

# Uterine Balloon Tamponade: An Effective Tool for Managing Postpartum Haemorrhage

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**ABSTRACT:** *This article explores the crucial subject of Uterine Balloon Tamponade (UBT) as a very efficient method for controlling postpartum haemorrhage (PPH). Maternal mortality continues to be a pressing issue in global health, with postpartum haemorrhage playing a prominent role in this troubling pattern. This study investigates the versatile operational processes of UBT devices, with a particular focus on their capacity to stimulate uterine receptors, initiate contractions, and exert hydrostatic pressure to halt bleeding sinuses. The research highlights the crucial importance of healthcare workers, namely nurses, in promptly identifying and skillfully implementing UBT to achieve hemostasis. This resource offers a comprehensive examination of the many factors that contribute to postpartum haemorrhage (PPH), including uterine atony and retained placental fragments. It emphasises the need of implementing focused therapies to address these causes. The article highlights the worldwide inequalities in maternal healthcare and proposes comprehensive measures to tackle shortcomings in healthcare facilities, improve accessibility, and invest in highly qualified healthcare professionals. Evidence-based procedures, including UBT, are promoted for wider*

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*application, needing intensive instructional programs for healthcare practitioners. It is recommended that policymakers give high importance to maternal health on the international agenda, promoting cooperation across different fields of study and involving the community. In conclusion, the abstract highlights the need of taking proactive steps and working together to include UBT as a primary intervention in the management of PPH, with the main objective of decreasing global maternal death rates.*

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**KEYWORDS:** uterine balloon tamponade, management, postpartum haemorrhage

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### **Introduction**

In order to achieve Sustainable Development Goals (SDG), countries have come together behind the target to accelerate the decline of maternal mortality by 2030. SDG 3 includes an ambitious target: reducing the global MMR to less than 70 per 100 000 births, with no country having a maternal mortality rate of more than twice the global average (WHO, 2023). The global MMR in 2020 was 223 per 100,000 live births; achieving a global MMR below 70 by the year 2030 will require an annual rate of reduction of 11.6%, a rate that has rarely been achieved at the national level. However, scientific and medical knowledge is available to prevent most maternal deaths.

Maternal mortality continues to pose a substantial worldwide public health obstacle, notwithstanding progress in healthcare. This article explores the frequency of maternal deaths, with a special focus on worldwide patterns and regional differences, particularly in the African Region. The scope of this study encompasses an analysis of the factors leading to maternal mortality, with a particular focus on haemorrhage as a major contributing factor. Additionally, it provides a comprehensive review of postpartum haemorrhage (PPH), including its definitions, causes, and related sequelae. The paper examines the occurrence of maternal mortality in connection with the objectives of the Sustainable Development Goals (SDGs) and the reports of the World Health Organisation (WHO), emphasising both advancements and ongoing difficulties. The emphasis on the African Region highlights the immediate need for precise actions to successfully tackle maternal mortality.

The subsequent section of the document delves into the origins of maternal mortality, pinpointing haemorrhage as a significant contributing component. The debate covers topics of insufficient resources, unskilled birth attendants, and difficulties in obtaining prompt obstetric treatment. Gaining insight into these factors is essential for formulating comprehensive approaches to alleviate maternal mortality. The article offers a comprehensive examination of postpartum haemorrhage, including terminology, risk factors, and the worldwide impact of PPH. The text discusses guidelines and suggestions from several organisations for the prevention and treatment of postpartum haemorrhage (PPH). It highlights the need of early diagnosis and suitable therapies.

The article provides a comprehensive analysis of Uterine Balloon Tamponade (UBT), delving into its mechanisms of action, efficacy, and rates of success in the management of Postpartum Haemorrhage (PPH). The conclusion highlights the need of continuous research and

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developments in medical technology to enhance the effectiveness of therapies such as UBT. This emphasises the need of healthcare professionals being updated on the most recent guidelines and evidence-based methods to improve patient outcomes while dealing with postpartum haemorrhage. The purpose of this article is to provide a thorough overview of postpartum haemorrhage, and how Uterine Balloon Tamponade (UBT) could be effective in managing postpartum haemorrhage.

### **Prevalence of Maternal Mortality**

As per the World Health Organisation (WHO) in 2023, the worldwide maternal mortality ratio (MMR) decreased by 34% between 2000 and 2020. This means that the number of maternal deaths per 100,000 live births dropped from 339 to 223, according to estimations from the United Nations inter-agency. This implies a mean yearly decrease rate of 2.1%. Nevertheless, this rate is insufficient to meet the target of reducing maternal fatalities to 70 per 100,000 live births by 2030, as outlined in the Sustainable Development Goal (SDG). Although there was significant success in decreasing the worldwide maternal mortality ratio (MMR) from 2000 to 2015, there has been a lack of improvement in the rates of decrease between 2016 and 2022. The pace of decline halted in most locations, and in Western Europe, North America, Latin America, and the Caribbean, the Maternal Mortality Ratio (MMR) saw an actual rise between 2016 and 2022. The issue of maternal mortality remains a serious problem for women of reproductive age in the African Region. Although there has been a global decline in the maternal mortality ratio (MMR) from 2000 to 2020, with a fall of 34.2%, the situation in Africa continues to be very concerning. The African Region consistently accounts for more than two-thirds (69%) of maternal mortality, according to the World Health Organisation (WHO, 2023). As to the World Health Organisation (2019) report, almost 86% (254,000) of the projected worldwide maternal fatalities in 2017 took place in Sub-Saharan Africa and Southern Asia. Approximately two-thirds (196,000) of maternal fatalities worldwide may be attributed to Sub-Saharan Africa, which has the highest maternal mortality ratio of 533 per 100,000 live births. Southern Asia, on the other hand, accounted for roughly one-third (58,000) of maternal deaths. During the period from 2000 to 2017, Southern Asia saw the most significant decrease in maternal mortality ratio (MMR), with a fall of almost 60% (from an initial MMR of 384 to 157). Similarly, sub-Saharan Africa also achieved a major reduction in MMR, with a decrease of almost 40% during the same period.

In 2020, the maternal mortality ratio (MMR) in the African Region was 531 deaths per 100,000 live births. The African Region contributed to 69% of worldwide maternal fatalities in the same year (WHO, 2023). South Sudan has a maternal mortality rate of 1223 deaths per 100,000 live births, making it one of the countries with the highest rates. Chad follows closely with 1063 fatalities, while Nigeria has a rate of 1047 deaths per 100,000 live births. When comparing to the year 2017, the maternal mortality ratio has increased in 17 countries and reduced in 30 nations. In 2017, Sierra Leone has one of the highest maternal mortality rates in the African Region, with 1120 deaths per 100,000 live births. Nevertheless, by the year 2020, there was a substantial reduction of over 60% in the maternal mortality rate, resulting in 443 deaths per 100,000 live births.

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Notable decreases in maternal mortality compared to 2017 have been seen in some countries, including Tanzania (55%), Eswatini (45%), Mauritania (39%), Ethiopia (33%), and Eritrea (33%). Nigeria's maternal mortality rate in 2017 was at an estimated 917 deaths per 100,000 live births. By 2020, this rate had risen by about 14%, reaching 1047 fatalities (WHO, 2023). The regions experiencing the most significant burden of maternal mortality will need extra focus and financial resources to accelerate the pace of decline. Enhancements will be required in both the accessibility and quality of prenatal care, birth, and postpartum care. In order to achieve global objectives and diminish these disparities, it will be imperative to establish collaborations among government and community leaders, the healthcare system, and other relevant parties (WHO, 2023).

### **Causes of Maternal Death**

Based on the World Health Organisation (WHO) reports from 2019 to 2023, haemorrhage continues to be the primary factor contributing to maternal deaths, representing more than a quarter (27 percent) of all fatalities. An equivalent percentage of maternal fatalities were attributed to indirect causes, including pre-existing medical issues exacerbated by the pregnancy. Hypertensive diseases of pregnancy, particularly eclampsia, together with sepsis, embolism, and complications arising from botched abortion, can result in a significant loss of life.

Postpartum haemorrhage (PPH) impacts over 27% of women who have childbirth. It is a significant contributor to maternal mortality, accounting for almost one-quarter of all maternal fatalities worldwide. Moreover, PPH is the primary cause of maternal mortality in many low-income countries. Postpartum haemorrhage (PPH) is a major cause of severe maternal morbidity and long-term impairment. It is also linked to several other severe maternal diseases, such as large blood loss, shock, and organ failure (WHO, 2019).

WHO (2023) states that maternal mortality may arise from issues that occur during pregnancy, before childbirth, during the delivery process, and after giving birth. Haemorrhage, a substantial factor, is often associated with inadequate resources, the presence of untrained delivery attendants, giving birth in ill-equipped facilities, and a scarcity of crucial obstetric care provisions such as blood transfusions. Maternal mortality in sub-Saharan Africa is linked to inadequate health-seeking behaviour, significant distances to health facilities, and a lack of transportation to specialised institutions. Additionally, obstacles such as the inability to promptly access healthcare facilities owing to inadequate infrastructure, such as poorly maintained roads, restricted communication, and insufficient transportation choices, are factors that contribute to maternal mortality. Other contributing factors include the prolongation of decision-making processes to seek maternity care, sometimes stemming from a failure to identify warning indicators and a lack of readiness. In the African Region, maternal mortality is worsened by delays in accessing appropriate healthcare due to factors such as a shortage of competent healthcare workers, inadequate medical equipment, and underdeveloped referral systems.

### **Overview of Post-Partum Hemorrhage**

As to the World Health Organisation (2019), post-partum haemorrhage is often described as the loss of blood over 500 millilitres (mL) within 24 hours following a vaginal delivery, and exceeding 1000 mL of blood after a caesarean birth (C-section). Postpartum depression often manifests quickly after childbirth but may also arise within a few days or weeks after delivery. It might be either main or secondary. A primary post-partum haemorrhage is classified as such when it takes place either immediately or within 24 hours after childbirth. It is considered secondary when it happens between 24 hours and 12 weeks after childbirth.

According to FIGO (2022), PPH is defined as excessive bleeding of over 500 ml for vaginal births and over 1000 ml for caesarean deliveries, occurring during the first 24 hours after delivery. Consequently, in 2017, the American College of Obstetricians and Gynaecologists (ACOG) revised the definition to include a blood loss of 1000 ml or more, or blood loss accompanied by signs or symptoms of hypovolemia within 24 hours after childbirth, regardless of the method of delivery (FIGO, 2022). PPH, as defined by the Royal College of Obstetricians and Gynaecologists (RCOG), is categorised based on the amount of blood lost: mild (500-1000 ml) and significant (more than 1000 ml) (FIGO, 2022).

In summary, the various definitions mentioned above identify the quantity of blood loss, duration of occurrence, and method of delivery as key factors in defining postpartum haemorrhage (PPH). However, the estimation of blood loss volume is often unreliable in many cases. Therefore, it is important to focus on the overall clinical condition of the patient, as emphasised by other authors. The current definition of postpartum haemorrhage encompasses two criteria: either a total blood loss of 1000 ml or more, or blood loss accompanied by signs or symptoms of hypovolemia, irrespective of the manner of delivery (Bienstock, 2021). As stated by FIGO in 2022, Precise instruments for evaluating blood loss have a direct impact on the diagnosis and treatment of postpartum haemorrhage (PPH). Visual estimation is often used for blood loss evaluation, however, it has a significant risk of underestimating haemorrhage. It has been suggested to use supplementary methods, such as gravimetric measurement, direct blood collection procedures, and assessment of clinical factors, to get a more unbiased estimate. FIGO (2022) has recently included the shock index and obstetric early warning indicators in its guidelines for assessing bleeding.

Uterine atony, the primary aetiology of postpartum haemorrhage (PPH), occurs when the uterine muscles fail to adequately contract or constrict after childbirth, resulting in insufficient control of bleeding at the site of placental attachment. Retained placenta fragments, the second most prevalent cause of postpartum haemorrhage (PPH), occur when the placenta fails to completely detach and stays partly inside the body. Uterine inversion is an infrequent occurrence in which the uterus undergoes inversion, or turning inside out, after childbirth. Uterine rupture is an infrequent occurrence in which the uterus tears apart during the process of childbirth. The likelihood of this occurring is increased if there is a uterine scar resulting from a previous C-section or uterine surgery. Individuals with congenital or prenatal bleeding problems have an increased susceptibility to experiencing postpartum haemorrhage. Uterine atony is the primary cause, responsible for around 70% of cases, followed by obstetrical

lacerations at roughly 20%, retained placental tissue at about 10%, and clotting-factor deficits at less than 1% (Bienstock, 2021).

FIGO (2022) categorises the causes of post-partum haemorrhage into the mnemonic 4 Ts: tone, trauma, tissue, and thrombin. Uterine atony refers to the lack of muscle tone in the uterus. Uterine atony, also known as uterine tone, describes the condition of a flaccid and feeble uterus after childbirth. This occurs when the uterine muscles fail to contract enough to close the placental blood vessels. As a result, there is a gradual depletion of blood after childbirth. Uterine atony is likely to occur with lengthy labour, especially when oxytocin is used. It is also common in pregnancies complicated by chorioamnionitis, high parity, general anaesthesia, and other circumstances that cause the uterus to expand, such as multiple foetal gestation, polyhydramnios, and foetal macrosomia. Uterine trauma, often known as trauma, refers to the occurrence of bleeding as a result of damage to the vagina, cervix, uterus, or perineum (the region between the genitals and anus). The use of devices such as forceps or vacuum extraction throughout the process of childbirth might heighten the likelihood of uterine harm. Occasionally, a hematoma, which is a gathering of blood, may develop in a hidden region and result in bleeding many hours or days after childbirth. Retained placental tissue, often known as tissue, refers to the condition when the placenta fails to detach completely from the uterine wall. It is often caused by placental abnormalities that impair the uterus's postpartum contraction. Hemostatic dysfunction (thrombin): pathological states such as coagulopathy or gestational diseases such as eclampsia may impede the body's hemostatic function.

### **Prevention and Management of Postpartum Hemorrhage**

Various organisations and associations, such as the World Health Organisation, the International Confederation of Midwives, the International Federation of Gynaecologists and Obstetricians, the American College of Obstetricians and Gynaecologists, the Royal College of Obstetricians and Gynaecologists, and the California Maternity Quality Care Collaborative, have issued guidelines for the prevention and management of postpartum haemorrhage (PPH). As to the Agency for Healthcare Research and Quality (AHRQ) report from 2014 to 2023, the first approach to managing PPH includes the steps of diagnosing the condition, determining its cause, and adopting suitable therapies depending on the underlying factors. The Agency for Healthcare Research and Quality (AHRQ) in 2014 and 2023 said that the treatment options for postpartum haemorrhage (PPH) often follow a progression from less invasive to more invasive approaches. These interventions include compression methods, drugs, procedures, and operations. In addition, the care of PPH may include the use of adjuvant therapies, such as blood and fluid replacement, as well as the use of an anti-shock garment to address the blood loss and other consequences that arise from PPH.

The first therapy method, known as the compression technique, involves the use of external uterine massage and bimanual compression. These compression methods stimulate uterine contractions to combat atony and aid in the discharge of retained placenta or clots. Aortic compression is a compression treatment used for severe primary pulmonary hypertension (PPH) (AHRQ, 2023).

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Treatments for acute blood loss anaemia include red blood cell transfusion and iron supplements. According to the World Health Organisation (WHO), oxytocin (10 IU, IV/IM) is the preferred drug for preventing postpartum haemorrhage (PPH). In cases where oxytocin is not available, other injectable uterotonics such as ergometrine/methylergometrine or a combination of oxytocin and ergometrine, or oral misoprostol (600 µg) are recommended alternatives (WHO, 2019).

The care of PPH involves many procedures, such as manually removing the placenta, manually removing clots, using uterine tamponade, and performing uterine artery embolisation. Laceration repair is necessary when postpartum haemorrhage occurs as a consequence of genital tract injuries. If various methods to reduce bleeding are unsuccessful, surgical interventions such as curettage, uterine artery ligation, uterine hemostatic compression suturing, and hysterectomy might be considered. Procedures and operations may heighten the susceptibility to infection and other consequences, and they have the potential to remove or negatively impact future fertility and pregnancy. Hence, after PPH has been successfully managed, it is essential to begin follow-up care. The approach to managing PPH might include a range of strategies, such as doing laboratory tests (e.g., measuring haemoglobin and hematocrit levels), administering iron replacement treatment, and implementing various interventions to evaluate and address the consequences of PPH (AHRQ, 2023).

PPH has been the central concern of safety measures in perinatal care, aiming to enhance patient outcomes via the implementation of various techniques, including practice standards or procedures, simulation exercises, and teamwork training. These improvements at the systems level may impact the treatment of postpartum haemorrhage (AHRQ, 2023).

### **Overview of Uterine Balloon Tamponade**

The Uterine Balloon Tamponade (UBT) is classified as a medical device. Utilising various therapeutic methods, a proficient healthcare practitioner implants a device into the uterus and expands it to provide pressure on blood vessels, thereby stopping bleeding and stabilising the patient. These devices have shown to be effective in saving lives, reducing the need for surgical procedures and blood transfusions, and eliminating unnecessary hysterectomies and impairments in women (UNICEF, 2022).

The variability in Uterine Balloon Tamponades (UBTs) is in their quality and pricing. A medical-grade UBT is a device that is subject to regulations, already put together, and usually intended for one-time usage. Regulated Uterine Balloon Tamponades (UBTs) have been used for many years in industrialised nations as a non-surgical solution for post-partum haemorrhage. In resource-constrained circumstances, several healthcare practitioners have resorted to using makeshift devices such as condom urinary bladder trainers (UBTs). This procedure involves the placement of a condom into the uterus, followed by the infusion of sterile water or saline solution via a catheter to apply pressure on the blood vessels (UNICEF, 2022).

FIGO (2022) and WHO (2019) have outlined several criteria that must be satisfied prior to the implementation of UBT, including: Uterine balloon tamponade (UBT) is a medical procedure

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that serves both as a diagnostic and therapeutic tool. It should be taken into account at an early stage when emergency measures are being used to treat postpartum haemorrhage (PPH). If necessary, prompt surgical intervention and availability of blood products are readily accessible. In order to prevent any difficulties arising from the incorrect positioning of the UBT device, it is imperative that only skilled healthcare professionals who have received proper training in its insertion do the procedure. It is necessary to rule out perineal, vaginal, and cervical lacerations as well as a ruptured uterus. A thorough evaluation of the placenta is necessary to exclude the presence of any remaining pieces. Maternal condition should be consistently and sufficiently checked to promptly detect any indications of decline.

Referring to the guidelines and recommendations provided by the FIGO and WHO in 2022 and 2019 respectively, the primary emergency interventions for treating atonic PPH involve uterine massage, establishing a large intravenous access, emptying the uterus and bladder, and administering oxytocin and TXA (as part of the first response bundle). In the case of the uterus not contracting, it is recommended to inject ergometrine or misoprostol. Additionally, bimanual uterine or aortic compression should be started, a uterine balloon tamponade (UBT) should be inserted, and the non-pneumatic anti-shock garment (NASG) should be used. These interventions are part of the response to refractory postpartum haemorrhage (PPH) bundle. The term "PPH bundle" has recently been used to refer to these two sets of techniques.

### **Mechanisms of Action of UBT**

FIGO (2022) states that Uterine Balloon Tamponade (UBT) devices have a multifunctional operating mechanism. The postulated methods include two aspects: the activation of uterine receptors by the device and the direct application of hydrostatic pressure. UBT devices activate uterine receptors, resulting in uterine contractions. These devices also enable the direct administration of hydrostatic pressure to specifically target the bleeding sinuses. According to the paper, when a UBT device applies pressure on the uterine wall that is equal to the systolic arterial pressure of the bleeding sinuses, it produces a tamponade effect.

According to FIGO (2022), the uterus receives its blood supply from maternal artery blood, which passes through the myometrium via sinuses that provide little resistance. After the placenta is delivered, the muscular fibres in the uterine wall contract and retract, effectively closing up the blood vessels and reducing bleeding. When dealing with instances of Postpartum Haemorrhage (PPH) caused by an atonic uterus, the primary goal is to promptly stop the excessive bleeding. Thus, the main objective is to use the most effective intervention options to stimulate contractions in the myometrium. UBT devices, such as the surgical glove balloon, Ellavi UBT, and Zukovsky balloon, operate as free-flow systems that allow for the escape of water from the balloon. This presumably enhances the inherent physiological process of myometrial contraction and retraction after the uterus undergoes recovery. Moreover, most UBT devices that are available for purchase have low-pressure, high-volume systems, which allow for the simple removal of the UBT once the uterus regains its muscle tone and starts contracting.



### **Effectiveness and Success Rate of Uterine Balloon Tamponade**

Uterine balloon tamponade (UBT) is a vital medical procedure used to treat postpartum haemorrhage (PPH), a potentially life-threatening condition that may occur after delivery. The efficacy and success rate of the intervention depend on many aspects, namely the underlying cause of the haemorrhage, the skill level of healthcare practitioners, and the timeliness of the intervention. Uterine balloon tamponade (UBT) is mostly used to treat instances of uterine atony, which is when the uterus does not contract properly after delivery. UBT is also effective in controlling postpartum haemorrhage (PPH) caused by conditions such as placental abruption or retained placenta.

The timing of intervention is crucial for the effectiveness of UBT, since early action greatly increases the chances of stopping bleeding before it worsens. Research has repeatedly shown that Uterine Balloon Tamponade (UBT) is very effective in attaining hemostasis, especially when dealing with uterine atony. Nevertheless, the rates of success might differ, underscoring the significance of the proficiency and expertise of healthcare practitioners. UBT is often used as a secondary intervention when earlier methods, such as uterine massage or uterotonic medications, are not effective enough. Occasionally, it may serve as a conduit to more conclusive treatments, such as surgical procedures.

According to observational studies conducted by FIGO (2022), the success rates of UBT (Uterine Balloon Tamponade) have been shown to range between 83% and 95% overall. Among women experiencing uncontrolled haemorrhage, the survival rate was almost 100% when a UBT device was inserted prior to the start of advanced shock. Research has demonstrated that incorporating Uterine Balloon Tamponade (UBT) into clinical pathways for Postpartum Haemorrhage (PPH) in high-income countries has effectively prevented the need for hysterectomy and significantly decreased the requirement for invasive procedures related to PPH, such as artery ligation, uterine compression sutures, and arterial embolisation (Gauchotte et al., 2017; Revert et al., 2019; Pendleton et al., 2016; as cited in FIGO, 2022).

According to a report by FIGO (2022), a systematic review and meta-analysis conducted in 2020 revealed an overall success rate of 85.9% (95% CI, 83.9–87.9%) for the treatment of postpartum haemorrhage (PPH). The success rates were higher for PPH caused by uterine atony and placenta previa, while lower success rates were observed for PPH caused by placenta accreta spectrum (PAS) and retained products of conception. Furthermore, a safety research conducted in Kenya and Sierra Leone evaluated the efficacy of a specially developed condom uterine tamponade device (ESM-UBT). The trial revealed that there was no heightened risk of infections or perineal injuries associated with the use of this device. Additionally, the success rates of condom UBT devices were found to be similar to those of Bakri balloons.

Additionally, many trials have shown the efficacy of Uterine Balloon Tamponade (UBT) in treating refractory Postpartum Haemorrhage (PPH), resulting in a decrease in the need for hysterectomy and maternal death. According to UNICEF Côte d'Ivoire, Uterine Balloon Tamponade (UBT) has been proven to be effective in preventing postpartum haemorrhage, with a success rate of 95%. Additionally, UBT has also been successful in lowering the yearly rise of hysterectomies by 8%, along with the accompanying health complications and financial burdens. This information is based on a report by UNICEF in 2021. In their research, Theron

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and Burke (2020) discovered that uterine balloon tamponade has a high efficacy in treating severe postpartum haemorrhage and demonstrates a favourable safety profile. Research has also shown that the use of the Bakri balloon is linked to a reduced occurrence of postpartum hysterectomy, consistently lowering the incidence of this procedure (Lo, et al., 2017).

FIGO (2022) reports that many trials indicate the high efficacy of Uterine Balloon Tamponade (UBT) in effectively managing uncontrolled Postpartum Haemorrhage (PPH). When UBT is administered prior to patients reaching advanced shock, the success rates reach about 100%. FIGO (2022) identified many obstacles to achieving better results, as shown by earlier studies conducted by Dumont et al and Natarajan et al. These barriers include the need for improved uterine balloon tamponade (UBT) techniques, delays in recognising postpartum haemorrhage (PPH), and insufficient action taken to properly install UBTs. Various UBT systems may reach various states at varying speeds. It is worth noting that improvised and untested UBTs are less often used and, when they are employed, their application is typically postponed, more challenging to position, prone to dislodgement, and linked to poorer overall success rates. Hence, it is crucial to promptly identify PPH and take urgent measures using reliable UBT equipment in order to save lives (FIGO, 2022).

Research has shown that the insertion of a UBT (Uterine Balloon Tamponade) results in effective management of haemorrhage, eliminating the need for transfers. The primary reasons for UBT failure are often inaccurate diagnosis and misplacement. If bleeding reoccurs or the patient remains unstable following UBT implantation, it is advisable to consider transferring them to more advanced healthcare facilities. Transfer may take place using both fixed-volume balloons and closed-off free-flow balloons. However, it is crucial to securely fasten all UBTs to avoid unintentional displacement (FIGO, 2022).

It is crucial to take into account the possible risks linked to UBT, such as uterine perforation or infection, despite its overall reputation for safety. Continuing research and progress in medical technology might enhance the efficacy of UBT and other therapies in the management of postpartum haemorrhage. Healthcare practitioners should remain updated on the most recent recommendations and evidence-based procedures to guarantee the best possible results for patients.

### **Implication for Nursing Practice**

Nurses have a crucial role in identifying and evaluating risk factors for maternal mortality and postpartum haemorrhage. It is essential for them to rapidly recognise warning indicators in order to initiate early actions. Hence, it is essential that routine training programmes prioritise the augmentation of nurses' abilities in evaluating and overseeing mother well-being throughout the various phases of pregnancy, delivery, and the postpartum period.

Efficient communication and coordination among healthcare team members are crucial in maximising outcomes during obstetric crises. Nurses have a crucial function in promoting multidisciplinary collaboration, actively participating with obstetricians, midwives, and other professionals. This partnership guarantees a synchronised reaction to obstacles in maternal health, with a focus on the significance of a cohesive healthcare strategy.

Nurses also play a crucial role in championing policies that enhance the accessibility and quality of maternal healthcare services. This includes tackling infrastructural obstacles, transportation concerns, and shortages in the healthcare personnel. The objective of advocacy activities should be to synchronise prenatal, birthing, and postpartum care services with set benchmarks, guaranteeing that women get the highest quality of care.

Education is a potent instrument, and nurses may have a substantial impact by providing instruction to pregnant women and their families. Providing women with easily understandable and respectful information enables them to take an active role in managing their healthcare, leading to improved maternal results. In addition, nurses must possess expertise in procedures such as Uterine Balloon Tamponade (UBT). Proficiency in technical abilities alone is insufficient; a comprehension of the requirements for UBT implementation and the associated dangers is also necessary.

After effectively managing postpartum haemorrhage (PPH), nurses have a vital role in providing postpartum follow-up care. This encompasses the surveillance of potential difficulties, provision of psychological assistance, and facilitation of access to essential resources for continuous recuperation. Providing adequate postpartum assistance helps maintain consistent care and reduces the long-term effects of postpartum haemorrhage on mother health.

Ultimately, nurses are urged to participate in research endeavours that specifically target maternal health and postpartum haemorrhage (PPH). Engaging in evidence-based practice facilitates the progress of the profession, resulting in enhanced treatments and results. Nurses who engage in research are able to keep up-to-date on developing trends and novel techniques in maternity healthcare.

## **CONCLUSION**

In conclusion, the study sheds light on the persistent challenges surrounding maternal mortality, emphasizing the insufficient progress made in achieving the Sustainable Development Goal (SDG) target of reducing maternal fatalities to 70 per 100,000 live births by 2030. Despite an overall global decline in maternal mortality ratios (MMRs) from 2000 to 2020, there has been a concerning stagnation and even an increase in certain regions, particularly in Western Europe, North America, Latin America, and the Caribbean. The African Region remains a focal point of concern, contributing to more than two-thirds of global maternal mortality.

Postpartum hemorrhage (PPH) emerges as a major contributor to maternal mortality, with causes ranging from uterine atony to retained placental fragments. The implementation of Uterine Balloon Tamponade (UBT) emerges as a critical intervention for managing PPH, offering a non-surgical solution with notable success rates. Primarily, a coordinated effort is required to improve healthcare facilities and accessibility, especially in areas with elevated rates of maternal mortality. This entails allocating resources towards recruiting and training

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proficient healthcare professionals, enhancing infrastructure, and optimising transportation networks to minimise the time taken to access maternity services. Furthermore, it is crucial to prioritise the implementation of extensive training initiatives targeting healthcare workers, specifically emphasising the prompt identification and efficient treatment of postpartum haemorrhage. Policymakers and stakeholders should promote and enforce evidence-based treatments, such as Uterine Balloon Tamponade (UBT), to ensure that it is widely accessible and that healthcare practitioners get enough training. Moreover, promoting multidisciplinary cooperation and community participation is crucial for a comprehensive approach to maternal healthcare, highlighting the significance of alliances between governments, healthcare institutions, and local communities.

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