








# Evaluation of an educational video about home bathing of newborns: a methodological study with parents and caregivers

*Avaliação de vídeo educativo sobre banho domiciliar de recém-nascidos: um estudo metodológico envolvendo pais e cuidadores*

*Evaluación de vídeo educativo sobre el baño en casa de los recién nacidos: un estudio metodológico con padres y cuidadores*

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## ABSTRACT

**Objective:** to evaluate the educational technology in video format about the bath of newborns at home according to their parents/caregivers' perceptions. **Methods:** a methodological study was conducted in a maternity hospital in the state of Rio de Janeiro, Brazil. Twenty parents/caregivers participated in the assessment of a YouTube video using a mobile device, and then filled out an evaluative instrument containing 26 items. Concordance indexes with a score equal to or greater than 0.8 (80.0%) were considered valid. **Results:** the overall average concordance index was 0.99 (99.0%). Among the evaluative items, scores ranged from 0.90 (90.0%) to 1.0 (100%), indicating an excellent assessment by family members. **Conclusions:** the evaluation of the video by the parents/caregivers was satisfactory, which makes it a promising instrument to be used during health education on newborn baths at home.

**Descriptors:** Infant, Newborn; Baths; Family; Educational Technology; Instructional Film and Video.

## RESUMO

**Objetivo:** avaliar a tecnologia educacional em formato de vídeo sobre o banho do recém-nascido no domicílio segundo a percepção dos pais/cuidadores. **Métodos:** estudo metodológico conduzido em uma maternidade no estado do Rio de Janeiro, Brasil. Vinte pais/cuidadores participaram da avaliação do vídeo no YouTube usando um dispositivo móvel, seguido de preenchimento de um instrumento contendo 26 itens. Considerou-se válidos os Índices de Concordância com pontuação igual ou superior a 0,8 (80,0%). **Resultados:** a média global do Índice de Concordância foi de 0,99 (99,0%). Entre os itens avaliados, as pontuações variaram de 0,90 (90,0%) a 1,0 (100,0%), indicando uma excelente avaliação por parte dos familiares. **Conclusões:** a avaliação do vídeo por pais/cuidadores foi satisfatória, sendo um instrumento promissor para ser utilizado durante a educação em saúde sobre o banho do recém-nascido no domicílio.

**Descritores:** Recém-Nascido; Banhos; Família; Tecnologia Educacional; Filme e Vídeo Educativo.

## RESUMEN

**Objetivo:** evaluar la tecnología educativa en formato de vídeo sobre el baño del recién nacido en casa según la percepción de los padres/cuidadores. **Métodos:** estudio metodológico realizado en una maternidad en el Estado de Rio de Janeiro, Brasil. Veinte padres/cuidadores participaron de la evaluación del vídeo en YouTube utilizando un dispositivo móvil, y luego rellenaron un instrumento evaluativo conteniendo 26 ítems. Se consideraron válidos los índices

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de concordancia con puntuación igual o superior a 0,8 (80,0%). **Resultados:** el Índice de Concordancia medio global fue de 0,99 (99,0%). Entre los ítems evaluativos, las puntuaciones oscilaron entre 0,90 (90,0%) y 1,0 (100%), lo que indica una excelente valoración por parte de los familiares. **Conclusiones:** la evaluación del vídeo por los padres/cuidadores fue satisfactoria, siendo un instrumento prometedor para ser utilizado durante la educación en salud sobre el baño del recién nacido en casa.

**Descriptores:** Recién Nacido; Baños; Familia; Tecnología Educacional; Película y Video Educativos.

## INTRODUCTION

All segments of society - the population, government, and private entities, among others - employ technologies to disseminate health information<sup>(1)</sup>, and the virtual environment is currently recognized as an excellent means of health communication<sup>(2)</sup>. Furthermore, the COVID-19 pandemic intensified this practice, as the world faced a new and challenging experience, requiring numerous technological resources and making digital tools more commonplace in people's everyday lives<sup>(3)</sup>. As a result, digital information and communication technologies have become integral part of daily life and increasingly essential in health care, serving as mediating tools in the construction of comprehensive care at all levels, including health education practices<sup>(4)</sup>. This shift aligns with the accelerated adoption of online, mobile, and portable technology in the field<sup>(5)</sup>.

Health technologies encompass products or processes derived from scientific knowledge, facilitating the involvement of professionals in providing client care and engaging in the health education process<sup>(6)</sup>. They can be classified as managerial (manuals, protocols, and routines), educational (videos, primers, applications, and brochures), or assistance (scales, processes, and theories). Moreover, these technologies collaborate to share relevant information with the target audience, addressing possible challenges they may face. Additionally, they enable professionals to reevaluate their work processes and dynamics, enhancing the quality of the service provided<sup>(6)</sup>.

Within the realm of health technologies, educational ones are widely employed in nursing and can be divided into three types: for students with technical and higher education, for the community through health education, and for professionals through continuing education<sup>(7)</sup>. In this context, healthcare teams can take advantage of health educational technologies to plan, execute, and monitor the construction and reconstruction of knowledge through dialogical educational meetings<sup>(6)</sup>. This approach aims to empower and foster autonomy among the subjects involved in the teaching-learning process<sup>(7)</sup>.

The decision-making for recommending and incorporating technologies into health systems must be grounded in the best scientific evidence, with health technology assessment studies serving as the guiding thread. This decision should be supported by evidence regarding the technology's efficacy, accuracy, effectiveness, and safety<sup>(8)</sup>. Additionally, this evaluation is defined as a systematic and fundamental procedure enabling the assessment of a technology's impacts on a population<sup>(9)</sup>.

Health educational technologies encompass videos, interviews, simulations, slides, manuals, counseling, booklets, educational games, websites, software, and other modalities<sup>(10)</sup>. Due to their versatility and ease of application, nurses have often utilized educational videos as a health education strategy<sup>(11)</sup>, as they can generate greater interest and enhance the viewer's learning<sup>(12)</sup>. These videos are interactive and easily accessible, contributing to significant public acceptance<sup>(2)</sup>. Thus, educational videos serve as an effective means to promote health orientations, allowing individuals to learn at their own pace and supplement their knowledge in their own time<sup>(13)</sup>. This flexibility includes the freedom to replay, pause, and rewind whenever necessary to meet their learning needs<sup>(5)</sup>.

Home care for newborns, especially during bath time, is highly relevant among the proposed themes for educational videos, considering that improper practices can harm the baby's health. Risks, in this context, include negative stimuli affecting the baby's behavioral state, the risk of hypothermia and associated symptoms due to inadequate heating during and after bathing, increased blood pressure, and heart and respiratory rates due to stress, damage to the skin from the use of inappropriate products, and the risk of accidents such as falling. Therefore, guidance on best practices in bathing and other care procedures is the responsibility of the nursing team, requiring the use of resources that facilitate communication with the target audience<sup>(11)</sup>.

Recognizing that the generation of an instructional video can be an effective learning strategy in health care, given that visual and audio information enhances learning compared to receiving either one alone<sup>(14)</sup>,

a cartoon educational video titled “*Como dar o banho no recém-nascido em casa*” (How to bathe a newborn at home) was produced. This video, which was considered valid by nursing specialists, aims to provide knowledge about this care practice to mothers, family members, and caregivers of newborns<sup>(11)</sup>. However, for a technology to achieve the objectives proposed in its construction, it must undergo the entire evaluation process. Hence, it is highly relevant for the target audience to provide suggestions about the material developed, as this enables adaptation to the preferences and culture of the end user, facilitating the development and propagation of quality and reliable educational material. This process had not yet been done with the video on bathing. Consequently, the study is guided by the following research question: is the educational video “How to bathe a newborn at home” valid in terms of objectives, organization, style, appearance, and motivation from the perspective of parents and caregivers of newborns?

In addition to the scarcity of studies evaluating this type of technology, the present study is justified by the need for an educational video to improve family care practices, so that they are carried out in a qualified and safe manner. Its evaluation was necessary to provide relevant and efficient educational technology considering that there are risks when bathing at home<sup>(15)</sup>. Otherwise, the widespread use of mobile devices in society, where videos can be watched, contributes to the success of health technologies, enabling the nursing team to act more dynamically, shorten distances, and deliver important and safe information for home care. Furthermore, the evaluation process of educational videos, with the participation of the target audience represented by family members, is crucial to recognizing the video as an educational technology suitable for its intended purpose<sup>(16)</sup>.

Hence, evaluating health educational technology in the form of a video on home bathing for full-term newborns with the target audience (pregnant and postpartum women, caregivers, and family members) has become essential. The intention is to ensure that the information shared is received and understood adequately to promote quality of life, prevent illnesses, and provide comprehensive health care. Nevertheless, the literature underscores the indispensability of conducting evaluations with the target audience. Inclusion of perspectives, values, and personal experiences from the end users of such technologies can contribute to an assessment more closely aligned with current social needs and offer a comprehensive analysis of the impact of health technologies, fostering a more democratic decision-making process<sup>(9)</sup>.

Presently, health technology assessment agencies have structured the evaluation process into two distinct stages: the technical-scientific stage, characterized by more specialized participation, and the appraisal stage, which involves a broader array of participants, encompassing societal, ethical, and cultural considerations<sup>(17)</sup>. Therefore, the study aimed to evaluate the educational technology in video format about the bath of newborns at home according to their parents/caregivers’ perceptions.

## METHODS

This is a methodological study for evaluating an educational cartoon video entitled “How to bathe a newborn at home” which took place from September 2022 to January 2023 in the maternity ward of a municipal hospital located in the coastal lowlands of the Rio de Janeiro State, Brazil. This maternity hospital, specializing in low and medium-risk cases, is reference for women delivering in the city and its surrounding areas. Pregnant women in the facility, who are in labor, are directed to either the Delivery Room or the Surgical Center. After childbirth, the mother-baby pair is transferred to the Joint Nursing Unit, where they stay until hospital discharge. This is an ideal place for nurses to guide parturient women and their families about caring for the baby.

The video, with duration of 6 minutes and 23 seconds, provides a step-by-step guide for a safe and quality bath, along with guidelines on preparing the environment, the materials to be used, and caring for the umbilical cord stump after the bath, following recommendations based on best practices, such as those from the Brazilian Society of Pediatrics. This health educational technology underwent initial evaluation of content and appearance by 19 expert judges (18 nurses and 01 media professional) to assess its relevance to the target audience and to ensure its effectiveness and appropriateness to the context of Brazil, which is a tropical country where, culturally, the first bath is performed in the first days of life, even before the fall of the umbilical stump, according to national recommendations. All these steps are described in detail in an article<sup>(11)</sup>, and the assessed version of the video is accessible for free on YouTube (<https://www.youtube.com/watch?v=5PdQ0OYpK-V0&t=15s>). Figure 1 shows selected scenes from the aforementioned video.

The sample was non-probabilistic, consisting of 20 participants from the target audience, considering the literature recommendation for studies of this nature, which suggests a minimum of nine participants for each

**Figure 1** - Images from the educational video “How to bathe a newborn at home”, Rio das Ostras, Rio de Janeiro, Brazil, 2023

Note: Tampar os ouvidos – Plug the ears; Água e pouco sabonete – Water and little soap.

group of evaluators<sup>(18)</sup>. The inclusion criteria for the participants were: puerperal women, family members, and caregivers over 18 years old, whose newborns were in good health and had been admitted to the Joint Nursing Unit of the research setting. Regarding exclusion criteria, the following were applied: puerperal women, family members, and caregivers with any health incapability to evaluate the educational video with animation.

For the evaluation of the video by puerperal women and their families, an instrument specifically designed for this audience was used after being previously evaluated and employed in a master's thesis, where there was also an assessment of an educational video with families<sup>(19)</sup>. It was adapted to the theme of the current study and consisted of seven groups, including identification, instructions, objectives, organization, video style, appearance, and motivation. The form also included a space for participants to provide comments and reservations if they desired.

Data collection was conducted by two researchers, the first was trained and supervised by the second, who had extensive experience in research of this nature. The researcher personally approached potential participants in the Joint Nursing Unit and presented the research. Everyone who expressed interest was included, even if they belonged to the same family. Upon accepting and signing the Informed Consent, the participants assessed the educational video using the researcher's mobile device, connected to the internet, which was already open on the YouTube platform. Subsequently, the participants, individually, completed the evaluative instrument or requested help from the researcher to read, clarify questions, and fill it out. The whole assessment took 15 minutes per participant.

Data analysis was conducted using the instrument designed for evaluating the educational video with the

target audience. Initially, a quantitative analysis of the participants' responses was carried out based on different ratings: the total responses for Inadequate (1), Partly Inadequate (2), Partly Adequate (3), and Fully Adequate (4).

The Concordance Index was calculated from the sum of the responses rated three and four, divided by the total number of responses. Answers three and four encompass evaluations deemed partially suitable and fully suitable, reflecting the participant's willingness to acknowledge, even if not entirely, that the item aligns with its purposes, according to the literature guidelines<sup>(20)</sup>. This approach allows to capture nuances in participants' perceptions more comprehensively, considering the potential for more differentiated assessments regarding the adequacy of the item in question. The predetermined threshold for a satisfactory Concordance Index was set at 0.8 (80%). Items that fell below these threshold values would be corrected<sup>(20)</sup>.

The project underwent review and approval by a Research Ethics Committee (Certificate of Presentation of Ethical Review – Portuguese acronym CAAE - number 29157319.9.0000.5243). The study emphasized the respect for the dignity and autonomy of research participants while acknowledging their vulnerability.

## RESULTS

Twenty family/caregivers, with an average age of 25.7 years (range: 18 to 50 years old), took part in the evaluation process. The majority of participants (90.0%) were female, mothers of newborns (75.0%), and housekeepers (55.0%). Additionally, 40.0% had completed elementary school, and 35.0% had finished high school (Table 1).



**Table 1** - Profile of the participants (n = 20) based on characterization data, Rio das Ostras, Rio de Janeiro, Brazil, 2023

Variables	n	%
<b>Sex</b>		
Female	18	90.0
Male	2	10.0
<b>Relationship with the baby</b>		
Mother	15	75.0
Father	2	10.0
Grandmother	2	10.0
Aunt	1	5.0
<b>Education</b>		
Elementary school	8	40.0
High school	7	35.0
Higher education	4	20.0
Incomplete schooling	1	5.0
<b>Occupation</b>		
Housekeeper	11	55.0
Other occupation	6	30.0
General services assistant	2	10.0
Student	1	5.0

Table 2 presents the target audience's evaluation of the video, according to the Concordance Index per item and overall, regarding objectives, organization, style, appearance, and motivation.

The average of Concordance Index for all items exceeded 0.8 (80.0%), with an overall average of 0.99 (99.0%). Across the 26 evaluative items, scores ranged from 0.90 (90.0%) to 1.0 (100.0%). Notably, in the video's objectives, appearance, and motivation, all items achieved a Concordance Index of 1.0 (100.0%).

Regarding the space for suggestions, it is worth mentioning that only two participants utilized it. One participant left a comment, stating, "I would like the video to be longer," under the organization item. The other participant provided positive feedback, stating, "No suggestions, very good!" in the objectives item.

## DISCUSSION

The evaluation of the educational technology in video format "How to bathe a newborn at home" by parents and caregivers was achieved satisfactorily through the Concordance Index on objectives, organization, style, appearance, and motivation. These scores, both per item and overall, surpassed the desirable thresholds, highlighting the video's suitability for use by families seeking information on the topic. Furthermore, it is

noteworthy that according to the literature, the body hygiene of newborns, especially bathing and cleaning the umbilical stump, despite being routine practices, generates doubts among parents, family members, and health professionals<sup>(15)</sup>, which reinforces the importance of this study.

In light of technological advancements and the availability of information online, there is a growing trend among the population to seek instruction and knowledge through these technological resources. From this standpoint, the utilization of educational videos has garnered significant attention, particularly in the health sector, providing information about educational health practices. This is attributed to the attractive nature of audio and video, which effectively engages and retains the viewer's attention<sup>(21)</sup>.

Additionally, it is important to acknowledge the rising prevalence of home videos addressing newborn bathing available on online platforms. A Brazilian study scrutinized the content of 61 videos of this type, revealing inconsistencies and omissions in the recommendations across all the analyzed videos. The study highlighted the potential risks to the safety of newborn bathing and advocated for the creation of materials grounded in scientific evidence<sup>(22)</sup>. Hence, consistent with previous research, it is posited that the creation and assessment of a mediating educational tool focused on the newborn's immersion bath can contribute to a better comprehension of this practice. This applies not only to parents and families but also benefits nursing staff and students by providing a visual representation of all the steps involved in the procedure. Such an approach facilitates the promotion of safety and quality in the execution of care<sup>(15)</sup>.

Quality in educational technology is conferred by aspects such as the relevance of information and the visual content closely resembling the reality perceived and experienced by the target audience. This is evident in a study that scrutinized a game designed to address the care needs of parents with premature newborns. Additionally, when technological content aligns with learning needs, particularly in areas of interest, it has the potential to enhance understanding, facilitate decision-making, and influence the maintenance and quality of life for the child. This underscores the importance of evaluating such technology with the target audience<sup>(23)</sup>, an aspect highlighted in the present study.

In this context, with a focus on quality, the educational video developed in this study received outstanding evaluations from the target audience across all evaluative criteria, mirroring findings from a study that similarly created and assessed an educational video on newborn

**Table 2** - Target audience's evaluation of the educational video's objectives, organization, style, appearance, and motivation, Rio das Ostras, Rio de Janeiro, Brazil, 2023

Item	Inadequate	Partly Inadequate	Partly Adequate	Fully Adequate	Concordance Index per item
	n	n	n	n	
<b>Regarding objectives</b>					
It meets the goals of guiding bathing the newborn	0	0	0	20	1.0
It helps during the families' daily life	0	0	1	19	1.0
It is suitable for use by any puerperal woman or family member who will be bathing a full-term newborn at home	0	0	2	18	1.0
<b>Regarding organization</b>					
The content is presented in the video in an attractive way	0	0	1	19	1.0
The size of the title and content in the topics are adequate	0	1	0	19	0.95
The video has a logical sequence	0	0	1	19	1.0
There is consistency among the information in the video	0	0	0	20	1.0
The video is appropriate for the proposed theme	0	0	0	20	1.0
The timing of the video is adequate	1	1	1	17	0.90
The themes portray important aspects	0	0	0	20	1.0
<b>Regarding style</b>					
Writing is in proper style	0	0	0	20	1.0
The text is interesting and tone-friendly	0	1	0	19	0.95
Vocabulary is accessible	0	0	0	20	1.0
There is an association of the theme of each scene to the corresponding text	0	0	0	20	1.0
The text of the video is clear	0	0	1	19	1.0
The writing style matches the level of knowledge of the target audience	0	0	0	20	1.0
<b>Regarding appearance</b>					
The scenes in the video look organized	0	0	1	19	1.0
The illustrations are simple, being preferably drawings	0	0	1	19	1.0
The images complement the texts	0	0	0	20	1.0
The images are expressive and sufficient	0	0	0	20	1.0
<b>Regarding motivation</b>					
The video is appropriate for the target audience	0	0	2	18	1.0
The contents of the video are presented in a logical way	0	0	0	20	1.0
The texts encourage interaction of the target audience, suggesting actions	0	0	1	19	1.0
The video addresses issues necessary for the daily life of puerperal women and their families	0	0	0	20	1.0
The video encourages changes in behavior and attitude of the target audience	0	0	2	18	1.0
The video offers knowledge for puerperal women and their families	0	0	0	20	1.0
<b>GLOBAL CONCORDANCE INDEX = 0.99</b>					

immersion baths, albeit with recorded real images<sup>(15)</sup>. In addition, systematic review examining the efficacy of video animations in health education highlighted the positive impact of this resource on learners' knowledge due to its dynamic nature. This underscores its potential to effectively illustrate procedures and skills in a manner that other formats, including still images or videos featuring real actors, may struggle to achieve<sup>(24)</sup>.

In the crafted video, significant attention was devoted to image production, aiming to depict Brazilian diversity in characters and scenes representing the family environment. This approach not only supported the information conveyed in the narration but also allowed the visualization of behaviors promoting enhanced safety in handling and care. In line with this approach, a study evaluating an instructional video on ofuro bath in preterm newborns reinforces the notion that educational technologies utilizing images are valuable tools in the teaching-learning process. Scenes have the potential to foster user identification and facilitate the grasping of content, leading to a behavioral shift in response to the information conveyed through visuals<sup>(25)</sup>. This aligns precisely with the objectives pursued in the video produced and evaluated in the present study.

Another study that evaluated the impact of an educational video on newborn care, encompassing bathing, aimed at enhancing the knowledge of pregnant and postpartum women along with their families, revealed that exposure to the video led to an increase in the participants' correct answers about those topics. Specifically, there was an improvement in understanding the frequency of baths, the daily use of products, and the correct approach to genital hygiene<sup>(26)</sup>. This underscores the significance of creating and deploying instructional videos on newborn care across diverse settings globally, contributing to the enhancement of postnatal care.

A limitation of the study regards the fact that it was conducted within a singular hospital setting, and therefore, responses may vary among family members in primary care or other hospital units in Brazil. Other limitation lies in not investigating the reasons why participants, although a minority, chose "partially adequate" for certain items among the target audience, which could enhance the understanding of the results. Moreover, the effectiveness of the video in enhancing the knowledge of family/caregivers remains to be thoroughly evaluated, which is why the authors currently undertaking another study to address this aspect.

## CONCLUSIONS

The video was satisfactorily evaluated in the parents/caregivers' perceptions, which confirm that it can be utilized as a safe guide to help puerperal women, family members, and caregivers in newborn bathing at home. It was deemed understandable, relevant, organized, attractive, and motivating from the end user's perspective, making it a valuable tool in health education.

The results suggest promising prospects for the use of instructional videos with families. Therefore, it is anticipated that this video will impart new knowledge to family and caregivers of newborns, equipping them to perform the bathing process correctly as per scientific recommendations.

Furthermore, there is a call to promote the production and adoption of educational technologies in video format within the clinical practice of healthcare professionals, including nurses, across various levels of healthcare, aiming to guide families safely and effectively.

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## Conflict of interests

None.

## Contributor roles - CRediT

**FGBG:** conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; writing – original draft; and writing – review & editing.

**IAAS:** conceptualization; data curation; formal analysis; investigation; methodology; resources; software; validation; visualization; writing – original draft; and writing – review & editing.

**ACSSS:** formal analysis; investigation; methodology; validation; writing – original draft; and writing – review & editing.

**ACSS:** formal analysis; investigation; methodology; validation; writing – original draft; and writing – review & editing.

**BLC:** conceptualization; formal analysis; investigation; methodology; validation; writing – original draft; and writing – review & editing.

**LFS:** formal analysis; investigation; methodology; validation; writing – original draft; and writing – review & editing.

**LJS:** formal analysis; funding acquisition; investigation; methodology; validation; writing – original draft; and writing – review & editing.

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