

CRITICAL ANALYSIS OF PERIPHERAL CATHETER VENIPUNCTURE VIDEOS AVAILABLE ON YOUTUBE

ANÁLISE CRÍTICA DOS VÍDEOS SOBRE PUNÇÃO VENOSA PERIFÉRICA COM CATETER DISPONIBILIZADOS NO YOUTUBE

ANÁLISIS CRÍTICO DE VÍDEOS SOBRE VENOPUNCIÓN PERIÉRICA CON CATÉTER DISPONIBLES EN YOUTUBE

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ABSTRACT

Objective: This study aimed to characterize the content of peripheral venipuncture with plastic catheter over needle videos shared on YouTube. **Methods:** Quantitative, an exploratory descriptive study conducted on YouTube. The researchers selected 81 videos in July 2014 presenting the execution of the peripheral venipuncture procedure with plastic catheter over needle alone or associated with intravenous therapy, openly available and in Portuguese. Data were collected by downloading the videos. The selected ones were coded and organized with Microsoft Excel software and analyzed using descriptive statistics. **Results:** The videos were characterized by having been produced, mostly, by individuals (97.53%) and totalized 964,041 views, resulting in an average of 12,203 views per video, showing significant users demand. The procedure of venipuncture was recorded during practical classes (74.07%) and performed in humans (91.35%). **Conclusion:** Due to content inconsistencies and inadequacies in the digital material production in many videos, they may not be indicated for educational purposes. We recommend for future studies to investigate how users acquire the videos knowledge and to charge in the production of quality digital material as reliable sources on the internet to the student.

Keywords: Nursing; Educational Technology; Catheterization, Peripheral; Instructional Films and Videos; Internet.

RESUMO

Objetivo: esta pesquisa teve como objetivo caracterizar o conteúdo de vídeos de punção venosa periférica com cateter plástico sobre agulha compartilhados no site YouTube. **Métodos:** estudo quantitativo, exploratório-descritivo realizado no site YouTube. Foram selecionados 81 vídeos em julho de 2014 que apresentavam a execução do procedimento de punção venosa periférica com cateter plástico sobre agulha isoladamente ou associado à terapia intravenosa, disponíveis em português. Os dados foram coletados em visita ao site por meio de download. A seguir, os vídeos foram codificados e organizados no software Microsoft Excel para serem analisados pela estatística descritiva. **Resultados:** os vídeos caracterizaram-se por terem sido produzidos, na sua maioria, por pessoas físicas (97,53%) e totalizaram 964.041 visualizações, resultando na média de 12.203 visualizações por vídeo, mostrando significativa demanda de usuários. A realização da demonstração do procedimento foi realizada como registro não sistematizado de aula prática (74,07%) e executado em humanos (91,35%). **Conclusão:** concluiu-se que, pelas inconsistências de conteúdo e inadequações na produção do material digital, muitos vídeos não podem ser indicados para fins educativos. Sugerem-se, para estudos futuros, investigações acerca das formas como os usuários se apropriam desse conhecimento e investimento na produção de materiais digitais de qualidade para que o estudante possa ter fontes confiáveis de consulta na internet.

Palavras-chave: Enfermagem; Tecnologia Educacional; Cateterismo Periférico; Filmes e Vídeos Educativos; Internet.

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RESUMEN

El objeto del presente estudio fue caracterizar el contenido de los videos de venopunción periférica con catéter de plástico sobre la aguja compartidos en YouTube. Se trata de un estudio cuantitativo exploratorio descriptivo realizado en YouTube. En julio de 2014 se seleccionaron 81 videos disponibles en portugués que mostraban el procedimiento de punción venosa periférica con catéter de plástico sobre la aguja, sólo o asociado con terapia intravenosa. Los datos se recogieron en el sitio y se bajaron en Internet. Los videos seleccionados fueron codificados y organizados en el software de Microsoft Excel para ser analizados con estadística descriptiva. Los videos se caracterizan por haber sido producido, en su mayoría, por individuos (97,53%), con 964,041 visitas, un promedio de 12.203 visitas por video, lo cual indica una significativa demanda de usuarios. La demostración del procedimiento se llevó a cabo con la grabación no sistematizada de clases prácticas (74,07%) y realizado en seres humanos (91,35%). Se concluye que, debido a inconsistencias de contenido e inadecuaciones del material digital, muchos videos no pueden ser indicados para propósitos educativos. Se sugiere investigar cómo los usuarios adquieren ese conocimiento e invertir en la producción de material digital de calidad para que los estudiantes puedan contar con fuentes fiables de consulta en Internet.

Palabras clave: Enfermería; Tecnología Educativa; Cateterismo Periferico; Películas y Videos Educativos; Internet.

INTRODUCTION

Educational materials in digital format available on the free internet is a way of democratizing the access to information. However, the use of these resources in nursing education requires a critical user to select the quality content of a large amount of information available. Videos on YouTube are examples of these features. This website constitutes a network with over one billion users who share more than 300 hours of content per minute, generating millions of hours of daily views.¹ On YouTube, there are several videos available on topics of health, including on nursing procedures, produced and published by institutions, organized groups or individuals.

Thus, the free demand videos available, as on YouTube, can collaborate with teachers and institutions that do not have resources to produce their digital material or even use it as a repository for shares, providing opportunities for consultation of the material students and professionals interested in the subject. Study of students in the health area has shown that the visual and auditory stimulation provided by a video is a feature that helped in learning.² This finding confirms the need for educational institutions in the health sector to invest in the production of videos, which can be used in classroom activities or distance classes.³

The analysis of videos posted on YouTube on adverse events found that the quality of digital material and the information is essential so that they can be used as teaching resources.⁴ Therefore, when selecting a material of this network for educational purposes should be cautious, and it is necessary to evaluate its content and potential for teaching.⁵ Some authors confirm that, when previously selected, videos can act as a beneficial supplement education in preparing students for the practical activities.⁶

The use of digital technologies is widespread among students of all ages and it is necessary that universities incorporate these resources to education, allowing students to explore their digital fluency in the search for knowledge.⁷ In this sense, some universities have developed their channels on YouTube

to share with the students own materials, quality and are integrated with classroom content.⁸

In front of the large quantity of information available in video on YouTube, it is identified that the thematic foundations of Nursing have a significant collection. It was decided in this study to select the peripheral venipuncture with plastic catheter over the needle to analyze in more detail the structure of the produced video, and the appropriateness of the content, which constitutes a procedure often performed by nursing professionals and it should have a specific care to prevent vascular route infections.

Peripheral venipuncture with plastic catheter over needle is a procedure that consists of installing a sterile device inside the venous vessel to infuse intravenous therapy.⁹ Performing this procedure, technical and scientific knowledge of the professional is required, since its success depends significantly on the professional skill. Given the various skills required for their achievement, often peripheral venipuncture causes anxiety in nursing student, feeling that can be minimized when it has access to simulation capabilities with mannequins or virtual environment.¹⁰

This study aimed to characterize the contents of peripheral venipuncture videos with a plastic catheter on needle shared on YouTube, describing its stages of execution and characterizing them as the environment, actors, materials used, authorship identification and the reference source for the procedure. The results of this study are involved in the dissemination and production of digital materials in Nursing, helping professionals and nursing students as critical of the use of available online content.

METHOD

This was an exploratory-descriptive research with a quantitative approach. Exploratory studies are intended to investigate phenomena still unknown and no assumptions made, and the descriptive stage responsible for presenting evidence that may instigate new studies.¹¹ The study area was the site of You-

Tube videos, selected to be a sharing network with large collection available for free.

The sample was composed of 81 videos that showed the peripheral venipuncture procedure with plastic catheter over the needle. On the site search area, the term "peripheral venipuncture" was searched obtaining 1.100 videos. These videos were selected for the sample following these criteria: demonstrating the procedure alone or associated with intravenous therapy; being publicly available and in the Portuguese language. The videos with more than one procedure not related to intravenous therapy and that did not use plastic catheter over needle were excluded from the sample.

Data were collected from visits to the address: <http://www.youtube.com>, on 28 July 2014. The gathering took place in one day, given the great dynamism of the data available on the internet.¹² There were downloads conducted using the free software ClipConverter (<http://www.clipconverter.cc/pt/>) of the videos that met the inclusion criteria, being encoded in V1, V2, and so on, until V81, ensuring the anonymity of the authors.

The researchers developed an instrument which included the basic steps for the performance of the peripheral venipuncture procedure with plastic catheter over needle, based on updated technical reference for its completion:¹³ data on the person responsible for sharing, development environment, if the implementation occurred in mannequin simulation or human beings, presentation of the material used, authorship identification, referral source for the procedure and number of views.

The data were organized and processed by Microsoft Excel software and analyzed using descriptive statistics, with absolute and relative frequencies, described by means and percentages. After obtaining this data, the variables were analyzed with literature about the study.

The researchers signed a Data Use Term of Commitment, pledging to preserve the identity of the authors of the participating videos and affirming the use of the material only for this study. The Commission of the Federal University School of Nursing of Rio Grande do Sul was favorable to this study (protocol number 27574). The ethical aspects related to copyright were respected, and the identity of the authors of the videos has been preserved.

RESULTS

There were 81 (100%) videos characterized that met the inclusion criteria of this research. The video had 964,041 views, resulting in an average of 12,203 views per video. The V43 was the one with the highest amount of views with 369,668 views, followed by the V17 with 341,322 and V33 with 91,428 views.

Among the materials analyzed, five (6.17%) of the procedures were specific simulations for the performance of video, six (7.40%) had a recording of a practical class, six (7.40%) re-

ording a care situation and 64 (79.01%) met the other option, as the non-systematized recording of classes (74.07%).

As for users who publish the content, 79 (97.53%) were individuals using their personal channel for the post, one (1.23%) was provided by an institution of education distance courses and one (1, 23%) was published by a group of students of an undergraduate degree in the health field.

In 68 (83.95%) videos of this sample, the procedure was performed in a laboratory practical classes, six (7.40%) in health facilities and seven (8.64%) in other places, including rooms classes and residences.

The demonstration of the procedure was performed in a simulation mannequin in only seven (8.64%) of the analyzed videos. The other 74 (91.35%) underwent the procedure in human beings. In four videos (4.93%), the material needed for the procedure was introduced, in the remaining 77 (95.06%) videos, this action was not performed.

In the analysis of the procedural steps that aim to ensure patient safety by performing the steps of venipuncture with aseptic technique, 81 (100%) videos characterized procedures, only one (1.23%) made the hygiene of hands, the other 80 (98.76%) did not perform this step of the procedure, or announced orally or legend that need. There were 75 (92.59%) that demonstrated the preparation of the material to be used when performing the procedure (Table 1).

In 70 (86.41%) videos, the performer used examination gloves and in 77 (95.06%) used the tourniquet on the puncture. In 61 (75.30%) videos, they addressed the choice of the site of venipuncture, and the antisepsis of the skin was provided in 60 (74.07%) procedures (Table 1).

In all the videos (100%), the insertion needle has been demonstrated, as this is an essential step towards the implementation of the puncture. The venous return and the removal of the mandrel were presented in 67 (82.71%) of the videos, while the correct disposal of the needle was not submitted in 76 (93.82%) of procedures performed (Table 1).

The catheter was stabilized for the release of the tourniquet in 64 (79.01%) videos, the firm and gentle pressure to prevent backflow of blood and syringe connection solution was not performed in 57 (70.37%) of them. In 61 (75.30%) of the executions the patency of vein was not observed, and in 54 (66.66%) videos, the device was fixed to the patient, and in only eight (9.87%) videos, the dressing was identified with the data procedure and the performer. In 80 (98.76%) procedures, the organization and disposal of the material used after finishing the procedure were not presented (Table 1).

As for complications, seven (8.64%) of the procedures had no venous return and two (2.46%) venous routes were injured while running. The procedure was not performed in 55 (67.90%) of procedures according to the order shown in the literature

that guided the study protocol. None of the videos (100%) presented the references used for the execution of the procedure.

Table 1 - Distribution of videos according to the steps recommended for the procedure – City, 2016

Procedure steps	Yes		No	
	n	%	n	%
Hand hygiene	1	1.23	80	98.76
Preparation of material to be used	6	7.40	75	92.59
Use of gloves	70	86.41	11	13.58
Use of tourniquet	77	95.06	4	4.93
Election of venous access	61	75.30	20	24.69
Antisepsis	60	74.07	21	25.92
Insertion of achievement	81	100	0	0
Observation of the venous return, proper catheter insertion and removal of the needle	67	82.71	14	17.28
Correct disposal of the needle	5	6.17	76	93.82
Stabilization of the catheter and release of the tourniquet	64	79.01	17	20.98
Firm and gentle pressure on the catheter to connect salinization	24	29.62	57	70.37
Observation of the vein permeability	20	24.69	61	75.30
Device fixation	27	33.33	54	66.66
Dressing identification	8	9.87	73	90.12
Disposal of the material used	1	1.23	80	98.76

Source: authors.

DISCUSSION

A large number of practical lessons videos found in this research showed that mobile technology features enable people to register everyday situations, which leads to the expansion of available videos in free access to the internet sites. Teachers and students become content authors to register and review the practices they perform. Studies highlight that digital materials productions in video format collaborate with learning, which enables unlimited access to content and helping the student to acquire knowledge and skills in the nursing area.^{8,14}

However, it is necessary to consider how the production of these videos and how they were available on the internet. In many of the materials evaluated, the authors/characters and institutions were presented informally and in situations that expose their weaknesses. The actors and institutions presented in educational videos should authorize the use of sound and image, before the publication of material in YouTube.¹⁵ Similarly, there should be concern in the production of digital material to socialize updated knowledge, based on evidence and encouraging best practices in nursing.¹⁵

In many videos, there was precariousness quality in pictures, sounds and editing absence showed that production was done informally without included in the description or profile of their publication data such as full name or technical training of the responsible professional. This omission brings doubts on the credibility and reliability of shared materials, which are health-related procedures that may compromise the integrity of others who may follow them.¹⁶

The use of laboratories in practical classes in health care enables the implementation of realistic and simulated situations, helping to minimize the anxiety and insecurity of students. There is currently 17 simulation equipment available that allow students to experience the care situation realistically, making unjustifiable use of human beings for laboratory practice, as these expose the student to risk of adverse events during the execution of the procedure. The São Paulo Regional Nursing Council published in 2009 an opinion contrary to training injection techniques among students, even under the supervision of a professional nurse.¹⁸ When conducting educational videos, this assumption must also be observed using the technological resources available instead of exposing people to unnecessary risks.

In the videos analyzed, there were differences observed in venipuncture technique catheter. It is noteworthy that some of the technical steps that were not presented, if not carried out in real care context, they endanger the patient safety or worker/student health. Hand hygiene is an indispensable step for the provision of patient care, admittedly responsible for preventing infections. Still, studies say that 29.7% of nurses perform the peripheral venipuncture procedure without hand hygiene.¹⁹ Because of its importance, this step cannot be absent in the content of an educational video that demonstrates an invasive procedure.

Gloves procedures consist of personal protective equipment in contact with blood and fluids while performing invasive activities and provide safety for the patient, preventing cross-infection when used properly.^{20,21} Not using it puts the patient and the professional in vulnerable situations. Thus, using gloves in the procedures should be presented in venipuncture videos for students to incorporate this stage of the procedure that is critical to their safety.

Another step underexplored in the videos was the end of sharps waste with biological material. Faced with the risk of exposure to this material, the videos should point out the correct destination of the material, especially the proper disposal of the needle. Improper disposal endangers all people attending the same environment for the procedure, the possibility of occupational exposure to the biological material, and may cause contamination by hepatitis B and C and also by the human immunodeficiency virus (HIV). Worker health sometimes is in a working environment overwhelmed by the great demand for care, causing it to become vulnerable to contamination, es-

pecially when there is no proper disposal of the used invasive needle.²² These procedure factors reinforce the importance of waste disposal is presented in an educational video.

After the procedure, it is recommended that information such as date, the size of the catheter and professional executor is registered in the setting of venous access, as well as in the patient record. These data are necessary for decision making during emergencies and for the prevention of infections, since the device cannot exceed the validity advocated by the routines of the institution.²³ The identification of the healing of venous access is a measured security that benefits patient and institution. This record allows any professional having access to device data when providing care.

A large number of views of videos analyzed in this study was registered. There were videos with close access numbers to 370,000, which reinforces that there is an interest in this educational resource. In the UK, it was observed a change in the nursing area of the material available on YouTube recently having quality educational materials to increase produced by educational institutions in English.⁸ In Brazil, it was found that YouTube offers many materials in open access format, however, not always they can be used as an educational resource, due to the inconsistency of the content or poor quality of picture and audio. Other studies conducted in Brazil that evaluated videos on nursing procedures stressed that they were not by recommended guidelines.^{24,25}

FINAL CONSIDERATIONS

This study aimed to characterize the videos shared on YouTube that showed the peripheral venipuncture procedure with plastic catheter over the needle. There were 81 videos identified of public access that met the inclusion criteria of the study.

Most videos had the execution of the peripheral venipuncture in educational situations, however, despite the context, most executions were carried out in human beings, drawing attention to the risk that procedures without therapeutic purposes and inappropriate environment can cause. Similarly, steps like hand washing, the use of protective equipment and disposal of sharps were not included in all the videos, showing inconsistency content.

Because YouTube is a widely accessed sharing site and the identification of many videos did not obey the recommended guidelines for peripheral venous catheterization, it is recommended that health and education institutions produce quality materials to disseminate good practice of Nursing. It is suggested to investigate the profile of the users in the future, as they select and use educational videos of Nursing.

As limitations of this study, there is the little diversity nurtured by the YouTube site search mechanism and the diversity

of nomenclatures used for peripheral venipuncture, with no standardization, which may have caused losses in the sample.

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