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Epidemiological Profile of 260 Rural Home Births in Ahaly canton of Brobo (Côte D'ivoire)

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Abstract

Background: *Home delivery is a common practice in rural areas of Côte d'Ivoire. It increases the risk of neonatal morbidity and mortality. The objective of the study was to describe the epidemiological profile of home births in Ahaly canton of Brobo.*

Methods: *This is a descriptive prospective study conducted from March to November 2018 in the locality of Brobo. Included were all newborns aged 8 to 28 days, born in rural areas, at home and whose parents were willing. The variables studied were: the prevalence of home delivery, the socio-demographic characteristics of the mother and the midwife, the course of the pregnancy and the circumstances of the delivery. The data analysis was descriptive.*

Results: *A total of 750 registered births, 260 of which were delivered at home, or 35%. The mothers had an average age of 26.6 years +/-7.23. 82.5% of them were housewives and 67% were out of school. They had performed at least 4 NOCs in 33% of cases. The midwife was a traditional or matron midwife in 87% and trained in the practice of childbirth in 5%. The reason for home delivery was surprise and habit in 78% of cases. The umbilical cord was severed with a new non-sterile blade in 88% of cases and tied with braided or sewn wire in 93% of cases. The newborn had a good reactivity in 99% of the time and a weight between 2500g and 4000g in 82.3%.*

Conclusion: *Home delivery is common in rural Brobo and practiced in an unsuitable environment by an unskilled person on illiterate young mothers with low socio-economic conditions for the most part. It is mainly promoted by poor pregnancy monitoring and socio-cultural beliefs. This increases the risk of maternal and newborn morbidity and mortality, hence the importance of educating mothers to avoid this practice and deliver in hospital.*

Keywords: *Epidemiology, Newborn, Home delivery, Rural areas, Côte d'Ivoire.*

Introduction

According toWorld Health Organization (WHO), in 2016, 2.6 million children worldwide died in their first month of life. This number represents 46% of deaths of children under 5 years of age[1]. In the majority of cases, death occurs in sub-Saharan Africa and is due to three main causes: prematurity, perinatal asphyxia and infection. Infection accounts for 15% of neonatal deaths worldwide[1] often caused by poor hygiene and antisepsis at birth and during the first week of life. To improve newborn survival, the WHO recommends that the mother deliver in hospital so that the newborn can receive essential care. Essential care for the newborn is provided within the first 90 minutes of life. They include protecting the child

from hypothermia, early initiation into the breast, eye care with antiseptic eye drops, dry cord care with chlorhexidine, body temperature measurement, weight gain, vitamin K1 administration and physical examination of the newborn[2]. Côte d'Ivoire, through the Ministry of Public Health and Hygiene, has adopted these recommendations. However, it must be noted that in several rural areas of the country there is a gap between community practices and these recommendations; and this seems to be favoured by home births. In the case of the Gbêkê region, the activity report of the 4 health centres in Ahaly canton of Brobo revealed a home delivery rate of 20% in 2017. Umbilical cord care for these homeborn newborns was not performed with chlorhexidine in the majority of cases. Breastfeeding is predominant and not initiated within one hour of delivery in almost all cases. Studies[3-7] have already been conducted on home births in Abidjan, Côte d'Ivoire, but none of them have been conducted in rural areas. Yet nationally, the rate of home births is higher in rural areas than in urban areas; 39.7% compared to 7.8%[8]. A good knowledge of the epidemiological profile of rural home births will make it possible to implement targeted interventions to reduce neonatal mortality in Côte d'Ivoire, currently at 33 per thousand live births[8]. The objective of the study is to describe the epidemiological profile of home deliveries in Ahaly canton of Brobo.

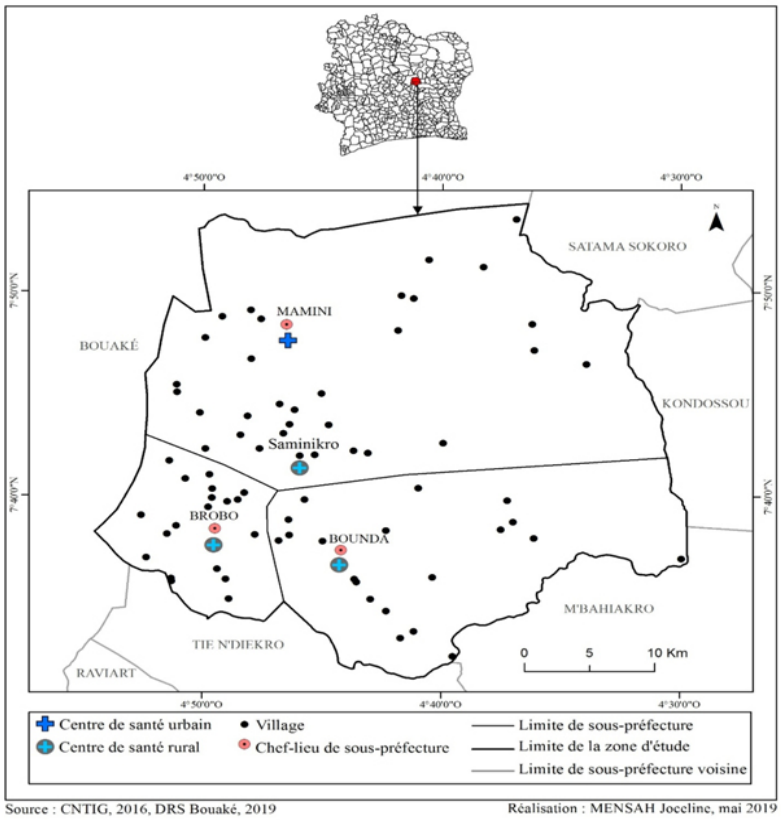

Fig 1. *Schematic representation of Ahalycanton of Brobo with administrative boundaries*

Methods

Type and Scope of the Study

This is a prospective, descriptive, cross-sectional, study conducted in Ahaly Canton of Brobofrom March to November 2018. The Ahalycanton ofBrobo includes three sub-prefectures: Brobo, Bounda and Mamini and had a population estimated according to the general population and housing census at 41735 inhabitants in 2012, including 14022 children under the age of 12. The administrative boundaries of Ahaly Canton are: the Satamasokoura sub-prefecture in the north, the Tie-N'Diekro sub-prefecture in the south, Kondossou and the M'Bahiakro sub-prefecture in the east and the Bouaké sub-prefecture in the west (Figure 1). In terms of health, Ahaly Township is part of the Bouaké-Est Health District and has four first contact health facilities. In 2016, these four health centres recorded 10617 consultations with children aged 0 to 14 years. Of these children, 8328 were under five years of age,

representing 75.6% of the cases consulted. The three main diseases recorded in these four health facilities were, in decreasing order of frequency, malaria (8518 cases), pneumonia (1176 cases), anaemia (944 cases) and acute diarrhoea (737 cases). In terms of maternity activities, 415 pregnant women were received at the first prenatal consultation. However, only 136 and 207 were reviewed respectively at the fourth prenatal consultation and in postnatal consultation. Of the 770 births notified, 642 took place at the health centre and 128 at home, representing a home delivery rate of 20%. Of the 642 women who gave birth at the maternity ward, 607 (94.5%) were properly vaccinated against tetanus, or 94.5% of cases. The newborn was predominantly breastfeeding in all cases. Regarding HIV activity, at the PMTCT level, 1175 pregnant women were tested for HIV during prenatal consultations. Fifteen pregnant women were tested positive for the disease, for a prevalence rate of 1.3%. All these women who tested positive for HIV infection were placed on ARVs. The children of these women tested positive were all placed on prophylactic antiretroviral treatment after birth as part of the Prevention of Mother-to-Child Transmission strategy.

Study Population

The target population was represented by all newborns born in Ahaly canton of Broboduring the study period. From this population we studied all those who were born in rural areas in one of the villages of Brobo.

Inclusion and Non-Inclusion Criteria

Inclusion Criteria

Included in the study were all newborns in Ahaly canton of Brobo, born in rural areas, at home between 0 and 28 days of age and whose parents gave their free and informed consent to participate in the study.

Criteria for Non-Inclusion

Not all children were included in the study:

- born at home in Ahaly canton of Brobo, aged from 0 to 28 days old and whose parents reside in the town of Brobo

- born at home in a place other than Brobo, aged 0 to 28 days and in transit with parents in a village in Ahaly canton of Brobo

Sampling and Sample

The study sample was selected by identifying all cases of newborns born at home in rural areas in Ahaly canton of Broboduring the study period and meeting the inclusion and non-inclusion criteria.

Conduct of the Study and Data Collection

When a newborn was born at home, the village community health worker would call the doctor. The latter travelled to the village by motorcycle, sometimes travelling several kilometers (20-30 km), in order to examine the newborn within a maximum of 48 hours. The assessment of the newborn at D0 included birth circumstances and clinical examination. Advice was given to mothers with drug prescriptions if necessary. The newborn was reassessed at D8 and D28. For data collection, we solicited the input of community health workers in each village and provided them with a register containing information on the circumstances of birth and postnatal care provided to the newborn. The preliminary data collected by the community health worker were checked and supplemented if necessary, by the doctor during the child's clinical examination. These data were then recorded on the pre-established and anonymous survey sheet. The data collection form was validated after a pre-test in three villages in Ahaly canton of Brobo that were randomly selected.

Variables Studied

The study variables included the prevalence of home birth, the socio-demographic characteristics of the mother, the course of the pregnancy, the circumstances of birth and the condition of the newborn at birth.

Ethical Considerations

This study was carried out after obtaining the respective administrative authorizations from the Regional Health Director of Gbêkê and the Deputy Prefect of Brobo. The newborn's participation in the study was obtained after the written informed consent of the parents. Anonymity and confidentiality were respected by assigning an anonymity number to each survey sheet.

Statistical Analyses

The data entry was made on the Epi Info 7 computer software. The data analysis was descriptive and consisted of calculating enrolment, averages and proportions. The quantitative variables were analyzed as an average with standard deviation. The qualitative variables were expressed as a proportion.

Results

Prevalence

During the study period, 750 patient deliveries were recorded, including 260 home deliveries, representing a prevalence of 35% of rural home deliveries in Ahaly de Brobo Township.

Socio-Demographic Characteristics of the Mother

The mother's average age was 26.6 years +/- 7.23 (extreme 14 and 45 years). In 67% of the cases, the mother was between 20 and 35 years old. Illiterate mothers and those with primary education accounted for 90% of the workforce. The mother was a housewife in 82.5% of cases and lived with her partner in 57% of cases. It was primigravida and paucigravida represented 55% of the workforce. The average number of gestated was 3.59 +/- 2.2 (extreme 1 and 12). First-time parents and paucipars accounted for 55% of the workforce. The average number of births was 3.54 +/- 2.2 (extreme 1 and 12). Mothers belonging to the Lasson (43%) and Akpouessou (25%) tribes accounted for 68% of the cases. The distribution of births by maternal tribe is shown in Figure 2. In the Lasson tribe, four villages (Yeguebo, Bounda, Bouakro and Pindikro) accounted for 57% of the home births in this locality. Concerning the Akpouessou tribe, three villages (Kouakro, Somelassou and Adikro) accounted for 61% of the home births in this locality. In the N'dènou tribe, four villages (Ahokokro, Koyakro, Atiwakro, Sinanvessou) accounted for 69% of home deliveries. In the Dro tribe, four villages (Takassou, Ahouzankro, Alloukro, Bokassi) accounted for 92% of home deliveries. In the Arrouyais tribe, two villages (Bokakouamékro and Sarakakro)accounted for 95% of all home births in this community. The main socio-demographic characteristics of the mother are shown in Table I

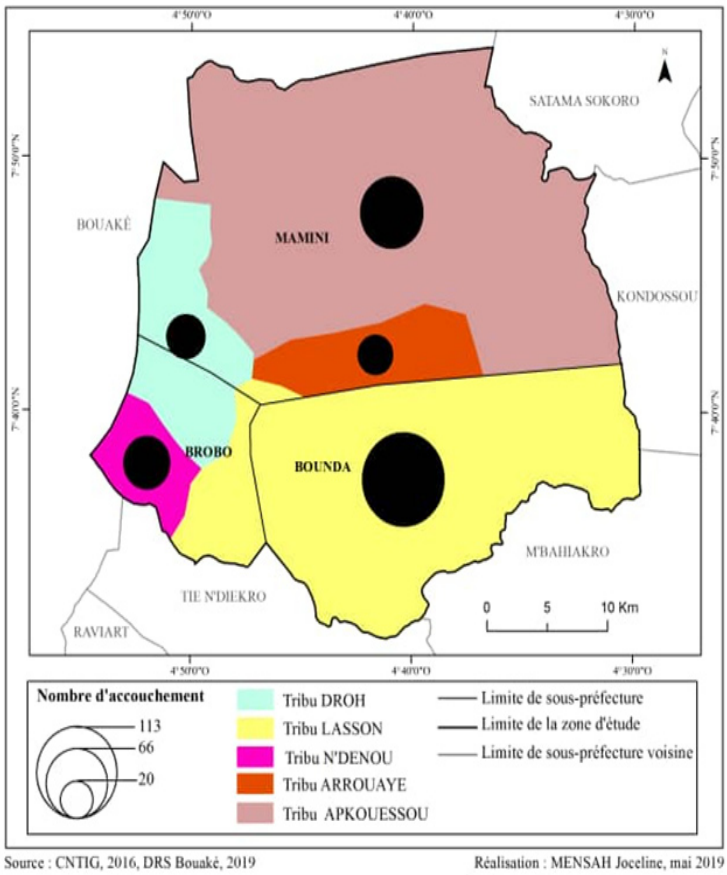

Fig 2. *Distribution of home deliveries by tribes in Brobo locality*

Table I. *Main socio-demographic characteristics of the mother*

Socio-demographic characteristics	Number	Percentage
Age (years)		
< 20	55	21.0
20-35	174	67.0
35-50	31	12.0
Educational level		
Illiterate	173	67.0
Primary school	59	23.0
Secondary school	28	10.0
Activities		
Housewife at home	214	82.5
Dressing table	16	6.0
Student	16	6.0
Seamstress	13	5.0
Trader	1	0.5
Marital status		
Married according to custom	42	16.0
Married to the civil status	0	0.0
Cohabitation	147	57.0
Single	71	27.0
Managed		
Primigravida (1)	53	20.0
Paucigest (2-3)	91	35.0
Multigeste (4-5)	61	24.0
Large multi-gest (≥ 6)	55	21.0
Parity		
Primipare (1)	57	22.0
Poverty (2-3)	91	35.0
Multiparous (4-5)	59	23.0
Large multipare (≥6)	53	20.0
Tribe of belonging		
Lasson	111	43.0
Akpouessou	66	25.0
N'denou	36	14.0
Drôh	27	10.0
Arrouaye	20	8.0

Pregnancy Course

The average number of prenatal consultations was 2.97+/-1.4 (extreme 0 and 7). The number of prenatal consultations greater than or equal to 4 was 33%. The mother correctly performed anti-anemic prophylaxis, intermittent preventive treatment of malaria and tetanus prophylaxis in 90%, 89% and 72% respectively. She slept under the long-lasting insecticide-treated net in 68% of cases. In 54.6%, the mother did not report any signs or diseases during pregnancy. When the sign or disease was reported, malaria (66%), pelvic pain (12%) and headache (6%) accounted for 84% of cases. The main data on the course of pregnancy are presented in Table II

Table II. *Information on the course of pregnancy*

Pregnancy course	Number	Percentage
Number of NOCs		
0-3	173	66.5
≥ 4	87	33.5
Prophylaxis performed		
Antianemic	235	90.0
Intermittent preventive treatment of malaria	232	89.0
Antitetanus	188	72.0
Use of insecticide-treated mosquito nets		
Yes	176	68.0
No	84	32.0
Symptoms and pathologies during pregnancy (n=118)		
Malaria	78	66.0
Pelvic pain	14	12.0
Headache	7	6.0
Pale	6	5.0
Dizziness	4	3.0
Arthralgia	2	2.0
Oral candidiasis	1	1.0
Epigastralgia	1	1.0
Influenza syndrome	1	1.0
Edema of the lower limbs	1	1.0
Palpitation	1	1.0
Rectorragie	1	1.0
Coughing	1	1.0
Mother's educational level		
Illiterate	321	79.4
Primaryschool	20	5.0
Secondaryschool	28	6.9
Superior	35	8.7
History of family asthma		
Yes	70	17.3
No	334	82.7
Concept of promiscuity		
Yes	320	79.2
No	84	20.8
Concept of exposure to cigarette smoke		
Yes	118	29.2
No	286	70.8
Concept of exposure to wood smoke		
Yes	295	73.0
No	109	27.0
Concept of exposure to animal hair		
Yes	60	14.8
No	344	85.2

Birth Circumstances and State of the Newborn at Birth

The mother's reasons for giving birth at home were represented by surprise and habit in 78% of cases. The place of birth was the parents' home in 99% of cases. The fetus was in cephalic presentation in 99.6% of cases. The average number of people who assisted the mother gave birth was 2 +/- 0.9 (extreme 1 and 5). This number ranged from 1 to 3 people in 93% of cases. Regarding the quality of the midwife, it was a traditional midwife and a matron in 87% of cases. The midwife was a woman in 87% of cases and worked as a household and farmer in 82%. The midwife was 45 years of age or older in 83% of cases. The midwife was trained in the practice of childbirth in 5% of cases. Volunteering and family tradition represented 95% of the sources of training in childbirth. The arrangement made by the midwife before the birth was to wash hands with soap and water in 59% of cases. The umbilical cord was severed with a new non-sterile blade in 88% of cases. Sewing and braiding thread were the means used to tie the umbilical cord in 93% of cases. A summary of the data on birth circumstances is provided in Tables III and IV.

Table III. *Information on the midwife*

Information on the midwife	Number	Percentage
Gender of midwife		
Male	33	12.7
Female	227	87.3
Age of the midwife		
≤ 35	14	6.0
35-45	31	12.0
45-55	83	32.0
55-65	101	39.0
>65	31	12.0
Quality of the midwife		
Traditional Birth Attendant	117	45.0
Matron	109	42.0
The mother herself	21	8.0
Healthworker	13	5.0
Activities carried out by the midwife		
Housekeeper/Cultivator	213	82.0
Village chief	26	10.0
Health Agent	13	5.0
Traditional Birth Attendant	2	0.8
Dressing table	2	0.8
Trader	2	0.8
Potter	1	0.4
Prophet	1	0.4
Training in the act of childbirth		
Yes	13	5.0
No	247	95,0
Source of the midwife's experience		
Volunteer work	163	63.0
Family tradition	84	32.0
Retired health worker	6	2.0
Active health worker	7	3.0
Disposition taken before delivery		
Hand washing with soap and water	154	59.0

Wearing clean gloves	61	24.0
No hand washing	45	17.0
Cord section material		
Unusedblade	229	88.0
Scissors	31	12.0
Cordligation means		
Sewing thread	149	57.0
Braidwire	94	36.0
Bag thread	13	5.0
Surgical suture suture	4	2.0

Table IV. *Birth Information*

Birth Information	Number	Percentage
Reasons for home delivery		
Surprise	168	65.0
Habituality	35	13.0
Financial problems	24	9.0
Personalchoice	22	8.0
RemoteHealth Centre	11	4.0
Place of delivery		
In the house	257	99.0
On the way to the field	3	1.0
Presentation of the fetus		
Cephalic	259	99.6
Shoulder	1	0.4
Number of people who attended the birth		
1	71	27.0
2	122	47.0
3	50	19.0
4	13	5.0
5	4	2.0
State of the newborn at birth		
Good reactivity (immediatecrying)	234	90.0
Poor reactivity	26	10.0
Gender of the newborn child		
Male	132	51.0
Female	128	49.0
Birthweight		
<2500 grams	41	15.7
2500-4000 grams	214	82.3
≥ 4000 grams	5	2.0

Discussion

This prospective and descriptive work, carried out for the first time in Ahaly canton ofBrobo aims to describe the epidemiological profile of rural home births. It reveals this practice represents 35% of births in Ahaly canton of Brobo. Childbirth takes place in an unsuitable environment by an unskilled person (85%) and involves young illiterate mothers (67%) with modest socio-economic conditions (82.5%). It seems to be favoured by poor pregnancy follow-up (67%) and the mother's socio-cultural beliefs. These main results must be qualified in view of some of the difficulties encountered during the data collection phase of this study. Difficult access to some villages due to poor road conditions during the rainy season has made it impossible to record cases of home births. Despite this potential bias, the results of this study raise the following points of discussion regarding

prevalence, socio-demographic characteristics of the mother, the course of pregnancy, the circumstances of childbirth and the characteristics of the midwife:

Regarding prevalence, the reported 35% rate is below the 39.7% of homebirths reported nationally in rural areas in 2016[8]. The high prevalence of homebirth is explained in the study by the difficult access of pregnant women in some villages to health centers during the rainy season (poor road conditions, inadequate means of transport), the population's trust in traditional birth attendants in view of their socio-cultural beliefs, and the poor reception of women in childbirth by some health workers. For Vrohand al.[3], the factors favouring home births in urban areas were geographical and financial accessibility, women's ignorance and poor perception of maternity services. Efforts are still needed in the Ahaly canton of Brobo to hope to get closer to the 7.8% home birth rate reported in urban areas at the national level[8].

Regarding the socio-demographic characteristics of the mother, the study reports 67% of mothers aged 20 to 35 years, with an average of 26.6 years. They are housewives, illiterate, economically disadvantaged, primigravida and paucigravida for the most part with an average number of pregnancies of 3.59. These main results have already been reported in different proportions by other authors in sub-Saharan Africa[9;10]. They have the merit of revealing that mothers are vulnerable with little experience of motherhood. These young mothers are therefore influenced by their parents. The latter probably encouraged them, because of their socio-cultural beliefs, to give birth at home through traditional birth attendants. This could help explain the high rate of home births observed in the study. The high proportion of illiterate mothers in Côte d'Ivoire reflects only the high number of illiterate women aged 15 and over[11] The study also reveals that the tribes most affected by home births are the Lasson (43%) and Akpouessou (25%) tribes. The presence of a traditional birth attendant, a village chief, with high community esteem in the Lasson tribe and difficult access to the health centre in many villages of the Akpouessou tribe explain the high prevalence of home births in these two tribes, respectively.

With regard to the progress of pregnancy, the study shows that 67% of mothers who give birth at home in rural areas make less than 4 prenatal consultations (ANC), compared to 34.6% nationally. This rate is still far from the target set by the Ministry of Health to reduce the number of women attending fewer than 4 prenatal consultations to less than 30%[12]. These mothers with less than 4 prenatal consultations are also Young, modest and mostly illiterate socio-economic conditions. They probably did not have sufficient access to the awareness messages from health care providers on the national recommendations often delivered in French. The insufficient number of prenatal consultations of the study mothers' contrasts with the high level of compliance with the recommendations on antianemia, antimalarial and anti-tetanus prophylaxis of 90%, 89% and 72% respectively. Kedyand al.[13] in 2015 reported in their hospital study that 99%, 98% and 75% of antianemia, antimalarial and tetanus prophylaxis were observed respectively. This study may be biased because mothers reported this information but without written confirmation in the mother-child health record. Inadequate pregnancy follow-up has a negative impact on the health of the pregnant woman. Nearly one in two pregnant women in the study has a pathology during pregnancy. This is malaria in two thirds of cases. In the study by Kalonji and al. [14] in Congo, the proportion of malaria reported was 34%. This high rate of malaria during pregnancy is probably linked to the low rate (68%) of use by pregnant women of the long-lasting insecticide-treated net. For Faye[15] cultural beliefs are not the main barriers to the use of long-lasting insecticide-treated nets. On the other hand, knowledge and social, technical, environmental and economic dimensions explain the non-use of long-lasting insecticide-treated nets at the community level.

With regard to the circumstances of childbirth and the characteristics of the midwife, the study reports that 99% of deliveries take place at home. In the study by Vrohand al. [3] conducted in 2009 in Abidjan, the home delivery rate was 90%. In Congo Brazzaville Bowassaand al. [16] reported a 70% rate of home births in 2015. The reasons given by the mothers in the study who give birth at home in rural areas are surprise (65%), confidence in the traditional birth attendant (13%), poor road conditions (8%), lack of transport (4%) and lack of financial resources (9%). These reasons related to geographical and financial inaccessibility, women's ignorance and misperception of maternity services have also been previously reported in urban areas of Abidjan by Vrohand al.[3]. The study reveals that the midwife is often a

woman over 45 years of age without a professional qualification. The latter is a housewife and farmer who learned the act of childbirth on the job or by family tradition in 95% of cases. These traditional birth attendants have insufficient knowledge of the rules hygiene and asepsis to be observed during the act of childbirth. This certainly explains why only 59% of them wash their hands with soap and water; and why the umbilical cord is cut and tied in most cases by a non-sterile tool. Insufficient asepsis exposes the newborn and mother to infection and increases their risk of death.

Conclusion

The prevalence of home delivery is high in Ahaly Canton of Brobo. It most often involves a young, out-of-school mother, housewife and farmer with less than four prenatal consultations. Childbirth is not performed by skilled health personnel in the majority of cases and umbilical cord management is based on traditional practices that can expose the newborn and mother to infection. Rural populations should be made aware of the importance and benefits of attending rural health centers and the risks to mothers and newborns in the event of home birth.

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