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Prevention and Control of Postpartum Hemorrhage: Validation of Rangel's Technology for Huambo, Angola

Adália Edna Fernando Chipindo[1] , Maria de Lourdes de Souza[1,2] ,
Rita de Cássia Teixeira Rangel[3] , Helder Lucas Chipindo[4]

[1]Post Graduation Nursing Program (PEN/UFSC), Federal University of Santa Catarina, Florianopolis, Brazil
[2]President Repensul Institute, Florianopolis, Brazil
[3]University of Vale do Itajai (UNIVALI), Itajai, Brazil
[4]Instituto Superior Politécnico da Caála, Huambo, Angola
Email: adalia.chipindo@gmail.com, repensul@uol.com.br, rctrangel@gmail.com, chipindohelder@gmail.com

Abstract

In the immediate postpartum period, women need to be observed by the obstetric nurse so that measures can be taken to prevent hemorrhages and reduce its complications. Most maternal deaths from hemorrhage are preventable with support measures for clinical practice, such as: guiding protocols, training of professionals, organization and management of health services and provision of adequate conditions for the parturition process. **Objective:** To validate Rangel's instrument with its application in the Maternity Ward of the General Hospital of Huambo, Angola. **Methodology:** This is a descriptive study with a quantitative approach. This is the sixth stage, called pre-test, of the Translation and Cultural Adaptation process. This instrument was sent for evaluation by the validators using the electronic data collection form named Google forms, with a seven-point Likert-type scale (from 7—totally agree to 1—totally disagree). The analysis was performed with the Cronbach's Alpha coefficient index (>0.91) and the Content Validity Index (CVI > 0.98). **Results:** Of the 10 items of evaluation criteria of the instrument analyzed by the 20 validators, 100% of them obtained a Cronbach's Alpha index rating of 0.91: clarity; coherence; scientific writing; relevance; sequence; uniqueness and updating. Coverage, item criticality and objectivity reached a Cronbach's Alpha of 0.95. The Content Validity Index was 0.95 for coverage, coherence, item criticality, scientific writing, relevance and updating. **Conclusion:** Rangel's instrument for nursing care aimed at preventing and controlling hemorrhage in the third period of birth, translated into Angolan Portuguese and validated by nurses, through the statistical results obtained in the validation, was considered reliable and necessary for clinical nursing practice in

Huambo, Angola.

1. Introduction

Hemorrhage and hypertensive disorders of pregnancy are the leading causes of maternal morbidity and mortality in developing countries. Hemorrhage is the leading cause of maternal death in Africa (33.9%) and Asia (30.8%) and the second leading cause in Latin America and the Caribbean (20.8%) [1]. Globally, 35% of maternal deaths are associated with PPH [2]. Mortality from hemorrhage for developed countries was much lower, 13.4% [1], but studies have warned of a trend towards increasing incidence of PPH as a cause of severe maternal morbidity (near miss) in developed countries, such as Australia, Canada, the United Kingdom and the United States, especially those related to uterine atony [3] [4].

Women in the immediate postpartum period needs observation of the volume of blood loss, the height of uterine contraction, recognition of the causes of hemorrhage and identification of risk factors, where warning signs are essential to prevent and control PPH. The major focus of health care is to do good to the patient, considering the scientific and technological advances involved in this process. Care defines the essence of nursing, and this occupation has socially conquered a space of trust, protection, hope and capacity for solidarity with patients, families and communities [5]. Therefore, nursing must be reinterpreted from scientific knowledge, in order to generate theories, concepts, methods, hypotheses and technological innovations [6]. Thus, nursing care in PPH must be based on observation and evidence-based protocols for the prevention, early detection and control of PPH.

The uterine contractions following delivery separate the placenta from the uterine wall completely, and it descends into the lower uterine segment and then into the vagina, where it is expelled. There are four most frequent signs in the first five minutes after delivery that indicate placental separation: firm globular uterus, gushing or trickling blood (depending on the insertion), lengthening of the cord and enlargement of the uterus in the abdomen [7].

At the placental site, 500 to 800 ml of blood flows every minute. If there is no mechanism after expulsion to control the hemorrhage, the woman will lose blood at that rate. She will bleed to death in a matter of minutes. With an average of five liters of blood in circulation, a woman can lose all her blood in six to ten minutes [8].

Due to the urgency and importance of PPH, professionals must act quickly before it becomes an irreversible condition that can lead to serious harm and even death [9]. In these conditions, it is important to estimate blood loss as ac-

curately as possible and to watch carefully for signs and symptoms of hypovolemia and/or shock, recording them correctly and taking appropriate control and treatment measures.

Therefore, nursing care that prevents and/or controls PPH requires techniques and technologies based on scientific evidence. Thus, among the various requirements for institutional management, the organizational infrastructure, number and preparation of adequate professionals, protocols, guidelines and instruments that support the intervention stand out. Accordingly, with the aim of contributing to the reduction of maternal mortality due to hemorrhage, the following objective was defined.

2. Objective

To validate Rangel's instrument with its application in the Maternity Ward of the General Hospital of Huambo, Angola.

3. Methodology

This is a descriptive study with a quantitative approach. This is the sixth stage of the Translation and Cultural Adaptation process [10] [11].

3.1. Ethical Aspects

The study was submitted to the Research Ethics Committee of the Instituto Superior Politécnico da Caála Huambo, Angola, opinion number 027/2021. Authorization was also previously requested from Dr. Rita de Cássia Teixeira Rangel, author of this instrument, who gave her written answer. Authorization was also requested from the Maternity Ward Directorate of the General Hospital of Huambo (HGH) in Angola.

3.2. Study Site

The study was conducted at the Maternity Ward of the General Hospital of Huambo (HGH), in Angola. This unit was chosen because it is the one that cares for the largest number of births, and it is also defined as high complexity in Huambo Province.

HGH was inaugurated on October 19, 1956, and is governed under the terms of Presidential Decree 260/10, dated November 19 [12] [13] and according to the Basic Law of the National Health Service, according to Decree-Law 21-B/92 [13] [14], which contains the references of the first level cases. Currently, HGH has an installed capacity of 820 beds and operates on a 24-hour basis.

Following the guidance of the National Directorate of the Ministry of Health, it is becoming a Regional Hospital. It has 402 Angolan doctors and 62 foreigners of various nationalities such as: Cuba, Russia, Egypt, Brazil, Senegal, Ethiopia, Portugal, among others. It has 810 nursing workers, 609 of whom are nurses (with university education), *i.e.*, 82.2%; and of these, 20 have joined the Committee of Experts.

In addition to patients from Huambo Province, HGH also cares for populations from different provinces such as: Bié and Kuando Kubango, besides neighboring municipalities, such as: Waco Kungo, Quibala, Cassongue and Ganda (Table 1).

3.3. Study Population and Sampling

The study population consisted of women who had children born in the Maternity Ward of HGH, regardless of the type of delivery (vaginal or cesarean section) who presented PPH in the third stage of birth, whose hemorrhage was controlled and were able to answer the instrument after ten hours of controlled hemorrhage.

As a preliminary procedure, the year 2019 was defined, prior to the COVID-19 pandemic. Therefore, considering that the Maternity Ward of HGH presented the highest number of births, it was identified that there was representativeness for Huambo (Table 2). Therefore, 12,294 births occurred in this institution were considered as the study population. After these definitions, the LabStat system of the Federal University of Santa Catarina, a free and easily accessible platform for various statistical calculations, was applied to calculate the sample (http://sestatnet.ufsc.br) [14] [15]. Considering a case frequency hypothesis of 10%, with a confidence interval of 95%, an estimated sample of 102 puerperal women was obtained.

3.4. Data Collection

The application of Rangel's Instrument in clinical practice with the Maternity Ward of the General Hospital of Huambo was carried out in the months of January and February 2023, until the number of puerperal women was completed, observing the characteristics defined in the study population. The collection was carried out by the nurses who composed the Committee of Experts, together with the main researcher, since the instrument, after adjustments due to translation into Angolan Portuguese, underwent evaluation in the following aspects: clarity, coherence, relevance to clinical practice, scientific updating and reliability.

Table 1. Distance between Huambo and the provinces that receive care at the General Hospital of Huambo. Florianópolis - SC, Brazil, 2023.

Province	Distance from Huambo
Bié	211 kilometers
Kuando Kubango	522 kilometers
Waco Kungo	193 kilometers
Quibala	269.8 kilometers
Cassongue	163.6 kilometers
Ganda	148.5 kilometers

Source: Systematized by the author, with data provided by the General Hospital of Huambo, 2021.

Table 2. Number of deliveries and live births per institution in Huambo, Angola. Florianópolis-SC, Brazil, 2023.

Institution	Number of births	Live births
Municipal Hospital	2713	-
General Hospital	12,294	7889
Bailundo	4346	4229
Caála	4302	4185
Ekunha	888	806
Katchiungo	964	941
Londuibali	1472	1433
Longonjo	1274	866
Mungo	1391	1355
Tchindjenje	474	465
Ukuma	1497	1463
Chicala	1103	1093

Source: Systematized by the author, with data collected at the Municipal Health Department of Huambo, 2021.

Each nurse performed an average of five applications, which was also performed by the main researcher. Thus, answers were obtained to proceed with the evaluation of the validity and reliability of the instrument in the field of clinical practice.

3.5. Statistics

Rangel's instrument translated into Angolan Portuguese remained with the 5 axes, 20 domains and 92 care actions. In this phase, sixth in the conception of Beaton [10] [11], the instrument was applied by the nurses who were members of the Committee of Experts and the main researcher, accompanied by a seven-point Likert-type evaluation scale, in order to evaluate each care proposed in each domain, in terms of content validity for the Angolan reality. Scale scores: 1 = Inadequate and incomplete; 2 = Needs major revision to be adequate and complete; 3 = Needs minor revision to be adequate and complete; 4 = Neither inadequate nor adequate; 5 = Adequate and complete; 6 = Very adequate and complete; 7 = Totally adequate and complete.

Once this step was completed, the answers were recorded in a Microsoft Excel (2010) spreadsheet, in order to verify the scores assigned to each item. The relevance of the items was obtained by interobserver agreement using Cronbach's Alpha coefficient and Content Validity Index (CVI).

According to Freitas and Rodrigues [15] [16], the Cronbach's alpha index [16] [17] is satisfactory when $\alpha \geq 0.70$ is obtained. In this adopted process, the acceptance of the care action was evaluated as valid and applicable in the Angolan reality when the care action obtained a score above 5 (five) on the Likert scale,

with the CVI also being higher than 0.77 [17] [18]. The Kappa Coefficient shows the ratio of the proportion of times that raters agreed (corrected for chance agreement) to the maximum proportion of times that raters could agree (corrected for chance agreement) [18] [19].

4. Results

The understanding of Rangel's instrument was demonstrated by the nurses who made up the Expert Committee after applying it to 102 puerperal women, who then stated that it was easy to understand and apply. The statistical results showed reliable measures for the adapted version, with the reliability value allowing us to infer that the instrument is able to measure the proposed clinical competences. The clinical competences integrated into the planned care actions include, among others, taking an anamnesis, as shown in Table 3, and were evaluated from clarity to scientific updating, as shown in Table 4.

Table 3. Evaluation of Rangel's instrument for the reality of Huambo, Angola, for the prevention and control of hemorrhage in the third stage of birth. Florianópolis-SC, Brazil, 2023.

Items	Average	SD	CVI	Kappa	Evaluation	Alpha
1. Perform anamnesis	7.0	0.0	1.00	1.00	Valid item	
2. Perform physical and obstetric examination	7.0	0.0	1.00	1.00	Valid item	
3. Perform risk stratification for PPH	7.0	0.0	1.00	1.00	Valid item	
4. Monitor parturient women after risk stratification	7.0	0.0	1.00	1.00	Valid item	
5. Perform control of labor with the partograph	6.7	0.5	1.00	1.00	Valid item	
6. Identify and monitor gaps in labor progress	6.7	0.6	0.99	0.99	Valid item	
7. Monitor and evaluate oxytocin	6.6	0.6	0.99	0.99	Valid item	
8. Prevent risk factors for parturient women in the second stage of birth	6.8	0.5	1.00	1.00	Valid item	
9. Monitor failures in labor progress	6.6	0.7	0.99	0.99	Valid item	
10. Prevent perineal trauma in the third stage of birth	6.7	0.5	1.00	1.00	Valid item	
11. Pay attention to the active management of the third stage of cesarean delivery	6.7	0.5	1.00	1.00	Valid item	0.77
12. Monitor placental abruption/secondment in vaginal delivery	6.6	0.8	0.99	0.99	Valid item	
13. Monitor the physiology of placental wound hemostasis	6.8	0.4	1.00	1.00	Valid item	
14. Repair birth canal injuries	6.8	0.5	0.99	0.99	Valid item	
15. Notify the multidisciplinary team if there are hemorrhagic complications (placental retention and maternal collapse)	6.8	0.4	1.00	1.00	Valid item	
16. Monitor placental retention	6.8	0.4	1.00	1.00	Valid item	
17. Monitor established hemorrhage and control maternal collapse	6.9	0.3	1.00	1.00	Valid item	
18. Monitor indication and treatment for control of PPH and maternal collapse	6.8	0.6	0.99	0.99	Valid item	
19. Monitor the duration of the third stage of birth	6.3	0.5	1.00	1.00	Valid item	
20. Prevent risk factors in parturient women in the third stage of birth	6.9	0.3	1.00	1.00	Valid item	

Source: Systematized by the author, 2023.

Table 4. Content validation by reliability measures with Cronbach's Alpha, Average and Content Validity Index (CVI) of Rangel's instrument for the reality of Huambo, Angola, for the prevention and control of hemorrhage in the third stage of birth. Florianópolis-SC, Brazil, 2023.

Composition	Agreement Percentage (%)	Average	CVI	Alpha
Coverage	99.0	6.81	0.99	
Clarity	98.0	6.74	0.98	
Coherence	97.1	6.63	0.97	
Item criticality	100.0	6.70	1.00	
Objectivity	98.0	6.69	0.98	
Scientific writing	97.1	6.62	0.97	0.91
Relevance	99.0	6.74	0.99	
Sequence	98.0	6.74	0.98	
Uniqueness	98.0	6.78	0.98	
Updating	98.0	6.74	0.98	

5. Discussion

Content validation is based on the opinion of experts on the theme to be studied. Therefore, the identification and choice of these professionals becomes the core in investigations using this methodological approach. The inadequate choice of selection criteria for experts (nurses with clinical practice) may interfere with the reliability of the results, since these professionals will be responsible for judging the validity of each item described in the instrument [19] [20].

Obtaining these professionals is a difficulty in translation and adaptation studies, since there is no consensus in the literature as to the defining characteristics for their selection. The lack of uniformity in the criteria for considering a professional as an expert is described in the literature as generating varied discussions and suggestions about his/her profile. For example, one could ask about years of experience; time since graduation; degree level; experience with research; publications on the studied theme and place of work. In this context of vagueness, in order to enable the identification of experts, Melo *et al.* refers that each researcher elaborates his/her own criteria as a way of directing them to the study objectives, respecting the necessary requirements to consider a professional as an expert [20] [21]. In any case, the criteria should be clear, justifying the choices of the researcher, in order to increase the credibility of future investigations.

In this study, the following criteria were adopted: to be a nurse, a native of Angola, to read and write Portuguese, to have at least one year of experience in caring for during and after the birth process, to work at the Maternity Ward of the General Hospital of Huambo, to be willing to participate in the research by applying the instrument with the puerperal women under the face-to-face observation of the native Angolan researcher.

Therefore, the act of inviting nurses as experts from other countries also requires taking into consideration the linguistic and cultural aspects of each.

The content validity of an instrument is necessarily based on judgment [21] [22]. There is no known set of objective methods to ensure the adequacy of the content coverage of an instrument, but content validity involves critical examination of the basic structure of the instrument, as well as its applicability to the research question [22] [23].

The values found for Cronbach's Alpha (α) and Content Validity Index (CVI) exceeded the cutoff values established in the research method, which were Cronbach's Alpha ≥ 0.70 and CVI ≥ 0.80 [23] [24]. They were also higher than those adopted by Yamada for excluding items from the instrument [24] [25].

Rangel's instrument applied in the Maternity Ward of the General Hospital of Huambo, Angola, presented an adequate internal consistency (α = 0.77) in the 20 evaluated domains. The averages were close to the highest score, between 6.3 and 7.0, which reflects the positive direction of the attitude of the respondents towards each statement. The CVI and Kappa tests showed values of 0.99 and 1.0. Accordingly, the instrument is considered recommendable for clinical practice, with agreement and validity (Table 3).

Table 4 shows the content validation, by reliability measures with Cronbach's Alpha and Content Validity Index (CVI) of Rangel's instrument for the prevention and control of hemorrhage in the third stage of birth [25] [26], according to the composition of 10 items (coverage; clarity; coherence; item criticality; objectivity; scientific writing; relevance; sequence; uniqueness and updating). After the evaluation with 102 puerperal women, the averages of each item varied from 6.62 to 6.81. The validation measures were adequate, with the agreement of the answers obtained being between 97.1% and 100%; the CVI varied between 0.97 and 1.00; and Cronbach's Alpha was 0.91.

The validated instrument, with evaluations of the items proposed by Pasquali obtained values varying with maximum and minimum [26]. The items evaluated with the highest Cronbach's Alpha value, with 0.96, referring to the reliability of the instrument data, were: clarity; coherence; scientific writing; relevance; sequence; uniqueness and updating. The items related to coverage, item criticality and objectivity reached a Cronbach's Alpha of 0.95, all considered by the judges with reliability. The results of the evaluation attest to the reliability, internal consistency of the instrument and the estimation of reliability among judges, as well as content validity. Overall, the instrument evaluated by nurses showed reliability in the axes, domains and actions and is therefore recommended for clinical practice, with a view to preventing and controlling hemorrhage in the third stage of birth.

6. Conclusions

The validation of instruments with care actions is a contribution to the adequate performance of procedures in clinical nursing practice.

Rangel's instrument, translated into Angolan Portuguese, for nursing care aimed at preventing and controlling hemorrhage in the third stage of birth, was considered reliable and necessary for clinical nursing practice in Huambo, Angola, based on the statistical results obtained during validation.

Most causes of maternal mortality are considered preventable with the proper care. Therefore, the translated and validated instrument in the clinical nursing practice in Huambo, Angola, will contribute to the prevention and control of hemorrhage in the third period of birth and, consequently, will contribute in terms of reducing maternal mortality from this cause.

Conflicts of Interest

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

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