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KNOWLEDGE, ATTITUDES AND PRACTICES OF MIDWIVES TOWARDS PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV IN BRAZZAVILLE

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SUMMARY

Introduction: In the Congo, the frequency of mother-to-child transmission of HIV remains high at 6.7%. There are not many health professionals who are familiar with and practise HIV PMTCT (22.9%), most of whom are physicians. Since midwives, too, have an important role to play in the follow-up of pregnant women and the practice of childbirth with regard to HIV status; our study aimed to analyse the knowledge, attitudes and practices of midwives regarding the prevention of mother-to-child transmission of HIV in Brazzaville. **Methods:** From January to June 2020, we conducted an analytical KAP study (KAP 2), concerning midwives in the prevention of mother-to-child transmission of HIV in the six (6) reference hospitals in Brazzaville. **Results:** One hundred and sixty-six midwives were interviewed. They had a median age of 42 years, a higher level of education (51.8%) with more years of work (44%). Exercise years were associated with the ratings of having satisfactory knowledge (p = 0.05). Their level of knowledge was unsatisfactory (68.7%) with disparities in partial knowledge; their attitudes were appropriate (67%) and their practices were poor (84.4%). Knowledge influenced attitudes (OR = 3.23 CI [1.43; 7,22] ; p = 0.003). Knowledge and attitudes have influenced practices. Midwives with satisfactory knowledge were 20 times more likely to have good practices (OR = 20.17; CI [6,45-63,01]; p = 0.000), and those with appropriate attitudes were 15 times more likely to have good practices (OR = 15.70; CI [2.07-119.23], p = 0.001). **Conclusion:** A strategy to strengthen the capacity of midwives to prevent mother-to-child transmission of HIV would help to improve their practice.

KEYWORDS: PMTCT, HIV, knowledge, attitudes, practices, midwives, Brazzaville.

INTRODUCTION

HIV infection is a real public health problem. According to epidemiological data, there are 38 million people living with HIV worldwide, including 690,000 deaths in 2019.[1, 2] However, in sub-Saharan Africa, women of childbearing age account for 59 per cent of all new HIV infections on par with men of the same age; this is the age range during which many women become mothers and begin to raise a family.[2] Pregnant women living with HIV are at risk of transmitting the virus to their children. In most cases, it is vertical transmission, it can occur during pregnancy, childbirth and in the postpartum through breastfeeding; This means that today, more than 220,000 new cases of infection are children under the age of 15.[2] It is therefore necessary to strengthen the strategy of prevention of mother-to-child transmission (PMTCT) of HIV, focusing on these three critical moments of motherhood. Midwifery as a health professional, who is primarily responsible for the follow-up of most pregnant women and for the practices of many deliveries, has an important role to play in preventing mother-to-child transmission of HIV. Its performance depends on its level of knowledge, attitudes and practices, as evidence has shown that it has a better knowledge of the risk factors for transmission and appropriate management; reduce contagion to less than 5%.[3] In Congo, HIV prevalence remains high at 6.7%.[4] According to the PMTCT evaluation report in 2014, coverage of antiretroviral prevention services is too low; 21% of pregnant women were screened and 19% received ARVT.[5] This is in contrast to the rates of prenatal contact and delivery in health facilities of 93% and 99% respectively in Brazzaville.[5] While, prenatal contacts represent the opportunity to offer PMTCT services to all pregnant women, in order to reach the target "zero new HIV infections in children and their mothers alive and healthy" of the new UNAIDS strategy 2016 – 2021.[6] To date, few studies around the world have addressed the knowledge, attitudes and practices of midwives on HIV/AIDS. In Congo, only 22.9% of health

personnel have an acceptable knowledge in 2016.[7] hence the interest of this study, which aims to analyse the social and professional characteristics of midwives in the Gynaecology-Obstetrics departments of the Brazzaville reference hospitals, their knowledge, attitudes and practices towards the prevention of mother-to-child transmission of HIV in Brazzaville.

POPULATION AND METHODS

Type and framework of the study

This was an analytical KAP study (KAP 2) that took place from January 03 to June 20, 2020, in the services of Gynecology-Obstetrics of the reference hospitals of Brazzaville.

Inclusion criteria

Consenting midwives, practising in the Gynaecology Obstetrics Services outpatient and birth block units with more than six months of exercise, were included exhaustively. The study variables were related to.

Socio-demographic and occupational characteristics: age, level of education, and number of years of exercise.

Knowledge of the PMTCT of HIV: general knowledge of the PMTCT, knowledge of the risk factors for mother-to-child transmission of HIV, and HIV prevention measures.

Preventive attitudes against transmission of HIV to children: the intentions, feelings and reactions of midwives towards the prevention of mother-to-child transmission of HIV.

HIV PMTCT practices: prenatal follow-up practices for HIV-positive pregnancy, delivery at lower risk of HIV transmission to the child and care of the newborn in the birth block.

Data collection tools and procedures

The data were collected using a pre-established and pre-tested questionnaire consisting of 27 questions (dichotomy, multiple-choice questions, short and open-ended questions).[8] The midwives were subjected to a direct and semi-direct interview conducted by the investigator.

Operational definitions

Level of education

Secondary: middle and high school level.
University: bachelor's level and more

Partial knowledge

Correct with maximum degree: when the answer is rated at + 100%
Usable: for responses rated between + 80 and + 100%
Unusable: for responses rated between - 60 to + 60%
Harmful: for responses rated between - 80 and -100%
Incorrect with maximum degree: when the response is rated at -100%.

Global knowledge

Satisfactory: if the score ranges from 9 to 12 points;
Unsatisfactory: if the score is less than 9 points.

Attitude

Adapted: when the rating is within the interval[6,9] points.
Unsuitable: when the rating is less than 6 points.

Practice

Good: for a score ranging from 7 to 8 bridges.
Bad: for a score of less than 7 points.

Data analysis

Calculations to be carried out

Level of knowledge, attitudes and practices

Knowledge rating

The level of knowledge was appreciated based on the method of Bruno De Finetti[9], improved by Dieudonné Leclerq.[10]

Knowledge has been recoded into four performance levels and classified as poor, insufficient, medium and good. This classification was obtained by means of a rating grid whose median score was considered for a score of 7 points with quartiles 1 and 3 (6, 9 points). Performance levels were then grouped into two categories: satisfactory which includes the levels (medium and good) and unsatisfactory which corresponds to the levels (bad and insufficient).

Rating of attitudes

Regarding the level of attitudes, Likert's rating served as benchmark. This rating; divides attitudes into four levels of performance: totally agree, agree, disagree and totally disagree. Applying this method to our study, the following expressions are similar.
- Fully agree = fully favourable.
- Agree = favourable.
- Disagreement = unfavourable.
- Totally disagree = totally unfavourable.[11]

Attitudes were rated on the basis of a rating grid. The median score is 6 points with quartiles 1 and 3 (5, 7 points). The four attitudinal levels were grouped in pairs into two variables (adapted and inadequate).

Rating of practices

Practices were rated using a rating grid, drawing on the various studies on KAP.[12, 13, 14] The median score is 5 points with quartiles 1 and 3 (4, 6 points). The level of good practices corresponds to adequate and poor practices grouping harmful and inadequate practices.

Influence of socio-demographic and professional characteristics on knowledge

In order to establish the influence of socio-demographic and professional characteristics on knowledge, we made cross-tabulations with knowledge performance levels (satisfactory and unsatisfactory), in order to obtain coastal ratios with the 95% confidence interval, then the influence of socio-demographic and occupational

characteristics on knowledge was revealed by the simple logistic regression method. The level of knowledge was the dependent variable and the socio-demographic and occupational characteristics were the independent variables.

Influence of knowledge on attitudes

To relate the influence of knowledge on attitudes, the same statistical process previously described has been performed, so attitude is the dependent variable and knowledge; the independent variable, at the end a rating ratio to the 95% confidence interval is produced and has allowed to establish the influence of knowledge on attitudes.

Influence of knowledge and attitudes on practices

The influence of knowledge and attitudes on practices, has been identified by logistic regression. The practice (dependent variable), is confronted with the independent variables which are the level of knowledge and attitudes, so that the adjustments allow to eliminate the potential confounding factors, when the rating ratio (RR) is significant not containing the number 1 and its CI at 95%.

Statistical tests

Data processing and analysis was carried out using CSpro.7.3 and Excel software. The Student test was used to calculate the mean to assess the homogeneity of the distribution of study populations, the median with the Mann Whitney test if the distribution is not homogeneous.

The test Chi-2 and the rib ratio (RR) with its 95% confidence interval were used for data analysis. The significance threshold used ($p < 0.05\%$).

The influences of the various variables on each other were assessed by bivariate analysis.

Ethical consideration

For each midwife interviewed, their informed consent was obtained beforehand. The study was carried out in accordance with the Helsinki Declaration.[15] The study was approved by the National Health Sciences Ethics Committee under number 211.

RESULTS

Characteristics of midwives

A total of 166 midwives had been recruited. The most represented health structure was Brazzaville Hospital and University Centre, 40/166 (24.1%). The age of midwives ranged from 24 to 59 years, with a median age of 42 years. The 42-47 age group was the largest 46/166 (27.7%). More than half of midwives had an 86/166 level of university education (51.8%) and a tenure of more than 10 years 73/166 (44%) (Table I).

Table I. Distribution of midwives by socio-occupational characteristics

characteristics	Midwives N = 166	
	n	%
Health facilities		
*BUH	40	24,1
*MCSHBG	32	19,3
*CAH-PM	20	12
*TRH	30	18,1
*MRH	31	18,7
*BRH	13	7,8
Age group (years)		
24 – 29	7	4,2
30 – 35	31	18,7
36 – 41	42	25,3
42 – 47	46	**27,7**
48 – 53	15	9
54 – 59	25	15,1
Years of exercise		
0,5 – 5 years	25	15
6 – 10 years	68	41
> 10 years	73	**44**
Education level		
Secondary	80	48,2
University	86	**51,8**

*BUH : Brazzaville University Hospital, *MCSHG : Mother and Child Specialist Hospital Blanche Gomes *CAH-PM : Central Armies Hospital Pierre Mobengo, *TRH : Talangai Refernce Hospital, *MRH : Makelekele Reference Hospital, *BRH : Bacongo Reference Hospital.

Knowledge of midwives

In terms of midwifery knowledge, overall, 52/166 (31.3%) had good knowledge, while 114/166 (68.7%) had poor knowledge. Specifically, only 70/166 (42,1%) midwives, knew that the transmission of the HIV of the mother to the child is possible become during the urgent pregnancy and 98/166 (59%), knew that the rate of low CD4, constitutes a risk factor of transmission. Very few midwives; 7/166 (4.2%), were familiar with the three methods of HIV testing regularly used. They were 154/166 (92,4%) to know that the regular catch of TAR is an efficient means of prevention, however 20/166 (12%) were aware of ARV molecules used in prophylaxis, 61/166 (36,7%) knew that ARVT is started from the positive diagnosis of the HIV and only 75/166 (45,3%) midwives knew about the existence of option B + initiated by the WHO as the currently registered ARVT at the pregnant woman (Table II).

Table II. Knowledge of midwives about the PMTCT of HIV		
General knowledge (12 points)	Midwives N = 166	
	n	%
Overall level of knowledge		
Satisfactory	52	31,3
Unsatisfactory	114	68,7
Definition of the acronym PMTCT		
Management of mother-to-child transmission	30	18
Prevention of mother-to-child transmission	126	76
Protection of mother and child	10	6
HIV MTCT moment		
In early pregnancy	87	52,4
During term pregnancy	70	42,1
During childbirth	153	92,1
In the postpartum during mixed breastfeeding	127	76,5
All the above proposals are correct	15	9
No idea	00	0,0
HIV MTCT risk factors		
During pregnancy, unsupervised gestation	153	92,1
High viral load	135	81,3
Chorioamniotite	101	60,8
Intact fully dilated membranes	44	26,5
Lymphocytes CD4 down	98	59
None of the above proposals is accurate	9	5,4
No idea	00	0,0
HIV testing		
RDOT, ELISA, Western Blot	7	4,2
RDOT	28	16,8
RDOT, ELISA	33	20
Aucune idée	98	59
Means of prevention		
Elestive caesarean section	107	64,5
Sexual intercourse protected	140	84,3
Systematic episiotomy	44	26,5
Well-conducted ARVT	154	92,7
Artificial breastfeeding in the absence of ARVT	101	60,8
No idea	00	0,0
The 3 molecules of ARV prophylaxis		
AZT, NVP, 3TC	20	12
No idea	146	88
Moment of initiation of ARVT		
Between 14 and 26 weeks of amenorrhoea	66	39,7
From positive diagnosis	61	36,7
3rd quarter	10	6
No idea	29	17,6
Therapeutic option currently recommended		
Option A	30	18
Option B	11	6,7
Option B+	75	45,3
No idea	50	30

Partial knowledge analysis identified some disparities; 71.8% of midwives responded with correct answers, of which 31% were correct with 100% certainty and 35% were usable, 55.7% were unusable and 9.3% were unsafe.

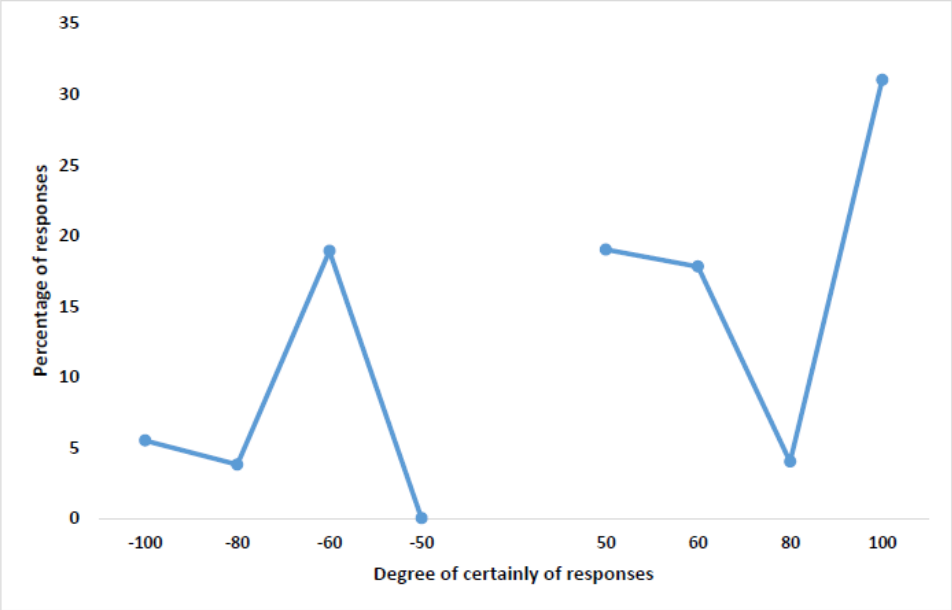

Figure I: Distribution of spectral qualities of the correct and incorrect responses of midwives to the prevention of mother-to-child transmission of HIV.

Percentage of correct responses: CR = 71.8%. The distribution of spectral qualities on the hemi-spectrum on the right is quite steep in J (more than a third of the responses of midwives are with 100% certainty).

Percentage of incorrect responses: IR = 28.2%. The distribution on the hemi-spectrum of the qualities of the incorrect responses on the left, here we have a curve in three phases; a first slightly oblique, a second increasing and finally, the third decreasing, peaking at - 60% (errors are made with caution).

The elements that distinguished midwives with satisfactory knowledge from those with unsatisfactory knowledge were age, educational attainment and years of exercise. Thus, among midwives with a satisfactory knowledge of the PMTCT of HIV, 16/52 (30.8%) were between 42 and 47 years of age, more than half had a university level of 31/52 (59.7%) and one year of exercise over 10 years of age 27/52 (52%) (Table III).

Table III. Knowledge of midwives by characteristics

Characteristics	Level of knowledge						p-value
	Satisfactory (n = 52)		Unsatisfactory (n = 114)		Total (N = 166)		
	n	%	n	%	n	%	
Age group (years)							0,62
24 – 29	1	1,9	6	5,2	7	4,2	
30 – 35	12	23	19	16,6	31	18,6	
36 – 41	10	19,2	32	28	42	25,3	
42 – 47	16	30,8	30	26,3	46	27,7	
48 – 53	4	7,7	11	9,6	15	9	
54 – 59	9	17,3	16	14	25	15	
Years of exercise							0,09
0,5 – 5 years	10	19,2	15	13,1	25	15	
6 – 10 years	15	28,8	53	46,5	68	41	
> 10 years	27	52	46	40,3	73	44	
Education level							0,17
Secondary	21	40,3	59	51,7	80	48,2	
University	31	59,7	55	48,3	86	51,8	

Attitudes of midwives

As for the attitude of midwives, in general, 111/166 (67%) had an appropriate attitude compared to 55/166 (33%) who had an inappropriate attitude. Specifically, almost all midwives (80.1%) thought that HIV testing in pregnant women is mandatory and can only be achieved in the first trimester of pregnancy, a quarter (17.5%) felt that pre-test counselling is necessary and that testing is

done throughout the pregnancy. Almost all (98.2%) were aware of the risk of taking care of an HIV-positive parturiac at birth, however, more than three quarters of them considered it necessary to adopt a positive attitude towards optimal childbirth without risk of contamination and stigma, and take this opportunity to give advice to the parturiente, to this end, 96.4% of midwives were convinced that artificial breastfeeding is the only fully effective prevention of post-natal transmission of HIV (Table IV).

Table IV. Attitude of midwives towards the PMTCT of HIV

Attitude (9 points)	Midwive N = 166	
	n	%
Overall attitude level		
Appropriate	111	67%
Inappropriate	55	33%
In your opinion, is HIV testing mandatory in pregnant women ?		
Yes	121	72,9
No (do pre-test counselling)	45	27,1
What do you think about the timing of HIV testing in pregnant women ?		
1st quarter	133	80,1
2nd quarter	3	1,8
3rd quarter	1	0,6
During the 3 quarter	29	17,5
What type of breastfeeding should an unsupervised positive HIV mother be advised ?		
Short-term maternal	4	2,4
Artificial	160	96,4
Mixed	2	1,2
Does HIV positive parturiente pose a risk of birth block contamination ?		
Yes	163	98,2
No	3	1,8
What is being done to her ?		
Measure of safe and stigmatized delivery	134	80,7
Provide advice	163	98,2
Refer to a PV/HIV care service	29	17,5
No idea	1	0,6

Practices of midwives

With regard to the level of practice, midwives overall showed a level of bad practice 140/166 (84.4%) compared to 26/166 (15.6%) of good practice. The detailed analysis showed that only 34/166 (20.5%) of midwives had ever had HIV-positive gestations followed by 58/166 (35%) who had delivered at lower risk of mother-to-child transmission of HIV and 59/166 (35.6%) who had taken care of a newborn born to HIV-positive mothers at birth.

Table V. Practice of midwives towards the PMTCT of HIV

Practice (8 points)	Midwive N = 166	
	n	%
Overall level of practice		
Good	26	15,6
Bad	140	84,4
How many positive HIV gestations have you received in PNC in recent months ?		
0	132	79,5
1	1	0,7
2	3	1,8
3	10	6
4	20	12
Have you ever given birth to a positive HIV parturiente ?		
Yes	58	35
No	108	65
Have you ever looked after a newborn baby of an HIV-positive mother ?		
Yes	59	35,6
No	107	64,4

Influence of midwifery knowledge on their attitudes
Midwives with a satisfactory level of knowledge were 3 times more likely to have an appropriate level of attitudes than those with an unsatisfactory level of knowledge (OR = 3.23).

Influence of knowledge and attitudes of midwives on their practices
Midwives with a satisfactory level of knowledge were 20 times more likely to have good practices (OR = 20.17) and those with an appropriate level of attitudes were 15 times more likely to have good practices (OR = 15.70).

Argument
Study limits
This work has been limited by the lack of extension to all health facilities in the Republic of the Congo and by the risk of a memorization bias. Indeed, the fact that we adopted the questionnaire model with both multiple-choice questions and open-ended and short-answer questions; can generate chance in the correct answers provided by some participants, whereas, this would not necessarily be the case if all the questions were designed openly. Also the valuation of the certainty of knowledge according to the postulate of Dieudonné Leclerq, does not have easy summer, because behind it, the midwives saw a way to judge it negatively.

Socio-demographic and professional profile
A total of 166 midwives participated in this study. The majority were between 42 and 47 years of age (27.7%), with a higher level of education (51.8%). The same profile was found in the studies of EL-Yakub and NDIKOM in Nigeria.[16, 17] However, for the year of exercise, our study showed that 44% of respondents had more than 10 years of exercise; result similar to that of MBOU ESSIE in Brazzaville.[7] In the EL-Yakub series, however, more than three quarters of the staff were experienced. This could be explained, on the one hand, by the fact that his study included several grade categories of caregivers, and, on the other hand, his study was conducted in a single locality with a much smaller sample size.

Knowledge, attitudes and practices of midwives
Knowledge
We conducted an analysis of the knowledge of the 166 midwives group on the prevention of mother-to-child transmission of HIV. It appears that their level of knowledge was generally unsatisfactory (68.7%). This could be explained, on the one hand, by a lack of information, since at national level, barely 1%[5] of the people in charge of prenatal contact were trained, and, on the other hand, by vertical and centralised management of the PMTCT project. This problem had already been identified in the PMTCT report in 2014.[5] This reality is not specific to the Congo. More generally, it is common in sub-Saharan Africa. The chronic lack of financial resources allocated to health is the cause.

In Africa, all the authors who worked on the same subject as us, had insufficient levels of knowledge, in respectively; 49 ; 65.7 and 85%; despite the diversity in the categorization of ranks of caregivers.[17,16,7] The decline in HIV awareness-raising activities, the lack of decentralization of PMTCT services and its integration into the entire provision of maternal and child care; this low level of knowledge is believed to be a threat to newborns from HIV-positive mothers, sexual partners, the community and the country at large. These results underscore the need for a health promotion intervention to raise awareness and increase knowledge about the severity of HIV infection in pregnant women in general and its transmission in children in particular.

Specifically, we noted that more than three quarters of participants (76%) were aware that PMTCT is a process to prevent mother-to-child transmission of HIV. As for the modalities of mother-to-child transmission of HIV, 42.1 per cent said that it could be done during pregnancy, especially at term, 92.1 per cent during childbirth and 76.5 per cent in the postpartum during exclusive or mixed breastfeeding. Some authors have worked on the same subject as us.[16,17,7] Among them, there are two in Nigeria that have had a similar result to ours (96%, 60.3%), in contrast to MBOU ESSIE which reported that 98.9% of caregivers (doctor and midwife), knew that an infected mother could transmit the virus to her future baby, but a quarter (22.9%), including most physicians, were familiar with the transmission routes. In our context, more than half of midwives had a university degree, whereas in the MBOU ESSIE study, the higher-level staff were physicians. This same observation was also made by MWEMBO-TAMBWE in the DRC and HENTENG in Madagascar.[18,19] Knowledge of the risk factors for transmission is an important element for prevention. In our study, 92,1 % midwives, knew that gestante seropositive one not followed, represented a risk factor for its offspring, as well as a high viral load was known (81,3 %), the chorioamniotite (60,8 %) and the rate of lymphocytes low CD4 (59 %). This result is broadly identical to that of NDIKOM, where 66% of respondents were aware of HIV/AIDS susceptibility factors. Whereas in the EL-Yakub series, 45.8% felt that they did not know the threshold for lymphocyte counts CD4 below which the risk of MTCT is high.

The means of preventing HIV-MTCT known to midwives in this study are the same as those found in Nigeria by NDIKOM: elective caesarean section (64.5%) and antiretroviral treatment (60.8%). The other means noted by the respondents; was protected sex (84.3%). For the molecules typically used for antiretroviral prophylaxis, more than three quarters of midwives said they had no idea (88%). The timing of initiation of antiretroviral therapy in pregnant women was largely unknown (63.2%), with only 36.7% aware that treatment was initiated upon positive diagnosis of HIV infection in pregnant women. According to the new WHO recommendations, option B + (of the ARVT) is the one

currently used.[20] In our study, 45.3% of respondents were aware of this option.

Attitudes

In general, although the attitudes of midwives towards HIV PMTCT were adjusted (67%), the knowledge was unsatisfactory. However, when an in-depth analysis of knowledge had been made going beyond the order of metacognition; that is, the degree of certainty of the partial knowledge, it was finally realized that the proportion of midwives who answered the questions correctly was high (71.8%), more than a third of the correct answers provided by midwives, with 100% certainty. This had justified why, on the whole, the attitude of the midwives was better. However, one should also not lose sight of the importance of planned behaviour theory which suggests that social values, beliefs and certain representations; indirectly influence health-related behaviours; how to perceive gravity, vulnerability, pros and cons.[21] This result, is not if far from what NDIKOM in Nigeria has rapported: 52,5 % good attitudes and 35,5 % negative attitudes. While in the Elyakub study, 41.8% of respondents had a negative attitude. The study framework and sample size may explain this difference. Nevertheless, our results pose a real public health problem due to a lack of information or ongoing training programmes for paramedics on the PMTCT of HIV.

In particular, taking into account the high level of HIV seroprevalence of pregnant women in the Congo, it is recommended that staff propose the test as a matter of priority in prenatal follow-up situations with mere presumed consent. Similarly, the requirement of resources for health workers should lead them to systematically offer HIV/AIDS testing. The law protecting VPs/HIV in Congo should not be seen as an obstacle to HIV testing of pregnant women, on the contrary it just recommends explicit consent. But despite this, the majority of midwives (72.9%) thought that HIV testing of pregnant women is mandatory and 80.1% believed that this test can only be carried out during the first trimester of pregnancy. Only 27.1% said that their attitudes were based on pretest counselling, among them; 17.5% felt that this test is in principle feasible throughout pregnancy, i.e. during the three trimesters. This corroborates the results of MBOU ESSIE with a quarter of midwives (26.6%), who said that they had systematically offered HIV testing to pregnant women. In the series of HENTENG[19] in Madagascar, and in the series on the determinants of HIV serological status unknown at delivery in the Democratic Republic of Congo.[22], it was reported respectively; 61 and 60% systematic non-proposal. A lack of awareness of the scale of the HIV epidemic, the breakdown of the stock of screening reagents, forgetting, and sometimes fear of not being able to treat HIV-positive; could be the cause of this drop in custody in the face of HIV testing of pregnant women.

Almost all midwives (98.2%) were aware of the risk of infection from the birth block of an HIV-positive parturiac. However, more than three-quarters felt that measures should be taken to ensure optimal childbirth without risk of infection while avoiding stigmatization of the parturient and to take this opportunity to provide advice. In Nigeria, NDIKOM reported that the majority of maternity staff (81.3%) use aprons, gloves and masks during childbirth and 76.8 per cent; educate and advise HIV-positive mothers on the low-risk diet of the newborn. In our study, 96.4% of midwives believed that artificial breastfeeding is the only fully effective prevention of post-natal HIV transmission.

Practices

Overall, the level of midwifery practice was poor (84.4%). It is not surprising to make this observation. The simple reason is that their low level of practice is necessarily a reflection of their level of knowledge, since best practices are based on knowledge deemed acceptable.[23] African authors, precisely in Lusaka in Zambia and in Bamenda in Cameroon[24, 25]; have reported results consistent with our own.

Distinctly, for the follow-up of an HIV-positive pregnancy during prenatal contact, only 20% of midwives had to take care of at least one HIV-positive pregnant woman. As for the practice of giving birth at lower risk of HIV transmission to children, 35 per cent of midwives had given birth and 35.6 per cent of participants had provided adequate care to newborns at birth. Factors associated with good knowledge.

In this study, the factor associated with the ratings of having good knowledge was years of work experience; the more experience the midwife had, the more she tended to have satisfactory knowledge (OR: 2.07; p = 0.05). In Nigeria, unlike us, NDIKOM reported a significant difference in knowledge between respondents who had more years of experience and those who had fewer (OR: 2,142; p = 0.03). This shows that the majority have acquired their knowledge by managing more HIV-positive pregnant women. This is an advantage that has allowed them to better understand the PMTCT, as experience has always had a lasting impact on knowledge.[26]

Influence of midwifery knowledge on their attitudes

The relationship between knowledge and attitudes has been tested. It did, however, suggest that midwives who had a satisfactory level of knowledge were 3 times more likely to have a favourable level of attitudes than those who had an unsatisfactory level of knowledge (OR: 3.23; p = 0.003). NDIKOM also obtained, like us, a correlation between respondents' knowledge and behaviour (r = 0.538; p = 0.000) with r: as correlation coefficient. This relationship clearly indicates that sufficient knowledge can lead to a favorable attitude, although many factors explained by the theory of health-related behavior may differentiate between what is known and what is actually

done.[21,26] Hence the unquestionable interest to raise the awareness of midwives, to re-educate them through quality continuous training or retraining programmes in order to strengthen their knowledge on the overall management of HIV infection in pregnant women.

Influence of knowledge and attitudes of midwives on their practices

Finally, the analysis of the influence of knowledge and attitudes on practices, allowed to assert with certainty that the respondents who had a satisfactory level of knowledge, were 20 times more likely to have good practices (OR: 20.17; p = 0.000) and those with favourable attitudes were 15 times more likely to have good practices (OR: 15.70; p = 0.001). We can then stress with certainty that satisfactory knowledge can lead to a positive attitude resulting from good practice. Recognizing the role of midwifery in the Millennium Development Goals for reducing maternal and child mortality, improving maternal health and combating HIV/AIDS; there is a need to promote capacity-building training to ensure good practices that can lead to the elimination of mother-to-child transmission of HIV (EMTCT).

CONCLUSION

The majority of midwives were between 42 and 47 years of age, with a higher level of education and more years of exercise.

They had an unsatisfactory level of knowledge, but with appropriate attitudes. Midwives had significant differences in responses. The more experience the midwife had, the more she tended to have satisfactory knowledge.

The practices of midwives in preventing mother-to-child transmission of HIV have been poor, influenced by attitudes and knowledge. This means that good knowledge and appropriate attitudes can lead to good practices.

An educational strategy based on knowledge-enhancing measures would help to improve practices.

CONFLICTS OF INTEREST

The authors do not declare any conflict of interest.

CONTRIBUTION OF THE AUTHORS

All authors contributed to the realization of this article. All authors also read and approved the final version of this article.

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