ACTA 30 YEARS 1988 - 2018

Original Article

Patient positioning for spinal anesthesia: construction and validation of a flipchart

Posicionamento do paciente para raquianestesia: construção e validação de álbum seriado

Posicionamiento del paciente para raquianestesia: construcción y validación de álbum seriado

Sarah de Lima Pinto[1]
Kenya Waleria de Siqueira Coêlho Lisboa[1]
Nelson Miguel Galindo Neto[1]
Larissa Alves Sampaio[2]
Mirna Fontenele de Oliveira[3]
Joselany Áfio Caetano[1]

Keywords
Anesthesia, spinal; Patient positioning; Pregnant women; Validation studies; Health education

Descritores
Raquianestesia; Posicionamento do paciente; Gestantes; Estudos de validação; Educação em saúde

Descriptores
Anestesia raquidea; Posicionamiento del paciente; Mujeres embarazadas; Estudios de validación; Educación en salud

Submitted
September 28, 2017

Accepted
January 23, 2018

Abstract
Objective: Construct and validate an educational flipchart for pregnant women who are to be submitted to a cesarean section on positioning during spinal anesthesia.
Methods: Methodological study involving the elaboration of the flipchart, validation with 22 surgical center nurses, 22 anesthetists and three judges with expertise in communication, followed by the pregnant women's evaluation of the material. The Level Content Validity Index superior to 0.8 was used for the content validation and the binomial test to verify the level of agreement.
Results: The flipchart consists of 15 pages, with orientations about advantages, disadvantages and positions for the spinal anesthesia. The mean Level Content Validity Index was 0.94 for the nurses, 0.93 for the anesthetists and 0.97 for the judges with expertise in communication. The pregnant women unanimously approved the material.
Conclusion: The flipchart was constructed and validated and nursing can use it with pregnant women who are to be submitted to cesarean section under spinal anesthesia.

Resumo
Objetivo: Construir e validar álbum seriado educativo para gestantes que serão submetidas à cirurgia cesariana, acerca do posicionamento durante a raquianestesia.
Métodos: Estudo metodológico realizado com a elaboração do álbum seriado, validação com 22 enfermeiros de centro cirúrgico, 22 anestesistas e 3 juízes da área de comunicação e posterior avaliação do material por gestantes. Utilizou-se o *Level Content Validity Index* superior a 0,8 para a validação de conteúdo e o teste binomial para verificação da proporção de concordância.
Resultados: O álbum seriado possui 15 páginas, contém orientações sobre vantagens, desvantagens e posições para a raquianestesia. A média do *Level Content Validity Index* foi de 0,94 pelos enfermeiros, 0,93 pelos anestesistas e 0,97 pelos juízes da área de comunicação. Houve unanimidade pelas gestantes na aprovação do material.
Conclusão: O álbum seriado foi construído e validado e pode ser utilizado pela enfermagem junto a gestantes que serão submetidas à cesariana sob raquianestesia.

Resumen
Objetivo: Construir y validar álbum seriado educativo para embarazadas que serán sometidas a cirugía cesárea, sobre el posicionamiento durante la raquianestesia.
Métodos: Estudio metodológico con elaboración del álbum seriado, validación con 22 enfermeros de quirófano, 22 anestesistas y 3 especialistas en el área de comunicación, con posterior evaluación del material de las embarazadas. Se utilizó el *Level Content Validity Index* superior a 0,8 para validación del contenido, y el test binomial para verificación de la proporción de concordancia.
Resultados: El álbum seriado tiene 15 páginas, incluye indicaciones sobre ventajas, desventajas y posiciones para la raquianestesia. El promedio del *Level Content Validity Index* fue de 0,94 para enfermeros, 0,93 para anestesistas y 0,97 para especialistas en comunicación. Hubo unanimidad entre las embarazadas para aprobación del material.
Conclusión: El álbum seriado fue elaborado y validado, puede ser utilizado por los enfermeros conjuntamente con las embarazadas que serán sometidas a cesárea bajo raquianestesia.

Corresponding author
Sarah de Lima Pinto
http://orcid.org/0000-0002-9020-5610
E-mail: sarahlimapinto@gmail.com

DOI:
http://dx.doi.org/10.1590/1982-0194201800005

CC BY

How to cite:
Pinto SL, Lisboa KW, Galindo Neto NM, Sampaio LA, Oliveira MF, Caetano JA. Patient positioning for spinal anestesia: construction and validation of a flipchart. Acta Paul Enferm. 2018; 31(1):25-31.

[1]Universidade Federal do Ceará, Fortaleza, CE, Brazil.
[2]Hospital and Maternity Hospital São Lucas, Juazeiro do Norte, CE, Brazil.
[3]Universidade Federal do Cariri, Juazeiro do Norte, CE, Brazil.

Conflicts of interest: the article presents partial results of the ongoing Doctoral dissertation "Educative technology for correct positioning in spinal anesthesia: randomized and controlled clinical trial", in the Graduate Nursing Program at Universidade Federal do Ceará, Fortaleza, CE, Brazil.

Introduction

Spinal anesthesia is an anesthetic technique widely used in cesarean sections. Compared to general anesthesia, it causes less neonatal exposure to depressant substances, maintains maternal consciousness, causes less perioperative bleeding and improves the quality of postoperative analgesia.[1]

Despite the high level of success, complications such as hypotension, postural puncture headache and nerve damage can occur. This may be associated, among other factors, with the inability to properly flex the spine.[1,2]

The difficulty to maintain appropriate positioning may occur out of fear of anesthesia, common among people undergoing anesthetic-surgical procedures. In pregnant women, obtaining a proper position may be difficult due to the impaired identification of anatomical references and impaired flexing of the spine due to the increased abdominal volume.[3]

Guidelines on the procedure can help reduce fear and anxiety, and encourage patient collaboration with the positioning for anesthesia. The guidance and assistance for the correct positioning of the patient in the pre-anesthetic phase are nursing care and can take place through the use of educational technologies that facilitate the communication process.[4]

The relevance of this subject was perceived during the authors' care routine, motivated by the question of what scientific evidence has been published about the position of the pregnant woman during spinal anesthesia. Therefore, an integrative review was performed which, despite the small number of articles published on the subject, showed that the positioning influences the effect, empowerment and time of onset, besides the pregnant woman's comfort and hemodynamic parameters, revealing its importance for the perioperative period and obstetric practice.[5]

These findings reinforced the need to construct educational technology on the subject, whose elaboration should be evidence-based, so that it has valid and understandable content for the target audience and contributes effectively to obstetric clinical practice.

In view of the above, the objective of this study was to construct and validate an educational flipchart for pregnant women who are to be submitted to cesarean section about the positioning during spinal anesthesia.

Methods

Methodological study developed between January and July 2017, in four phases: bibliographic survey; elaboration of flipchart; content and face validation by experts; assessment by target audience.

Bibliographic survey and construction of flipchart

The bibliographic survey considered the literature on the subject, in addition to the findings from the integrative review mentioned earlier.[5] Based on the scientific evidence identified, the authors constructed the flipchart. The recommendations were followed for the writing and layout of text for educational technologies for people with low education levels.[6] A designer was hired to design the characters and layout of the album using Adobe Illustrator CS3 and Adobe InDesign CS6.

Expert validation

Three expert groups, of nurses, anesthetists and education professionals, respectively, validated the flipchart, considering the appearance of the images, clarity, importance, practical applicability and relevance of the content.

The following were considered as inclusion criteria for group 1: to have teaching or care experience in a surgical center, where care is taken to assist the patient during spinal anesthesia; for group 2: to have teaching or care experience in anesthesiology, with emphasis on spinal anesthesia for cesarean section.

As it is educational material, three professionals from the education area composed expert group 3, called technicians, included based on their experience in the construction or analysis of educational materials. As an exclusion criterion for the three groups, less than two years of experience in question was considered.

The number of judges in groups 1 and 2 were calculated by the formula: n = Za2xP (-1-P) / e2. The coefficient of Za (confidence level) was set at 95%, P (interrater agreement ratio) 85%, and (accepted difference from expected level) equal to 15%.

The snowball technique was applied to select the judges, which consists of using reference chains to recruit the participants.[7] Thus, we sought indications of teachers at universities in the areas of nursing, medicine and pedagogy, in the regions of Cariri and Fortaleza, Ceará, Brazil. The judges were asked to appoint other professionals. This invitation was forwarded via e-mail. Emails were sent to twenty-four nurses, with two refusals, justified by lack of time to participate. Thirty invitations were forwarded to anesthesiologists with eight absences. The judges from the area of education who were invited agreed to participate in the research. After the experts had confirmed their participation, the material and evaluation instruments were sent by e-mail. The evaluation forms were returned within the required ten-day deadline.

The data collection instrument was submitted to a pilot test, without modifications. This instrument contained the following aspects: clarity, practical relevance and theoretical relevance. For each item, the options to be indicated corresponded to the level of agreement (low, medium, high and very high). There was also room to register suggestions on the educational material. The suggested changes were made and, after a new analysis by the experts, the items were considered valid.

Evaluation by the target audience

After the expert validation, ten pregnant women in the third trimester of pregnancy evaluated the flipchart, selected by convenience while awaiting care at a primary health care unit of the Family Health Strategy located in Cariri, a metropolitan region in the South of the State of Ceará, Brazil. Low-risk prenatal care is offered in primary health care.

The pregnant women had access to the printed flipchart and completed an instrument to evaluate the material. For each page of the flipchart, they indicated their level of agreement (little, medium, very and very much) regarding the clarity and comprehension of the images and the text.

Analysis of results

The data was organized in Microsoft Excel 2016 through double data entry, aiming to guarantee the reliability of the inserted data. The Content Validity Index was calculated as follows: I-CVI (Item-level Content Validity Index), interrater agreement level for each item evaluated; S-CVI / AVE (Scale-level Content Validity Index, Averange Calculation Method), proportion of items each expert agreed with; and S-CVI (Scale-level Content Validity Index), mean S-CVI / AVE. The binomial test was used to verify if the agreement ratio was statistically equal to or greater than the previously defined value to consider the item valid, of 0.80, with a significance level of 5%.

Ethical aspects

This study received approval from the Research Ethics Committee of the Regional University of Cariri - URCA, under number 1.837.179.

Results

In table 1, the three expert groups' sociodemographic characteristics are presented.

Regarding the validation process, for 14 of the 22 nurse experts, the S-CVI / AVE was 1, representing their agreement with all items evaluated. In this group, for one expert, the S-CVI / AVE was 0.97; for two it was 0.94; for one, 0.88; for two 0.80, and for two it was 0.75. Also, for 14 anesthesia experts, the S-CVI / AVE was 1. For two, 0.94; for two, 0.91; for two, 0.83; for one, 0.69 and for one, 0.58. The S-CVI of the mean S-CVI / AVE of the anesthesiology experts was 0.93 while, in the group of nurse experts, it was 0.94.

Table 2 presents consolidated data for the groups of anesthesiology and nurse experts, regarding the agreement frequencies and content validity indices per item.

All communication experts agreed on the 33 items, except one who disagreed on two items in fig-

Table 1. Sociodemographic characteristics of three expert groups

Variable	Nurses n(%)	Anesthesiologists n(%)	Technical judges n(%)
Sex			
Female	22(100)	7(32)	2(67)
Male	-(-)	15(68)	1(33)
Age range (years)			
≤30	1(5)	2(9)	-(-)
31 to 40	11(50)	8(36)	2(67)
41 to 50	6(27)	4(18)	1(33)
>50	4(18)	8(36)	-(-)
Mean / SD	41.7 / 7.8	44.9 / 12.5	39.9 / 3.0
Activity			
Care	5(23)	21(95)	1(33)
Teaching	8(36)	-(-)	1(33)
Care and teaching	9(41)	1(5)	-(-)
Management	-(-)	-(-)	1(33)
Degree			
Ph.D.	7(32)	-(-)	1(33)
Master's	5(23)	-(-)	-(-)
Specialization	10(45)	22(95)	2(67)
Total	22(100)	22(100)	3(100)

SD – standard deviation

ure 5, which was modified. The three communication experts unanimously agreed on the other items. The S-CVI / AVE of two judges was 1, and of one judge 0.93. The S-CVI of this group was 0.97, without any suggestion to change any of the other items.

The nurse and anesthesiology experts suggested 19 adjustments that were made, such as monitoring the pregnant woman, wearing a cap, positioning of the patient's hands on her legs during anesthesia, standardization of terms, less emphasis on complications, among others. After the changes, the flipchart consisted of 15 pages: cover, back cover, presentation, five pages containing the figures and five pages with their respective script forms, references and the final page with the technical file. The items submitted to expert evaluation were the cover, the figures and their respective script forms, which displayed the guidelines the nurse is to provide during the educational activity. In figure 1, some of the main images of the flipchart are shown.

Image 1 of the flipchart displays a pregnant woman and an anesthetist, highlighting the needle and the place where it is inserted, evidencing the intervertebral spaces and the spinal cord, as well as the area related to the body area the anesthetic action covers. In script form 1, it is described how the nurse should guide pregnant women about the definition of spinal anesthesia.

Table 2. Agreement between nurses and anesthetists regarding the items of the flipchart

Item	I-CVI*	n(%)**	*p-value****
Cover			
1. Clear, understandable and appropriate language.	0.97	43(97.7)	0.999
2. Practical importance.	0.95	42(95.4)	0.993
3. Relevant content.	0.97	43(97.7)	0.999
Image 1 – What is spinal block			
4. Clear, understandable and appropriate language.	1	44(100)	1
5. Practical importance.	0.93	41(93.1)	0.970
6. Relevant content.	1	44(100)	1
Script form 1 – Orientations on definition of spinal block			
7. Clear, understandable and appropriate language.	0.97	43(97.7)	0.999
8. Practical importance.	0.93	41(93.1)	0.970
9. Relevant content.	0.93	41(93.1)	0.970
Image 2 – Spinal block: advantages and disadvantages			
10. Clear, understandable and appropriate language.	0.81	36(81.8)	0.336
11. Practical importance.	0.86	38(86.3)	0.663
12. Relevant content.	0.79	35(79.5)	0.205
Script form 2 – Spinal block: orientations on advantages and disadvantages			
13. Clear, understandable and appropriate language.	0.90	40(90.9)	0.912
14. Practical importance.	0.90	40(90.9)	0.912
15. Relevant content.	0.88	39(88.6)	0.809
Image 3 – Ideal position for spinal block			
16. Clear, understandable and appropriate language.	1	44(100)	1
17. Practical importance.	0.97	43(97.7)	0.999
18. Relevant content.	0.97	43(97.7)	0.999
Script form 3 – Orientations on ideal position for spinal block			
19. Clear, understandable and appropriate language.	1	44(100)	1
20. Practical importance.	0.97	43(97.7)	0.999
21. Relevant content.	0.95	42(95.4)	0.993
Image 4 – Spinal block: main positioning varieties			
22. Clear, understandable and appropriate language.	0.97	43(97.7)	0.999
23. Practical importance.	0.95	42(95.4)	0.993
24. Relevant content.	0.97	43(97.7)	0.999
Script form 4 – Spinal block: orientations on main positioning varieties			
25. Clear, understandable and appropriate language.	0.97	43(97.7)	0.999
26. Practical importance.	0.97	43(97.7)	0.999
27. Relevant content.	0.95	42(95.4)	0.993
Image 5 – Benefits of appropriate positioning during spinal block			
28. Clear, understandable and appropriate language.	0.90	40(90.9)	0.912
29. Practical importance.	0.90	40(90.9)	0.912
30. Relevant content.	0.88	39(88.6)	0.809
Script form 5 – Orientations on benefits of appropriate positioning during spinal block			
31. Clear, understandable and appropriate language.	0.93	41(93.1)	0.970
32. Practical importance.	0.93	41(93.1)	0.970
33. Relevant content.	0.90	40(90.9)	0.912

*Item-Level Content Validity Index; ** Agreement percentage; *** Binomial test

Image 2 represents the pregnant woman and the anesthetist advising on the advantages and disadvantages of spinal anesthesia; this content is described in script form 2. Image 3 shows the pregnant woman with the column bent; script form 3 emphasizes the essential characteristics for appropriate positioning during spinal anesthesia.

In image 4, three main varieties of position the pregnant woman can take are shown. Script form 4

Figure 1. Some pages of the final version of the flipchart on the positioning of pregnant women for spinal anesthesia

deals with the anesthetist's choice, together with the pregnant woman, of one of these positions. Image 5 presents the image of the woman with the baby on her lap and the contents of script form 5 reinforce the benefits of proper positioning during spinal anesthesia.

The pregnant women who evaluated the flipchart were between 19 and 38 years of age, with a mean age of 28.3 years. All were literate, the majority having completed high school (40%) or taking higher education (20%). The women were unanimous on the clarity and relevance of the items in the flipchart. They also unanimously considered all the information important and that the images in the flipchart help to improve the understanding about the subject.

Discussion

The lack of studies on the construction and validation of educational technologies to guide pregnant women or other populations about the positioning for spinal anesthesia was a limitation of this study, making it difficult to compare and discuss the results. In addition, the pregnant women who evaluated the material came from a specific region and were users of the Unified Health System, so that the opinions obtained may not represent the reality of pregnant women from other regions or who are users of private health services.

The construction and validation of the flipchart discussed here converges with the program Safe Surgeries Save Lives, established by the World Health Organization (WHO), which proposes that the team uses known methods to prevent damage in the administration of anesthetics, while protecting the patient from pain.[8] It is also in accordance with the guidelines of the Stork Network, established by the Brazilian Unified Health System (SUS), which proposes guaranteeing safety in childbirth and birth care.[9]

The three expert groups almost unanimously accepted the evaluation of the flipchart's applicability to the perioperative nursing context. This outcome is considered relevant, as educational technology needs to be feasible, in addition to being comprehensible. Corroborating this result, the specialists in the validation study of the educational leaflet on HIV / AIDS judged this material as an excellent complement to the health professionals' guidance activities on the subject.[10] The result is similar to the validation of the educational leaflet on dietary guidelines to improve the quality of life of adults in Malaysia with I-CVI 0.95.[11]

The perioperative nursing routine includes guidelines for patients, such as those on positioning during anesthesia. In this sense, according to the ex-

perts, the flipchart can contribute to nursing practice in the preoperative phase of cesarean section.

The language of the flipchart was considered clear, comprehensible and appropriate. This data is in accordance with a study about the validation of an educational booklet for teachers about first aid at school, which obtained a satisfactory evaluation of the clarity, objectivity and attractiveness of the language.[12] The same result was obtained in the aforementioned study on dietary practices, whose language was judged clear and comprehensible, presenting I-CVI 1.[11]

It is important to emphasize the importance of the language used in educational materials, so that they are clear and understandable to the target audience, and can present practical relevance. Considering that the users of the flipchart are health professionals, the texts of the script forms target these professionals. Thus, even if there is technical language, professionals should explain the content at the level of the target audience's understanding.

A study conducted in Swedish hospitals to characterize educational materials provided to surgical patients with colorectal cancer identified that 29% of the materials contained difficult language for the target audience.[13] In this sense, it is essential for the target audience to evaluate the educational technologies. An evaluation by expert judges is also fundamental to permit the identification of possible aspects that are incomprehensible.

In this study, the pregnant women evaluated that the flipchart was satisfactory, in line with other studies involving the target audiences, such as the study to validate an educational technology on venous ulcer care, whose participants considered that the material was appropriate.[14] In the validation of an educational leaflet on vertical HIV transmission, the evaluation by the target audience also reached a satisfactory level of agreement.[15]

The pregnant women's evaluation of images from the flipchart showed unanimity about helping to understand the subject. Other studies have revealed similar results, like in the case of the validation of a flipchart on breastfeeding by postpartum women, who evaluated that the images were clear, comprehensible and relevant.[16] In educational practice, the use of figures is quite pertinent, as it contributes to the target audience's understanding regardless of their education level schooling, in addition to making the educational material more attractive.

The evaluation of educational technologies by professionals with experience in evaluating educational materials is important because they have a sharper look on aspects that can influence the learning process. In this sense, the result of this study obtained a satisfactory evaluation, as only one judge disagreed on only one item, not interfering in the general evaluation of the material, with S-CVI 0.97. This data corroborates the study that validated an educational technology for teaching about sexually transmitted diseases, with all items presenting I-CVI 1 in the group of technical experts.[17]

Considering the three groups of expert judges on all items, the flipchart obtained an S-CVI of 0.94 and was considered validated in the content and face validation.

Conclusion

The flipchart "Correct positioning of pregnant women for spinal anesthesia" was constructed and submitted to content and face validation by experts and by the target audience. Nurses working at maternity hospitals and obstetric surgical centers can use it as a tool to contribute to the adoption of appropriate and safe positioning during spinal anesthesia for cesarean section. Although the content and face validation of the flipchart indicate the feasibility of its use in nursing practice, its effectiveness needs further investigation by analyzing the pregnant women's understanding of the knowledge and their respective adoption of an appropriate position during the spinal anesthesia.

Collaborations

Pinto SL, Galindo Neto NM, Sampaio LA, Oliveira MF and Caetano JA participated in the conception of the Project, analysis and interpretation of the

data, writing of the article and critical review of the intellectual content, approving its final version.

References

1. Oliveira TR, Louzada LA, Jorge JC. [Spinal anestesia: pros and cons]. Rev Med Minas Gerais. 2015; 25(Supl 4):S28-S35. Portuguese.
2. Bisinotto FM, Dezena RA, Abud TM, Martins LB. [Cerebral venous thrombosis after spinal anestesia: case report]. Rev Bras Anestesiol. 2017 ; 67(3):305-10. Portuguese.
3. Bansal T, Kumar P, Hooda S. Regional anaesthesia – still a comfortable choice in morbidly obese parturient. Rev Colomb Anestesiol. 2013; 41(4):302-5.
4. Lemos CS, Peniche AC. Nursing care in anesthesic procedure: na integrative review. Rev Esc Enferm USP. 2016; 50(1):154-62.
5. Pinto SL, Melo GA, Barros LM, Galindo Neto NM, Lisboa KW, Gomes EB, Oliveira MF, Caetano JA. Pregnant women positioning in spinal anesthesia for cesarean section: integrative review. Int Arch Med. 2017; 10(179):1-8.
6. Doak C; Doak L; Root, J. Teaching patients with low literacy skills. Philadelphia: JB Lippincott; 1996.
7. Vinuto J. [The snowball sampling in the research qualitative: an open debate]. Temáticas (Campinas). 2014; 22(44):203-20.
8. World Health Organization. World Alliance for Patient Safety. Guidelines Safe Surgery [Internet]. Geneva: WHO; 2008. [cited 2018 Jan 20]. Available from: www.who.int/patientsafety.
9. Brasil. Ministério da Saúde. Gabinete do Ministro. Portaria nº1.459, de 24 de junho de 2011. Institui no âmbito do Sistema Único de Saúde – SUS – a Rede Cegonha. Diário Oficial da União, Poder Executivo, Brasília, DF, n.121, 27 jun. 2011. Seção 1, p.109.
10. Cordeiro LI, Lopes TO, Lira LE, Feitoza SM, Bessa ME, Pereira ML, Feitoza AR, Souza AR. Validation of education booklet for HIV/Aids prevention in older adults. Rev Bras Enferm. 2017; 70(4):808-15.
11. Teng NI, Ismail NA, Ismail NH, Ahmad T. Development and validation of an educational booklet for sunnah practices in improving quality of life. E-BPJ. 2017; 2(5):151-9.
12. Galindo Neto NM, Caetano JA, Barros LM, Silva TM, Vasconcelos E. First aid in schools: construction and validation of an educational booklet for teachers. Acta Paul Enferm. 2017; 30(1):87-93.
13. Smith F, Carlsson E, Kokkinakis D, Forsberg M, Kodeda K, Sawatzky R, Friberg F, Öhlén J. Readability, suitability and comprehensibility in patient education materials for Swedish patients with colorectal cancer undergoing elective surgery: a mixed method design. Patient Educ Couns. 2014; 94(2):202-9.
14. Benevides JL, Coutino JV, Pasoal LC, Joventino ES, Martins Mc, Gubert FA, et al. Development and validation of educational technology for venous ulcer care. Rev Esc Enferm USP. 2016; 50(2):306-12.
15. Lima AC, Bezerra KC, Sousa DM, Rocha JF, Oriá MO. Development and validation of a booklet for prevention of vertical HIV transmission. Acta Paul Enferm. 2017; 30(2):181-9.
16. Rodrigues AP, Nascimento LA, Dodt RC, Oriá MO, Ximenes LB. Validation of a flip chart for promoting of self-efficacy breastfeeding. Acta Paul Enferm. 2013; 26(6):586-93.
17. Holanda VR, Pinheiro AK. Technology for education of sexually transmitted diseases: hypermedia validation. J Nurs UFPE On Line. 2016; 10(6):2082-90.