

## Preparation and validation of theoretical-illustrative e-book on pelvic endometriosis: Assessment of learning and diagnostic sensitivity associated with the surgical approach



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### ABSTRACT

In Endometriosis is a chronic gynecological disease characterized by the anomalous implantation of endometrial tissue outside the uterine cavity, which may compromise pelvic and distant organs. It is estimated that about 5 - 20% of the world's female population has the disease in question. Clinically, it is characterized by infertility and pelvic pain,

among other symptoms, and the treatment must be multidisciplinary, depending directly on clinical staging and imaging tests. The aim of this study was to construct and validate a theoretical-illustrative e-book on radiological and surgical aspects of pelvic endometriosis. The study was conducted in two stages: instrument construction and product validation. To determine content validity, a minimum Content Validity Index (CVI) of 0.80 was considered acceptable. The overall CVI result obtained was 0.957, indicating high validity of the e-book. The "Structure and Presentation" criteria obtained a CVI of 0.952 and 0.923, respectively, demonstrating good validity in these aspects. The topic "Objectives" obtained the maximum score of CVI (1.000), indicating a complete approval in this criterion. The e-book was prepared and validated according to the established criteria. The creation of a practical product, containing direct information about the diagnostic and surgical aspects of endometriosis, has been shown to have a positive impact on learning and updating knowledge in this area.

**Keywords:** Endometriosis, Surgery, Medical education, Diagnostic imaging, Pelvic pain.

## 1 INTRODUCTION

In 1860, in Germany, Carl Von Rokitansky reported for the first time endometriosis, which consists of a chronic gynecological disease characterized by the anomalous implantation of endometrial tissue outside the uterine cavity, which can compromise pelvic and distant organs.<sup>1,2</sup>

The form of development of the disease is still a challenge. There are several theories that try to explain the development of the disease, however, the most accepted theory is of abdominal ectopic implants due to retrograde menstrual reflux through the fallopian tube (Sampson's theory)<sup>1,3</sup>. The prevalence of the disease is estimated at 5-20% in the female population, being clinically marked by pain, infertility, dyschezia, constipation and tenesmus, which may influence the quality of life of



patients<sup>4</sup>. Between 2010 and 2019, 138,641 hospitalizations for endometriosis were recorded in Brazil<sup>5</sup>.

Endometriosis can be classified according to the depth of the implants, which can be superficial, when its depth is less than 5 mm, and deep when it has a thickness greater than 5 mm<sup>3</sup>.

The importance of clinical and imaging diagnosis for therapeutic initiation in most cases should be emphasized, based briefly on the patient's clinical history, physical examination and complementary tests. To the detriment of scientific efforts in the area, there is still a global diagnostic delay of 10.4 years and a time interval of 7.7 years from the gynecological consultation due to symptoms of pelvic pain or subfertility until the final diagnosis<sup>6,7</sup>.

The main diagnostic methods of the disease are transvaginal ultrasound (TVUS) and pelvic magnetic resonance imaging with specific protocol, both with bowel preparation. In cases of involvement of the ureters and bladder, excretory urography may be indicated, but with limitations to detect small bladder lesions. The gold standard method for diagnosis is laparoscopy, as it allows direct inspection of large surface areas of intra-abdominal organs, as well as directed biopsies and histological confirmation<sup>6,7</sup>.

The treatment of the disease should be individualized, always taking into account the patient's symptoms and the impact of the disease and its treatment on her quality of life, as well as the patient's desire for pregnancy. Whenever possible, a multidisciplinary team specialized in the area should be involved, in an attempt to provide a treatment capable of covering all biopsychosocial aspects of the patient<sup>8,9</sup>.

## 2 METHOD

This is a methodological research, carried out in two stages, namely: (a) construction of the instrument, theoretical-illustrative e-book on pelvic endometriosis, and (b) validation of the product. The instrument was developed by medical radiologists specialized in the field of women's health and surgeons experienced in the field of endometriosis, taking into account a thorough review of the available literature.

The e-book discusses the diagnostic bases of pelvic endometriosis by magnetic resonance imaging and directed surgical management, under nine domains: (1) Introduction, (2) Pelvic anatomy on magnetic resonance imaging, (3) Examination technique, (4) Anterior compartment, (5) Middle compartment, (6) Posterior compartment, (7) Abdominal wall, (8) Surgical treatment of pelvic endometriosis and (9) Appendages.

Regarding the validation process of the face and content of the product, the content was submitted to psychic evaluation and statistical analysis (Likert Scale) by a validation committee composed of 1 coloproctologist surgeon, 1 gynecologist, 6 radiologists working in the area of internal



medicine and 15 radiology and diagnostic residents. Each judge was able to evaluate the following questions: "Objectives", "Structure and presentation", "Relevance" and "General comments" (Chart 1).

Chart 1 - Description of the items evaluated in the content by specialists in the management of endometriosis.

Items	Content evaluation
1 - Objectives	It refers to the purposes, goals or ends that one wishes to achieve with the use of the manual.
2 - Structure and presentation	It refers to how to present the guidelines. This includes your overall organization, structure, presentation strategy, coherence, and formatting
3 - Relevance	It refers to the characteristic that evaluates the degree of significance of the material presented.

Source: Authors (2023).

The intention was to validate the product as a teaching instrument for physicians in training and update knowledge among subspecialized professionals involved in the subject, being obtained through an adapted questionnaire with *Likert* type score, organized with closed questions, in order to attribute satisfaction regarding the content presented by the digital book, using 3 (three) satisfaction criteria verified from a table of notes of 1 to 5, being: 1= (Totally Inadequate), 2= (Partially Inadequate), 3= (Neither Adequate nor Inadequate), 4= (Partially Adequate) and 5= (Totally Adequate).

The database was structured using *Excel software*. The analysis was descriptive, through tables and graphs, performed in the *BioStat software*, version 5.4, and validated through the Content Validity Index (CVI), which should be equal to or greater than 0.78. The IVC measures the agreement between the opinions of the experts, evaluating the objectives, structure and presentation, and relevance of the book, giving a positive score for each question in the validation.

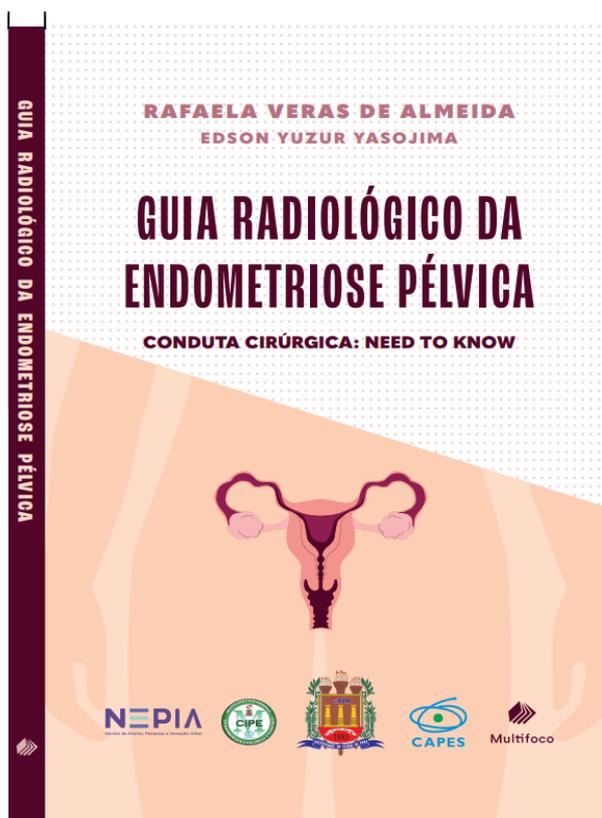
### 3 RESULTS

The final version of the digital book was registered with ISBN number of 978-65-999763-6-0, published in Multifoco. It consists of 109 pages with the title "Radiological guide to pelvic endometriosis. Surgical Approach: Need to Know". The material was divided into eight chapters with the following themes: 1- Introduction; 2- Pelvic anatomy on magnetic resonance imaging; 3- Examination technique; 4- Anterior pelvic compartment; 5- Middle pelvic compartment; 6- Posterior pelvic compartment; 7- Abdominal wall and 8- Surgical treatment of pelvic endometriosis.

It contains 86 images ranging from illustrative magnetic resonance imaging maps to photographs from the authors' personal collection. The key MRI images were edited and standardized in Adobe Photoshop.



Figure 1 - Digital book cover.



Source: Authors (2023).

This version received positive evaluation from the target audience and expert committee. The content refers to the imaging diagnosis and surgical aspects of the various forms of presentation of pelvic endometriosis.

Regarding the epidemiological characteristics of the judges (Table 1), it was observed that the majority were male (70%), according to Graph 1. Among them, 8 were medical specialists with more than 5 years of medical experience, and 15 physicians in training (residents).

Table 1 - Characterization of the Committee of Judges, Belém-PA, 2023.

Characterization of judges	n
<b>Sex</b>	
Female	7
Male	16
<b>Training</b>	
Medical experts	8
Doctors in training (residents)	15

Source: Authors (2023).

Briefly, table 2 shows the validation of the e-book performed by the committee of judges, obtaining as a general result of CVI the value of 0.957. The items "Structure and Presentation" obtained CVI of 0.952 and 0.923 respectively. The topic "Objectives" reached the maximum approval level (IVC of 1,000).



Table 2 - Criteria for validation of the pelvic endometriosis radiological guide. Surgical management: Need to Know, Belém-PA, 2023.

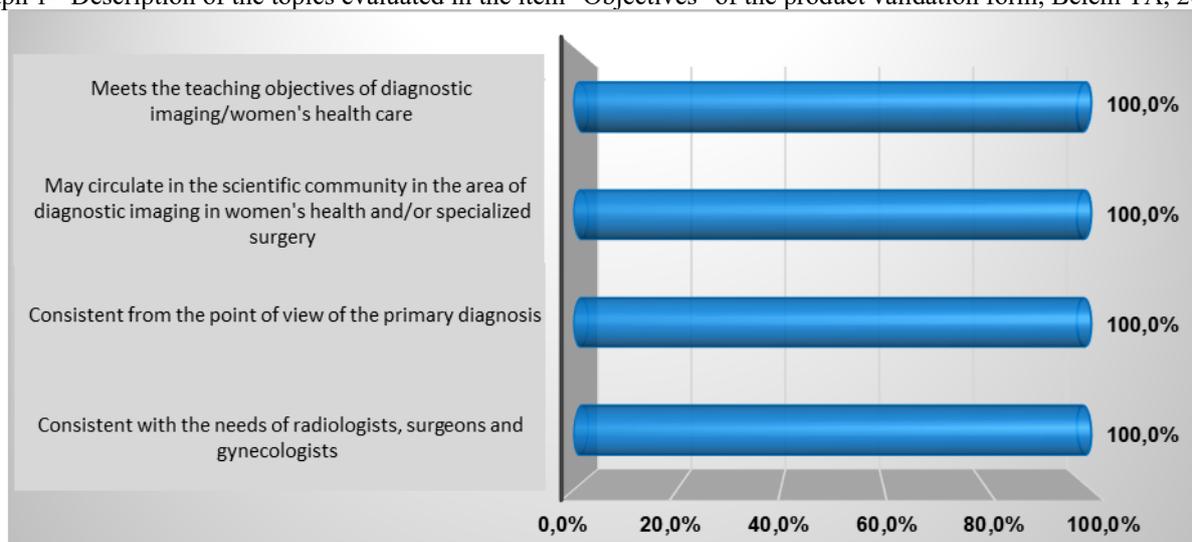
Criteria for validation of the guide	Score Received	% Approval	IVC
Objectives	120	100,0%	1,000
Structure and Presentation	267	98,9%	0,952
Relevance	118	98,3%	0,923
<b>General</b>	<b>505</b>	<b>99,0%</b>	<b>0,957</b>

Legend: CVI - content validity index.

Source: Authors (2023).

The item "Objectives" obtained maximum valuation in all topics, as shown in graph 1.

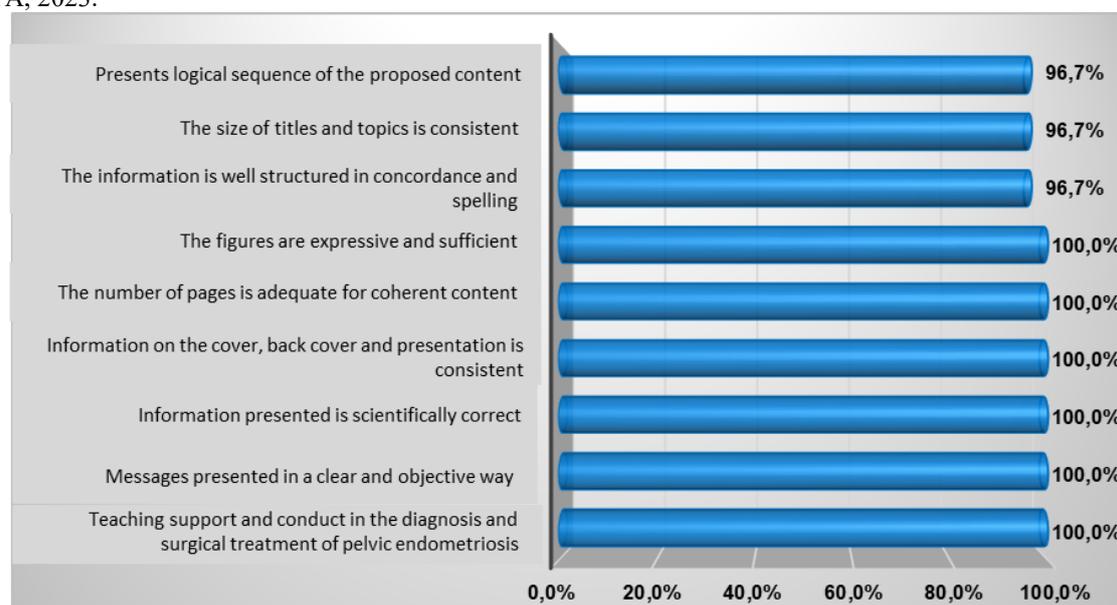
Graph 1- Description of the topics evaluated in the item "Objectives" of the product validation form, Belém-PA, 2023.



Source: Authors (2023).

Concordance and spelling, reached a level of approval among the judges of 96.7%.

Graph 2 - Description of the topics evaluated in the item "Structure and presentation" of the product validation form, Belém-PA, 2023.

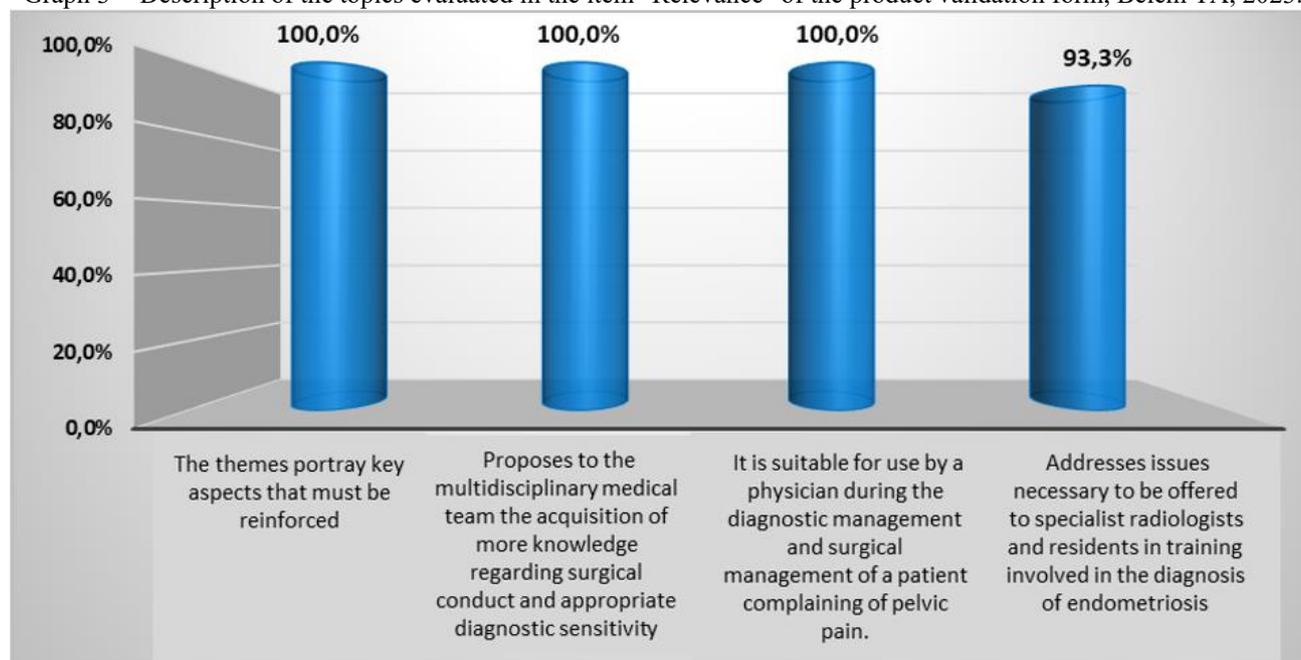


Source: Authors (2023).



The last topic evaluated in the validation form discusses the relevance of the product in question. 93.3% of the evaluators totally agreed on the topic "Addresses necessary subjects to be offered to radiologists specialists and residents in training involved in the diagnosis of endometriosis". On the other hand, the other points analyzed showed maximum valuation.

Graph 3 - Description of the topics evaluated in the item "Relevance" of the product validation form, Belém-PA, 2023.



Source: Authors (2023).

As for the general comments, there was a suggestion regarding the spelling correction of the word "intense" in Chart 1, located on page 11, being duly corrected. Rest of the e-book with no suggested changes or fixes.

#### 4 DISCUSSION

Through this methodological study, a theoretical-illustrative e-book on imaging diagnosis and surgical techniques involved in the various types of pelvic endometriosis was developed and validated. The CVI analysis, which evaluates the agreement between the questions and the answers given by the evaluators, received a score of 0.95, ensuring that it is a valid instrument for study. It is noteworthy that the validation of materials is an important step for the elaboration of educational materials<sup>10,11</sup>.

Historically, the digital book emerged with the development of personal computing and expansion of the internet, thus, in the 90s, as a way to replace the printed book, its commercialization emerged, and thus it spreads in commerce<sup>12,13</sup>.

As mentioned in two studies on the use of digital books in teaching, alternative methods to the printed book, when developed by specialists in the field and based on scientific research, contribute to a better understanding of diseases and their treatments, being attractive and useful to the public<sup>13,14</sup>.



Digital books have advantages such as multi-user access, agility in technical processing, ease of portability, permission to integrated research through links and ease of sharing, proving satisfactory to the objective of this study<sup>14</sup>.

In accordance with Reis and Backes<sup>15</sup> who concluded familiarity of teachers, students and researchers with digital teaching methods, the product in question meets the teaching objectives of diagnostic imaging (valuation = 100%), and can serve as an effective teaching object in specialized educational institutions (medical residency). The fact that we are discussing an important and current subject, which directly impacts the quality of life of the patients involved and requires accurate diagnosis, also reflects the positive results acquired.

As stated by Faria *et al.*<sup>14</sup> and Vieira *et al.*<sup>16</sup>, it is indisputable the importance of the image for a greater understanding of the written message, serving as an attraction to the reader. The validation of this e-book, combining two subjects directly related to images (diagnostic imaging and expertise in surgical detection of endometriotic lesions) showed agreement of opinion among the validation judges on the topic "Structure and presentation" (questions "The figures are expressive and sufficient, "Messages presented in a clear and objective way" and "Support for teaching and conduct in the diagnosis and treatment of pelvic endometriosis").

The information presented was considered scientifically correct and the number of pages was considered adequate for the proposed content, which reinforces the positive value of the digital book in question, since it was evaluated and validated by medical specialists working in the area and residents in training with the minimum of basic knowledge in the subject.

Still on the evaluation of the structure and presentation of the digital book, the result of the topic "The information is well structured in agreement and spelling" reflects the grammatical error in Chart 1, located on page 11, which was evaluated and accepted the immediate correction.

The chapters of the e-book were organized in an unprecedented way, according to the anatomical pelvic compartments, in order to facilitate general learning. Because it is a classification usually used in the area of diagnostic imaging, it may have represented exceptional content for evaluators from other medical areas, reflecting the agreement on the topic "Presents logical sequence of the proposed content". However, formally recognized by the judges in view of the positive values obtained in the study, the importance of multidisciplinary knowledge in the management of endometriotic disease is highlighted.

Therefore, all value judges fully agreed with the relevance of the content in the topics "The themes portray key aspects that should be reinforced", "Proposes to the multidisciplinary medical team the acquisition of more knowledge regarding the appropriate surgical procedures and diagnostic sensitivity" and "It is suitable to be used by physicians during the diagnostic management and surgical management of the patient complaining of pelvic pain", revealing that it is a plausible method not



only in the scope of teaching, but also as an instrument of clinical management in the daily practice of the disease. Regarding the statement "It addresses necessary subjects to be offered to specialist radiologists and residents in training involved in the diagnosis of endometriosis", we observed agreement of 93.3% on the subject, in line with Reis and Backes<sup>15</sup>, reflecting the high degree of significance to assist in the learning curve of the diagnosis of the disease.

## 5 CONCLUSION

The e-book was developed and validated according to the criteria used: objectives, structure and presentation and relevance. The development of a practical product with direct information on the diagnostic and surgical aspects of pelvic endometriosis demonstrated a positive impact on the learning and recycling of knowledge in the area. It is believed that the e-book is, in addition to an educational material, an instrument to improve the diagnosis of pelvic endometriosis, and finally, to improve the therapeutic management of the patients involved.



## REFERENCES

ROCHA, A. M. *et al.* Late impact of the laparoscopic treatment of deep infiltrating endometriosis with segmental colorectal resection. *Arq Bras Cir Dig.*, [S. l.], v. 31, n. 4, p. e1406. Dec. 2018. DOI:10.1590/0102-672020180001e1406

SAMPSON, J. A. Peritoneal endometriosis due to the menstrual dissemination of endometrial tissue into the pelvic cavity. *Am J Obstet Gynecol.*, [S. l.], v. 14, n. 4, p. 422-69, 1927. DOI: 10.1016/S0002-9378(15)30003-X.

LEE, S. Y.; KOO, Y. J.; LEE, D. H. Classification of endometriosis. *Yeungnam Univ J Med.*, [S. l.], v. 38, n. 1, p. 10-18, 2021. DOI: 10.12701/yujm.2020.00444.

CUNHA, F. L. D. *et al.* Laparoscopic Treatment of Ureteral Endometriosis: A Systematic Review. *J Minim Invasive Gynecol.*, [S. l.], v. 28, n. 4, p. 779-787, Apr. 2021. DOI: 10.1016/j.jmig.2020.11.022.

GUEDES, H. H. G. *et al.* Hospitalizações por endometriose no Brasil (2010-2019): estudo ecológico. *Temas em Saúde*, [S. l.], v. 21, n. 6, p. 97-111, 2021. Disponível em: <https://temasemsaude.com/wp-content/uploads/2021/12/21605.pdf>. Acesso em: 20 abr. 2023.

ARRUDA M. S. *et al.* Endometriose profunda: aspectos ecográficos. *Femina*, [S. l.], v. 38, n. 7, p. 367-372, jul. 2010. Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/lil-562402>. Acesso em: 15 maio 2023.

HUDELIST, G. *et al.* Diagnostic delay for endometriosis in Austria and Germany: causes and possible consequences. *Hum Reprod.*, [S. l.], v. 27, n. 12, p. 3412-6, Dec. 2012. DOI: 10.1093/humrep/des316.

ALMEIDA, R. V. *et al.* Tratamento cirúrgico da Endometriose Pélvica - revisão de literatura. *Brazilian Journal of Health Review*, [S. l.], v. 5, n. 3, p. 11920–11934, 2022. DOI: 10.34119/bjhrv5n3-323.

ZONDERVAN, K. T. *et al.* *Nat Rev Dis Primers.*, [S. l.], v. 4, n. 1, p. 9, Jul. 2018. DOI: 10.1038/s41572-018-0008-5.

BREGA, A. G. *et al.* Using the Health Literacy Universal Precautions Toolkit to Improve the Quality of Patient Materials. *J Health Commun.*, [S. l.], v. 20(Suppl 2), p. 69-76, 2015. DOI: <https://doi.org/10.1080/10810730.2015.1081997>.

TAQUETTE, S. R.; BORGES, L. *Pesquisa qualitativa para todos*. São Paulo: Vozes, 2021.

ALBUQUERQUE, L. N. L.; ALVES NETO, F. R. A utilização do livro digital como recurso didático para a dinâmica da sala de aula. *ARIGÓ – Revista do Grupo PET e Acadêmicos de Geografia da Ufac*, [S. l.], v. 4, n. 1, p. 1-10, 2021.

SILVA, E. L. O. *et al.* Métodos de elaboração de materiais de educação em saúde para adultos: revisão integrativa. *Saúde & Tecnologia*, [S. l.], v. 21, p. 60-67, maio, 2019.

FARIA, C. C. *et al.* Elaboração e validação de um e-book com as leis sobre o diabetes nas escolas. *Rev Bras Enferm.*, [S. l.], v. 75, n. 3, p. e20200711, 2022.

REIS, J. M. D.; BACKES, L. Livros digitais e ensino superior: revisão da literatura. *Biblionline*, [S. l.], v. 15, n. 2, p. 21-32, 2019. DOI: 10.22478/ufpb.1809-4775.2019v15n2.44982.



VIEIRA, A. S. M. *et al.*. Validation of an educational booklet for people with chronic pain: EducaDor. BrJP, [S. l.], v. 2, n. 1, p. 39–43, jan. 2019. DOI: <https://doi.org/10.5935/2595-0118.20190008>