Special Section

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# EFFECTIVENESS OF EDUCATIONAL TECHNOLOGY IN VIDEO FORMAT ON HOME BATHING OF TERM NEWBORNS

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## ABSTRACT

**Objective:** evaluating the effectiveness of an educational technology in video format on the knowledge of family caregivers about home bathing of term newborns.
**Method:** a quantitative study with a quasi-experimental, single-group, before-and-after design, carried out between February and June 2023, in the Rooming-in Unit of a municipal hospital located in the coastal lowlands of Rio de Janeiro State. Data collection consisted of three stages (pre-test, intervention, and post-test). McNemar's test was used to compare the proportion of correct answers before and after the intervention. The $p<0.5$ was used.
**Results:** 107 family members took part, 86 of them women (80.4%). There was a 36.5% increase in the total number of correct answers in the post-test after the use of educational technology. Most of the questions showed an increase in the number of correct answers (n=16; 88.9%), with more than half showing a statistically significant difference between the pre-test and post-test. The questions on the use of different brands of hygiene products, the use of talcum powder, care of the umbilical cord stump, and the most suitable type of bath, as well as the temperature and duration of the bath, stood out.
**Conclusion:** The educational video "How to bathe a newborn baby at home" proved to be effective in increasing knowledge about home bathing of term newborns. Thus, the video evaluated on the subject can be used as an educational health technology with families to promote safer care for newborns.

**DESCRIPTORS:** Family. Educational film and video. Educational technology. Evaluation study. Health education.

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## EFETIVIDADE DE TECNOLOGIA EDUCACIONAL EM FORMATO DE VÍDEO SOBRE BANHO DOMICILIAR DO RECÉM-NASCIDO A TERMO


### RESUMO

**Objetivo:** avaliar a efetividade de uma tecnologia educacional em formato de vídeo no conhecimento de familiares cuidadores sobre banho domiciliar do recém-nascido a termo.
**Método:** estudo quantitativo com delineamento quase-experimental, de grupo único, do tipo antes e depois, realizado entre fevereiro e junho de 2023, no Alojamento Conjunto de um hospital municipal da baixada litorânea do Estado do Rio de Janeiro. A coleta de dados foi composta por três etapas (pré-teste, intervenção e pós-teste) e utilizou-se para análise o teste de McNemar para comparar a proporção de acertos antes e após a intervenção. Adotou-se $p<0,05$.
**Resultados:** participaram 107 familiares, sendo 86 mulheres (80,4%). Verificou-se aumento de 36,5% no total de respostas corretas no pós-teste após o uso da tecnologia educacional. A maioria das questões apresentou aumento no número de acertos (n=16;88,9%), sendo mais da metade com diferença estaticamente significativa entre o pré-teste e o pós-teste. Destacaram-se as questões sobre utilização de marcas variadas de produtos de higiene, uso de talco, cuidados com o coto umbilical e o tipo de banho mais indicado, bem como temperatura e duração do banho.
**Conclusão:** o vídeo educativo "Como dar o banho do recém-nascido em casa" se mostrou efetivo no aumento do conhecimento sobre o banho domiciliar do recém-nascido a termo. Assim, pode-se utilizar o vídeo avaliado sobre o tema como uma tecnologia educacional em saúde com as famílias, a fim de promover um cuidado mais seguro ao recém-nascido.



**DESCRITORES:** Família. Filme e vídeo educativo. Tecnologia educacional. Estudo de avaliação. Educação em saúde.


## EFICACIA DE LA TECNOLOGÍA EDUCATIVA EN FORMATO DE VIDEO SOBRE EL BAÑO DOMICILIARIO DEL RECIÉN NACIDO A TÉRMINO


### RESUMEN

**Objetivo:** evaluar la efectividad de una tecnología educativa en formato video en el conocimiento de los cuidadores familiares sobre el baño domiciliario de recién nacidos a término.
**Métodos:** estudio cuantitativo con diseño cuasiexperimental, de grupo único, tipo antes y después, realizado entre febrero y junio de 2023, en la Sala de Alojamiento Conjunto de un hospital municipal del litoral del Estado de Río de Janeiro. La recolección de datos constó de tres etapas (pretest, intervención y postest), con utilización de la prueba de McNemar para comparar la proporción de respuestas correctas antes y después de la intervención. Se adoptó $p<0,05$.
**Resultados:** participaron 107 familiares, de los cuales 86 eran mujeres (80,4%). Hubo un aumento del 36,5% en el número total de respuestas correctas en la prueba posterior después del uso de tecnología educativa. La mayoría de las preguntas mostraron un aumento en el número de respuestas correctas (n=16;88,9%), y más de la mitad mostró una diferencia estadísticamente significativa entre la prueba previa y la prueba posterior. Se destacaron preguntas sobre el uso de diferentes marcas de productos de higiene, uso de talco, cuidados del muñón umbilical y el tipo de baño más recomendado, así como la temperatura y duración del baño.
**Conclusión:** el video educativo "Cómo bañar a un recién nacido en casa" demostró ser eficaz para aumentar el conocimiento sobre el baño de recién nacidos a término en casa. Así, el video evaluado sobre el tema puede ser utilizado como tecnología educativa en salud con los familiares, para promover una atención más segura al recién nacido.



**DESCRIPTORES:** Familia. Película y video educativo. Tecnología educativa. Estudio de evaluación. Educación en salud.

## INTRODUCTION

Bathing newborns follows a cultural tradition and is routine care aimed at removing waste and reducing skin colonization[1]. However, actions involving bathing need to be based on scientific evidence to promote babies' health and prevent different health problems. Therefore, for safe care to take place, it is essential that the precepts of evidence-based practice are applied, but that popular knowledge and beliefs are also taken into account, in a dialogical relationship between health professionals and family members[2].

Bathing a newborn baby requires extreme care, due to the various risks involved in this practice and the need for detailed guidance for the baby's caregivers. These risks are related to hypothermia, which can lead to hypoxia, metabolic acidosis, and hypoglycemia. In addition, daily bathing reduces the skin's protective factors, increasing the vulnerability of newborns to infection, since frequent use of soaps can hinder the maturation of the acid mantle, raising the skin's pH. Added to these factors is the possibility of falls and drowning associated with bathing[3].

Some additional issues with bathing should also be taken into account, such as the products that should be used, the ideal temperature of the bath water, the way to wash the head, face, back, and genitals, as well as the best technique for holding and drying the baby, which is usually surrounded by a lot of insecurity on the part of family caregivers because it is such a small and fragile being. Bathing a newborn is therefore a complex procedure that generates doubts and uncertainties, especially because of the fear of the baby slipping and falling into the bathtub[4].

The development and application of educational interventions are therefore important and necessary for family caregivers of newborns so that different knowledge and practices can be articulated to reduce difficulties or doubts in the neonatal period, helping in the new family organization, as well as promoting quality of life and child development. Thus, nurses are educators and health promoters who can use educational health technologies to answer questions and improve the knowledge of family members, clarifying the uncertainties and myths that permeate this type of care[5].

Educational health technologies are important methodological tools to be used in the teaching-learning process and should be applied in health education to facilitate and support individuals in familiarize themselves with new health-related knowledge and practices[6]. These technologies help to assertively direct the knowledge, skills, attitudes and self-knowledge that are essential for responsible teaching and care practices[7].

Therefore, health professionals face challenges in incorporating technologies to carry out educational practices in health, including online environments and smart mobile technologies, since access to information anywhere and at any time tends to be efficient in the face of modern times[8], which also meets the principles of the Global Strategy on Digital Health (2020-2025) and the Brazilian National Digital Health Strategy (2020-2028), which aim to promote health for everyone, everywhere.

The use of educational videos, as educational technology in health, is a concrete possibility of support and learning for family caregivers, especially about familiarize themselves with new information and guidelines for caring for newborns, as well as enabling them to feel more confident in the care process. It should be emphasized that to care for a baby, the mother and close family members need to familiarize themselves with the most appropriate and safest practices to reduce the risks during the neonatal period and the child's growth[5].

Due to their versatility, videos are promising as a health education strategy, as they are interactive and easily accessible, leading to great public acceptance[9]. This type of educational technology allows the individual to learn on their own and complete their knowledge in their own time[10], given the freedom to play, pause, and rewind whenever they consider it necessary to meet their learning needs[11]. International research has shown that generating an instructional video is an

effective learning tactic, as visual and audio information improves learning compared to receiving either of them alone[12].

With this in mind, an educational video was recently produced with a cartoon about home bathing of term newborns, which includes guidance on products, as well as when and how long to do the procedure, including a step-by-step guide to the practice. This video was satisfactorily validated by expert judges in the field of nursing and social communication, obtaining a Content Validity Index of 0.99 (99.0%)[2]. However, it was still necessary to understand whether this video effectively contributed to improving the knowledge of family caregivers.

This gave rise to the intention of evaluating the effectiveness of the video with the target audience. In addition, literature searches were carried out on the use and evaluation of educational videos in the health field, but the results were scarce, which also justified this study. Therefore, the following research problem emerged: What is the effectiveness of the educational video on home bathing of term newborns in the knowledge of family caregivers?

With this in mind, the aim of the study was to evaluate the effectiveness of an educational technology in video format on the knowledge of family caregivers about home bathing of term newborns.

## METHOD

This is a quantitative study with a quasi-experimental, single-group, before-and-after design[13], carried out between February and June 2023, in the Rooming-in Unit of a municipal hospital located in the coastal lowlands of Rio de Janeiro State, Brazil. This hospital, which is the setting for the study, is the only public hospital in the municipality that provides obstetric care to the population of the area and neighboring cities. It should be noted that it is in the Rooming-in Unit that puerperal women and the newborns' families usually have contact with the newborn's first bath. To describe the research, the CONSORT (*Consolidated Standards of Reporting Trials*) tool guidelines were adopted.

The population was made up of puerperal women and family caregivers of newborns. Based on a consultation with the Ministry of Health's Live Birth Monitoring Panel, the average number of live births per month in that municipality in 2021 was 147. Based on this figure, a sample calculation for finite populations was carried out using the formula: $(Z^2 . p (1 – p) / e^2) / 1 + (Z^2 . p (1 – p) / e^2 . N)$. Thus, the Z=1.96 score was used (for a 95.0% confidence interval), p=0.5 (considering a proportion of 50.0%, since this value in the study population is unknown, so a more heterogeneous estimate was adopted, resulting in the largest possible sample size, and consequently, the smallest possible margin of error), e=0.05 (margin of error of 5.0%) and N=147 (number of live births per month). This resulted in a minimum sample of 107 participants.

The inclusion criteria for the sample were: puerperal women and/or family caregivers over the age of 18 whose newborns were in good health and who were hospitalized in the Rooming-in Unit of the research setting. Exclusion criteria were: puerperal women and/or family members who had any health problems that would make it difficult to evaluate the educational video and/or who had already watched the video proposed previously.

The puerperal women and their families were approached in person on the wards because they were readily available and easy to find constantly. They were then invited to take part in the research and the sample was constituted by convenience, based on their acceptance to take part in the study. From February 2023, all the puerperal women and their families who met the selection criteria were approached until the minimum sample was reached, which happened in June 2023.

Data collection consisted of three stages (pre-test, intervention, and post-test). In the first stage, the pre-test, a form was used as a data collection tool divided into two parts, the first consisting of closed questions that allowed the characterization of the participants, namely: gender, age, education, and degree of kinship with the newborn. The second part included questions specifically related to

the object of the study, which focused on baby bathing, from preparation to carrying out and caring for the umbilical stump, to assess the participants' knowledge of home bathing of term newborns before the intervention activity was carried out. The printed self-completion form consisted of 18 questions in the form of statements to be marked: True (T), False (F), or Not Sure (NS). Hits corresponded to true statements answered as "T" or false statements answered as "F", and "NS" answers were considered as not correct in the analysis.

The 18 questions investigated in the pre-test and post-test were: 1. It's important to separate and organize everything that will be needed for the bath before taking the baby's clothes off (True); 2. It's best to use bar soap with a mild, baby-specific smell (False); 3. It's okay to use different brands of hygiene products (False); 4. It's important to use talcum powder to prevent diaper rash (False); 5. The person bathing the baby should have short nails and no bracelets or rings to prevent hurting the baby's skin (True); 6. The immersion bath is the most suitable (True); 7. A newborn's bath should last between 8 and 15 minutes (False); 8. The water temperature should be around 37 degrees (True); 9. The baby should not be blown by the wind when being bathed, so the windows and doors should be closed and the fan and air-conditioning turned off in the room where the bath will take place (True); 10. It is advisable to start the bath by first wiping the baby's face and head while they are still wrapped in the towel (True); 11. Bathing should be done with plenty of soap and water (False); 12. It is recommended that the baby is held by the armpit, as this promotes greater safety (True); 13. Babies should not be left alone in the bathtub at any time to avoid drowning (True); 14. The baby should be dried well, without forgetting to dry between all its folds (True); 15. After bathing, it is important to care for the umbilical stump using 70% alcohol or povidone-iodine to help it heal (False); 16. If the umbilical stump has not yet fallen off, it should remain outside the diaper to keep it clean and dry (True); 17. The use of coins is contraindicated, but umbilical strips can be used to protect the navel (False); 18. While caring for the baby, it is interesting to talk to him and look into his eyes to strengthen the family's emotional bonds (True).

In the second stage of the intervention, the educational video with a cartoon was presented to the research participants, individually and privately, reproduced using the researcher's *smartphone*. It should be noted that the educational video entitled "How to bathe a newborn baby at home", which lasts 6 minutes and 23 seconds, was constructed based on up-to-date scientific evidence and validated by expert judges.[2] It is available free of charge on YouTube (*link*: https://www.youtube.com/watch?v=5PdQ0OYpKV0) for the population and health professionals to have access to the material. During this stage, participants were asked to watch the video only once, to maintain standardization and reduce possible biases.

Finally, in the third stage, the post-test, the participants answered another printed self-completion form containing the same questions as in the first stage and could choose a different answer to the one chosen during the pre-test. In this way, it was possible to check whether there had been a change in the number of correct answers before and after the intervention by watching the educational video.

The three stages with the same participant took place over a period of one day, with an average time of 20 minutes to complete all the stages, in order to minimize the chances of bias in the research, such as the search for information with other people and on the internet, as well as the loss of research participants, since they could be discharged from hospital during the data collection process. During data collection, there was no space for the participants to ask questions, since the effectiveness of the educational technology was being evaluated, however, after the post-test, all the questions that arose about bathing the baby were duly answered by the researcher. Five months of data collection were needed to reach the minimum sample.

The data collected was entered into an electronic Excel spreadsheet and statistical analysis was carried out using the *Statistical Package for Social Sciences* (SPSS) software, version 21.0. The

answers to the forms were double-entered independently by the study collaborators. In this way, it was possible to discuss, through a meeting with a third collaborator, any discrepancies found in the typing of the answers until they were all in conformity, to minimize errors.

The characterization data was analyzed using descriptive statistics with measures of central tendency, frequencies, and dispersion. All the answers to the knowledge test were dichotomized between right and wrong since the answers of the type Not Sure (NS) were included as not correct answers. Thus, considering that the data was categorical (correct and incorrect answers), McNemar's test was used, which is suitable for paired samples and is therefore appropriate for comparing the proportions of correct answers before and after an intervention, evaluating the change from one category to another after the sample was exposed to educational technology. The significance level adopted was $p < 0.05$.

In this way, the effectiveness of the educational video was assessed in terms of the proportion of correct answers in the post-test compared to the pre-test, to reveal in which of them this proportion was statistically higher. Thus, an overall score was not generated from the form, but rather an overall and question-by-question evaluation to compare the proportion of correct answers in the pre and post-test.

The study was submitted to and approved by the Research Ethics Committee, respecting the precepts of Resolutions 466/2012 and 510/2016 of the National Health Council. Participants only took part in the research if they agreed and signed the Free and Informed Consent Form. Participants were informed of the objectives of the research, the method, the guarantee of confidentiality of their participation, and that they could withdraw from the research at any time.

## RESULTS

The study included 107 participants, 86 women (80.4%), 20 men (18.7%) and one person who chose not to state their gender (0.9%). The age range was 18 to 59 years, with a mean age of 29.1 years (SD±10.1). The educational level of participants with completed High School Education (n=48; 44.9%) presented a higher proportion. However, it is worth noting that the sum of the participants who had not completed High School (n=52; 48.6%) is higher than those who had, namely incomplete Elementary School (n=16; 15.0%), complete Elementary School (n=18; 16.8%) and complete High School (n=18; 16.8%). Only one person had higher education, albeit incomplete (n=1; 0.9%), while seven chose not to answer (n=6; 5.6%). As for the degree of kinship with the newborn, the largest proportion was represented by mothers (n=54; 50.5%), followed by fathers (n=20; 18.7%) and other participants such as grandparents (n=18; 16.8%), aunts (n=11; 10.3%), godmothers (n=3; 2.8%) and sisters (n=1; 0.9%).

Regarding the evaluation of the number of correct answers concerning the effectiveness of educational technology in video format in the knowledge of family caregivers about home bathing of full-term newborns, it was found that after viewing the educational video, the total number of correct answers, in a universe of 1,926 (100.0%) possible correct answers, which correspond to the total number of correct answers in the pre-test and post-test, increased from 1,157 to 1,580, which is equivalent to a percentage increase of 36.54% in the total number of correct answers.

When comparing the number of correct answers to each question on how to perform and care for home baths for term newborns before and after the use of educational technology, it was found that the number of correct answers increased in most of them (n=16; 88.9%), two remained the same (n=2; 11.1%) and none decreased, as shown in Table 1.

**Table 1 –** Family members' correct answers to the pre-intervention and post-intervention educational tests on home bathing of term newborns, Rio das Ostras, RJ, Brazil, 2023. (n=107)

| Items | Correct answers | | | | value* |
|---|---|---|---|---|---|
| | Pre-test | | Post-test | | |
| | n | % | N | % | |
| 1. It's important to separate and organize everything that will be needed for the bath before taking the baby's clothes off. | 107 | 100.0 | 107 | 100.0 | – |
| 2. It's best to use bar soap with a mild, baby-specific smell. | 43 | 40.2 | 65 | 60.7 | **0.001** |
| 3. It's okay to use different brands of hygiene products. | 41 | 38.3 | 93 | 86.9 | **<0.001** |
| 4. It's important to use talcum powder to prevent diaper rash. | 39 | 36.4 | 93 | 86.9 | **<0.001** |
| 5. The person bathing the baby should have short nails and no bracelets or rings to prevent hurting the baby's skin. | 104 | 97.2 | 107 | 100.0 | – |
| 6. The immersion bath is the most suitable. | 63 | 58.9 | 89 | 83.2 | **<0.001** |
| 7. A newborn's bath should last between 8 and 15 minutes. | 36 | 33.6 | 61 | 57.0 | **<0.001** |
| 8. The water temperature should be around 37 degrees. | 30 | 28.0 | 93 | 86.9 | **<0.001** |
| 9. The baby should not be blown by the wind when being bathed, so the windows and doors should be closed and the fan and air-conditioning turned off in the room where the bath will take place. | 105 | 98.1 | 107 | 100.0 | – |
| 10. It is advisable to start the bath by first wiping the baby's face and head while they are still wrapped in the towel. | 59 | 55.1 | 107 | 100.0 | – |
| 11. Bathing should be done with plenty of soap and water. | 39 | 36.4 | 51 | 47.7 | **0.029** |
| 12. It is recommended that the baby is held by the armpit, as this promotes greater safety. | 70 | 65.4 | 107 | 100.0 | – |
| 13. Babies should not be left alone in the bathtub at any time to avoid drowning. | 104 | 97.2 | 107 | 100.0 | – |
| 14. The baby should be dried well, without forgetting to dry between all its folds. | 107 | 100.0 | 107 | 100.0 | – |
| 15. After bathing, it is important to care for the umbilical stump using 70% alcohol or povidone-iodine to help it heal. | 6 | 5.6 | 18 | 16.8 | **<0.001** |
| 16. If the umbilical stump has not yet fallen off, it should remain outside the diaper to keep it clean and dry. | 68 | 63.6 | 104 | 97.2 | **<0.001** |
| 17. The use of coins is contraindicated, but umbilical strips can be used to protect the navel. | 34 | 31.8 | 58 | 54.2 | **<0.001** |
| 18. While caring for the baby, it is interesting to talk to him and look into his eyes to strengthen the family's emotional bonds. | 102 | 95.3 | 106 | 99.1 | 0.125 |

*McNemar test.

More than half of the questions showed a statistically significant difference ($p < 0.05$) between the pre-test and post-test (2,3,4,6,7,8,11,15,16, 17), with a significant increase in the number of correct answers. These questions were about the type of bath and soap, the use of different brands

of hygiene products and talcum powder, the length of the bath, the temperature of the water, the amount of water and soap, and the handling of the umbilical stump.

Eight questions (1,5,9,10,12,13,14, and 18) did not show statistically significant differences, however, in two questions (1 and 14) 100.0% of correct answers were maintained before and after, namely about the organization of materials before removing the baby's clothes and the complete drying of the baby after bathing.

In five questions (5,9,10,12, and 13) there was an increase to 100.0% correct answers in the post-test, so in these cases the statistical test was not carried out as it did not allow the comparison of paired proportions given the zero count of wrong answers. It is worth noting the significant increase in correct answers in the post-test for questions 10 and 12, which brought the number of errors to zero after the intervention, although not significant from a statistical point of view for the aforementioned reason.

Question 10, which deals with the guidance to start the bath by wiping the baby's face and head first while they are still wrapped in the towel, increased from 55.1% to 100.0%; and question 12, which deals with the most suitable position to hold the baby during the bath, increased from 65.4% to 100.0% the number of correct answers. Questions 5,9, and 13 dealt with the use of short nails and the absence of bracelets or rings, closing windows and doors and turning off fans and air conditioners, and the importance of babies not being left alone in the bathtub.

It should be noted that the five largest variations of correct answers in the post-test, in descending order, were related to water temperature (28% to 86.9%), the use of talcum powder (36.4% to 86.9%), the use of different brands of hygiene products (38.3% to 86.9%), the order of hygiene (55.1% to 100.0%) and the positioning of the baby during bathing (65.4% to 100.0%).

## DISCUSSION

This study showed that after the intervention using the educational video, there were more correct answers to the test, indicating that this educational technology is effective in improving family caregivers' knowledge about home bathing of term newborns. In addition, the results show that this educational intervention made it possible to correct or minimize misconceptions related to this type of care.

The neonatal period is a time that requires a lot of care and, despite being at low risk, term newborns need special attention due to their vulnerability and dependency, to promote healthy development and reduce neonatal and infant morbidity and mortality. For bathing care to be safe and of quality at home, the active participation of the family is necessary,[2] thus confirming the importance of health education, including the use of validated and evaluated educational videos, to minimize damage to the newborn's health.

A study carried out with the parents of 22 term newborns and 10 premature newborns in Belo Horizonte, Brazil, set out to compare care priorities over time, revealing that the priority for these parents was similar and that the priority of care related to bathing and umbilical stumps was higher in the baby's first month of life. This reinforces the importance of educational interventions, even in the hospital environment after birth, clarifying doubts and contributing to knowledge related to the care considered a priority by the target audience for this educational technology[14]. Thus, given the importance of the topic, two Brazilian studies have produced and validated videos on bathing newborns[15–16], but both did not present the process of evaluating the educational technology with families, which was done in this study.

The findings were similar to those found in a 2021 Peruvian study, which evaluated the effect of educational videos to improve the practical skills and knowledge of informal caregivers of Cerebrovascular Accident patients. The study mentioned above assessed skills and knowledge before

and after each video and, finally, the caregivers' satisfaction. According to the results, the score for practical skills increased from 21.6 to 56.1 points ($p<0.001$) and for knowledge from 11.6 to 21.6 points ($p<0.001$). In addition, seven out of ten of the caregivers were very satisfied with the videos, found the words easy to understand, and found it easy to put the instructions into practice, in addition, nine out of ten would recommend the videos and all found the information useful. These findings show that educational videos are tools that improve the practical skills and knowledge of caregivers[17], as reinforced by the current results.

The results also converge with a study from Ceará, Brazil, which showed that it was possible to verify the effectiveness of using an educational video for guidance of laypeople and highlighted the importance of nursing applying educational actions aimed at this type of public, to add knowledge and empower family caregivers on topics relevant to health[18]. On the other hand, a study comparing the effectiveness of educational videos with verbal guidance from nurses in relation to the perception of the elderly about the risk of falls showed that both promoted an increase in the perception of the elderly. Although the greatest increase was observed in the group that received verbal guidance from a nurse, the size of the effect was small compared to the group that watched the educational video. It is worth noting that there were no reports from participants about damage or unwanted effects resulting from the interventions, so the use of educational videos should be incorporated as a strategic resource for health education without excluding verbal guidance from nursing[19], since the use of technologies in health education focused on guidance, counseling, support and encouragement are essential to increase understanding and promote better adaptation, favoring adherence to care[20].

The results of another Brazilian study, which aimed to evaluate the effectiveness of an educational video on the knowledge of Lusophone nursing students about peripheral venipuncture, show that there was a significant improvement ($p<0.005$) in the correct answers to seven of the twenty questions. This shows that the use of video as an educational strategy demonstrates that digital technologies are complementary tools that can be used in different scenarios, such as in undergraduate nursing courses, helping in the teaching-learning process[21].

It should be noted that educational technologies are tools that help health education interventions and their interactive capacity, as in the case of educational videos, has been little explored. This can be seen in a scoping review carried out in 2018, the aim of which was to map postnatal educational interventions aimed at parents of children in low- and middle-income countries. This review analyzed 77 (100.0%) productions, of which 61% dealt with newborn care and, with regard to the intervention strategy, only nine (11.7%) used educational videos, with verbal (93.5%) and written (42.9%) information predominating in the publications analyzed[22], which enhances the importance of the video produced, validated and now duly evaluated by the target audience.

Evidence of the improvement in knowledge found in this study comes from the significant increase in the number of correct answers in the post-test, which confirms its importance. Given this, it can be inferred that the use of digital media for teaching, such as videos, favors learning. This type of technology enhances the teaching-learning process by applying theory to practice, favoring assertive decision-making by bringing viewers closer to an issue that is close to reality, allowing unlimited access to the content, as well as the repetition of phases so that the technique can be understood and any doubts resolved[23].

Another important finding was that the questions specifically focused on water temperature, the use of talcum powder, the use of different brands of hygiene products, the sequence of hygiene, and the positioning of the baby during bathing, which showed a greater increase in the proportion of correct answers after the use of educational technology. In addition, the vast majority showed an increase in the number of correct answers without any reduction and more than half showed a statistically significant difference between the pre-test and post-test, which highlights its importance,

as parents have reported difficulties in bathing their newborns at home, even after receiving verbal guidance from health professionals.

Therefore, this type of technology really does have the potential to improve the understanding of this care, as it allows the sequence of the procedure to be visualized, promoting safety and quality of care, as indicated by another study[16]. This highlights the importance of nurses going beyond the technocratic model of care, seeking a true exchange of knowledge in the process of implementing care[24], which includes the use of technologies in the teaching-learning process on the home bathing of newborns.

This study's limitation is that it was carried out in a single setting, which makes it impossible to assess the external validity of the research, which implies the need to test the effectiveness of educational videos in other social and economic contexts. Another limitation is the scarcity of studies evaluating the effectiveness of educational technologies in video format, especially in newborn care, limiting the specific and comparative discussion of the results.

It is hoped that this study will contribute to future research on the subject, highlighting the family in this process and reducing the fears and concerns that permeate this practice, thus making it safer for caregivers and, consequently, for newborns. Therefore, there is also an urgent need for primary studies to investigate the effectiveness of other existing health education technologies in this area.

## CONCLUSION

The findings of this study indicate that there was an improvement in the knowledge of family members and caregivers about home bathing of term newborns. Thus, the educational video "How to bathe a newborn at home" proved to be effective in increasing family caregivers' knowledge on the subject.

Thus, this study is relevant because it deals with a topic that directly affects the health and safety of newborns, considering that this educational health technology in video format was able to generate positive results in terms of the teaching-learning process regarding home care for bathing term newborns through its use.

This educational intervention aims to share messages and guidance as clearly and objectively as possible so that the viewer feels motivated and can reproduce the instructions in the video efficiently. Thus, the video evaluated is an educational technology that can be used to educate families on the subject, in order to promote safer care for newborns.

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## NOTES

### ORIGIN OF THE ARTICLE

Extract from the Undergraduate Course Conclusion Work – Effectiveness of educational technology in video format on home bathing of term newborns, presented to the Nursing Course of the Fluminense Federal University, Rio das Ostras Campus, in 2023.

### CONTRIBUTION OF AUTHORITY

Study design: Corrêa BSO, Góes FGB.
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Discussion of the results: Corrêa BSO, Góes FGB, Silva ACSS, Silva MA, Goulart MCL, Campos BL, Silva, LF.
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Review and final approval of the final version: Corrêa BSO, Góes FGB, Silva ACSS, Silva MA, Goulart MCL, Campos BL, Silva, LF.

### APPROVAL OF ETHICS COMMITTEE IN RESEARCH

Approved by the Ethics Committee in Research of the *Universidade Federal Fluminense*, opinion no. 5.767.870, Certificate of Presentation for Ethical Assessment 63711822.0.0000.5243.

### CONFLICT OF INTEREST

There is no conflict of interest.

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