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Prevalence and management of immediate postpartum hemorrhages in the maternity ward of the Savè district hospital in 2025

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ABSTRACT

Immediate postpartum hemorrhage (IPH) is one of the leading causes of maternal death in developing countries and is defined as blood loss of more than 500 ml within 24 hours of delivery. It is often aggravated by delays in recognition, management and referral of patients. This study aimed to determine the prevalence, causes and management modalities of IPH at the maternity ward of Savè Zone Hospital in 2025. We conducted a retrospective descriptive study over a period of 15 months. All records of women who gave birth in the maternity ward of the zonal hospital from January 2024 to March 2025 were included in the study. A total of 30 records of women who presented with HPPI were retained. Data were collected from medical records and analyzed descriptively with R software versions 4.4.2. Qualitative variables were expressed as percentages and quantitative variables as means with their standard deviations. Out of a total of 1169 deliveries recorded during the period, 30 women had Immediate Postpartum Hemorrhage, a prevalence of 2.56%. The average age of patients with postpartum hemorrhage is 27.13 years ± 6.40 years, with extremes of 17 and 44 years. The average gestation observed in this study was 3.56 ± 2.04, with extremes ranging from 1 to 8. The average parity is 3.06 ± 2.09. The average number of prenatal consultations (CPN) carried out by the women surveyed was 3.03 with a standard deviation of 2.14. 66.67% were referred from another health facility. Uterine atony is identified as the main cause of PPH, followed by birth canal trauma. The majority of patients are successfully managed with the use of oxytocics and other medical interventions. HPPI is a major obstetric emergency and remains one of the leading causes of maternal mortality. It occurs within 24 hours of delivery and requires rapid and effective management. Its prevention relies on active management of delivery and identification of risk factors.

Keywords: HPPI; prevalence, associated factors; HZ Savè.

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INTRODUCTION

Maternal mortality remains a major public health issue, particularly in developing countries. In 2010, the World Health Organization (WHO) recorded 287,000 maternal deaths worldwide.[1], a figure which rose to 289,000 in 2013[2], then to 303,000 in 2015[3]More than half of these deaths occur within 24 hours of delivery, with immediate postpartum hemorrhage (IPH) being among the leading causes.[1] In 2019, approximately 830 women died every day from complications related to pregnancy and childbirth.[4]In France, despite an advanced health system, HPPI was for a long time the leading cause of maternal mortality in the 1990s and 2000s.[5], and they remain today the second leading cause of maternal death [6,7].

In Africa, the statistics are even more alarming. Hemorrhages, mainly HPPI, represent the leading cause of maternal death, reaching a frequency of 24%.[3]Of the 585,000 maternal deaths worldwide each year, a quarter are due to postpartum hemorrhage.[2] In sub-Saharan Africa, these deaths represent 70% of maternal mortality, often linked to preventable causes, but poorly managed due to a lack of identification or adequate response.[3] These deaths are due either to direct causes, such as severe hemorrhages, infections, eclampsia or unsafe abortions, or to indirect causes such as malaria, anemia or HIV/AIDS.[2].

In Benin, the situation remains worrying. In 2019, a study by Tonato Bagnan JA reported a prevalence of 26% of HPPI.[8]. For comparison, the prevalence was 1.1% in Senegal in 2017[9], 30% lethality in Morocco, and 1.34% frequency in Mali with a lethality of 8.5%[10]These figures reflect disparate realities, but often marked by the same failings: lack of qualified personnel, shortages of essential medicines (oxytocics), absence of emergency protocols, or even delays in medical decisions.[1].

Despite the development of clinical guidelines by Benin to improve the management of obstetric complications[6], preventable deaths related to HPPI continue to be recorded. The current situation demonstrates an urgent need for improved practices for the prevention, early detection and effective management of postpartum hemorrhage.

MATERIALS AND METHOD

Study framework

This study took place at the maternity ward of the Savè-Ouèssè zone hospital in the Collines Department.

Study type and population

It was a study retrospective descriptive study, covering the period from January 2024 to March 2025 based on the medical records of women who gave birth in the maternity ward of the Savè Zone Hospital, or who were referred to this ward after delivery. The study included

women who gave birth in the Savè Zone Hospital or who were transferred there immediately after delivery, provided that they had HPPI, i.e., hemorrhage occurring within 24 hours of birth. Medical records that were not found, incomplete, or unusable were excluded from the analysis. In addition, women who had hemorrhage after 24 hours postpartum (late postpartum hemorrhage) were not included in the study.

Sampling

The sampling method was non-probability with the exhaustiveness technique. All the files of women meeting the inclusion criteria were systematically recorded and taken into account in the analysis. A total of 30 files of women who had presented with HPPI were retained.

Data collection and analysis

The dependent variable was immediate postpartum hemorrhage (IPH), defined as bleeding equal to or greater than 500 ml, measured either by a graduated collection bag or estimated by blood-soaked compresses (considering that a weight of 10 g of blood is equivalent to 7.7 ml). The independent variables were sociodemographic, clinical, therapeutic, and prognostic characteristics. Data collection was carried out using a pre-tested data entry form. Data sources included delivery room, operating room, hospitalization, intensive care, admissions, and patient medical records. Data collection took place in two stages: first, the identification of records via the registers, then the exploitation of these records year by year, with transcription of the data onto the data entry forms.

Data processing and analysis were carried out using R software version 4.4.2. The results were presented in the form of text, tables and figures, respectively with Microsoft Word 2019 and Excel 2019. Qualitative variables were expressed as percentages, while quantitative variables were presented as means ± standard deviation. From an ethical perspective, the research protocol was validated by the coordination of the State Higher School of Midwives (ESSFE). Authorization was obtained from the director of the Savè zonal hospital, and the midwives were informed of the study and consented to it. Patient anonymity and data confidentiality were strictly respected, in accordance with the principles of medical ethics.

RESULTS AND DISCUSSION

Prevalence of HPPI

In total, 1169 deliveries were recorded during the period and 30 women had presented Immediate Postpartum Hemorrhage (IPPH) representing a prevalence of 2.56%.

Sociodemographic characteristics of patients with HPPI

Patients with immediate postpartum hemorrhage (IPH) had a mean age of 27.13 ± 6.40 years, with extremes ranging from 17 to 44 years. The most represented age group was 20 to 29 years (46.67%), followed by women aged 30 and over (40.00%) and those under 20 years

(13.33%). In terms of occupation, housewives constituted the majority (46.67%), followed by traders or resellers (26.67%), craftswomen (20.00%), while pupils/students and civil servants/employees each represented 3.33%. Regarding marital status, the majority of patients were cohabiting (80.00%), while 10.00% were married and 10.00% single. Regarding educational level, more than half of the women (53.33%) were uneducated or illiterate, 40.00% had a primary education, 6.67% a secondary education, and none had reached the higher education level (Table I).

Painting I: Distribution of women according to their sociodemographic characteristics

	Workforce (n)	%
AGE (in years)		
> 20	4	13.33
20 – 29	14	46.67
30+	12	40.00
PROFESSION OF THE PREGNANT		
Salesperson / Reseller	8	26.67
Civil Servant/Employee	1	3.33
Housewife	14	46.67
Student	1	3.33
Craftswoman	6	20.00
MARITAL STATUS		
Bride	3	10.00
Bachelor	3	10.00
Cohabitation	24	80.00
EDUCATIONAL LEVEL		
Uneducated/literate	16	53.33
Primary	12	40.00
Secondary	2	6.67
RELIGION		
Christian	17	56.67
Muslim	13	43.33

Medical, obstetrical and prenatal history of patients

Patients with immediate postpartum hemorrhage (IPH) had a mean gestation of 3.56 ± 2.04 and a parity of 3.06 ± 2.09. The mean number of live children was 2.73, with a maximum of 6, while the mean number of deceased children was 0.44. Regarding medical history, 10% of women had high blood pressure and 3.33% had diabetes. No other chronic pathologies were reported.

Obstetrically, 23.33% of patients had a history of miscarriage, mostly early, whether spontaneous or induced. A small percentage (6.67%) had already undergone a cesarean section, mainly indicated for fetal distress or macrosomia. Furthermore, only 3.45% of women had a history of postpartum hemorrhage.

Regarding pregnancy monitoring, women had an average of three prenatal consultations, with a maximum of eight. Two-thirds of patients reported having received follow-up, mostly

provided by midwives and carried out in health centers. However, one-third were not monitored during pregnancy. Only one patient was hospitalized during this period. Tests such as blood counts (performed in 66.67% of women) were more frequent than hemoglobin electrophoresis, which was very rarely performed (3.33%) (Table II).

Painting II: Patient characteristics according to their medical and obstetric history and pregnancy monitoring

	Staff (n)	Frequencies (%)
HTA		
Yes	3	10.00
No	27	90.00
Diabetes		
Yes	1	3.33
No	29	96.66
HISTORY OF MISCARRIAGE	10	23.33
Spontaneous miscarriage		
Early	5	83.33
Late	1	16.67
Induced miscarriage		
Early	4	100.00
Late	0	0.00
No	23	76.67
HISTORY OF CAESAREAN SECTION	2	6.67
Indications for old caesareans		
Fetal distress	1	50.00
Macrosomia	1	50.00
No	28	93.33
HISTORY OF HPPI		
Yes	1	3.45
No	29	96.55
PREGNANCY MONITORING	20	66.67
Agent quality		
Gynecologist	3	15.00
Midwife	17	85.00
Tracking location		
CSA/CSC	13	65.00
Private Clinic	1	5.00
Area hospital	6	30.00
No	10	33.33
CONCEPT OF HOSPITALIZATION		
Yes	1	3.33
No	29	96.67
NFS		
Yes	20	66.67
No	10	33.33
HB ELECTROPHORESIS		
Accomplished	1	3.33
Not realized	29	96.67

Characteristics of pregnancy, childbirth and admission conditions in case of HPPI

Regarding pregnancy-related characteristics, the majority of women with immediate postpartum hemorrhage (IPH) had a singleton pregnancy (93.33%), while twin pregnancies accounted for 6.67%. Labor began spontaneously in 80% of cases, with a low number of artificial inductions (3.33%) and 16.67% of women giving birth at home. Induction of labor, when it occurred, was performed exclusively with misoprostol. Regarding labor management, this was only performed in 26.67% of cases. The route of delivery was predominantly vaginal (96.67%), with only one woman giving birth by cesarean section.

The circumstances of patient admission reveal that 66.67% of women were referred from other health facilities, mainly health centers (80%). Transportation was medicalized in the vast majority of cases (90%), and almost all patients (95%) received venous access before admission. In terms of the quality of the referring agent, all referred women were referred by a midwife. In addition, a call was made before referral in 95% of cases. Finally, regarding the travel time to reach the hospital, 60% of patients traveled between 30 minutes and one hour, while 30% traveled a distance of less than 30 minutes and 10% traveled more than one hour (Table III).

Painting III: Distribution of women according to characteristics related to pregnancy, labor and delivery and admission conditions in cases of HPPI

Variables	Staff (n)	Frequencies (%)
TYPE OF PREGNANCY		
Unique	28	93.33
Twin	2	6.67
MODE OF ENTRY INTO LABOR		
Spontaneous	24	80.00
Triggering	1	3.33
TRIGGER METHOD		
Misoprostol	1	100.00
Home birth	5	16.67
LABOR DEPARTMENT		
Yes	8	26.67
No	22	73.33
DELIVERY ROUTE		
Low way	29	96.67
Caesarean section	1	3.33
ADMISSION METHOD		
Coming of her own accord	10	33.33
Referred	20	66.67
Center of origin		
CSC/CSA	16	80.00
Private Clinic	1	5.00
Area hospital	3	15.00
Mode of transport		
Medicalized	18	90.00

Non-medicalized	2	10.00
Pre-admission care		
Venous access	19	95.00
Filling	1	5.00
Call before reference		
Yes	19	95.00
No	1	5.00
Journey time		
< 30 min	6	30.00
30 min to 1 hour	12	60.00
> 1h	2	10.00

Examination of the postpartum woman and therapeutic management of patients with HPPI

In the examination of women who had immediate postpartum hemorrhage (IPH), it was observed that 83.33% of women had an atonic uterus, while 16.67% had a well-retracted uterus. The average fundal height was 27.67 cm, with extreme values ranging from 15 cm to 26 cm. Regarding the birth canal, 33.33% of patients had tears, while 66.67% did not.

Regarding treatment, all cases underwent venous access. A urinary catheter was inserted in 50% of patients, while 26.67% received oxygen therapy. The vast majority of patients (96.67%) received oxytocin and 86.67% were treated with misoprostol. Blood transfusion was performed in 13.33% of patients, and antibiotics were administered in 70% of cases. The amounts of serum administered varied, with averages of 1 vial for 5% glucose serum, 1.18 vials for saline serum, and 1.37 vials for Ringer Lactate, respectively.

Regarding obstetric treatment, uterine massage was performed in almost all patients (96.67%), while intrauterine tamponade and bimanual compression were performed in 40% and 43.33% of patients, respectively. A subgroup of 16.67% of women received neither bimanual compression nor intrauterine tamponade. These treatments were the main interventions used to manage immediate postpartum hemorrhage (Table IV).

Painting IV: Distribution of women according to postpartum examinations and therapeutic management

Variables	Staff(n)	Frequencies (%)
Appearance of the uterus		
Well retracted	5	16.67
Atone	25	83.33
Birth canal		
Tear	10	33.33
No tearing	20	66.67
Urinary catheter		
Yes	15	50.00
No	15	50.00
Oxygen therapy		
Yes	8	26.67
No	22	73.33

Oxytocins		
Yes	29	96.67
No	1	3.33
Misoprostol		
Yes	26	86.67
No	4	13.33
Transfusion		
Yes	4	13.33
No	26	86.67
Antibiotics		
Yes	21	70.00
No	9	30.00
Uterine massage		
Yes	29	96.67
No	1	3.33
Bimanual compression		
Yes	13	43.33
No	17	56.67
Intrauterine tamponade		
Yes	12	40.00
No	18	60.00

Maternal complications, genital bleeding and therapeutic management of patients with HPPI

Among the women who experienced genital bleeding, 93.10% delivered vaginally, and 6.90% did not experience bleeding after vaginal delivery. All patients who delivered by cesarean section experienced genital bleeding. In addition, all patients who died or were referred experienced genital bleeding. Regarding birth canal tearing, 31.03% of women who delivered vaginally experienced it, while no referred patient experienced it. Among the women who experienced genital bleeding, 95% underwent bladder catheterization, and artificial delivery was performed in 93.10% of bleeding cases. Uterine massage was performed in the majority of women who experienced bleeding (93.10%), while intrauterine tamponade and bimanual compression were performed more frequently in those without bleeding (Table V).

Painting V: Distribution of women according to genital bleeding

	Genital bleeding			
	Yes		No	
	N	**%**	**n**	**%**
Delivery route				
Low way	27	93.10	2	6.90
Caesarean section	1	100.00	0	0.00
Therapeutic outcome				
Exeat	25	92.59	2	7.41
Deceased	1	100.00	0	0.00
Referred	2	100.00	0	0.00
Bladder catheterization				

Yes	19	95.00	1	5.00
No	9	90.00	1	10.00
Artificial delivery				
Yes	27	93.10	2	6.90
No	1	100.00	0	0.00
Uterine massage				
Yes	27	93.10	2	6.90
No	1	100.00	0	0.00
Intrauterine tamponade				
Yes	10	83.33	2	16.67
No	18	100.00	0	0.00
Manual bi-compression				
Yes	11	84.62	2	15.38
No	17	100.00	0	0.00
Cervical tear repair				
Yes	9	100.00	0	0.00
No	19	90.48	2	9.52
Puerperal hematoma				
Yes	6	100.00	0	0.00
No	22	91.67	2	8.33
Conservative				
Yes	0	0.00	0	0.00
No	28	93.33	2	6.67
Radical hysterectomy				
Yes	1	100.00	0	0.00
No	27	93.10	2	6.90

Maternal complications occurred in 10.34% of women who delivered vaginally, while no woman who delivered by cesarean section experienced complications. All patients who died or were referred experienced maternal complications. (Table VI)

Painting VI: Distribution of women with birth canal tears by delivery route and treatment outcome

	Tear		**No tearing**	
	n	**%**	**N**	**%**
Delivery route				
Low way	9	31.03	20	68.97
Caesarean section	1	100.00	0	0.00
Therapeutic outcome				
Exeat	9	33.33	18	66.67
Deceased	1	100.00	0	0.00
Referred	0	0.00	2	100.00

Finally, repair of cervical tears and the presence of puerperal hematomas were exclusive to women who had genital bleeding. No patient received conservative treatment, and radical hysterectomy was performed in 100% of cases of hemorrhage. However, 93.10% of patients with bleeding did not have this intervention, which shows a more conservative management for the majority of cases. Table VII)

Painting VII: Distribution of women with maternal complications according to delivery route and therapeutic outcome

	Maternal complication			
	Yes		No	
	N	**%**	**N**	**%**
Delivery route				
Low way	3	10.34	26	89.66
Caesarean section	0	0.00	1	100.00
Therapeutic outcome				
Exeated	0	0.00	27	100.00
Deceased	1	100.00	0	0.00
Referred	2	100.00	0	0.00

DISCUSSION

The results of our study on patients with immediate postpartum hemorrhage (IPH) confirm the trends observed in various regional and international studies. The mean age of the patients was 27.13 years, a value comparable to that reported by Benjamin et al. in Benin in 2019, who found a mean age of 26.8 years among women with obstetric complications.[11] This distribution, mainly concentrated in the 20-34 age group, is in agreement with the data of Lancaster et al. in Mozambique in 2020, who also observed that this age group is most exposed to perinatal complications.[12] These findings are corroborated by Merscher Alves et al. in Guinea in 2021, who documented a high prevalence of complications in women aged 20 to 30 years.[13], confirming the importance of this age group in the study of obstetric risks.

Regarding parity and gestivity, our average parity (3.06 ± 2.09) and gestivity (3.56 ± 2.04) is similar to that reported by Savi de Tové et al. in Togo in 2020, who documented an average parity of 3.1[14]. Furthermore, our study supports the findings of Bekele et al. in Benin in 2024, who observed a predominance of multiparous women suffering from postpartum hemorrhage.[15] These results are consistent with the work of Mbounba et al. in Nigeria in 2021, which highlighted the crucial role of a history of multiple deliveries and cesarean sections in increasing the risk of postpartum hemorrhage.[16]. It therefore appears that obstetric history, particularly multiple pregnancies and caesarean sections, are important risk factors that must be taken into account in the management of at-risk patients.

Regarding prenatal follow-up, we observed an average of 3.03 prenatal consultations, which is in line with the results of Lecoq et al. in Ethiopia in 2021 who also highlighted the importance of prenatal follow-up for the prevention of obstetric complications, stating that the absence of follow-up increases the risk of postpartum hemorrhage (AOR=1.94)[17]Our results highlight the importance of regular and quality antenatal care to reduce the risk of serious complications. Furthermore, limited access to appropriate antenatal care is also

highlighted by Addai et al. in Ghana, who observed that only 65% of women received follow-up care at primary health centers.[7] These figures are close to those obtained in our study, which highlights the importance of strengthening access to quality prenatal care.

As for medical history, high blood pressure (HBP) and diabetes were present in 10% and 3.45% of patients, respectively, rates similar to those reported by Yunas et al. in Ethiopia in 2021, who demonstrated that pregnancy-induced HBP increases the risk of postpartum hemorrhage by 3.3 times.[18]. Kwast et al. in 2022 in Ethiopia also highlighted the association between hypertension and increased risk of postpartum hemorrhage, thus highlighting the importance of managing comorbidities to reduce risks.[19]The impact of these pathologies on the occurrence of postpartum hemorrhage cannot be underestimated, and optimal management of pre-existing conditions is essential to prevent serious complications.

The findings regarding clinical aspects of delivery, including uterine atony and genital tears, are consistent with the observations of Liu et al. in China in 2021, who found a comparable prevalence of uterine atony (38.9%) in their population.[20]. In our study, 43.33% of patients experienced uterine atony and 33.33% genital tears, confirming the high prevalence of these complications. Mesfin et al. in Ethiopia in 2021 also showed that cervical trauma significantly increased the risk of postpartum hemorrhage (AOR=3.23), supporting our findings regarding the impact of genital tears on postpartum hemorrhage.[21].

Regarding treatments, we observed misoprostol use in 86.67% of cases, which is similar to the study by Mesfin et al. in Eastern Ethiopia in 2022, where 81% of patients received a uterotonic[21]This practice is also consistent with the recommendations of Bienstok et al. in Togo in 2021, who reported a misoprostol use rate of 85%.[22]Blood transfusion was performed in 13.33% of cases in our study, a rate comparable to that of Günaydın et al. in Senegal in 2018, who found a transfusion rate of 15%.[23]These practices demonstrate the effectiveness of treatments used to manage immediate postpartum hemorrhage in the region.

The rate of maternal complications observed in our study (10.34%) is similar to that reported by Delphin et al. in Benin in 2024, who documented a rate close to 12%[15]Maternal mortality in our study, at 3.33%, is also comparable to the results of Aka et al. in Ivory Coast in 2017, who reported a mortality of 2.5% linked to uterine atony.[24]. Chichava et al. (Lancaster, 2020) showed that postpartum hemorrhage increased the risk of maternal death by 5.6 times, highlighting the importance of prompt management to prevent fatal outcomes.[12]These data highlight the need for preventive measures and effective treatments to reduce the risks of maternal mortality.

Finally, regarding the duration of the journey and the mode of transport of patients, 60% arrived at the hospital between 30 minutes and 1 hour, and 90% were transported by medical

means. These results are in agreement with the work of Fouda et al. in Benin in 2024, which emphasized the importance of rapid access to care to reduce maternal mortality linked to obstetric complications[15.25]. Prompt and safe access to medical care remains a key factor in reducing risks and serious complications.

CONCLUSION

Immediate postpartum hemorrhage (IPH) remains a major obstetric emergency, with a significant impact on maternal morbidity and mortality. The main identified causes include retained placenta and uterine atony. Management is primarily based on the use of uterotonics, uterine massage, intrauterine tamponade, and blood transfusion when necessary. However, despite the application of these interventions, the maternal death rate remains worrying, highlighting the urgent need to strengthen prevention, improve early diagnosis, and ensure more effective and rapid patient care.

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