

TRANSLATION OF KNOWLEDGE BASED ON SCIENTIFIC EVIDENCE TO IMPROVE THE CLINICAL PRACTICE OF OBSTETRICIANS

Translação do conhecimento baseado em evidências científicas para melhorar a prática clínica de obstetras

Traducción del conocimiento basada en evidencia científica para mejorar la práctica clínica de los obstetras

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ABSTRACT

Objective: evaluate the effectiveness of educational interventions based on scientific evidence to improve the clinical practice of obstetricians. **Method:** longitudinal study with nurses and doctors at the Hospital Estadual de Santana, Amapá, Brazil, where 21 structured interviews were carried out in the pre and post-audit, in addition to educational interventions with “audit and feedback” and “recommended clinical practice guidelines” by Cochrane collaboration to bring about changes in the behavior of healthcare professionals. The data were analyzed using a Likert scale. **Results:** there was an increase in professionals favorable to the recommendation of obstetric practices, after educational interventions, with a significant increase in perineal suture with absorbable synthetic thread and the warm compress technique in the perineum; fewer professionals recommended obstetric interventions, with a significant reduction in Kristeller’s maneuver during childbirth. **Conclusion:** educational interventions provided improvements in the practice of professionals.

DESCRIPTORS: Normal birth; Clinical audit; Translational medical research.

RESUMO

Objetivo: avaliar a eficácia de intervenções educativas baseadas em evidências científicas para melhorar a prática clínica de obstetras. **Método:** estudo longitudinal com enfermeiros e médicos do Hospital Estadual de Santana, Amapá, Brasil, onde realizou-se 21 entrevistas estruturadas na pré e pós-auditoria, além de intervenções educativas com “auditoria e *feedback*” e “diretrizes de prática clínica” recomendadas pela *Cochrane collaboration* para provocar mudanças no comportamento dos profissionais de saúde. Os dados foram analisados através de uma escala *Likert*. **Resultados:** houve aumento de profissionais favoráveis à recomendação de práticas obstétricas, após as intervenções educativas, com aumento significativo da sutura perineal com fio sintético absorvível e a técnica de compressa morna no períneo; menos profissionais recomendaram as intervenções obstétricas, com redução significativa da manobra de *Kristeller* no parto. **Conclusão:** as intervenções educativas proporcionaram melhoras na prática dos profissionais.

DESCRIPTORIOS: Parto normal; Auditoria clínica; Pesquisa médica translacional.

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RESUMEN

Objetivo: evaluar la efectividad de las intervenciones educativas basadas en evidencia científica para mejorar la práctica clínica de los obstetras.

Método: estudio longitudinal con enfermeras y médicos del Hospital Estadual de Santana, Amapá, Brasil, donde se realizaron 21 entrevistas estructuradas en la pre y post auditoría, además de intervenciones educativas con “auditoría y retroalimentación” y “práctica clínica recomendada directrices” de la colaboración Cochrane para provocar cambios en el comportamiento de los profesionales sanitarios. Los datos se analizaron mediante una escala Likert. **Resultados:** hubo un aumento de profesionales favorables a la recomendación de prácticas obstétricas, después de intervenciones educativas, con un aumento significativo de la sutura perineal con hilo sintético absorbible y la técnica de compresa caliente en el perineo; menos profesionales recomendaron intervenciones obstétricas, con una reducción significativa de la maniobra de Kristeller durante el parto. **Conclusión:** las intervenciones educativas aportaron mejoras en la práctica de los profesionales.

DESCRIPTORES: Parto normal; Auditoría clínica; Investigación médica traslacional.

INTRODUCTION

In Brazil, in recent years, considerable efforts have been undertaken by governmental and non-governmental organizations in an attempt to seek to implement a new model of childbirth care, with improvements in the quality of care and reduction of morbidity and mortality for the mother and child.¹

This need arises because in Brazil 98.4% of births take place in hospitals and 88.7% are assisted by obstetricians, with excessive use of hard technology and medicalization, exposing women to high rates of obstetric interventions (unnecessary and potentially iatrogenic conducts), which should be used only in women with unusual obstetric risk.^{2,3}

Within the Unified Health System (SUS), the ‘Stork Network’, an innovative strategy that incorporated health practices including the rescue of childbirth as a physiological process, the stimulus for the performance of the obstetric nurse, access to non-pharmacological and non-invasive technologies, and the use of practices based on scientific evidence, in accordance with the recommendations of the World Health Organization (WHO).^{4,5}

Some advances occurred after the implementation of the ‘Stork Network’, but maternal morbidity and mortality is still a challenge.¹ Therefore, another effort of the Ministry of Health (MOH) was the publication of the National Guidelines for Normal Childbirth Care (DNAPN/MS), a strategy that synthesizes and systematically evaluates the scientific information available on delivery and birth care practices, in order to contribute to the translation of knowledge.³

In this understanding, it was identified that in our reality, most childbirth care practices are unsafe, resulting in greater risks to the mother-child binomial and contradicting the recommendations of the DNAPN/MS³ and the WHO,⁴ characterizing a care unrelated to scientific evidence. Therefore, the need to change this reality justified the study and became a guiding question: what is the effectiveness of educational interventions as strategies for translating

knowledge based on scientific evidence to improve the clinical practice of obstetricians.

The term “Knowledge translation” (KT) is described as synonymous with “knowledge translation” or “translational research” and defined as the application of findings generated by laboratory research and preclinical studies to the development of clinical research and human studies. A second area of translational research involves improving the adoption of best practices.⁶⁻¹¹

Some knowledge translation initiatives coupled with the use of educational interventions, such as reminders, printed guidelines or educational materials, lectures, conferences, meetings, use of local opinion leaders, among others, have been described in the literature,^{7,8} but the most appropriate recommendation of one intervention over the other is still limited, and further evaluation documented in the literature is essential. However, it can be stated that multifaceted approaches are more effective than simple approaches.^{9,10}

The study aimed to evaluate the effectiveness of educational interventions based on scientific evidence to improve the clinical practice of obstetrician.

METHOD

This is a longitudinal, quasi-experimental, before-and-after study that followed the clinical audit process suggested by the methodology for implementing scientific evidence in clinical practice of the Joanna Briggs Institute (JBI),¹¹ based in Adelaide, Australia, which developed its own methodology with action research tools, comprising three phases: 1) pre-audit; 2) implementation of practices; 3) post-audit.

The study was developed in the period from May to October 2019 in the maternity ward of the Santana State Hospital (HES), linked to the Amapá State Department of Health (SESA). The HES has four nurses and 10 physicians to attend 220 deliveries per month of women with usual obstetric risk, 73% deliveries and 27% surgical.

The population consisted of all obstetricians who agreed to participate in the study, four nurses and eight physicians, according to the following inclusion criteria: being a specialist in obstetrics, acting in direct assistance to normal delivery and having at least 12 months of experience. The sample was composed of 12 professionals in phase 1 and nine in phase 3. The only exclusion criterion was not participating in phase 2 (intervention).

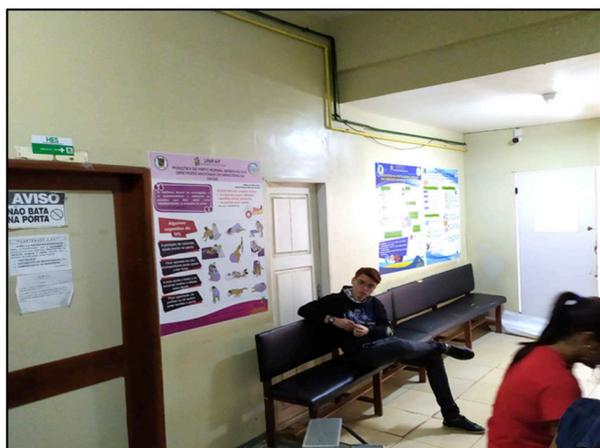
In phase 1, an audit team was formed, the audit criteria were defined, and the baseline audit was conducted. The audit team was composed of the general director of the HES, nursing coordination, head of obstetrics, maternity nurses, and the researchers themselves. It established 29 audit criteria, of which 21 were obstetric practices and eight were obstetric interventions (shown in the results tables).

In the baseline audit, which began in May 2019,¹² 15-minute face-to-face interviews were conducted with four nurses and eight physicians, using a structured questionnaire of 29 questions and five “Likert scale” type response options: “never,” “rarely,” “sometimes,” “most of the time,” and “always,” assigned linear numerical values of 1, 2, 3, 4, 5, respectively.

In phase 2, two educational interventions targeting health professionals involving “audit and feedback” and “clinical practice guidelines”, recommended by the Cochrane collaboration¹² in its taxonomy of educational interventions designed to bring about changes in the behavior of health professionals, were conducted. Thus, phase 2 was initiated right after each interview, where the scientific evidence was presented and discussed according to the audit criteria and the recommendations of the DNAPN/MS.

In the feedback, of variable time between 10 and 15 minutes, a verbal summary of the professionals’ performance could include the recommendations in clinical practice. In addition, in August 2019, 12 banners, measuring 120 x 90 centimeters, were attached in the form of stickers at the maternity reception and in the two delivery rooms to reinforce to professionals those recommendations of the clinical practice guidelines³ (Figure 1).

Figure 1 - Banners in the reception and delivery room, Santana State Hospital, Amapá, 2019



At this point, it is important to highlight that a medical professional who works at the site of the study damaged part of the exposed material, leaving only three of the 12 exposed banners, which were finally “discarded” from the hospital on the 48th day of intervention.

In phase 3, considering that the JBI does not set fixed deadlines for the post-audit to occur, it was initially proposed that the third phase would take place 90 days after the end of phase 2, that is, on November 1, 2019. However, considering the interruption of phase 2, the post-audit was started 60 days after the intervention date, starting on October first, 2019, in order to compare the results.

In this phase, the researchers interviewed nine professionals (four nurses and five physicians) from those who participated in the pre-audit, feedback, and who acted in childbirth care during the period when the banners were available at HES, using the same repeat questionnaire and inclusion criteria. Therefore, in phases 1 and 3, dependent samples of professionals were used.

Descriptive and inferential analysis was performed in IBM SPSS® software, version 25.0. In the descriptive analysis the Mean Ranking (RM)¹³ and Total Mean Ranking (RMT)¹³ of the Likert-type scale were calculated. For the inferential analysis, the results of phase 1 were compared with phase 3 (before and after the intervention) using Student’s t-test.

Differences were considered significant when the p-value was less than 0.05 for a 95% confidence interval.

To analyze the Likert-type scale, the calculation of the Mean Ranking (MR) was used,¹³ which is the sum of the values from one to five assigned for each criterion, divided by the number of responding subjects, obtained through the following formula.

$$RM = \frac{\sum VC}{NT}, \Sigma = \text{sum}; VC = \text{values of each criterion}; NT = \text{total number of respondents}$$

In the RM,¹³ it was considered that the $RM > 3$ score demonstrates professionals more favorable to recommending or performing obstetric practices or interventions, while the $RM < 3$ score indicated less favorable professionals. The $RM = 3$ score represents the “neutral point” on the Likert-type scale.

In addition, we also checked the Ranking Médio Total (RMT),¹³ which is the sum of the summative values of all criteria, divided by the number of responding subjects, obtained using the following formula:

$$RMT = \frac{\sum VSC}{NT}, \Sigma = \text{sum}; VSC = \text{summative criteria scores}; NT = \text{total number of respondents}$$

The research was approved by the Research Ethics Committee of the Universidade Federal do Amapá, under opinion number 2,853,419. Authorization was obtained from HES before the beginning of data collection and the participation of professionals was voluntary, after reading and signing the Informed Consent Form (ICF), observing the guidelines and standards of Resolution No. 466/12 of the National Health Council.

RESULTS

In the comparison between phases 1 and 3 of the study, the obstetric practices that had a statistical difference in recommendation were 'use of absorbable synthetic thread in perineal suturing' ($p=0.003$) and 'warm compress on the perineum as a trauma prevention technique' ($p=0.031$). For the practices 'shower bath', 'perineal trauma assessment', 'umbilical cord clamping', 'rectal examination', 'relaxation massage', 'birth position of the woman's choice' and 'continuous suturing', there was favorable adherence ($RM>3$) of the professionals with an increase in the mean difference after the educational interventions, but without statistical significance between phases 1 and 3 (Table 1).

Table 1 - Mean Likert scale ranking of obstetric practices recommended or performed by obstetricians at Santana State Hospital, Amapá, 2019

Obstetric practices	Phase 1	Phase 3	Average difference	p-value*
	Likert	Likert		
Ambulation or movement	4,92	4,56	-0,36	0,370
Shower	4,67	5,00	0,33	0,144
Perineal trauma assessment	4,50	5,00	0,50	0,217
Use of the anesthetic	4,42	3,89	-0,52	0,381
Use of oxytocin in the third stage of labor	4,33	3,44	-0,88	0,164
Active management in the third stage of labor	4,33	4,33	0	1,000
Manual protection technique of the perineum	4,17	3,44	-0,72	0,260
Fluid and food intake	4,00	4,00	0	1,000
Cord clamping after the 1st minute	4,00	4,56	0,56	0,162
Repair of all perineal lacerations	3,67	3,33	-0,34	0,455
Rectal examination after 3rd and 4th degree repair	3,42	3,78	0,36	0,675
Presence of the companion of free choice	3,00	2,00	-1,00	0,202
Relaxation Massage	3,00	4,00	1,00	0,116
Position in childbirth of the woman's choice	2,75	4,00	1,25	0,06
Continuous suture not anchored to mucosa/muscle	2,58	3,44	0,86	0,240
Continuous intradermal skin suture	2,58	3,44	0,86	0,240
Position in a squat birth	2,33	2,56	0,23	0,651
Position in four-way birthing	2,00	2,22	0,22	0,680
Position in side birth	1,83	2,11	0,28	0,586
Use of absorbable synthetic thread in perineal suturing	1,25	3,00	1,75	0,003
Warm compress on the perineum to prevent trauma	1,00	2,33	1,33	0,031

*Student's t-test

The recommendation to use the Kristeller maneuver was the only obstetric intervention with a statistical difference ($p=0.023$) between phases 1 and 3 of the study. Favorable adherence ($RM>3$) of the professionals was maintained for 'use of biological catgut in perineal suturing', 'interrupted suturing in all tissue planes' and 'lithotomic birth position', but with a reduction in the mean difference after the educational interventions, without statistical significance between phases 1 and 3 (Table 2).

Table 2 - Mean Likert scale ranking of obstetric interventions recommended or performed by obstetricians at Santana State Hospital, Amapá, 2019

Obstetrical interventions	Phase 1	Phase 3	Average difference	p-value*
	Likert	Likert		
Use of biological catgut in perineal suturing	4,83	4,44	-0,39	0,130
Interrupted suture in all tissue planes	3,58	3,11	-0,47	0,479
Supine or semi-supine birth position (lithotomy)	3,67	3,22	-0,45	0,341
Directed Pulls	2,67	1,89	-0,78	0,145
Use of the Kristeller maneuver	2,42	1,78	-0,64	0,023
Routine use of amniotomy	2,33	1,78	-0,55	0,189
Routine use of oxytocin in the 1st stage of labor	1,92	1,56	-0,40	0,337
Routine episiotomy	1,42	1,44	0,02	0,929

*Student's t-test

According to the total average ranking, there was an increase (7.5%) in the proportion of professionals favorable to recommending obstetric practices after the educational interventions, but without a statistically significant difference (p=0.176). On the other hand, the proportion of professionals recommending unnecessary obstetric interventions reduced (15.8%), with a statistical difference (p=0.024) (Table 3).

Table 3 - Mean total ranking of obstetric practices and interventions recommended or performed by obstetricians at Santana State Hospital, Amapá, 2019

Obstetrical interventions	Phase 1	Phase 3	Average difference	p-value*
	Likert	Likert		
Obstetric practices	68	73,1	7,5%	0,176
Obstetrical interventions	22,8	19,2	-15,8%	0,024

*Student's t-test

DISCUSSION

Regarding the obstetric practices evaluated in this study, the results show that after the educational interventions, there was a statistical difference in the increase in the favorable proportion of professionals recommending 'the perineal suture with absorbable synthetic thread' and 'the warm compress technique in the perineum'.

For these two practices, which were also emphasized in the banners as recommended by the DNAPN/MS, providers understood the importance of recommending them to reduce maternal morbidities associated with perineal trauma.

The use of absorbable synthetic sutures for first and second degree lacerations and episiotomies result in less likelihood of postpartum perineal pain, dyspareunia, and dehiscence than catgut sutures.¹⁴⁻¹⁵ The only disadvantage is the time it takes for the synthetic suture to be fully absorbed, which can take up to 120 days in the case of Monocryl® or approximately 42 days if Vicryl Rapide™ is used, and there is rarely a need for removal of this suture.¹⁶

A Cochrane Library systematic review¹⁷ of 15,181 women concluded that warm compresses can reduce the occurrence of third and fourth degree perineal injuries. The procedure was shown to be acceptable to women and has been recommended^{3,4} for care in the second stage of labor.

Although without statistical difference, eight other obstetric practices had an increase in the favorable proportion of professionals recommending them after the educational interventions, especially showering, perineal trauma assessment, and cord clamping after the first minute. These findings were considered satisfactory because these practices were very incipient in the study site and had rarely been used before the educational interventions.

The recommendation of showering with warm water is a beneficial non-pharmacological strategy for pain relief with a relaxing effect on body muscles, low cost compared to other methods, easy to apply, and that helps the parturient woman to decrease tension, fear, and blood pressure. In addition, it promotes the increase of cervix dilation, provides comfort, and favors the formation of a bond with the nursing team.^{3,4,11}

Importantly, some professionals reported during feedback that they were not confident to assess or classify perineal trauma on their own, especially to the anal sphincter. This was worrisome because professionals assisting in childbirth should be able to assess it to ensure that the structures and tissues involved are repaired.

Lack of knowledge in perineal anatomy can lead to inadequate assessment of third and fourth degree trauma. The assessment includes the classification of the trauma, which involves from the skin and mucosa (1st degree), extending to the perineal muscles (2nd degree), the anal sphincter (3rd degree) or the anal epithelium (4th degree).^{5,18}

At the study site, umbilical cord clamping has been performed before the first minute after the birth of term babies in good conditions, and immediate care has been initiated. This practice, although frequently performed, has no scientific basis, and is at odds with the recommendations of the DNAPN/MS³ and WHO.⁴

Cord clamping performed only after the first minute of term births and without the need for stabilization results in an increase of almost 100 ml blood per placental transfusion. As a result, hemoglobin 48 hours after birth is higher and iron deficiency during infancy is less frequent.^{19,20} If cord clamping occurs within 90 seconds, provided >60 seconds, it may not only improve the early hematologic status of neonates, but also prevent excessive jaundice requiring phototherapy.²¹

With regard to obstetric interventions, the results show that after exposure to the banners, there was only a statistical difference in the reduction of professionals favoring the recommendation of the 'Kristeller maneuver'. A Cochrane Library systematic review,²² with 3,948 women, concluded that there is insufficient evidence for the routine use of the Kristeller maneuver. Therefore, this practice is not recommended by the MH³ and WHO⁴ as it may cause physical and psychological trauma to the woman.

Even without statistical difference, there was a reduction of professionals recommending 'the use of biological catgut in perineal suturing', 'the interrupted suture technique in all tissue planes', and 'the lithotomic delivery position', after exposure of the banners. This reduction was considered important because it involves those unnecessary interventions with higher maternal morbidity.

There is evidence that the biological catgut thread is still the most used type for perineal repair, associated to a greater need of analgesia until the third day after delivery and greater dehiscence when compared to suture performed with absorbable synthetic thread. The use of the interrupted suture technique, in comparison with the continuous suture technique, is associated with a greater need for analgesia up to 10 days after delivery, greater use of suture material (thread and anesthetic) and greater removal of the suture from the perineum.¹⁵⁻¹⁶

Regarding the lithotomy position in labor, it was observed that this was still highly recommended in the routine of professionals, before the educational interventions, because it was the most favorable for viewing the birth canal and traction of the child during the expulsion period, i.e., the parturients

were discouraged from adopting any other position they found more comfortable. This culture of recommending lithotomy in labor was still transferred to the students, residents and midwives at the study site. Thus, the feedback and exposure of the banners were not able to improve it significantly, although, in the literature^{1,3,4} there is consensus that the position in eutocic delivery can be of the patient's choice, including upright positions.

The analysis of the total average ranking shows, in general, whether the obstetric practices and interventions were more or less favorable to be recommended or performed by the professionals. Thus, we can infer that after the educational interventions, more obstetric practices based on scientific evidence were observed in the clinical conduct of the professionals interviewed, without statistical significance, while fewer women were exposed to unnecessary or not recommended obstetric interventions, with significance.

Statistically, it is interesting to clarify that although the difference in the total mean ranking was greater among the obstetric practices, in this type of ranking, the amplitude of the mean differences for each of the criteria is considered, exactly, as in obstetric interventions, which, with the exception of episiotomy, all the others had a reduction in the mean difference, justifying their significance in the total mean ranking.

Our findings were corroborated by other studies^{1,15,23} that evaluated possible improvements in the obstetric indicators of nurse and physician professionals, compared to the DNAPN/MS, whose results showed an increase in the proportion of use of beneficial practices and reduction of practices considered harmful.

The results of this research bring contributions to professionals working in childbirth care, showing that many practices are empirical and that there is evidence that can reduce or prevent maternal morbidities and improve women's experience in childbirth.

The main limitations of the study include the small sample of professionals, the scarcity of non-pharmacological and non-invasive technologies in the maternity hospital, the loss of part of the banners by a physician, and the approach with only two educational interventions, instead of a multifaceted one.

CONCLUSION

The results of this research allow the conclusion that educational interventions with "audit and feedback" and "clinical practice guidelines" with use of banners can increase the recommendation by professionals for obstetric practices based on scientific evidence. The study confirmed the importance of continuing education, greater involvement of obstetric professionals, and available infrastructure for the maintenance of evidence-based care. The sample size was small, but the total eligible population of the hospital was 14 professionals. We suggest further research with more multifaceted educational interventions to evaluate their effectiveness in assisting normal childbirth.

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