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Original Research Article

Obstetric Complications in the General ICU at CHU Gabriel Touré, Bamako Management and Prognostic Factors

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Abstract: ***Introduction*:** Obstetric complications remain a major cause of maternal morbidity and mortality in sub-Saharan Africa, particularly when intensive care is required. This study aimed to analyse the epidemiological, clinical, therapeutic and prognostic aspects of these complications. ***Methods*:** We conducted a 12-month descriptive and analytical study (March 2024 to February 2025) in the general intensive care unit (ICU) of CHU Gabriel Touré. All women admitted for obstetric complications were included. Data were entered and analysed using SPSS® 22.0. ***Results*:** Of 674 ICU admissions, 244 involved obstetric complications (36.2%). Mean age was 25.7 ± 7.1 years. Most patients were housewives (80%) and primigravidae (34.4%); over three-quarters (76.2%) had no antenatal care. Clinical findings included tachycardia (45%), arterial hypertension (45%), hypotension (35%) and anaemia (65%). The main obstetric complications were eclampsia (43%), retroplacental haematoma (36%), haemorrhagic shock (33.6%) and acute kidney injury (22.9%). Management comprised initial stabilisation (100%), oxygen therapy (39.7%), ventilatory support (50%), and blood transfusion (36.5%), predominantly red cell concentrates (65.1%). Magnesium sulphate (29.5%) and antihypertensives (25%) were used; noradrenaline was the vasopressor of choice (98%). Mean length of stay was 2.8 ± 2.32 days. Mortality was 17.6%. Prognostic analysis showed significant associations between mortality and eclampsia (p=0.000; RR=4.65 [2.04–10.62]), acute kidney injury (p=0.000; RR=3.12 [1.83–5.65]) and haemorrhagic shock (p=0.000; RR=2.75 [1.58–4.79]). ***Conclusion*:** Obstetric complications are frequent and carry substantial mortality. Strengthening antenatal care and ensuring timely, protocol-driven management are essential to improve maternal outcomes.

Keywords: Obstetric Complications, Intensive Care, CHU Gabriel Touré, Mali.

1. INTRODUCTION

Obstetric complications refer to disorders and disturbances that occur during pregnancy, labour, childbirth, and the early neonatal period. According to the World Health Organization (WHO), approximately 830 women die every day worldwide from complications related to pregnancy or childbirth, and 99% of these maternal deaths occur in developing countries [1, 2]. When they arise, such obstetric complications often lead to admissions to intensive care units.

In developed countries, severe conditions associated with pregnancy or childbirth account for less than 1% of intensive care admissions [3, 4]. In contrast, in developing countries, the number of women admitted to intensive care for pregnancy- or childbirth-related complications remains considerably high [5]. In Africa, maternal mortality remains a major public health concern; approximately 57% of all maternal deaths occur on the continent, making Africa the region with the highest maternal mortality ratio in the world [6]. In Mali, the maternal mortality ratio is estimated at 325 maternal deaths per 100,000 live births, according to the Demographic and Health Survey (EDSM VI, 2018) [7]. Admission to intensive care for a woman with pregnancy-related complications represents a critical situation requiring coordination, multidisciplinary management, and clinical expertise. In the public health system of Bamako, very few studies have been conducted on this topic within intensive care units, with

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the objective of analysing obstetric complications in critical care settings.

2. METHODOLOGY

The study was conducted in the Department of General Intensive Care at the Gabriel Touré University Teaching Hospital in Bamako, Mali, a tertiary-level referral facility within the national healthcare system. It was a descriptive and analytical study with prospective data collection, carried out from 1 March 2024 to 28 February 2025, and included all female patients admitted for obstetric complications. Data were collected using a standardised survey form, completed based on information extracted from medical records and intensive care monitoring sheets. The variables studied were both quantitative (age, gravidity, parity, length of stay, vital parameters) and qualitative (occupation, residence, reason for admission, medical and surgical history, diagnoses, complications, and outcomes). The severity criteria considered were: systolic blood pressure ≥160 mmHg or ≤80 mmHg, diastolic blood pressure ≥110 mmHg, heart rate >120/min, respiratory rate >26/min, haemoglobin level <7 g/dL, and the K-DIGO criteria for renal failure. The obstetric complications assessed in this study primarily included eclampsia, haemorrhagic shock, HELLP syndrome, retroplacental haematoma, and acute renal failure. Statistical analysis was performed using SPSS version 22.0. The Chi-square test was used to compare variables, with a significance threshold of $p < 0.05$. The relative risk (RR) was calculated to quantify the association between variables of interest and prognosis. In accordance with ethical principles, informed consent was obtained from each participant or her accompanying relative, and data confidentiality was strictly maintained.

3. RESULTS

A total of 244 cases of obstetric complications were recorded out of 674 admissions to the intensive care unit, representing a frequency of 36.2%, confirming the significance of this issue within the department. The predominant age group was 20 to 35 years (63.9%), with a mean age of 25.7 ± 7.1 years. Most patients were housewives (79.9%), residing in urban areas, and 84.4% had been referred from district health centres. Additionally, 34.4% were primigravidae, and a large proportion (76.2%) had not attended any antenatal consultations. At admission, the main clinical signs observed included conjunctival pallor in almost all cases (94%), tachycardia (79.1%), hypertension (45%), and cold extremities (36%). Biological abnormalities were also frequent, including anaemia (65%), thrombocytopenia (30%), and elevated creatinine levels (30%).

The most common obstetric complications were eclampsia (43%), retroplacental haematoma (36%), haemorrhagic shock (33.6%), and acute renal failure (22.6%). Management included initial stabilisation (100%), mechanical ventilation (50.4%), oxygen therapy (39.7%), and blood transfusion (36.5%), mainly packed red blood cells (65.1%). Magnesium sulphate (29.5%), antihypertensive drugs (25%), particularly calcium channel blockers (45%), and vasoactive amines (36.5%), primarily noradrenaline (98%), were also administered. The average length of hospital stay was 2.8 ± 2.32 days, and the mortality rate was 17.6%. The analysis of prognostic factors revealed a significant association between mortality and certain complications, particularly eclampsia ($p = 0.000$; RR = 4.65 [2.04–10.62]), acute renal failure ($p = 0.000$; RR = 3.12 [1.83–5.65]), and haemorrhagic shock ($p = 0.000$; RR = 2.75 [1.58–4.79]).

Table I: Distribution of Patients According to Socio-demographic Characteristics

Variables	Frequency (n = 244)	Percentage (%)
Age group		
< 19 years	62	25.4
20–35 years	156	63.9
≥ 36 years	26	10.7
Occupation		
Housewife	195	79.9
Trader	12	4.9
Pupil/Student	25	10.2
Other	12	4.9
Mode of admission		
Referred	206	84.4
Transferred	38	15.6
Gravidity		
Primigravida	84	34.4
Paucigravida	55	22.5
Multigravida	73	29.9
Grand multigravida	32	13.1
Antenatal consultations (ANC)		
None	186	76.2
1–3 visits	40	16.4
≥ 4 visits	18	7.4

Table II: Distribution of Patients According to Clinical and Biological Signs

Variables	Frequency (n = 244)	Percentage (%)
Conjunctival pallor (n = 130)		
Yes	122	93.8
No	8	6.2
Cold extremities (n = 130)		
Yes	48	36.9
No	82	63.1
Arterial hypertension (HTN)		
Yes	111	45.5
No	133	54.5
Tachycardia		
Yes	193	79.1
No	51	20.9
Haemoglobin level (n = 179)		
Anaemia	111	62.0
Normal	68	38.0
Platelet count (n = 179)		
< 150,000	90	50.3
[150,000–450,000]	82	45.8
> 450,000	7	3.9
Creatinine level (n = 179)		
< 50 µmol/L	18	11.9
[50–126] µmol/L	102	56.9
≥ 140 µmol/L	59	31.2

Table III: Distribution of Patients According to Management

Variables	Frequency (n = 244)	Percentage (%)
Mechanical ventilation		
Yes	123	50.4
No	121	49.6
Oxygen therapy		
Yes	96	39.7
No	148	60.3
Blood product transfusion		
Yes	89	36.5
No	155	63.5
Magnesium sulphate administration		
Yes	72	29.5
No	172	70.5
Antihypertensive treatment		
Yes	96	39.3
No	148	60.7
Use of vasopressors (amines)		
Yes	89	36.5
No	155	63.5
Length of hospital stay		
< 3 days	180	73.8
3–6 days	43	17.6
≥ 7 days	21	8.6

Table IV: Distribution of Patients According to Prognostic Factors

Complications	Mortality		Total	Pv	RR [IC]
	Yes	No			
Eclampsia	6 (5,7%)	99 (94,3%)	105 (43%)	**0,000**	4,65 [2,04-10,62]
Retroplacental haematoma	8 (9,1%)	80 (90,9%)	88 (36%)	0,078	1,75 [0,94–3,26]
Haemorrhagic shock	25 (30,5%)	57 (69,5%)	82 (33,6%)	**0,000**	2,75 [1,58-4,79]
Acute renal failure	21 (37,5%)	35 (62,5%)	56 (22,9%)	**0,000**	3,12 [1,83-5,65]
HELLP syndrome	5 (13,9%)	31 (86,1%)	36 (14,8%)	0,524	1,3 [0,55-3,11]

4. COMMENTS AND DISCUSSION

We recorded 244 cases of obstetric complications among 674 patients admitted to intensive care (36.2%), a rate significantly higher than those reported by Fall M.L. *et al*., in Senegal (18.5%) [8], and Essiben F. *et al*., in Cameroon (11.4%) [9], and slightly above that found by Tchaou A. *et al*., in Benin (31.8%) [10]. This high prevalence reflects the persistence of uncontrolled pregnancies and highlights the magnitude of obstetric complications as a major public health concern in our setting. Primiparous women represented 36.1% of our cohort, with an average parity of 3.18 ± 2.5, similar to the findings of Essiben F. *et al*., (38.5%) [9]. The 20–35-year age group was predominant (63.9%), with a mean age of 25.7 ± 7.1 years, consistent with the observations of Fall M.L. *et al*., [8], and Essiben F. *et al*., [9]. Most of the women were housewives (79.9%), nearly twice the rate reported in Cameroon. A large proportion (84.4%) of patients were referred from lower-level facilities, a rate markedly higher than that observed by Essiben F. *et al*., [9]. (47%), reflecting delayed management and limited technical capacity in peripheral health centres. Regarding obstetric status, 34.4% were primigravidae, consistent with the results of Seydou Z. *et al*., in Mali (34.5%) [11]. Additionally, 76.2% of patients had no antenatal care, a figure close to Bagnan *et al*., in Benin (85.4%) [12], and far below the current WHO recommendations [13].

At admission, conjunctival pallor was almost constant (93.8%), while cold extremities (36.9%) reflected the frequency of shock states. The high prevalence of arterial hypertension (45%) confirmed its key role as a major risk factor for obstetric complications, in line with the findings of Essiben F. *et al*., (24%) [9]. Biologically, anaemia (62%) and thrombocytopenia (50.3%) were associated with clinical severity. An elevated creatinine level (31.2%) suggested acute renal injury, with K-DIGO stage 2 criteria present in 41.1%. The most frequent complications were eclampsia (43%), retroplacental haematoma (36%), haemorrhagic shock (33.6%), and acute renal failure (22.9%). Initial management included urinary catheterisation and venous access for all patients. Intubation was required in 50.8%, oxygen therapy in 39.7%, and nasogastric tubes in 21.1%. Blood products were administered in 36.5% of cases, mainly packed red cells (65.1%). Magnesium sulphate was used in 70.5% of patients, and antihypertensive drugs, primarily calcium channel blockers (96.8%), in 39.3%. In cases of haemodynamic instability, noradrenaline was the vasopressor of choice (98.9%). The outcome of patients showed a transfer rate of 81.6% to the obstetrics and gynaecology ward, and a mortality rate of 17.6%, which is higher than those reported by Essiben F. *et al*., (1.2%) [9], Bagnan *et al*., (2.3%) [12], and Owono O. *et al*., (9%) [14]. This higher mortality can be explained by delayed admissions, greater clinical severity, and limited technical resources, hindering early and comprehensive management. Bivariate analysis revealed a highly significant association between maternal mortality and three major obstetric complications: eclampsia (p = 0.000; RR = 4.65 [2.04–10.62]), haemorrhagic shock (p = 0.000; RR = 2.75 [1.58–4.79]), and acute renal failure (p = 0.000; RR = 3.12 [1.83–5.65]). These findings confirm the prognostic impact of these complications on maternal survival and are consistent with those of Mobio *et al*., (2023) [15], who also identified the presence of complications as a determinant of maternal mortality (p = 0.000). Similarly, Grover *et al*., (2021) [16], reported that acute renal failure was a significant predictor of maternal death (OR = 39.1; p = 0.000).

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