

Use and coverage of PMTCT services: Profile of health facilities and antiretroviral treatment options in Haut-Katanga and Nord-Kivu in the Democratic Republic of Congo

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Abstract

Introduction: The objective of this study was to identify treatment options and determine the coverage and use of services for the prevention of transmission of HIV infection from mother to child in Lubumbashi.

Methods: We conducted a cross-sectional descriptive study. Including 137 health facilities (FOSA) from ten Health Zones, we systematically included all (FOSA) during the period from June 2016 to December 2017. The interview with the focal points of PMTCT activities allowed us to determine the PMTCT components (cascade of activities) available in the FOSA; the analysis of PMTCT registers made it possible to evaluate the use of each component. The data was analyzed using Epiinfo 7 and SPSS v 20 software.

Results: Coverage in PMTCT activities in Lubumbashi was 2 FOSAs offering PMTCT services per 100,000 inhabitants (57/3000, 000 inhabitants). This number represents 41.6% (57/137) of FOSAs surveyed. According to the support options, 48.3% offered option A while 51.7% offered option B+. The cascade of components offered was dominated by sensitization, screening and post-testing. Prophylaxis of opportunistic infections (42.7%), early diagnosis in infants (39.0%) as well as retention on treatment: at inclusion (40.2%) at 3 months (10%) were the components less carried out in the FOSAs. In terms of coverage, these components represented an availability of 0.8 health facilities per 100,000 inhabitants.

Conclusion: At least 3 options were used, coverage of PMTCT services compared to previous years, services are not available where women seek prenatal and postnatal care. The specific components, notably: prophylaxis of opportunistic infections, early diagnosis in infants as well as retention under treatment, are still not very available. Strengthening home-based follow-up activities can improve retention on treatment and compensate for low coverage of specific components.

Keywords: Service utilization; Coverage; PMTCT cascade; Profile of health facilities; Antiretroviral treatment options

1. Introduction

Elimination of MTCT of HIV is considered a realistic public health goal and HIV/AIDS has become a major cause of illness and death among women of reproductive age; in countries where the rate of HIV infection is high, this becomes the next

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challenge in the fight against AIDS; objective set by UNAIDS to move towards the elimination of all new infections by 2030 while carrying out screening tests, initiation of ARV treatment and other care components (1). The PMTCT service is a privileged entry point to access the services that mothers need both to improve their health and to prevent mother-child PMTCT/HIV (2).

Since 2012, globally, the number of new HIV infections has continued to decline. The decrease in new HIV infections is greater among children, although observed throughout the world, it mainly affects sub-Saharan Africa, where 90% of infected children live today, but thanks to ARV treatment, it would be possible to avoid 10 million additional deaths by 2025(4).

Option B+ has another important policy change: not only that all HIV-positive pregnant women be started on antiretroviral therapy regardless of their CD4 count, but also to start antiretroviral therapy as soon as possible after diagnosis, to quickly achieve viral suppression before delivery and thus increase the chances of having an HIV-negative baby. The current approach within MSF to initiate ARV treatment, with 2-3 counseling sessions to prepare the patient until he or she is deemed ready to start ARV treatment (2).

Mother-to-child MTCT/HIV rate remains high in Lubumbashi and newborns continue to be infected while some transmission factors are preventable, however reduction in transmission is dependent on improved monitoring system pregnancies within care structures (5). There is an urgent need to improve access to comprehensive programs for the prevention of HIV infection in infants and young children according to (4, 6).

To increase the effectiveness of programs for the prevention of mother-to-child transmission of HIV (PMTCT), many countries hard hit by the epidemic have adopted more effective prophylactic regimens of ARVs initiated during the third trimester of pregnancy, the risk of transmission during pregnancy and childbirth is then reduced to 2 to 4% (8,9). Despite the use of these prophylactic regimens, infants are still at significant risk of infection during breastfeeding. Research is ongoing to evaluate different methods of preventing HIV transmission by this route (10).

To support Ministry of Health (MOH) universal antiretroviral therapy (ART) scale-up for HIV-infected pregnant and lactating women (Option B+) and to scale up prevention of child transmission (PMTCT) cascade from HIV testing and counseling to the provision of ART to the mother and early infant diagnosis of HIV after delivery, interventions such as protecting families, have been integrated into the Ministry's Option B+ curriculum of Malawi Health, enabled favorable uptake of counseling and testing, maternal antiretroviral therapy, infant prophylaxis and early detection services is a low proportion of infants found to be HIV-infected at first PCR DNA test. Continued investments are needed to strengthen the PMTCT cascade, in particular; health actors should reaffirm their commitment to improving EID services and continue to invest in reducing gaps along the PMTCT cascade (7).

Today, countries have a unique opportunity to improve the coverage and effectiveness of PMTCT programs, thanks to several initiatives that have recently emerged (8). Considerable has been done to implement and increase coverage of PMTCT program. These programs have been shown to be feasible, acceptable, and cost-effective. But despite some advances, they have still not been implemented on a large scale in resource-constrained settings (11).

United Nations on HIV/AIDS (UNGASS). In 2005, only 9% of pregnant women living with HIV received PMTCT prophylaxis (11). As with other HIV-related services, however, there are wide variations in coverage. In Botswana, for example, more than 50% of pregnant women living with HIV currently receive prevention services. Some countries in Eastern Europe and Latin America have also achieved good levels of coverage. For women, these programs are a privileged entry point to access the services they need both to improve their health and to prevent the transmission of HIV to their child (12).

A great weakness in post-test patient coverage, 43% of HIV-positive women were followed up after testing overall and 55% of HIV-positive women and their babies received Nevirapine in the pilot project of the South African national program (9). With current treatments that significantly reduce the rate of mother-to-child transmission, almost all infants treated are expected to be seroconverted, i.e., they are expected to lose HIV antibodies from their mothers and become HIV-negative on all tests. One of the goals of care is to identify uninfected infants as effectively and safely as possible. In infected infants, the viral load increases rapidly during the first few weeks of life (9).

In the Democratic Republic of Congo (DRC), an estimated one million people are living with HIV. About 15,000 people are already waiting for ARV treatment, while an estimated 300,000 people should benefit from it. Lack of timely access to ARV treatment inevitably leads to increased morbidity and mortality from HIV. The grant application that the DRC had submitted in Round 11 aimed to increase the coverage of PMTCT in the structures (10). Despite progress in research

and international commitment in the fight against the HIV/AIDS epidemic and its consequences on the health of mothers and children, several indicators actually bear witness to the availability, insufficient and inappropriate use of PMTCT services in developing countries (11).

Global coverage of PMTCT services is developing too slowly since 2005, only around 11% of infected pregnant women had accessed HIV testing, counseling and antiretroviral prophylaxis during pregnancy. In addition, most national programs pay too little attention to primary prevention, the prevention of unintended pregnancies among women living with HIV and the access of women and children to antiretroviral treatment. Globally, in 2008, only 45% of HIV-positive pregnant women had received antiretroviral drugs to prevent mother-to-child transmission of HIV (12) (WHO et al., 2009). In 2006, approximately 39.5 million people worldwide were living with HIV, including 17.7 million women and 2.3 million children under the age of 15. Currently, in some regions, women represent the population with the fastest growing rate of HIV infection. In the most affected countries in sub-Saharan Africa, women, infants, and young children account for more than 60% of all new HIV infections (13).

The goal of all efforts should be the reduction of MTCT in children during routine maternal and child health activities in all facilities, despite unprecedented global efforts to mobilize against the epidemic of HIV/AIDS, the prevention of new infections remains largely insufficient; What are the treatment options, coverage and use of services for the prevention of transmission of HIV infection from mother to child in Lubumbashi?

The objective of this study was to identify health facilities that have integrated treatment options and determine the coverage and use of services for the prevention of mother-to-child transmission of HIV (PMTCT) in Lubumbashi and North Kivu.

2. Methods

2.1. Study environment and selection of subjects

The study was carried out in the provinces of Haut-Katanga and Nord-Kivu. In each of these provinces, all health facilities (FOSA) having integrated PMTCT and treatment options, coverage and use of PMTCT services in the Democratic Republic of Congo (DRC).

Whatever the option, were included in the study. In Haut-Katanga, the study included eleven HZs from the city of Lubumbashi and the HZs Sakania, Kipushi and Kasenga. In North Kivu, the ZS Nyirangongo, Rutshuru, Binza, Goma, Karisimbi and Kirotshe were included in the study. In each FOSA, the records of mother-child couples treated in the PMTCT program were considered as study units.

2.2. Study

The study was descriptive cross-sectional describing the profile of health facilities and treatment options in the coverage and use of PMTCT service options, from November 2015 to January 2017.

2.3. Population and Data Collection Technique

The study population was made up of health facilities and treatment options in the said facilities, so the information was obtained through the documentary review of the registers, the interview with the focal points of PMTCT activities using the questionnaire.

2.4. Data analysis and ethical considerations

The analysis was carried out using Epi-info 7 software for input and SPSS v 20 for analysis.

Ethical considerations were respected in this case anonymity, free informed consent and confidentiality of information related to the structures involved in the study and the people included in the study. We systematically included all health facilities in health zones that agreed to participate in the study.

3. Results

It appears from table I. on the profile of FOSAs, we can see that 250 FOSAs were included in the 11 HZs in the study including Ruashi 16%, Lubumbashi 20.8%, Kenya 3.2%, Kampemba 17, 2%, Tshamilemba 20.4%, Kisanga 5.2%, Kamalondo 2.4%, Katuba 6.4%, Kowe 0.4%, Mumbunda 8% and Vangu 0.4%.

Table 1 Distribution of structures according to health zones, types of structures, membership and duration since the creation of the structure

Variables	numbers	Percentage
health area	(n=256)	
Kamalondo	6	2.3
Kampemba	43	16.8
Katuba	19	7.4
Kenya	8	3.1
Kisanga	16	6.3
Lubumbashi	51	19.9
Mumbunda	20	7.8
Ruashi	40	15.6
Tshamilemba	51	19.9
Kowe	1	0.4
Vangu	1	0.4
Types of structures		
Provincial referral general hospital	1	0.4
Referral general hospital	11	4.3
Health center	162	63.3
Polyclinic (Medical Center)	71	27.7
Maternity	11	4.3
Membership		
Private	215	84
State	15	5.9
Religious denomination	26	10.2
ONG	10	4
Time since inception (years)		
<1	30	11.7
2-5	87	34.0
6-10	63	24.6
>10	76	29.7

According to the type of structures, we found that 62.4% were health centers, 28.4% polyclinics or medical centers and 4% respectively general reference hospital and maternity, among the structures surveyed 82.8% FOSAs belong to private individuals, 6.8% to religious denominations and 6.4% to the state and 4% to NGOs. The average duration of the year of existence of the structure is 7.34 ± 5.8 years with 37.8% having existed 2-5 years ago followed by 26.8% which had a duration greater than 10 years and only 17.1% with an age of less than 1 year (just born).

Table 2 Distribution of structures according to the organization of the PMTCT service, the reasons for non-organization and the duration since the integration of the activity in the structure.

Variables	numbers	Percentage
Organization of PMTCT	(n=256)	100
Yes	139	54.3
Nope	117	45.7
Reasons for not organizing	(n=117)	100
No equipment	50	42.7
No materials	36	30.8
No training	9	7.7
The infrastructure does not allow	22	18.8
Duration of PMTCT integration (years)	(n=139)	100
≤1	71	51.1
2-3	30	21.6
≥4	38	27.3

About Table II on the organization of the PMTCT activity in the FOSAs, 61.7% of the FOSAs organize the PMTCT service, for those of the FOSAs which do not organize the activity, they mentioned as a reason the lack of materials at 48.8%, the lack of training on PMTCT prevent them from organizing the activity 27.5% but also the unsuitable infrastructure was the reason for not organizing the activities. Regarding the duration of the FOSA since the integration of the activity, it appears that 51.3% were less than 1 year old (let's say had just been born), followed by 29.7% of those 4 years old of existence and at the end 19% having an age between 2-4 years with an average duration of 5.6 ± 3.2 years of existence.

3.1. PMTCT service availability

Table 3a Distribution of structures according to the package of PMTCT components in the structures.

PMTCT package variables	Numbers (n=139)	Percentage
Advice and awareness		
Yes	114	82,0
Nope	25	18,0
HIV pre-test		
Yes	110	79,1
Nope	29	20,9
Blood collection for HIV test		
Yes	112	80,6
Nope	27	19,4
HIV post-test		
Yes	125	79,1
Nope	33	20,9
HIV testing		
Yes	115	72,8

Nope	43	27,2
CD4 count exam		
Yes	98	62,0
Nope	60	38,0
Indication of place of CD4 production (n=98)		
In the structure itself	15	15,3
Large reference laboratory	56	57,1
Structures close and able to do so	27	27,6

In the light of Table III a. on PMTCT activities within structures declaring that they organize the PMTCT service (availability of components) Counseling and awareness-raising were carried out at 88.6%, the pre-test at 84.8%, sampling for the test at 83.5%, the post-test at 71.9%, the screening at 72.8% and the completion of the CD4 test at 62%. As regards the place where the CD4 examination is carried out, 57.1% of FOSAs carry out this examination at the large reference laboratory, 27.6% have it done in a nearby FOSA capable of doing it, but also 15.3% carried out the examination within the structure.

Table 3b Breakdown of facilities by PMTCT component package

PMTCT package variables	Number (n=158)	Percentage
Performing the viral load test		
Yes	65	41.1
Nope	93	58.9
Indication of the place of realization of the viral load (n=65)		
In the structure itself	22	33.8
Large reference laboratory	26	40.0
Structures close and able to do so	17	26.2
Treatment of screened patients (n=158)		
Yes	112	70.9
Nope	46	29.1
The biological follow-up of the woman		
Yes	112	70.9
Nope	46	29.1
Biological monitoring of newborns of HIV positive mothers?		
Yes	108	68.4
Nope	50	31.6
Biological follow-up of newborns of HIV-positive mothers at 3 months		
Yes	102	64.6
Nope	56	35.4
Biological follow-up of newborns of HIV-positive mothers at 6 months		
Yes	107	67.7

Nope	51	32.3
Biological follow-up of newborns of HIV-positive mothers at 12 months		
Yes	101	63.9
Nope	57	36.1

In view of Table III b. 41.1% of the PMTCT components carried out in the FOSAs carried out the viral load examination and at the large reference laboratory 40% had indicated as the place of realization and 33.8% did so within the structure. Among the FOSAs which organize the PMTCT service, 70.9% respectively put on treatment the patients tested positive for HIV and carry out the biological follow-up of the seropositive women, 68.4% carry out the biological follow-up of the newborns of the seropositive mothers and at 3 months 64.6%, at 6 months 67.7% and at 12 months 63.9% carry out the biological follow-up of the children.

Table 3C Distribution of structures according to the package of PMTCT components in the structures.

PMTCT package variables	Number (n=158)	Percentage
monitoring breast-feeding of babies born to HIV-positive mothers		
Yes	112	70.9
No	46	29.1
Yes	115	72.8
Prophylaxis of Opportunistic Infections in HIV positive women		
No	43	27.2
Prophylaxis of Opportunistic Infections in Newborns of HIV Positive Mothers		
Yes	112	70.9
No	46	29.1

It appears from Table III c. that 70.9% of FOSAs had monitored the breastfeeding of newborns from HIV-positive mothers, 72.8% and 70.9 of FOSAs among those who organize the service respectively provide prophylaxis against opportunistic infections for women HIV positive and newborns of HIV positive mothers.

Table 4 Distribution of structures according to the scheme used in the context of PMTCT and the partner supporting the activities

Option for the management of HIV-positive women	Number (n=158)	Percentage
Option A	46	29.1
Option B	26	16.5
Option B+	73	46.2
Option A et B+	13	8.2
support partner		
Self-financing	96	60.8
Private NGOs (ICAP and PROVIC)	62	39.2

It appears from Table IV. on the profile of regimens used in the context of PMTCT treatment, we see that 46.2% of FOSAs use option B+, followed by 29.1% who had option A, 16.5% had option B and at the end 8.2% of FOSAs use option A and

B+; according to the financial support of the activities within the FOSAs, 60.8% were self-financed against 39.2% which receive the support of the few organizations (private NGOs) for the realization of the activities of the PMTCT service in their structures.

3.2. Use of health services

Table 5 Components of the PMTCT cascade

PMTCT cascade	Number (n=158)	Percentage
Advice and awareness	140	88.6
HIV pre-test	134	84.8
Blood collection for HIV test	132	83.5
HIV post-test	125	79.1
HIV testing	114	72.2
CD4	89	56.3
viral load	65	41.1
Treatment of screened patients	112	70.9
biological follow-up of the woman	112	70.9
Biological monitoring of newborns of HIV positive mothers?	108	68.4
biological monitoring of newborns of HIV-positive mothers at 3 months	102	64.6
biological monitoring of newborns of HIV-positive mothers at 6 months	101	63.9
biological monitoring of newborns of HIV-positive mothers at 12 months	101	63.9
monitoring the breastfeeding of newborns of HIV-positive mothers	112	70.9
cotrimoxazole prophylaxis for HIV-positive women	115	72.8
cotrimoxazole prophylaxis for newborns of HIV-positive mothers	112	70.9

Table 6 Use of services from January 2015 to July 2017

Workforce by component	Number
ANC	76427
Women counselled or sensitized about HIV at the ANC	68551
Women pre-tested for HIV at the CPN	69217
Women who have been to the post test at the CPN	68282
Women whose sample was taken at the ANC	67594
Women screened at the CPN	18870
Women whose CD4 test was performed at the CPN	6313
Women whose viral load examination was carried out at the ANC	5466
Women put on ARV treatment	1840
HIV-positive women at the ANC put under scheme A	352
HIV-positive women at the ANC put under scheme B	3043
HIV-positive women at the ANC put on the B+ regimen	

PCR	4914
Women who have benefited from biological monitoring	2874
Newborns of HIV positive mothers who have benefited from biological monitoring	1461
Biological monitoring of newborns at 3 months	1586
Biological monitoring of newborns at 6 months	1289
Biological monitoring of newborns at 12 months	1730
Newborns of HIV-positive mothers breastfeeding follow-up	2593
HIV-positive women take cotrimoxazole	2301
Newborns of HIV-positive mothers receive cotrimoxazole	
Maternity	330
HIV-positive women	3031
HIV positive women in the maternity ward	27662
HIV-positive women in the maternity ward put on treatment	5012
HIV-positive women in the maternity home follow-up	1229
seropositive women in the maternity ward put under scheme A	169
HIV-positive women in the maternity ward put on regimen B	1932

In this table V and VI, it appears that 30 FOSAs among those of Haut-Katanga were from Lubumbashi. In this city, 23.3% of FOSAs were from ZS Lubumbashi, 15.2% were from Mumbunda. ZS Kamalondo and Tshamilemba were each represented by a FOSA. In North Kivu, apart from the ZS of Rutshuru which was represented by a FOSA, the other ZS were represented by at least six FOSAs.

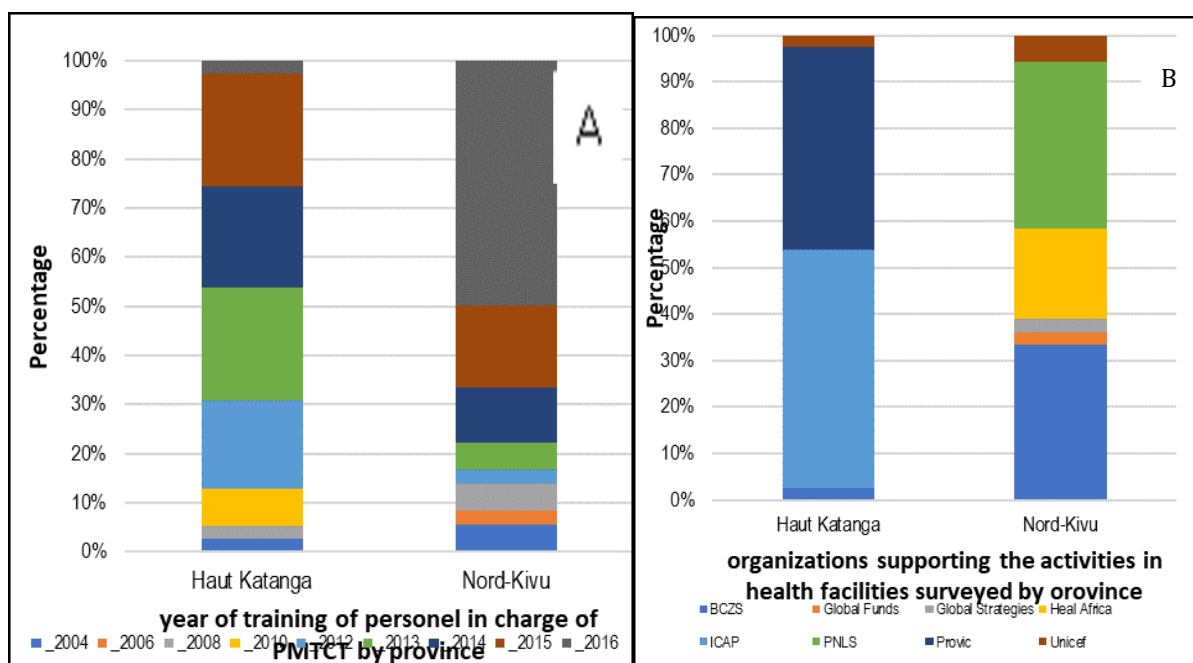


Figure 1 Year of training of personnel in charge of PMTCT (A) and organizations supporting the activities in Health facilities surveyed (B)

In Haut Katanga, it was noted that, although some FOSAs included in the study had integrated PMTCT activities for more than 10 years, provider training was recent. In this province, 83.5% of providers were trained between 2012 and 2015,

while in North Kivu, more than three quarters (77.8%) were trained from 2014. last province, and half of the service providers were trained during 2016. Thus overall, 57 de 75 providers included in the study were trained between 2013 and 2016. In the two provinces, PMTCT activities are not supported by the same partners. In Haut Katanga, PMTCT activities are supported by PEPFAR through ICAP and the Global Fund through Provic. UNICEF supports three rural HZs and three urban HZs in the city of Lubumbashi. The rest of the ZS are supported by PEPFAR and the Global Fund. In North Kivu, UNICEF also supports six HZs, three of which are urban and three rural, representing 11.2% of HZs. The Global Fund supports 69.4% of FOSAs (69.4%) and Health Africa supports 19.4%.

Regarding training on PMTCT option B+, almost all HZ providers who had integrated this therapeutic protocol were trained (98.7%). In North Kivu, however, we noted that in three FOSAs, providers were offering PMTCT option B+ services without having been trained. Such a situation was observed only in one FOSA in Haut Katanga.

Table 7 Professional experience and initial function of PMTCT focal points, and number of staff trained

Characteristics	Upper Katanga			North Kivu			Total
	number	%	Mean.±SD	Number	%	Mean.±SD	
Experience (years)	39		4±2	36		3±2	75
1	2	5.6		15	45.5		17
2	3	8.3		6	18.2		9
3	10	27.8		5	15.2		15
≥4	24	64.5		10	28.0		34
Initial function							
Nurse	15	38.5		12	33.3		27
IT	9	23.1		19	52.8		28
PMI Manager	10	25.6		0	0.0		10
Midwife	2	5.1		0	0.0		2
Doctor	1	2.6		0	0.0		1
Pharmacist	1	2.6		0	0.0		1
Head of maternity	0	0.0		3	8.3		3
Other agent	1	2.6		2	5.6		3
Number of agents			3±2			4±2	
1	5	12.8		5	13.9		10
2	16	41.0		12	33.3		28
3	7	17.9		7	19.4		14
≥4	11	28.2		12	33.3		23

In Haut Katanga, providers involved in PMTCT activities had a long experience compared to those in North Kivu ($p=0.41$). Thus, it was noted that nearly two thirds (64.5%) of providers in Haut Katanga had at least four years of professional experience, which was not the case in North Kivu where three quarters (78.9%) had less than four years of this experience. The average length of professional experience was four years in Haut-Katanga against three years in North Kivu.

The profile of personnel in charge of PMTCT activities differed from one site to another ($p=0.003$). In Haut Katanga, it was often: the head nurse (38.5%), the titular nurse (23.1%) or the one responsible for the PMI (25.6%) who took care of these activities. Midwives were responsible for PMTCT activities in two FOSAs and, in one FOSA, doctors were responsible for these activities. In North Kivu, on the other hand, it was noted that these activities were under the

respective responsibility of titular nurses (IT) (53.8%), head nurses (33.3%) and maternity managers (8.3 %). None of these FOSAs had doctors and midwives responsible for these activities.

The number of staff involved in PMTCT activities varied between FOSAs, but not between the two provinces ($p=0.04$). It varied between 1 to 8 people. In Haut Katanga, 89.6% of FOSAs had at most four agents involved in PMTCT, while in North Kivu, only 74.6% of FOSAs had at most four agents involved in these activities.

3.3. PMTCT activities carried out in the health structures surveyed

Table 8 PMTCT activities carried out in the health structures surveyed

Activities	Upper Katanga % (n=39)	North Kivu % (n=36)	Total % (n=75)
Collection of samples at the CPN	100	97.2	98.7
Screening in pregnant women and in the maternity ward	100	100	100.0
Collection of CD4 samples	30.8	27.8	29.3
Co-trimoxazole prophylaxis	100	100	100.0
ART in pregnant women	100	100	100.0
ART in newborns	100	100	100.0
Growth monitoring of exposed children	100	83.3	92.0
Collecting DR6S samples	100	69.4	85.3
Collecting DR6M samples	100	55.6	78.7
Collecting DR12M samples	17.9	69.4	42.7
Nutritional support	97.4	5.6	53.3

In this table VII, the collection of blood samples at the CPN for screening, screening at the maternity ward, co-trimoxazole prophylaxis, ART for mothers and newborns, were the activities commonly carried out in the two sites. 'Study. The collection of blood samples for CD4 was performed only in nearly 30% of FOSAs and did not differ between sites ($p>0.05$). On the other hand, it was noted that the collection of blood samples for early diagnosis at six weeks and six months was carried out more by all the focal points of Haut-Katanga than those of North Kivu ($p=0.02$). But at 12 months, it was the focal points from North Kivu who collected more of these samples than those from Haut-Katanga ($p=0.01$). Moreover, while almost all health facilities (97.4%) in Haut-Katanga that organized PMTCT activities had nutritional support, one health facility had this support in North Kivu.

4. Discussion

Coverage in PMTCT activities in Lubumbashi is 2 FOSAs on average offering PMTCT services per 100,000 inhabitants (57/3,000,000 inhabitants). This rate is lower than that recommended by the Ministry of Health of the DR Congo, this result agrees with that found by (3) which says that It probably does not make it possible to respond to all the health problems to which the population is faced with and proposes the development or revitalization of health zones advocated by the SRSS requires a good knowledge of the operational health care activities carried out in the existing health care structures (3, 14).

The FOSAs of each of the 11 HZs were included in the study by finding the type of structure, which was health centers, polyclinics or medical centers and the general referral hospital; This is consistent with the national health policy in force in the DR Congo, which requires the definition of roles with regard to the elimination of HIV transmission from mother to child, which must correspond to those already in force according to the levels of pyramid. The operational unit of the national elimination plan is the CS/HGR. (15). But in disagreement with (16) shows a disarticulation or even a fragmentation of the services of the health Zone due to the insufficiency of the national resources allocated to the sector and, as a result, the loss of the normative power of the Ministry and that of coordination of the lessors by the latter. This disarticulation is manifested on the one hand by the marginalization of the General Reference Hospital which competes

with the health Centers (financed by partners in the sector) thus disrupting the referral and counter-referral mechanisms and, on the other by the fact that these Health Centers respond more to vertical programs and partners than to ECZs which themselves are on the way to extinction (16).

Of the FOSAs surveyed, 82.8% belong to the private sector, 10.2% to religious denominations or NGOs and only 6.4% to the state. The situation in Haut-Katanga differs there are many non-regulated private for-profit companies as the country's health policy wishes (15). These results do not differ with those reported by (3) that the private nonprofit sector is held by nongovernmental organizations and religious denominations. Their contribution to the health supply is appreciable, giving the example of the Catholic Church which manages approximately 40% of the health infrastructures that are either owned or acquired for management. The lucrative private sector, in recent development, remains little known and on the whole less well regulated (3). The goal of universal health coverage takes a broad view of the services essential for good health and well-being. These services range from clinical care for individual patients to public services that protect the health of entire populations (17).

The average duration of the year of existence of the FOSA is 7.34 ± 5.8 years, given that each FOSA can decide to start operating by integrating some basic activities into the structure and after a few times later decide to add other activities according to the demand of the population or the need according to the health problems encountered.

Antiretroviral treatment regimens.

5. Conclusion

The study shows that the profile of health facilities in the DRC is mainly represented by private and state FOSAs and the treatment scheme is dominated by three options which complement each other according to demand, the client's context and the availability of the drug molecule care. Coverage of PMTCT services is low for the entire package, services are not available where women seek prenatal care. The specific components, notably: prophylaxis of opportunistic infections, early diagnosis in infants as well as retention under treatment, are still not very available. Strengthening follow-up activities and components can compensate for low coverage as well as the combination of formalized care regimens.

Compliance with ethical standards

Disclosure of conflict of interest

The authors of this article declare that there is no conflict of interest

Statement of ethical approval

The Ethics Committee of the University of Kinshasa for approval before carrying out the investigations under number: ESP/CE/091/2015.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study".

References

- [1] UNAIDS. 90-90-90 An ambitious treatment target to help end the AIDS epidemic. http://www.unaids.org/sites/default/files/media_asset/90-90-90_fr.pdf [internet]. 2014;38. available from: http://www.unaids.org/sites/default/files/media_asset/90-90-90_fr.pdf
- [2] Helal h, momas i, pretet s, marsal l, poinsard r. hiv prevalence and risk behaviour among intravenous drug users attending hiv counselling and testing centres in paris. *addiction*. 1995 dec;90(12):1627–33.
- [3] Chenge m, van der vennet j, porignon d, luboya n, kabyla i, criel b. The health map of the city of Lubumbashi, Democratic Republic of Congo Part II: analysis of the operational activities of health care facilities. *glob health promot*. 2010;17(3):75–84.
- [4] ONUSIDA. rapport. 2013.

- [5] Ngwej dt, mukuku o, mudekereza r, karaj e, odimba ebf, luboya on, et al. [study of risk factors for hiv transmission from mother to child in the strategy «option a» in lubumbashi, democratic republic of congo]. pan afr med j [internet]. 2015 jan [cited 2016 sep 4];22:18. available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4646444&tool=pmcentrez&rendertype=abstract>
- [6] Ogundele mo, coulter jbs. hiv transmission through breastfeeding: problems and prevention. ann trop paediatr. 2003 jun;23(2):91–106.
- [7] Herce me, mtande t, chimbwandira f, mofolo i, chingondole ck, rosenberg ne, et al. supporting option b+ scale up and strengthening the prevention of mother-to-child transmission cascade in central malawi: results from a serial cross-sectional study. bmc infect dis. 2015;15(1):328.
- [8] Cressey tr, punyawudho b, le coeur s, jourdain g, saenjum c, capparelli e v, et al. assessment of nevirapine prophylactic and therapeutic dosing regimens for neonates. j acquir immune defic syndr. 2017 aug;75(5):554–60.
- [9] Socidela, de c, id d. the care of infants born to seropositive mothers. 2000;5(3):167–70.
- [10] Chauvancy m introduction of the health map - the region is the reference level for financing hospitals: from the daily charge to the t2a and the global allocation. 2009;1991:1–6.
- [11] Doctors without borders. The price of forgetting. 2016; available from: <http://www.msf.org/sites/msf>.
- [12] Guide for scaling up prevention of mother-to-child transmission of HIV globally towards universal access for women, infants.
- [13] Groupe l, interagences t. gguide for scaling up prevention of mother-to-child transmission of HIV globally towards universal access for women, infants with the Interagency Working Group on Prevention.
- [14] General S. Secretariat General. 2006;
- [15] République démocratique du congo 2017–2021. 2021;
- [16] General S. Health System Strengthening Strategy. 2012;(June):1–12.
- [17] Research for Universal Health Coverage. 2013

Annexes

B. Health facilities selected for data collection in Haut-Katanga

Health zone	Health areas	Health facilities
Kampemba	Savio	Dominique Savio
	ECASET	Poly St Charles
	Référence	HGR Kampemba
	Kafubu	Mary Elmer
Kipushi	Betty	Saint Charles
	Lumata	SNCC Lumata
	Tumbwe	Yata
Kisanga	Mutuale	HGR Kisanga
Lubumbashi	Kalubwe I	Sainte Scholastique
	Kiwele	CUL
	Makutano	Medicare
	Gambela II	Saint Esprit
	Mampala	GCM Sud

Mubunda	Mampala	CS Mubunda II
	Mampala	CS Jemima
	Kabulameshi	Saint François d'Assise
	LIDO	Clinic Flora
	Basembe	Mubunda I
	Munua	CSR Munua
Kamalondo	Serekali	Crina
Kasenga	Kaboka	Kaboka
	Mission	HGR Kaboka
Kisanga	Mama wa Huruma	
	M Mwetu	Ste Bernadette
Kenya	Kenya	Kenya 2
Katuba	Marungu	CS AVE MARIA
	Kayebele	HGR Katuba
Vangu		HM Vangu
Sakania	Musoshi	HGR Kasumbalesa
	Kibwana	CSR Kibwana (Mokambo)
	FMA	FMA Sakania
	FMA	FMA Mokambo
	Katala	HGR Sakania
	Kasumbalse Village	Bwafwano
	Makutano	CS Rosalie
	Muhona	Hopital MUHONA

C. Health facilities selected for data collection in North Kivu

Health zone	Health areas	Health facilities
Binza	Kibati	CS KIBATI
	Kasizi	CS KASIZI
	Kibumba	CS KIBUMBA
	Kibumba	HGR NYIRAGONGO
	Kanyaruchinya	2
	Kingarama	
	Goma	Camp 5H
	Buramba	7
	Katwiguru	8
	Nyamilima	NYAMILIMA
	Nyamilima	HGR

	Kisharo	KISHARO
	Rutshuru	CS RUTSHURU
Karisimbi	Casop	CASOP
	Keshero	HOP KESHERO
	Carmel	CS CARMEL
	Heal Africa	1
	CCLK	CCLK
	Mapendo	CHARITE MAT
Kirotshe	Katoyi	HMR
	Virunga	5
	Kahembe	CSR KAHEMBE
	Mabanga	9
	Murara	CS MURARA
	Lubango	CS LUBANGO
	Murara	3
	Solidaire	SOLIDARITE
Nyirangongo	Rubare	4
Rutshuru	Shasaha	CS SHASHA
	Sake	CSR SAKE
	Kirotshe	HGR KIROTSHE
	Bweramana	CS BWEREMANA
	Kimoka	CS KIOMOKA
	Murambi	CS MURAMBI