97% of patients said they did not know the modes of transmission. Sources of information on HIV/AIDS infection were mainly radio, television and school. Other supposed traditional sources of information (father educators, religious denominations, learning centers) were rarely mentioned. All women with a higher level of education knew the mode of transmission from mother to child.

Regarding the period of contamination, 19.50% cited the breastfeeding period, 38.33% childbirth and 42.17% answered that they did not know. MTCT is much less well known than the other two modes of transmission, namely the sexual transmission and the transmission through blood.

Pregnant women's knowledge of PMTCT methods.

In 31.93% of cases, pregnant women declared having no knowledge of PMTCT methods. The caesarean section was mentioned as a PMTCT method in 20.84% of cases. Taking ARV drugs during pregnancy and administering ARV drugs to newborns were mentioned in 9.94% and 9.39% respectively. Exclusive breast-feeding was mentioned in 18.54% of cases, mixed breastfeeding in 8.98% of cases and artificial feeding in 0.38%.

Acceptability of HIV testing by pregnant women.

The HIV screening was accepted in 85.5% of cases and 14.50% refused to be screened.

Acceptability of the screening test result

In 96.5% of cases the screening test result was accepted and in 3.5% it was rejected (Table 2).

Table 2. Types of ARVs administered.

Types of ARV	Number	Percentages
AZT + 3TC + NVP	19	32.76
TDF + 3TC + EFV	21	36.21
(AZT + 3TC) + EFV	3	5.17
D4T + 3TC + NVP	2	3.45
(TDF + 3TC) + NVP	12	20.69
(TDF + 3TC) + LVP/r	1	1.72
Total	58	100

Sharing of the (serological) status by pregnant women.

Most HIV positive pregnant women refused to share their status (73.5%), 16.56% shared their status with a family member and only 9.94% agreed to share it with their spouse.

Mode of delivery.

Delivery was carried out by vaginal delivery in 48 patients, *i.e.* 82.76% of cases. The caesarean section rate was 17.24%.

All newborns were alive at birth.

Treatment of newborns

NVP was administered in 94.83% of cases and AZT in 5.17% of cases for 6 weeks depending on the type of HIV.

All newborns received cotrimoxazole syrup.

HIV RNA and DNA screening by PCR revealed 3 cases of HIV seropositivity in children out of a total of 58, *i.e.*, a transmission rate of 5.17%, and all these contaminated children were exclusively breastfed.

Mode of feeding of newborns

Breastfeeding was exclusive in 93.5% and artificial breastfeeding in only 6.5%.

4. Discussion

Women who were counseled for the screening represented 72.38%.

The screening acceptance rate was 85.45%. The rate of acceptance of the screening was 88% in Benin; the screening was therefore carried out in 64% of new consultations. The average seropositivity rate in PMTCT sites was 3.9%, *i.e.* twice as high as the estimated HIV seroprevalence among pregnant women in Benin in anonymous, uncorrelated surveys [11]. This discrepancy is found in some studies [12] [13] or it varies in the opposite direction in other cases [12] [14].

The average age of our patients was 27 with extremes of 15 and 39. Diallo M H *et al.* reported at Matam CMC, in Guinea, an average age of 31 with extremes of 15 and 47 [10]. These results could be explained by the fact that these age groups are the most sexually active.

Married women doing liberal professions were the most numerous. Diallo M H *et al.* reported a rate of 76.54% married [10]. This could be explained by the fact that marriage is the ideal setting for having children in our culture. Any pregnancy outside of marriage is considered a dishonor to the family. Half of our sample was unschooled. A higher level of education would allow a better understanding of the usefulness of the screening.

In relation to the gestational age at screening, most of our patients were screened in the 2nd and 3rd trimesters of pregnancy. These results can be explained by the fact that the majority of women first go through their attending physicians who make the pregnancy diagnosis before deciding to have the prenatal consultation booklet for the rest of the follow-up. Regarding clinical stages according to the evolution of the disease, stage I was by far the most frequently encountered. This high frequency of stage I could be explained by the fact that most patients were

unaware of their HIV status and were screened after initial ANC counseling.

As for mother-to-child transmission, it is much less well known than the other two modes, *i.e.* the sexual transmission and the transmission by blood modes. This situation is observed both in African countries south of the Sahara, such as Côte d'Ivoire, and in less affected countries such as Sweden [15].

With regard to the knowledge about methods of preventing mother-to-child transmission of HIV, the caesarean section was cited in 20.84% of cases, taking medication during pregnancy in 9.94%. This result is different from that reported in the DRC where ARVs were cited in 32% of cases as a factor in reducing MTCT, artificial breastfeeding in 23.3% and caesarean sections in 21.6% [9]. This low rate of knowledge of PMTCT methods is due to the lack of information and sensitization.

Women's attitude towards screening was favorable in that 85.45% accepted doing it. The reasons most often mentioned for refusing screening were: the fear of the result and its consequences on family life, the waiting for their husband's approval or disapproval to do it, the feeling that they were not concerned (because they were not prostitutes), as they were screened before marriage.

Kédoté N M *et al.* reported 87% acceptance versus 13% refusal in their study conducted in Benin in 2011. This high rate of acceptance of HIV screening is due to the fact that both screening and management are free of charge [16].

On the whole, pregnant women had a favorable attitude towards the screening result in our survey. The acceptance rate of the HIV screening result among the women surveyed was (96.5%). This rate is close to the one reported in a similar study conducted in Togo where the acceptance rate of the result was also high (92.4%) [17].

In fact, women acknowledged that there were more advantages than disadvantages in knowing one's HIV status in the context of PMTCT. The most frequently mentioned advantages were knowing one's serostatus, protecting oneself in order to protect one's future child and benefiting from a management if they are HIV-positive.

The disadvantages mentioned were attempted suicide, rejection by family or spouse, discrimination, stigmatization, and shock or depression at the announcement of the result.

Regarding the sharing of their serological status with their partner, most of the women did not agree in our series (73.51%). These results are contrary to those reported in the study by Tatanga A *et al.* in 2010 in Togo where most women agreed to share their serological result with their partner, only 8.6% gave a contrary opinion [17]. The main reasons for not revealing HIV screening results were the fear of stigma, discrimination and violence from male partners.

In terms of management, all pregnant women who tested positive for HIV accepted PMTCT [18].

About the place of delivery 95.83% of the women delivered at Ratoma CMC under supervision. This rate could be explained by the positive impact of ANCs,

which provided a lot of advice on the need to continue PMTCT during labor.

All newborns were alive at birth and they routinely received ARV prophylaxis.

The high rate of exclusive breastfeeding was observed in our series. In our conditions, artificial (breast)feeding is difficult due to economic or socio-cultural barriers or fear of stigmatization when it is the rule that all mothers breastfeed their children in some communities.

5. Conclusion

Lessons learnt from this survey show that PMTCT is a well-accepted intervention among the main target population. Results showed that a lot of efforts have been made in the area of information and sensitization. Challenges to overcome in postnatal follow-up include long waiting times for PCR-DNA results. In order to decrease the rate of maternal-foetal transmission in our regions, it is necessary to strengthen screening and to improve the accessibility of newborns to care and artificial feeding. Acceptability, a high level of knowledge and a favorable attitude towards HIV screening are conditions that will promote the adherence of pregnant women to the various PMTCT programs.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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