Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Obstetrics and Gynecology

Obstetric Evacuations at the Reference Health Centre in Fana (Mali)

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DOI: 10.36347/sjmcr.2023.v11i03.034 | **Received:** 24.01.2023 | **Accepted:** 05.03.2023 | **Published:** 22.03.2023

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Abstract **Original Research Article**

The purpose of our study was to study obstetric medical evacuations received at the Fana Reference Health Centre. We had 16.85% frequency of evacuations; The maternal death rate was low (0.08%) but the foetal prognosis was poor (19.2%). There is therefore a major need to improve the quality of antenatal consultations and follow-up of labour at birth. Our study found shortcomings in the correct filling of supports. The most common reason for evacuation was dystocia.

Keywords: Obstetric medical evacuations, emergencies, maternal and fetal prognosis, Fana CSRéf.

INTRODUCTION

Obstetric emergencies are multiple causes of maternal and neonatal death and are expressed by various clinical pictures that have in common the therapeutic emergency [1]. They have always posed public health problems in the world, particularly in developing countries, both in terms of their scale and their care. Every year about 8 million women worldwide suffer complications related to pregnancy and childbirth; An estimated 585,000 women die [2]. According to De Bernis for women of childbearing age, obstetric complications are the leading cause of death and morbidity worldwide [3]. According to Adanson Peter [1]: it is clear that the only way to significantly reduce maternal and neonatal mortality and morbidity is to identify as soon as possible the 15% of high-risk pregnancies requiring modern obstetric care and ensure that they are given on time [1]. In sub-Saharan Africa, a woman has a 1 in 16 chance of dying from a pregnancy-related complication in her lifetime; However, this risk is 1 in 2800 in developed countries [2].

In Mali, according to the 2018 Demographic and Health Survey (DHS VI), the maternal mortality ratio was 325 deaths per 100,000 live births; The neonatal mortality rate was 33 per 1000 [4].

To reduce the risks associated with pregnancy and childbirth, it is essential to refer women in time to better equipped facilities.

To combat maternal and perinatal mortality, effective strategies have been put in place by the Government of Mali, namely:- Introduction of the referral/evacuation system in 1993 as part of the sectoral health and population policy; Promotion of antenatal consultations; Implementation of emergency obstetric and neonatal care (SONU); Promotion of family planning; Free caesarean section.

Mali's efforts to combat maternal and perinatal mortality are part of the Sustainable Development Goals (SDGs). The Fana Health District is one of the districts in the Koulikoro region where obstetric evacuations are frequent. According to the latest SONU reports, the district recorded 7 maternal deaths in 2019 and 6 deaths in 2017. No study has been done on obstetric evacuations in the district, hence the need for our study with the following objectives.

OBJECTIVE

The aim was to assess the frequency of obstetric evacuations, to describe epidemiological aspects, clinical aspects; to determine the maternal-fetal prognosis.

MATERIALS AND METHODS

It was a prospective, descriptive, cross-sectional, analytical study from January 1, 2020 to December 31, 2020 (i.e. one year).

Study Population

This consisted of all admissions to maternity during the study period.

Sampling

This was comprehensive sampling. We took into account the parturients evacuated and cared for at the reference health center of Fana for an obstetrical emergency as part of the Reference/Evacuation.

Inclusion Criteria

All parturient women evacuated by a health centre in the Fana health district for an obstetric problem during the study period with evacuation support who received maternity care were included in this study.

Non-Inclusion Criteria

The following were not included in this study: patientsadmitted to the reference health centre in Fana for a non- obstetric problem; patientswho have been referred or come on their own; patientsevacuated without evacuation support, patients evacuated by a health centre outside the Fana health district.

The Minimum Sample Size

The minimum size is calculated by the SCHWARTZ formula: $n = z^2.p.q/i^2$ with i (precision) = 0.08, z = 1.96 and p = 27% (Dembélé frequency H [17]) = 0.27 = > q = 1 – P = 0.73. So $n = 1.96^2 \times 0.27 \times 0.73 / 0.08^2$ n = 118.30 or 118 patients.

Data Coverage

Data were collected on the survey sheet from:

Obstetric records; the register of references/evacuations, caesarean section registers; the maternal death register; theregistre of perinatal death.

Data Capture and Analysis

Data was entered on Word 2016 software, analyzed on SPSS software version 21.0.0. For variable comparisons we used Pearson's Khi squared test and Fisher's test. We used all values of $p<0.05$ as the statistically significant difference.

The variables studied are age, marital status, occupation, residence, parity, means of transport, evacuator, reason for evacuation, history, number of NPCs, diagnosis, condition of the newborn, route of delivery.

RESULTS

Epidemiological Aspects

We recorded 250 obstetric evacuations out of a total of 1484 deliveries, a frequency of 16.85%. The age group from 20 to 34 years was in the majority with a rate of 70.80%. The average age was 24.42 years with extremes of 15 and 44 years. Housewives were the most represented with 94.4% of our workforce against 3.2% of single. Among the patients, 48.4% were out of school, compared to 49.6% with primary education and only 2% with secondary education. These epidemiological aspects are classified in Table 1.

Table 1: The epidemiological aspects of obstetric studies from 1 January 2020 to 31 December 2020 at the reference health centre in Fana (Mali)

Aage in year		**Staff**	**%**
	≤ 19	69	27,6
	20 – 34	177	70,80
	≥ 35	4	1,6
Profession	Housewife	236	94,4
	Student	9	3,6
	Merchant	5	2
Marital status	Bride	242	96,8
	Bachelor	8	3,2
Schooling	Out of school	121	48,4
	Primary	124	49,6
	Secondary	5	2

Clinical Aspects

Dystocia was the most frequent reason for evacuation at 36.4% followed by antepartum hemorrhages with a rate of 11.6% and high blood pressure and complications which gives us a rate of 11.2 %. Evacuation was carried out by nurses in 41.20% compared to only29.20% of evacuations by doctors. The reasons for evacuation were accurate in 65.2% of cases. Gestationity and parity played an important role in the causes of the evacuations. Nulliparous accounted for the largest proportion (38.40%). In our series, 51 women (20.4%) had no antenatal visits. Delivery was done by caesarean section in 53.2% of cases followed by vaginal delivery in 46.8% (41.2% normal delivery and 5.6% instrumental extraction). These clinical aspects of obstetric evacuation are presented in Table 2.

Table 2: The clinical aspects of obstetric evacuations from 1 January 2020 to 31 December 2020 at the reference health centre in Fana (Mali)

Reason for evacuation	Dystocia	91	36,4	CPN numbers	0	51	20,4
	Antepartum hemorrhage	29	12		1 – 3	126	50,4
	HTA/complications	28	11	Type of presentation	Summit	202	81
	Anemia on pregnancy	24	9,6		Transverse	24	9
	Lack of expulsive effort	21	8,4		Seat	17	7
	Uterine scars	20	8		Forehead	5	2
	Stationary dilation	16	6,2		Face	2	1
	Cord process	13	5,2	Selected diagnosis	Dystocia	113	45,2
	.RPM	8	3,2		Work of normal evolution	54	21,6
Means of transport	Ambulance	217	86,8		HTA/complications	31	12,4
	Motorcycle	25	10		Uterine scars	17	6,8
	Personal car	7	2,8		Hemorrhagic PP	13	5,2
	Transit	1	0,4		HRP	12	4,8
Medical history	HTA	6	2,4		Cord process	8	3,2
	Anaemia	3	1,2		SFA	1	0,4
	No history	241	96,4		Uterine rupture	1	0,4
Surgical history	No history	224	90	Pick-up delay	< 60	202	80,8
	Caesarean section	17	6,6		60-120	22	8,8
	Laparotomy	5	2		> 120	26	10,4
	Appendectomy	4	1,4				

The average duration was 4 days with extremes of 1 and 20 days.

Maternal-Fetal Prognosis

In 86.4% of cases we recorded no complications. The most common maternal complications were anaemia with 9.6% of cases followed by infections in 2.4%. During our study, we recorded 2 cases of maternal death or 0.8%. One due to anemia and the other to eclampsia. During our study 3 patients or 1.2% were evacuated to a public hospital. Of these, 48% of newborns had an Apgar score above 7 at the first minute. The rate of live newborns and stillbirths was 80.8% and 19.2%, respectively. The main causes of stillbirth are: HRP (20.84%), dystocic presentations (18.75%), funicular pathology (12.5%), hypertension and complications (10.42%). The perinatal stillbirth rate was 5.6%. For a delay of care of less than one hour there are 18.31% of stillbirths, this rate is 36.36% between one hour and two hours (p = 0.032). Cord procidence, HRP and dystocia are accompanied by a high stillbirth rate (< 0.001) for the first two and (p=0.030) for the last. Tables x 3, 4 and 5 show the o-fetal prognosis of evacuated women.

Table 3: The maternal-fetal prognosis of women evacuated from 1 January 2020 to 31 December 2020 at the reference health centre in Fana (Mali)

Complications	**Staff**	**%**
No complications	216	86.4
Anaemia	24	9,6
Infection	6	2,4
Hypovolemic shock	1	0,4
Status of eclamptic status	1	0,4
Maternal death	2	0,8
Newborn condition	**Staff**	**%**
Living non-resuscitate	109	43,6
Resuscitated good suites	79	31,6
Stillborn	48	19,2
Early neonatal death	14	5,6

Table 4: The maternal-fetal prognosis of women evacuated from 1 January 2020 to 31 December 2020 at the reference health centre in Fana (Mali)

Delay in care (mn) Newborn condition at birth			**P**	**Total**
	Alive	Stillborn		
1 – 60	165	37	0,467	202
60 – 120	14	8	0,032	22
> 120	23	3	0,432	26
Selected diagnosis	**Normal delivery**	**Caesarean section**	**Manoeuvre obstetric**	
Dystocia	23	83	7	113
PP hemorrhage	7	6	0	13
SFA	1	0	0	1
HTA/complications	13	18	0	31
Uterine scars	5	11	1	17
HRP	3	9	0	12
Processing of cord	5	3	0	8
Normal evolution work	46	2	6	54
Uterine rupture	0	1	0	1

Table 5: The maternal-fetal prognosis of women evacuated from 1 January 2020 to 31 December 2020 at the reference health center of Fana (Mali)

Selected diagnosis	**Newborn condition at birth**	**P**		**Total**	
	Alive	Stillborn			
Dystocia	98	15	0,03	113	
Hemorrhagic PP	9	4	0,467	13	
SFA	1	0	1	1	
HTA/complications	26	5	0,64	31	
Uterine scars	15	2	0,626	17	
HRP	4	8	< 0.001	12	
Cord process	2	6	< 0.001	8	
Normal evolution work	47	7	0,188	54	
Uterine rupture	0	1	0,433	1	
Selected diagnosis	**Maternal complications**	**P**		**Total**	
	Single suites	Complicated suites	Maternal death		
Dystocia	104	9	0	0,034	113
Hemorrhagic PP	7	5	1	0,002	13
SFA	1	0	0	1	1
HTA/complications	23	7	1	0,069	31
Uterine scars	14	3	0	0,818	17
HRP	6	6	0	< 0.001	12
Cord process	6	2	0	0,616	8
Normal evolution work	54	0	0	0,003	54
Uterine rupture	1	0	0	1	1

(Pearson chi-squared = 49.836; p< 0.001)

DISCUSSION

Methodological Approach

Many studies have been conducted on obstetric medical evacuations around the world in reducing maternal and perinatal mortality. Our study is the first study conducted in the Fana Health District. This was a cross-sectional study with prospective data collection from 1 January to 31 December 2020, i.e. a duration of one year. We conducted an exhaustive sampling which allowed us to obtain a sufficient size for the study. The main difficulty encountered during our study was the non-correct filling of the supports. This deficiency has been corrected by cross-referencing the different sources of collection.

Epidemiological Aspects

We have grouped in Table 6 the summary of obstetric evacuations found in the literature.

Table 6: Review of the literature on obstetric evacuations

Authors	Place	Year	Frequency (%)
Koffi K Stéphane [5]	Bouaké	2015-2016	42,5
O Thiam [6]	Senegal	2011	31,2
Dembélé H [7]	Yeliman	2015-2018	27,65
Maiga B I [8]	Bamako CV	2015	15,20
Salihou A [9]	Niafunké	2007-2008	27,53
Soumouthéra M [10]	Koutiala	2008-2009	7,91
Our study	Freak	2020	16,85

The problems of obstetrical evacuation in our context is multifactorial, including the coverage of 22 health facilities by a reference center with often only one ambulance and the lack of quality staff. In our series, we recorded 250 evacuations out of 1484 deliveries during 12 months of study; or 16.85%. This frequency is higher than those reported by Soumouthéra M [10] at the reference health center of Koutiala and Maiga B I [8] at the reference health center of commune V of the district of Bamako which found respectively 7.91% and 15.20%. On the other hand, it is lower than those reported by Salihou A [9] at the reference health center of Niafunké and Thiam O and collaborators [6] at the NDOUM Hospital Center in Senegal who found respectively 27.53% and 31.2%. The frequency of evacuations is variously assessed depends on the area and the method of recruitment. In developed countries, evacuations are exceptional because there is still a substantial technical platform attached to the maternity ward that allows immediate emergency action [11].

The majority age group was 20 to 34 years with a rate of 70.80%. In the study by Maiga B. I. [8] the majority age group was that of 18 to 34 years with a rate of 74.7% According to the studies of Diarra M [12] and Touré S [13], the under 20s were in the majority with respective frequencies of 48.09% and 40.87%. In the studies of Traoré D. B. [14] and Berthé D. S. [15], the majority age group was 20-35 years with rates of 75.11% and 57% respectively. Our rate could be explained by the fact that it corresponds to the age range of women of childbearing age. Singles were found with a frequency of 3.2%. These rates could be explained by the discrimination and stigmatization generated by conception outside marriage, which is still poorly accepted in our traditional African societies. It was observed in our study 96.8% of married women. Diarra M. [12] (2008) and Alamine [6] (2004) reported 88.46% and 80.9% respectively. Housewives were the most represented with 94.4% of cases. This result is close to those of Macalou B. [7] and Fall G. [8] which were 92.8% and 92.24% respectively. The majority of our evacuations were carried out by ambulance, 86.6%. But it is noted that 10% were insured by motorcycle. According to studies by Kouyaté H. M [19] and Thiam O *et al.,* [6], patients evacuated by ambulance accounted for 75.6% and 69% respectively. The Marka Coungo health facility and the Fana Central Health Unit were the most evacuated facilities during the study period with 17.2% and 15.6% respectively due to their geographical position and population.

Clinical Aspects

Dystocia was the most common reason for evacuation at 36.4% followed by antepartum haemorrhage at 11.6%; high blood pressure and complications or 11.2%. These same reasons were found in other studies such as that of Thiam O *et al.*, [6] in Senegal who find dystocia 37.4% and followed by hemorrhages 31.6% and arterial hypertension and complications 14.2% and Soumouthéra M [10] which reports 41.70% hemorrhages and 12% and 11.10 % respectively for stationary dilation and lack of expulsion. The high frequency of dystocia in our study could be partly explained by the lack of early detection of risk factors related to pregnancy and childbirth in the last trimester and poor partograph monitoring of labour of delivery.

The evacuation was made by nurses in 41.20%. This rate is lower than that reported by Touré S [13] in 2019 (52.8%). Diarra B. [20] in 2007 and Touré A. [21] In 2010 each found 37% and 64.8% of the reference rates/evacuations made by matrons. This is because most CSCOMs are manned by nurses (DTCs) who order evacuations. Only 29.20% of evacuations were made by doctors. Touré S [13] had the same rate at the Banamba CSRéf of referrals/evacuations made by doctors. On the other hand, Diarra M. [12] at Point G and Alamine [16] in commune I found respectively 41.20% and 48.8% of referrals/evacuations made by doctors. Our result is explained by the presence of physicians in 7 out of 22 CSCOMs in the Fana Health District.

The reasons for evacuation were accurate in 65.2% of cases. This rate is slightly lower than that of Maiga B I [8], which reported 68.1%. Gestationity and parity played an important role in the causes of the evacuations. Nulliparous accounted for the largest proportion (38.40%). Our rate is higher than that of Touré S [13] and THIERO [22] who found respectively 36.40% and 30.6%. Large multiparous accounted for 14% in our series. This result is higher than that of CAMARA [23] (9.2%) and lower than that of Touré S [13] (16.96%). The risk in the latter is due to the weakening of the uterus as a result of multiple and close pregnancies due to a low level of contraception of our patients.

In our study, 51 women (20.4%) had no antenatal consultations. Diallo M L [24] and Sidibé I. M. [25] reported 23.71% and 20.7% of women without antenatal follow-up, respectively. The EDSM VI reports that 19% of women had not received antenatal care [4]. The percentage of women who received prenatal care from a trained provider varies according to certain demographic characteristics. This percentage is higher in urban areas (93%) than in rural areas (76%) [4].

Maternal-Fetal Prognosis

Delivery was done by caesarean section in 53.2% of cases followed by vaginal delivery in 46.8% (41.2% normal delivery and 5.6% instrumental extraction). Seydou Z Dao and colleagues [26] found 61.4% normal delivery and 32.4% caesarean section at the reference health center of commune II. Niaré A [27] in 2009 found at the reference health center of commune II, 75% vaginal delivery and 24.18% caesarean section. In 86.4% of cases we recorded no complications. The most common maternal complications were anaemia with 9.6% followed by infections in 2.4%. The prevalence of anaemia could be explained by poor prenatal follow-up or lack of prenatal follow-up and the precarious conditions of our evacuated parturients. Niaré A [27] and Traoré D B [14] reported respectively 14.34% and 6.43% complication. During our study, we recorded 2 cases of maternal death or 0.8%, one due to anaemia and the other to eclampsia. Seydou Z Dao *et al.*, [26] reported 2 cases of maternal death or 0.4%. Traoré D B [14] in 2010 at the reference health center of commune VI noted no case of death. During our study 3 patients or 1.2% were evacuated to EPH. Touré S [13] at the reference health center of Banamba found 3.53% evacuation to a public hospital or 10 patients.

During our study, 48% of newborns had an Apgar score greater than 7 at the first minute this rate is higher than those of Salihou A [9] and Thiéro [22] who found respectively 21.73% and 26.6%. The rate of live newborns and stillbirths was 80.8% and 19.2%, respectively. Cheick O. [28] in 2013 in Kita, Coulibaly A. [29] in 2015 reported 83.3% and 15.13% respectively; 76% and 24%. These high stillbirth rates are thought to be explained by the mode of admission, the delay in evacuation and the lack of prenatal follow-up in some patients. The main causes of stillbirth are: HRP (20.84%), dystocic presentations (18.75%), funicular pathology (12.5%), hypertension and complications (10.42%). The perinatal stillbirth rate was 5.6%. Salihou A [9] found 3.73% early neonatal death.

For a delay of care of less than one hour there are 18.31% of stillbirths, this rate is 36.36% between one hour and two hours (p = 0.032). Cord procidence, HRP and dystocia are accompanied by a high stillbirth rate (< 0.001) for the first two and (p=0.030) for the last. HRP, dystocia and hypertension and its complications are accompanied by a high rate of maternal morbidity. Anaemia due to haemorrhagic pp and hypertension and its complications are the two causes of maternal mortality. Thus we can say that the maternal-fetal prognosis is related to the delay of management and the pathology associated with pregnancy and labor of delivery.

CONCLUSION

Good quality antenatal care and the extension of UNOS could reduce the frequency of obstetric evacuations and improve their prognosis.

Conflict of Interest: None.

REFERENCES

1. WHO. Reducing maternal mortality – Joint WHO/UNFPA/UNICEF/World Bank Statement. Geneva.WHO.1999
2. World Heath Organization. Geneva.Maternal Mortality in 2000 :
3. Estimâtes developed by WHO, UNICEF and UNFPA. Geneva: WHO.2004a. 3-De Bernis, L Maternal mortality in developing countries: what strategies to adopt? Med Too; 2003. 63 (4-5) ; 391-9.
4. EDS VI Mali. Demographic and Health Survey. Mali 2018
5. Koffi Kouamé Stéphane. Problem of obstetrical evacuations about 630 cases collected at the maternity hospital of Bouaké University Hospital from February 1, 2016 to April 30, 2016.Thesis of medicine Bouaké, 2016 n ° 608.
6. Thiam O, Cissé M L, M'Baye M, Niang M, Gueye M, Diouf A. A, Dieye S, Moreau J C. Problem of parturients evacuated in rural Senegal: Example of the hospital center of NDIOUM from January to December 2011;52-54
7. Dembélé Hamidou. Evaluation of the evacuation referral system focused on obstetric emergencies from 2015 to 2018 In the Yélimané health district. Medical thesis, Bamako 2020 n°64: 73.
8. Maiga B I. Obstetrical medical evacuations at the reference centre of commune V (CSRéf.CV) of the district of Bamako. Thesis medicine, Bamako 2019 : n° 06 : 65
9. Salihou A. Evaluation of the referral/evacuation system for obstetric emergencies at the CSRéf of Niafounké from January 2007 to December 2008. Medical thesis, Bamako 2009, n°468 :68
10. Soumouthéra M. Evaluation of the referral system evacuation of obstetrical emergencies at the Koutiala Reference Health Center in July 2008 to June 2009.Thesis of medicine, Bamako 2010 n°277 :71
11. Berland M. Shock in obstetrics. Enc Med chir Paris obstet 1980. 65082A10.

12. Diarra M B. Obstetrical evacuations at the Obstetrical Gynecology Department of the CHU of point G about 682 cases. Medical thesis, Bamako 2008: 63-64
13. Touré S. Evaluation of the referral/evacuation system at the Banamba referral health center from October 1, 2017 to September 30, 2018. Thesis medicine, Bamako 2019 n° 129 : 49
14. Traoré D B. Problem of the referral/evacuation system for obstetric emergencies at the Reference Health Center of Commune VI of the district of Bamako. Thesis med. Bamako 2010 n°365.
15. Berthé D S. Obstetrical evacuations at the Fousseny Daou Hospital in Kayes /about 322 cases Medical thesis, Bamako 2011: 57-73
16. Altanata S., Alamine. Obstetric evacuations received at the maternity ward of the referral health centre in commune I of the district of Bamako from November 2003 to October 2004 concerning 371 cases. Thèse de médecine, Bamako FMPOS, 2005, 65p, 168
17. Macalou B. Medical evacuations in obstetrics about 154 cases at the Fousseny Daou regional hospital in Kayes: Medical thesis, Bko 2001 n°142: 54
18. Fall G Problems posed by parturient evacuees in a reference centre in sub-Saharan Africa. One-year prospective study at Dakar University Hospital, 1996. Medical thesis, Dakar, 1996: 63.
19. KOUYATE H M. Study of obstetric evacuations received at the reference health center of commune III of the district of Bamako in 2015. Medical thesis, Bamako, 2019 n°173: 66.
20. Diarra B. Evaluation of the referral system and evacuation to the Koulikoro referral health centre from July 2005 to June 2006. Medical thesis: Bamako, FMPOS, 2007 n° 153: 67p
21. Touré A. Study of obstetrical emergencies in the context of referral/evacuation to the Kolokani reference health center about 145 cases from March 1 to September 31, 2009. Thèse de médecine, Bamako, 2010 n°307:49p.
22. Thiéro M. Emergency medical evacuations in obstetrics at Gabriel Touré Hospital: about 160 cases. Medicine thesis Bko 1995 n°17 :66
23. Camara S (wife Kaba). Emergency medical evacuations in obstetrics: assessment of 2 years of study. Thèse médecine, Bamako, 2000, n° 714: 82
24. Diallo M L. Evaluation of the reference/evacuation system of the Barouéli circle from 2005 to 2010. Medical thesis, Bamako 2010, n°183:89
25. Sidibé I M. Obstetrical medical evacuations at the CSRéf of Bougouni prospective study from 2005 to 2006 about 329 cases. Thesis medicine, Bamako 2006: 47
26. Seydou Z, Sidibé K, Traoré B A, Konaté S, Haidara M, Diarra I. Evaluation of the referral /evacuation system at the referral health center of commune II of the district of Bamako, 2018.
27. Niaré A. Obstetric evacuation at the reference health centre of commune II. Medical thesis Bamako 2009 n°241 : 83
28. Cheick O. Evaluation of the referral/evacuation system at the maternity ward of the Kita Health District from 1 October 2011 to 30 September 2012. Medical thesis, Bamako, 2013 n°130 : 56
29. Coulibaly A. Obstetric medical evacuations: maternal and perinatal prognosis at the CS Ref of the commune V of Bamako from July to December 2012. Thesis of medicine, Bamako, 2015 n°176: 60