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RESEARCH

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INVASIVE BLOOD PRESSURE: IS YOUTUBE A PLATFORM FOR SHARING CONTROLLED INFORMATION FOR NURSES?


Pressão arterial invasiva: o youtube é uma plataforma que compartilha informações confiáveis para enfermeiros?
Presión arterial invasiva: ¿es Youtube una plataforma para compartir información controlada para enfermeras?

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ABSTRACT

Objective: to identify the quality and reliability of information on invasive blood pressure covered in YouTube videos. **Method:** descriptive and exploratory research with YouTube videos on invasive blood pressure, identified in a single search on February 23, 2023. The videos were organized into a playlist and subjected to analysis using the Discern Questionnaire tool for the educational quality of the video and the Journal of American Medical Association Benchmarks for reliability and quality of information and performed simple descriptive statistical analysis. **Results:** 62 videos published two years ago were listed, of which 93.55% presented poor educational quality, 6.45% moderate, 70.97% demonstrated low reliability of information and 32.25% cited information incompatible with science. **Conclusion:** The videos found on the You Tube platform presented gaps related to the content of invasive blood pressure, demonstrating that it is not a reliable source of support for nurse's learning.

DESCRIPTORS: Arterial pressure; Hemodynamic monitoring; Information sources; Nurses; Patient safety;

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RESUMO

Objetivo: identificar a qualidade e confiabilidade das informações sobre a pressão arterial invasiva abordadas em vídeos do YouTube. **Método:** pesquisa descritiva e exploratória com vídeos do YouTube sobre pressão arterial invasiva, identificados em busca única no dia 23 de fevereiro de 2023. Os vídeos foram organizados em uma lista de reprodução e submetidos à análise utilizando a ferramenta Discern Questionnaire para a qualidade educacional do vídeo e a Journal of American Medical Association Benchmarks para a confiabilidade e qualidade da informação e realizada análise estatística descritiva simples. **Resultados:** elencou-se 62 vídeos publicados há dois anos, dos quais 93,55% apresentaram qualidade educacional dos vídeos ruim, 6,45% moderada, demonstrando 70,97% baixa confiabilidade das informações e 32,25% citaram informações incompatíveis com a ciência. **Conclusão:** os vídeos encontrados na plataforma do YouTube apresentaram lacunas relacionados ao conteúdo de pressão arterial invasiva demonstrando não ser uma fonte confiável de respaldo para aprendizado do enfermeiro.

DESCRIPTORIOS: Pressão arterial; Monitorização hemodinâmica; Fonte de informação; Enfermeiras e enfermeiros; Segurança do paciente;

RESUMEN

Objetivos: identificar la calidad y confiabilidad de la información sobre presión arterial invasiva cubierta en videos de YouTube. **Método:** investigación descriptiva y exploratoria con videos de YouTube sobre presión arterial invasiva, identificados en una única búsqueda el 23 de febrero de 2023. Los videos fueron organizados en una lista de reproducción y sometidos a análisis mediante la herramienta Discernir Cuestionario para la calidad educativa del video y la Journal of American Medical Association Se tomaron puntos de referencia para la confiabilidad y calidad de la información y se realizó un análisis estadístico descriptivo simple. **Resultados:** Se enumeraron 62 videos publicados hace dos años, de los cuales el 93,55% presentó mala calidad educativa, el 6,45% moderada, el 70,97% demostró baja confiabilidad de la información y el 32,25% citó información incompatible con la ciencia. **Conclusión:** Los videos encontrados en la plataforma You Tube presentaron lagunas relacionadas al contenido de presión arterial invasiva, demostrando que no es una fuente confiable de apoyo para el aprendizaje de los enfermeros.

DESCRIPTORIOS: Presión arterial; Monitorización hemodinámica; Fuente de información; Enfermeras y ordenanzas; Seguridad del paciente.

INTRODUCTION

Invasive hemodynamic monitoring aids decision-making in relation to the therapy provided to critically ill patients due to its precision.¹ Among the safe and effective monitoring procedures, we can highlight invasive arterial pressure (IAP)², which consists of catheterization of an artery³, indicated in situations of hemodynamic instability.⁴

Nurses have the exclusive competence under professional legislation in relation to the nursing category to install intra-arterial catheters in order to allow monitoring.⁵⁻⁶ To do this, they need to be trained in performing the procedure, maintaining the system and analyzing the pressure curve.⁴⁻⁶ Therefore, it is clear that the need for knowledge, training and skills related to the procedure goes beyond just puncturing and/or recording IAP, in order to safely implement the percutaneous device and prevent complications for the patient.⁷

Given the complexity of the processes and technological density involved in the IAP procedure,⁸ COFEN resolution 703 of 2022 reinforces that in order to perform the procedure, nurses need to have continuous training related to the inclusion of IAP in the context of the nursing process. This highlights the importance of teaching about arterial catheterization from undergraduate level⁸ and of continuing education, combined with active learning methods, the use

of health technologies and information and communication technology resources.⁹⁻¹⁰

Although there is a need for contact with the procedure from the time of graduation,⁸ there is sometimes little inclusion of topics covering critical patient care in undergraduate nursing curricula. Furthermore, there has been an increase in the use of virtual technologies for teaching, especially as a result of the COVID-19 pandemic,¹¹ which may raise concerns about the quality of the source of the information accessed.

The use of Information and Communication Technology (ICT) in the learning process is growing, as a dynamic tool that favours the dissemination of information, makes access more flexible and stimulates autonomy, in which the implementation of ICT must be aligned with pedagogical theories and not an uncritical and simple strategy for making content available.¹² In this sense, in the globalized world, networks that disseminate videos can be (un)informative and thus, identifying the quality of the sources used to review the technique by the health team becomes relevant to guarantee the safety of patients who undergo the procedure.

Given the need to reflect on the growing use of digital technologies in professional training, the question arises: are YouTube videos about Invasive Blood Pressure safe sources of learning? With this in mind, the aim was to identify the quality and reliability of information on invasive blood pressure in YouTube videos.

MÉTODO

This was a descriptive and exploratory study using videos published on the information search and sharing site YouTube. This platform was chosen because it is freely accessible, quick to search and widely used.

To carry out the study, a protocol was organized based on the following steps: choosing the topic, defining the objective and guiding question, keywords for searching for videos, drawing up an instrument based on the scientific literature, analysing the videos, extracting the data and presenting the results.¹³⁻¹⁴

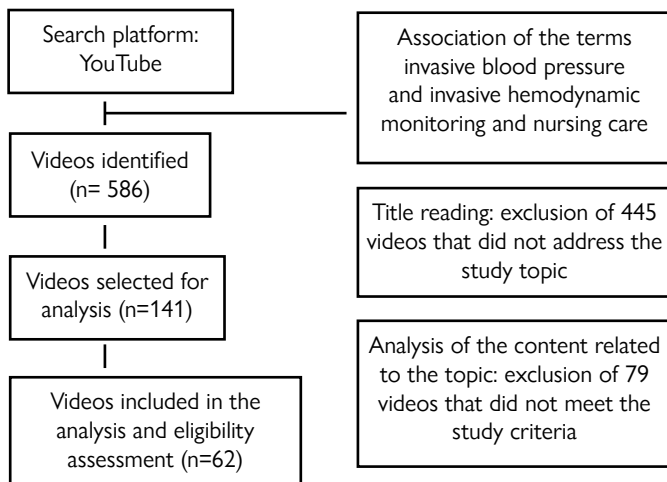
The research was carried out using the Google Chrome browser in a single instance due to the possibility of changing the number of videos published. The standard search filters used were "video" and "relevance". The search was carried out by associating the terms "invasive blood pressure", "invasive hemodynamic monitoring", "nursing care", searched on February 23, 2023.

The initial search resulted in 586 videos added to the platform's "watch later" playlist. After analyzing the titles, 445 videos were excluded because they did not cover the research topic. 141 videos with titles related to invasive blood pressure and hemodynamic monitoring were recruited for full viewing and application of the inclusion criteria.

The videos included were added to a playlist created by the researcher with private access, to help analyze the reliability of the content. Educational videos in Portuguese were included, regardless of length and target audience, if they aimed to address ICT. We excluded those that were unavailable or where the quality of the video made it impossible to analyze the material, those that were not educational in nature, those with commercial content and those aimed at veterinary medicine.

With regard to the quality and character of the videos, we followed similar studies¹⁹⁻²⁰. As a characterization, data was collected on the duration of the video, posting time, total number of views, number of "likes" and "dislikes", number of comments, description of the comments and identification of the authors.

Figure 1 - Video selection flowchart. Brazil, 2023.



In order to determine the educational quality of the content, an 18-item/point form was created based on scientific literature and recommendations, which included the moments of the procedure (pre-, trans- and post-puncture), so that the instrument covered all aspects involving IAP.15-16 A score of 0 was given for an item not covered in the video, 0.5 points for information that was partially portrayed and 1 point for complete information. Each video could achieve a maximum score of 18 points. The quality of the videos was according to the score: good (if score >13), moderate (13< but >7) and poor (≤7).¹⁶

The quality of the videos was classified using the Discern Questionnaire (DISCERN), which assesses reliability, general quality and quality of information, available at www.discern.org.uk/discern_instrument.php. It should be noted that not all the questions were used and that some were adapted for the analysis of the object of this investigation, totaling 10 questions (Table 2),

Chart 1 - Checklist of the educational quality of the video in relation to the moments of the procedure, based on scientific literature and current recommendations.

	Item to be addressed	Score
1	Indications, contraindications and complications	
2	Legislation and Systematization of Nursing Care	
3	Hand hygiene	
4	Explanation and authorization	
5	List of materials	
6	Electrical and fluid monitoring system	
7	Allen test	
8	Puncture sites	
9	Aseptic technique when installing the catheter	
10	Use of ultrasound, anesthetic button and catheter fixation	
11	Leveling	
12	Pressurization	
13	Zeroing	
14	Arterial curve morphology and flow test	
15	Blood collection	
16	Assessment of risks and complications	
17	Removing the device	
18	Patient safety and infection prevention	

Source: Author.

where questions 1 to 5 dealt with the reliability of the publication and questions 6 to 10 focused on the procedure. Each question was rated on a 5-point scale where: 5 (yes), 3 (partially), 1 (no). A score was obtained from the sum of each item, ranging from 10-20 (poor quality), 30 (intermediate quality), 40 (good quality) and 50 (excellent quality).

Chart 2 - Adapted DISCERN reliability, general quality and information quality assessment tool.

Criteria	Score
1	Are the objectives clear?
2	Do you achieve your goals?
3	Is it relevant?
4	Is it clear what sources of information were used for the publication (apart from the author and producer themselves)?
5	Is it balanced and impartial?
6	Does it describe all the elements of the subject covered in the video?
7	Do you use tools in teaching (simulation and photos)?
8	Did you mention the ethical principles of nursing?
9	Describe patient safety and infection prevention?
10	Does it provide support for decision-making?

We also applied the criteria of the Journal of American Medical Association Benchmarks (JAMA Benchmarks),¹⁷ which assesses the reliability of online knowledge based on four parameters: authorship (identification of the authors/collaborators), attribution (references and sources of the information), transparency (identification of the person responsible for the site, sponsorship, advertising policies and possible conflicts of interest) and updating (presentation of the dates of publication and updating of the information). The scores were as follows: 0 (when the information was absent); 1 (if the information was only mentioned in the video description or in the video itself); 2 (if, in addition to having the information in the description, the logo/author/source of information/date was shown in the video); 3 (when the information was mentioned by the characters in the video); 4 (in addition to being mentioned in the video and description, it was detailed). The average of these scores for the 4 items revealed the reliability of the video, which can be between 0 (low reliability) and 4 (high reliability).

The selection of videos, analysis, review and scoring were carried out by two independent researchers, and the searches were

checked against each other. The data was analyzed using simple descriptive statistics. As the material is in the public domain, it did not require the approval of the Research Ethics Committee.

RESULTS

The 62 videos had an average duration of 18.5 minutes (\pm SD: 25.1). In total, they had 85,328 thousand views, an average of 1,376.25 views (\pm SD: 3922.403), as well as 33,871 thousand "likes" or "dislikes", with an average of 546.30 (\pm SD: 1194.49). Comments were disabled on 22 videos, and the remaining 40 videos had a total of 1,244,000 comments.

Table 2 shows the evaluation of the reliability and quality of the video information.

Table 3 shows the reliability of the videos, assessed according to the JAMA Benchmarks criteria.

Analysis of the classification of the videos shows that 93.54 % of the productions were classified as bad.

Table 5 shows the characterization of the videos according to the checklist of items to be covered on safe ICT.

Table 1 - Characterization of IAP videos available on YouTube (n=62). Brazil, 2023.

Variable	N	%
Posting time in years		
≤ 1 years	16	25,81
1 a 2 years	35	56,45
> 2 years	11	17,74
Author of the video		
Nursing technician	01	01,61
Nurse	18	29,03
Doctor	04	06,46
Not identified	39	62,90
Tools used in Teaching		
Simulation, image and photography	41	66,13
Oral presentation and slide	21	33,87

Among the sample, 20 videos (32.25 %) cited information incompatible with science, including the use of heparin, pressurizing the bag to 200 mmHg, care and arterial puncture by the nursing technician, leveling in the 5th intercostal space, questioning the legislation that supports the nurse's actions in relation to the procedure.

Table 2 - Evaluation of the reliability, general quality and quality of information of YouTube videos, according to the adapted DISCERN instrument (n=62). Brazil, 2023.

DISCERN adapted	n (%)		
	No (1 point)	Parcialmente (3 points)	Yes (5 points)
Are the objectives clear?	24 (38,7)	7 (11,3)	31 (50)
Do you achieve your goals?	18 (29)	33 (53,2)	11 (17,8)
Is it relevant?	11 (17,7)	37 (59,7)	14 (22,6)
Is it clear what sources of information were used for the publication (apart from the author and producer themselves)?	61 (98,4)	1 (1,6)	0
Is it balanced and impartial (towards any company)?	14 (22,6)	1 (1,6)	47 (75,8)
Does it describe all the elements of the subject covered in the video?	17 (27,4)	36 (58,1)	9 (14,5)
Do you use tools in teaching (simulation and photos)?	14 (22,6)	1 (1,6)	47 (75,8)
Did you mention the ethical principles of nursing?	52 (83,8)	6 (9,7)	4 (6,5)
Describe patient safety and infection prevention?	48 (77,4)	14 (22,6)	0
Does it provide support for decision-making?	48 (71)	9 (14,5)	9 (14,5)

Table 3 - Reliability of YouTube arterial puncture and IAP videos, according to JAMA Benchmarks criteria (n=62). Brazil, 2023.

Reliability criteria	n (%)				
	Missing information (0 point)	Quoted the information (1 point)	Information in the description (2 points)	Information quoted in the video (3 points)	Video information and detailed description) (4 points)
Author	36 (58,1)	26 (41,9)	0	0	0
Assignment	60 (96,8)	2 (3,2)	0	0	0
Transparency	60 (96,8)	2 (3,2)	0	0	0
Update	60 (96,8)	2 (3,2)	0	0	0

Table 4 - Summary of the results of the evaluation instruments: quality and reliability of YouTube videos on IAP (n=62). Brazil, 2023.

Instrument	Score		
	Criteria	n	%
<i>Instrument 1</i>			
Educational quality of the video in relation to the moments of the procedure.	Good: if score >13.	00	-
	Moderate: if score 13 ≤ but > 7.	04	06,45
	Bad: if score ≤ 7.	58	93,55
<i>Instrument 2</i>			
Reliability, overall quality and quality of information (DISCERN) adapted.	Optimum quality (50 points)	00	-
	Good quality (40 points)	00	-
	Intermediate quality (30 points)	18	29,03
	Poor quality (10-20 points)	44	70,97
<i>Instrument 3</i>			
Reliability of the videos was assessed using the JAMA Benchmarks criteria	Score 0: when the information was missing.	33	53,23
	Note 1: if you only cited the information in the video description or in the video itself	28	45,16
	Note 2: if, in addition to having the information in the description, it showed the logo/author/source of information/date in the video	01	01,61
	Note 3: when the information was quoted by the characters in the video	0	0
	Note 4: as well as being quoted, in the video and description, she was detailed.	-	-

DISCUSSION

Most of the publications were published two years ago (74.19%), which justifies the information being at odds with the scientific literature. However, the suggestion of heparinized solution infusion is not justified by the time the video was published, given that this procedure has been contraindicated for over a decade.

Table 5 - Characterization of the items covered according to the educational quality checklist of the videos in relation to the moments of the procedure (n=62). Brazil, 2023.

Variable	n (%)		
	Not addressed (0 pontos)	Partially addressed (0,5 pontos)	Complete information (1 ponto)
Indications, contraindications and complications	34 (54,8)	24 (38,7)	4 (6,5)
Legislation and Systematization of Nursing Care	47 (75,8)	13 (21)	2 (3,2)
Hand hygiene	53 (85,4)	8 (13)	1 (1,6)
Patient explanation and authorization	62 (100)	0	0
List of materials	46 (74,1)	7 (12,1)	8 (13,8)
Electrical and fluid monitoring system	34 (54,9)	24 (38,7)	4 (6,4)
Allen test	41 (66,1)	10 (16,1)	11 (17,8)
Puncture sites	35 (56,4)	16 (25,8)	11 (17,8)
Aseptic technique when installing the catheter	50 (80,6)	8 (13)	4 (6,4)
Use of ultrasound, anesthetic button and catheter fixation	60 (96,8)	2 (3,2)	0
Leveling	36 (58)	13 (21)	13 (21)
Pressurization	37 (59,6)	17 (27,4)	8 (13)
Zeroing	30 (48,4)	19 (30,6)	13 (21)
Arterial curve morphology and flow test	36 (58,1)	17 (27,4)	9 (14,5)

Blood collection	50 (80,6)	11 (17,8)	1 (1,6)
Assessment of risks and complications	39 (63)	23 (37)	0
Removing the device	56 (90,3)	6 (9,7)	0
Patient safety and infection prevention	40 (64,5)	22 (35,5)	0

The majority of the videos were of poor quality, and the absence of information is noteworthy, which means there are gaps in reliability, such as identifying the author, the date the video was made or updated. Other elements that reinforce the low reliability and quality of the videos are the absence of explicit objectives, the lack of information sources and the date of the information or update.

Poor results related to video analysis have been found in other studies, which identified gaps in the information omitted or partially covered, especially the essential elements for carrying out the procedure and those related to the preparation of the videos.^{15,18} Given this alarming scenario, the credibility of these videos is being debated, which allows us to state that easy access to information via the internet does not imply a guarantee of knowledge, because it requires critical application, updating and scientific backing.

Nurses were the professionals most identified with producing videos about the procedure. To the detriment of the complexity and technological density involved in the procedure,⁸ nurses need to have continuous training related to the insertion of IAP, since they have the technical competence and autonomy to carry it out.^{5,19} It is possible to reflect that the quality of nursing care goes beyond carrying out procedures according to technique and includes critical thinking, in order to associate scientific knowledge with the analysis of the patient's clinical situation.

In relation to the moments of the procedure, only four were rated as moderate, a fact that proves the presence of gaps in the preparation of the videos, since by omitting essential steps in the execution of the procedure, the authors fragmented knowledge. One example of this is the absence of videos that addressed the complications of the procedure, which include compartment syndrome due to periarterial hematoma, infection, ischemia, thromboembolism, bleeding and blockage of blood flow.²⁰ Thus, by not fully informing the public, it demonstrates the limitations in the application in clinical practice¹³ in relation to monitoring the risks related to invasive puncture²⁰ and its effects on promoting patient safety.

With regard to the pre-puncture moment, according to the Checklist,²¹ videos fully addressed the puncture sites. The radial artery is the first choice for arterial puncture due to its easy anatomical location, the fact that it causes fewer infectious and vascular complications, allows for hemostasis and uncomplicated fixation of the device.^{3,20} To use this artery, one of the essential procedures

for the safety of the technique is to check for the presence of collateral circulation as a guarantee of a safe procedure, but only 17.7% of the videos described the Allen Test fully and 16.1% partially.

This highlights the growing inclusion of technology in the daily practice of nurses. That said, only two videos mentioned ultrasound-guided cannulation, which increases the success rate of the puncture and reduces the number of attempts, since inserting the device can be difficult and painful²¹, as well as the anesthetic button and fixing the device, which may indicate outdatedness in relation to trends in professional practice.

Hand hygiene was one of the elements least addressed in the videos, as was the step of putting on the sterile glove and positioning the surgical drape, a fact that demonstrates the fragility of adherence to aseptic technique during the procedure, considered essential care in reducing the risk of infection.

The rate of primary bloodstream infection associated with invasive catheters includes situations such as improper handling of the device.²¹ Failure to respect the principles of asepsis can promote a high risk of infection, which requires care in the maintenance and quality of care in order to ensure patient safety.²²⁻²³

Zeroing and leveling were the most detailed features in the videos. The stages of explanation/authorization, risk/complication assessment and removal of the device were not fully covered, which allows us to reflect on the fact that ensuring accurate blood pressure goes beyond the team's knowledge of handling the devices and interpreting the results. Inadequate IAP can result in erroneous interventions or omission of care.

Studies that analyzed the impact of the difference in the results of non-invasive and invasive monitoring in relation to the clinical outcome found that IAP monitoring was relevant to the patient's recovery and quality of life, especially when associated with the use of vasoactive drugs.²⁴⁻²⁵ However, incorrect IAP reading has implications for diagnostic and therapeutic decisions related to hemodynamic resuscitation and prognosis.¹

Among the elements portrayed in the videos related to the post-puncture period, the following stood out: zeroing and leveling. However, every moment of the procedure is important, from the care taken to maintain the system to the puncture, in order to guarantee accurate and continuous reproduction of the IAP value.²⁶

Analysis of the blood pressure curve helps to identify alterations in the system and must be carried out carefully. It is therefore up to the nurse to interpret the morphology of the curve, normal wave, damped, with graphic representation according to the cannulation site, through clinical judgment. Therefore, it is necessary to carry out the flow test, which identifies whether the curve is adequate.²⁶

IABP allows blood to be collected and thus reduces the number of arterial punctures the patient undergoes, as described in detail in 1.6% of the videos. In this context, the blood sample must be collected safely and the system must be handled aseptically in order to reduce the rate of complications, such as infection.¹⁹⁻²⁰

Removal of the device was partially addressed in 9.7% of the videos, which mentioned the importance of keeping the catheter in place for the minimum time necessary by assessing the need for it every day. However, they did not discuss the removal technique,

the most common being to remove the catheter slowly and compress the removal site for 5 minutes with continuous observation of hemostasis.²⁶

Evaluating good nursing practice with regard to invasive monitoring requires skills and competencies that support decision-making. In this sense, care planning combined with greater patient safety, autonomy and improved quality of care are essential.

CONCLUSION

YouTube videos cannot be considered reliable sources on ICT because, after assessing the quality and reliability of the content presented in the videos, gaps were identified in relation to the aspects covered. The lack of information in the videos could lead to patient harm. In this sense, the use of videos available on YouTube as a way of quickly consulting information and updating professionals should be done sparingly, always checking the sources cited (when referenced).

A limitation of the study is the analysis of videos published only in Portuguese, indicating the need for more research into the best way to analyze the content of videos available on YouTube. The need for future research into the validation of educational videos on ICT for teaching health and nursing professionals.

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