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Rationale of a Cross Sectional Descriptive Study on Knowledge and Practices of Healthcare Providers on Postpartum Hemorrhage Management in Kinshasa, the Democratic Republic of the Congo

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Abstract

Background: Healthcare Providers' knowledge and practice of postpartum hemorrhage (PPH) management are essential to reduce maternal morbidity and mortality. PPH is a public health problem due to the high maternal mortality (MM) associated with it worldwide (25%). Improving the quality of PPH management is a major challenge in low-income countries where, despite the progress made in its management, PPH remains a major contributor to maternal morbidity and mortality. **Objective:** We will evaluate the level of knowledge and practices of providers in the PPH management in Kinshasa in the Democratic Republic of the Congo (DRC). **Methods:** This study will be descriptive and cross-sectional. The minimum sample size will be 86. Our study population will consist of delivery room care providers. Results will be reported as percentage proportion and mean plus or minus standard deviation. Comparisons of means between groups will be made using Student's t-test and Pearson's chi-square test. The test will be statistically significant for a p value < 0.05. Data will be collected and processed anonymously and confidentially. **Conclusion:** Improving quality of care must be a priority in obstetrics. This evaluation requires us to determine the level of knowledge and practices of providers in the PPH management in Kinshasa.

Keywords

Knowledge, Practices, Providers, Management and PPH

1. Introduction

PPH is the loss of at least 500 ml of blood from a woman's genital tract and/or accompanied by signs and symptoms of hypovolemia within 24 hours of delivery [1] [2] [3]. Its prevalence remains high and heterogeneous depending on the context. Its incidence is 5% if the measurement of blood loss is imprecise, 10% if it is quantified, and 2% for severe PPH [4] [5] [6]. In the DRC, the incidence is 6% [7]. PPH is linked to uterine atony (50% - 80%), retained placenta (10% - 30%), soft tissue lesions (15% - 20%) and coagulopathy (1%) [5]. PPH is a public health problem, representing the leading cause of MM worldwide (25%) [8]. Despite theoretical notions on the clinic and PPH management, the problem remains almost unresolved, as evidenced by the data in the literature [8] [9] [10]. In New Zealand, 68% of MM are attributed to the shortcomings of care providers, including the organization and/or management of care (33%) and inadequate knowledge and skills (35%) [11]. In Madagascar, on the evaluation of providers' knowledge and practices on PPH, it was found that providers' knowledge on assessing signs of PPH was 56% and on detecting tears (68%). Providers scored highest on management of uterine atony (39%) and placental retention (36%). Strict adherence to active management of third stage of labour steps was found in only 13% of deliveries [12]. According to Bouvier-Colle *et al*., the PPH management was sub-optimal in 94% of cases and death could have been avoided in 91% of cases [13]. In France, out of 363 obstetric residents, 33% lacked mastery of bilateral uterine artery ligation, 37% lacked mastery of uterine compression suturing, 62% lacked mastery of internal iliac artery ligation, 47% lacked mastery of emergency peripartum hysterectomy and 18% of providers clamed to have mastered none of these techniques [14]. Improving the quality of PPH management by providers is a major challenge in low- and middle-income countries where, despite the progress made in its management, PPH remains a major factor in maternal morbidity and mortality in both resource-limited and developed countries [13] [14] [15] [16]. It is therefore appropriate to examine the level of knowledge and practice of healthcare providers regarding the PPH management in Kinshasa (DRC).

2. Objective

This present study will assess the level of knowledge and practice of health care providers on the PPH management in the city of Kinshasa in DRC.

2.1. Study Rationale

To answer the question of the level of knowledge and practice of health care providers in the city of Kinshasa regarding the PPH management, our study will take place from July to August 2023 in selected facilities in the 35 health zones of the city-province of Kinshasa. The choice will be justified by the large number of deliveries and health providers assigned to these facilities. Our study population will consist of health care providers (doctors, midwife nurses and midwives) as-

signed to gynecology and obstetrics departments or services, as well as to delivery rooms. We will use lists of providers and data collection forms drawn up in the form of a mixed questionnaire adapted to the status of each.

2.2. Study Method

2.2.1. Sample Size

This will be a cross-sectional descriptive study with a minimum sample size of will be calculated according to the SCWARTZ formula, $n \geq \frac{Z^2 \times p \times q}{d^2}$. In this formula, n represents the minimum sample size, z equals the confidence interval (1.96), p is the assumed proportion prevalence of the problem in the population equal to 6%, q corresponds to the proportion of people with no problem (q = 100 − p) and d is the degree of precision set at 0.05. After incorporating these elements into the formula, the minimum size our calculated sample will be 86 providers. This study is designed and will be financed from our own funds.

2.2.2. Provider Selection

1) Inclusion criteria

To be included in this study, you must be a doctor, delivery nurse or midwife assigned to the gynecology-obstetrics department or service and the delivery rooms, and you must also agree to answer our questionnaire.

2) Non-inclusion criteria

Physicians and nurse midwives or midwives who did not agree to answer our questionnaire will not be included in this study.

2.2.3. Study Variables

1) Variables related to the general characteristics of providers: gender, qualification and number of years of maternity benefits.

2) Variables related to the provider's level of knowledge about PPH: knowledge of the definition of PPH, the definition of severe PPH, the method for assessing blood loss during vaginal delivery and caesarean section, etiologies and risk factors for PPH, preventive measures for PPH, elements of the diagnosis (clinical signs, severity and complications of PPH), biological work-up, drugs and solution prescribed for PPH and their dosage, mechanical and surgical treatments for PPH and monitoring.

3) Variables related to providers' level of practice in the PPH management: practice of annotating the initial time of diagnosis of PPH calling the multidisciplinary team, practice of monitoring vital signs and diuresis, practice of quantifying bleeding at the time of diagnosis, practice of artificial delivery, practice of uterine revision, exploration of the birth canal, uterine massage coupled with bladder emptying, antibiotic prophylaxis, endouterine tamponade with compress or balloon, bimanual uterine compression, trachelorrhaphy, uterine exteriorization during caesarean section, repair of uterine perforations during caesarean section, repair of vulvo-perineal lesions, treatment assessment, practice of arterial ligation (uterine and hypogastric), practice of uterine rupture repair,

practice of uterine compression technique (B-Lynch) and hemostasis hysterectomy.

2.3. Data Collection Procedures

Once we have obtained authorization for the survey from the department and the faculty, we will contact the authorities of the chosen health facilities to obtain their agreement to the study and request from them the list of service providers assigned to the gynecology-obstetrics department or service as well as to the delivery room. The providers will then be contacted individually and after obtaining their informed consent, we will proceed to fill in the data collection forms during an interview with each of them.

2.4. Expected Results of the Study

At the end of the present study, the level of knowledge of providers in Kinshasa maternity clinics about PPH will be established. Then, the level of practice of the providers on PPH in the maternities of Kinshasa will be determined.

2.5. Statistical Considerations

Data will be entered using Microsoft Excel 2016 and then exported to a database in the Statistical package for social sciences (SPSS) version 22.0 for analysis. Results will be expressed as a percentage proportion and mean plus or minus standard deviation. Comparisons of means between groups will be made using the Student's T-test or analysis of variance (ANOVA) as appropriate for quantitative variables and comparisons of proportions will be made using the Pearson's Chi-square test. The test will be considered statistically significant for a value of $p < 0.05$.

2.6. Ethical Considerations

This project was approved by the staff of the gynecology-obstetrics department, as well as by the Ethics Committee of the School of Public Health at University of Kinshasa. Information will be collected under the usual interviewing conditions, respecting confidentiality and after obtaining the free and informed consent of the providers. Data from this study will be processed and published anonymously.

3. Discussion

Providers' knowledge and practices in the PPH management is the primum movens for the combating the maternal morbidity and mortality associated with this entity. Indeed, several data in the literature have reported this, notably that of Vendittelli *et al*. who demonstrated that 82.5% of providers knew the definition of PPH and 41.7% the definition of severe PPH. Most of them used a collection bag to quantify blood loss (90.8%). In addition, the quantification of blood loss due to caesarean section was performed in 88.3% of cases. Finally, in the

same study, 33.2% of providers performed hysterorraphy during caesarean section after uterine exteriorization [17]. On the other hand, in many maternity units in Sub-Saharan Africa, the majority of care providers present enormous difficulties in relation to the knowledge of PPH. This was reported in in Tanzanian study by Carnahan LR *et al*. who found that only 6.1% of providers answered all questions correctly; 16.5% mastered the diagnostic elements of PPH; 45.2% of providers were able to identify the risk factors for PPH and uterine atony was recognized as the main cause of PPH by 40.9% of providers [18]. Consequently, inaccurate estimation of blood loss at the time of delivery can lead to misdiagnosis and mismanagement of PPH. In addition, overestimation may lead to inappropriate procedures, such as blood transfusion, with all its attendant risks. Underestimation can delay the diagnosis and treatment of PPH [19]. In their study, Bouet P-E *et al*. found a significant difference between theoretical and practical knowledge when assessing providers. In fact, the vast majority (almost 90%) of providers knew the theory of techniques for managing severe PPH, while less than a third had mastered the procedures and 55% had mastered none of the techniques. Of these, 7% had never seen or attended any of the techniques used in the severe PPH management [14]. As a result, the severe PPH management by providers leaves much to be desired in many health facilities [19].

3.1. The Strengths of the Study

Our study will be the first to assess providers' knowledge and practice in the PPH management in Kinshasa. It will therefore serve as a reference for future studies. This study will enable a review of the application of management protocols, training methods and refresher courses for providers in Kinshasa maternity hospitals.

3.2. Study Limits

An interview-based survey of provider practice will not really reflect what's going on. It may overestimate providers' level of practice. As a result, our sample will not be representative for the city of Kinshasa, and future studies will have to take this into account.

4. Conclusion

Improving the quality of care must be at the forefront in obstetrics in order to reduce maternal morbidity and mortality linked to PPH. This study will assess the level of knowledge and practices of healthcare providers of PPH management in Kinshasa, in order to highlight existing shortcomings. Generalized and continuous training of these providers could improve their level of knowledge and their ability to manage this problem.

Authors' Contributions

MMA and LMEP are the principal investigators. MMA generated and designed

the study. LMEP participated in the study design and will be actively involved in data collection. MMA, LMEP, LAJ, MNF, LBJ, KNB, LNN and NOC contributed to the drafting and improvement of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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