

Obstetric References in Disadvantaged Environments: Case of References to the University Hospital Center of Kara, in Northern Togo

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Abstract

Introduction: References are frequent and most often carried out in emergency situations. The objective of this study was to describe the epidemiological and clinical profile of obstetric referrals to the CHU-Kara. **Methodology:** This was a retrospective cross-sectional descriptive study conducted from September 1, 2022, to February 28, 2023, at CHU-Kara, focusing on obstetric referrals to the Gynecology-Obstetrics department. **Result:** 828 patients were referred for obstetric reasons out of 1295 admissions, representing a frequency of 63.9%. The average age was 25.04 years. They were primigravida (38.3%), unemployed (62.7%). Motorcycles were the main means of transportation, accounting for 53.1% of cases. The average distance to reach the referral center was 31.6 km, covered in an average of 71 minutes. In 40.7% of cases, patients had less than 4 prenatal consultations and were referred in peripartum (56.6%) for pre-eclampsia (14%), post-term pregnancy (11.8%), dystocia (10.5%). Eighty-six point nine percent (86.9%) of the referred patients were able to deliver during their stay in the department, of which 61.7% had vaginal deliveries. The maternal and perinatal mortality rates were 0.7% and 14.9%, respectively. **Conclusion:** Obstetric referrals to Kara University Hospital are frequent during the peripartum period and are often carried out by motorbike.

Keywords

Obstetric Referral, Epidemiology, Prognosis, CHU-Kara

1. Introduction

The pregnancy and postpartum period constitute a risk factor for mortality and morbidity among women of reproductive age [1]. Indeed, every day, nearly 800 women die from complications related to pregnancy and childbirth [2]. This is a significant public health issue, especially in low-income regions, particularly in Sub-Saharan Africa. In 2020, out of the 287,000 recorded maternal deaths, 70% occurred in sub-Saharan Africa [2].

Like these countries, Togo also experiences a high maternal mortality rate, with 399 deaths per 100,000 live births [3]. However, the majority of these deaths can be prevented with the help of addressing the three delays, including difficulties in reaching referral centers. Thus, reducing maternal mortality would involve identifying and referring any situation that poses a maternal or fetal life-threatening prognosis for obstetric and neonatal emergency care at an earlier stage. This is where obstetric referral becomes one of the strategies aimed at reducing maternal and neonatal deaths. It is common and has been the subject of research, particularly in Africa. For example, in Cameroon, Belinga *et al.* reported a frequency of 37.5% [4]. In Ghana, Goodman *et al.* reported a frequency of 80% [5].

In Togo, Aboubakari *et al.* reported a frequency of 67.83% in 2007 [6]. Despite this high frequency of referrals, patients, families, and healthcare providers often encounter difficulties in accessing referral centers, especially in low-income regions. In Ghana, Daniels *et al.* reported difficulties including inadequate transport, poor management of patients during transit, lack of communication and lack of professional [7]. According to Banke-Thomas *et al.* in Nigeria, patients are often confronted by transport difficulties, making the delay in arriving at the referral centre very long, up to 240 minutes [8]. On the basis of these observations, this study was conducted to highlight the challenges of referral to the Chu Kara and the prognosis of these referrals. Specifically, the objectives were to determine the frequency of obstetric referrals, determine the epidemiological profile of referrals, and determine the early maternal and neonatal prognosis of referrals.

2. Patients and Method

The study took place in the Gynecology-Obstetrics department of CHU-Kara, which is the largest referral center in the northern part of Togo. CHU-Kara is located in the Kara region, specifically in the 1st commune of the Kozah prefecture, 412 km from Lomé, the capital of Togo. This was a descriptive cross-sectional study with retrospective data collection conducted from September 1, 2022, to February 28, 2023, a period of 6 months. The study included all patients referred or evacuated from peripheral centers and admitted to the gynecology-obstetrics department of CHU-Kara during the study period. A comprehensive survey was conducted, involving all patients who met the inclusion criteria. Thus, all patients referred and admitted to the department with or without a referral form,

for obstetric reasons and receiving care in the Gynecology-Obstetrics department of CHU-Kara during the study period, were included in our study. Patients who were not referred and those admitted or referred for non-obstetric reasons were not included in this study. A questionnaire was used to collect data from referral forms, obstetric records, and neonatology admission registers. The parameters studied included sociodemographic aspects (age, education level, occupation, gravidity, parity), prenatal history and follow-up (comorbidity, surgical history, number of prenatal consultations), referral data (means of transport, distance traveled, duration of referral, existence of a referral form, referral period, referral reason), maternal and perinatal prognosis (pregnancy outcome, postpartum complications, maternal lethality in referrals, Apgar score at 5 minutes, perinatal lethality in referrals), and length of stay. The data were treated and analyzed using Microsoft Office Word and Excel 2021 software, as well as Epi Info 7.2.

Ethical considerations

Study conducted after obtaining authorization from the management of CHU-Kara. The collected data were kept confidential and anonymous for all patients.

3. Results

3.1. Frequency

828 obstetric cases referred out of 1295 admissions, with a frequency of 63.9%.

3.2. Sociodemographic Data

The average age of the patients was 25.04 years, with an age range of 15 to 41 years. The age group of 20 to 30 years was the most represented, accounting for 53.2%.

Sociodemographic data	Number	Percentage %
Age (year)		
<20	143	17.3
20 - 30	440	53.2
>30	245	29.5
Level of education		
Not in school	284	34.3
Primary	152	18.3
Secondary	312	37.7
Tertiary	80	9.7
Profession		
Unemployed	519	62.7
Reseller	106	12.8
Student	67	8.1

Continued

Craftswoman	78	9.4
Grower/farmer	58	7.0
Gravidity		
Primigravida	318	38.3
Paucigravida	208	25.2
Multigravida	302	36.5
Parity		
Nulliparous	327	39.5
Primiparous	109	13.2
Pauciparous	181	21.8
Multiparous	211	25.5

3.3. History and Prenatal Care

In 17.9% of cases, the patients had a comorbidity, with hypertension (3.9%), diabetes (2.3%), and asthma (1.8%) being the most common. Regarding surgical history, 9.1% had at least one cesarean section scar. Forty-seven percent of those referred had completed less than 4 antenatal care consultations, as shown in **Table 1**.

3.4. Reference Data

Motorcycle (53.1%) and taxi (36.8%) were the main means of referral (**Figure 1**). The distance traveled ranged from 3 to 108 km with an average distance of 31.6 km. The referral duration ranged from 25 to 250 with an average duration of 71 minutes. In 23.1% of cases, patients were referred without a referral form.

The majority of patients were referred during labor and delivery as shown in **Table 2**.

Concerning the reasons for referral to the Kara university hospital, patients were referred mainly for preeclampsia/eclampsia (14%, N = 116), post-term pregnancy (11.8%, N = 98), dystocia (10.5, N = 87), scarred uterus (9.2%, N = 76), late-term abortion (8.8%, N = 73). **Figure 2** below shows the reference patterns

3.5. Maternal and Fetal Prognosis

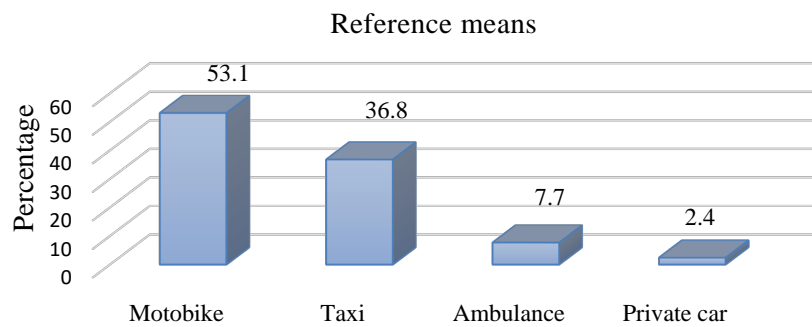
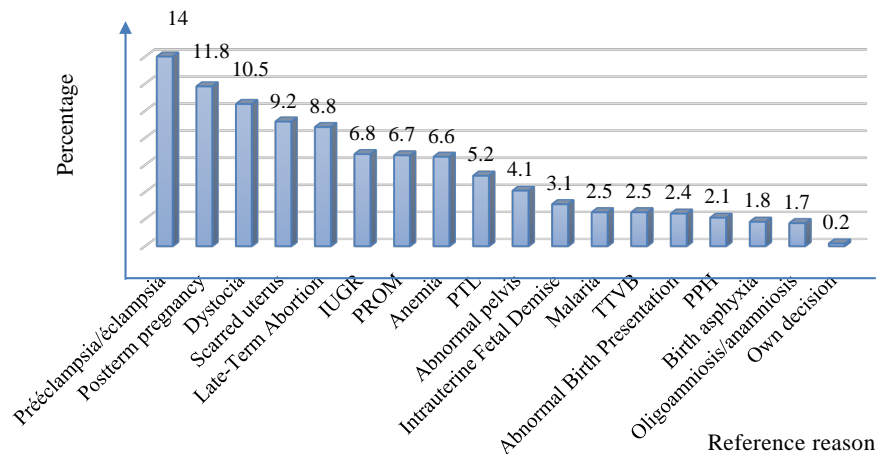
Out of all the referred patients, 720 were able to deliver during their stay in the department, resulting in a delivery rate of 86.9%. Vaginal delivery was performed in 61.7% of cases. Sixty-two patients, accounting for 7.5%, experienced postpartum complications, with the main ones being anemia (38.7%), wound infections (16.1%), immediate postpartum hemorrhage (14.6%), and eclampsia (3.1%). Six maternal deaths were recorded, with hemorrhage being the main cause in 4 out of 6 cases, resulting in a case fatality rate of 0.7%.

Table 1. Distribution of patients according to the number of antenatal care consultations.

Number of CPNs	Number	Percentage (%)
None	94	11.4
1 - 3	243	29.3
≥4	491	59.3
Total	828	100.0

Table 2. Distribution of patients according to the referral period.

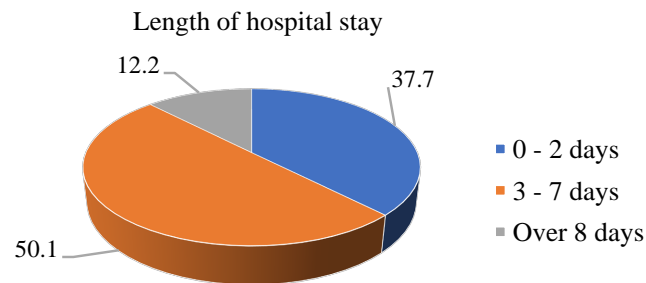
Reference period	Number	Percentage (%)
Antepartum	337	40.7
Intrapartum	469	56.6
Postpartum	22	2.7
Total	828	100.0

**Figure 1.** Distribution of referral means.**Figure 2.** Distribution of patients according to the referral reason. IUGR: intrauterine growth restriction, PROM: premature rupture of membranes, PTL: preterm labor, PPH: immediate postpartum hemorrhage, TTVB: Third-Trimester Vaginal Bleeding.

Regarding perinatal prognosis, the Apgar score at the fifth minute was above 7 in 74% of cases. We recorded 107 cases of perinatal deaths, including 26 stillbirths. The perinatal mortality rate was 14.9% due to causes represented in **Table 3**.

Table 3. Distribution of perinatal deaths according to the cause.

Cause	Number	Percentage (%)
Perpartum asphyxia	35	33.0
Preeclampsia	21	19.7
Maternal anemia	15	13.8
Retro placental hematoma	15	13.8
Prematurity	12	10.8
Chorioamnionitis	9	8.9
Total	107	100.0

**Figure 3.** Distribution of patients according to the length of hospital stay.

3.6. Length of Hospital Stay

The length of hospital stay ranged from 24 hours to 20 days, with an average duration of 3.3 days, as shown in **Figure 3**.

4. Discussion

4.1. Limitations of the Study

The limitations of our study are those of a retrospective study on files completed in an emergency, where some variables are not included. The referral documents were poorly completed, and sometimes not completed at all, resulting in the loss of some information.

However, the results of this study will enable us to make some conclusions about referral in our area and to find some solutions for better quality obstetric care.

4.2. Frequency

During the study period, we recorded 828 referred patients out of a total of 1295 admissions, resulting in a frequency of 63.93%, which is similar to Atade *et al.* in Benin who reported a frequency of 55% [9]. This rate is higher than that of Belinga *et al.* in Cameroon (37.46%) [4], Tiam *et al.* in Senegal (31.2%) [10], or Ghardallou *et al.* in Tunisia (15.23%) [11]. The referral rate varies from one region to another and depends on the level of healthcare coverage in the region and the methodology of different studies. In the case of our study, this high rate

is explained by the low coverage of the region with tertiary hospitals. Indeed, CHU-Kara is the only tertiary level hospital in the northern region of Togo, which receives all referrals from the northern part of Togo.

4.3. Socio-Demographic Data

The average age of 25.04 years with a range of 15 to 41 years found in this study is similar to that of Maskey *et al.* in Nepal, which was 25.2 years with a range of 15 to 40 years [12]. In 53.1% of cases, the patients were aged 20 - 30 years, similar to the findings of Belinga *et al.* and Akaba *et al.*, with respective percentages of 55.4% and 56.1% [4] [13]. It is clear that the age groups in the different studies overlap. Indeed, the period of 20 - 30 years represents a period of reproductive activity.

In 65.7% of cases, the patients were educated, just like Jakhar *et al.*, who reported 67% [14]. Secondary education was the most represented level of education, at 37.7%. The same observation was made by Prathiba *et al.* in India, who reported that the majority of patients were educated in 86.3%, with 41.2% having a secondary education level [15]. However, in the studies by Jakhar *et al.*, Belinga *et al.*, and Kanyengye *et al.*, the most represented level of education was primary, at 47.2%, 24.8%, and 65% respectively [4] [14] [16]. The Togolese government has made female literacy a cornerstone of improving maternal health. This explains the existence of multiple actions and programs by the Togolese government to promote girls' education, including free primary education and subsidies for girls' secondary education expenses.

Nearly half of the patients (49.8%) were housewives. Higher proportions of housewives were also found in the studies by Atade *et al.* in Benin and Dembele *et al.* in Mali, which reported 93% and 92.5% housewives, respectively [9] [17]. However, it should be recognized that women's empowerment and the creation of income-generating activities are significant factors in improving maternal health indicators. Therefore, more efforts should be made to empower women in order to significantly improve their health.

4.4. Antenatal Care

In 40.7% of cases, patients had attended fewer than 4 antenatal consultations, with 11.4% having had no consultations at all. This rate is similar to that of Belinga *et al.* (42.1%) [4] and Atade *et al.* They had attended 1 to 3 antenatal consultations in 65.1% (222/341) of cases and had no antenatal consultations in 19.1% (n = 65/341) [9]. The purpose of these consultations is to identify warning signs and dangers, to detect any potential fetal or maternal pathologies, to assess the prognosis of delivery, and to provide timely referrals. They also provide pregnant women with the opportunity to benefit from prophylactic measures related to malaria, advice on preventing anemia, and other risk factors. It is evident that not only do many pregnant women not attend enough consultations, but they also do not seek prenatal care early.

4.5. Reference Data

Ambulances were only used in 7.7% of cases. Motorcycles were the most commonly used means of transportation (53.1%), followed by taxis (36.8%). Non-medicalized transport was also reported by Akaba *et al.*, who reported 7.3% ambulance usage [13], and Kitilla *et al.* (4.5%) [18]. The low rate of ambulance usage could be explained by the fact that several facilities do not have a functional ambulance available at all times, as well as the financial constraints of patients to pay for ambulance transport. In addition to transportation challenges, there is also the issue of geographical accessibility to referral centers. Indeed, patients had to travel an average distance of 31.6 km, sometimes up to 108 km, before reaching the referral center. The average duration of the referral process was 71 minutes, and sometimes referrals lasted 250 minutes, which is over 4 hours. The lack of surgical facilities in district hospitals, shortage of qualified personnel, and poor condition of rural roads are among the obstacles to improving maternal and neonatal health indicators.

Twenty-three point one percent (23.1%) of patients were referred without a referral form. This result reflects the fact that the majority of healthcare providers consider filling out the referral form as a mere administrative formality. However, beyond its administrative aspect, a well-filled referral form allows for a better understanding of the care provided to the parturients upon admission. This helps to avoid overdosing on certain medications that can have harmful effects on both the mother and the fetus. Therefore, it is important to encourage and raise awareness among staff about the significance of this referral form.

Pre-eclampsia/eclampsia was the main reason for referral as reported in studies in Nigeria and India, where pre-eclampsia accounted for referral rates of 17% and 26.8% [19] [20]. However, in other African studies, dystocia was the main reason for referral [21] [22]. Based on our study and others, special attention should be given to pre-eclampsia, which is a public health issue and tends to surpass hemorrhage as a cause of maternal death. It is important to emphasize the quality of prenatal consultations, strengthen the competency of maternity teams in managing pre-eclampsia, and equip referral maternity clinics with adequate technical resources.

4.6. Maternal and Neonatal Prognosis

In our study, 61.7% of patients delivered vaginally, of which 58.2% were natural deliveries, 2.8% were instrumental, and 0.7% were by maneuver. Cesarean section was performed in 25.2% of cases. Our data is consistent with that of Atade *et al.* in Benin and Mathew *et al.* in India, who reported vaginal delivery rates of 54% and 68.1% [9] [23]. The maternal morbidity rate was 7.5% and occurred in the postpartum period. The same maternal complications were reported in Benin [9]. The maternal mortality rate was 0.7%, with the main cause being hemorrhage. The perinatal mortality rate was 14.9%, as reported by Atade *et al.* in Benin (13.2%) [9] or Mathew *et al.* in India (15.9%) [23]. These perinatal deaths

were mainly related to perinatal asphyxia and pre-eclampsia. Hence, the importance of prenatal consultations, especially their quality, proper monitoring of labor, timely referrals, and the availability of blood products and labile resources to prevent maternal and perinatal deaths, which are almost avoidable in our settings.

5. Conclusion

Obstetric referrals are frequent at CHU Kara, and these referrals most often occur during labor and delivery. These referrals are characterized by long distances traveled with inadequate means of transportation, which contribute to significant maternal and neonatal morbidity and mortality. While the referral system in place helps prevent deaths, it is important to strengthen it to improve the maternal and neonatal prognosis of obstetric referrals.

Conflicts of Interest

The authors declare no conflict of interest.

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