

Effect of educational video on the student's knowledge about oral hygiene of patients undergoing chemotherapy

Efeito de vídeo educativo no conhecimento do aluno sobre higiene bucal de pacientes em quimioterapia

Los efectos resultantes a los alumnos de la exhibición de videos educativos sobre la higiene oral de pacientes en quimioterapia

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ABSTRACT

Supervise dental conditions and teach oral hygiene are responsibility of the nurse. Patients on chemotherapy have risk factors for oral and systemic changes. **Objective:** To determine the effect of educational video on the cognitive and procedural knowledge of oral hygiene, the degree of importance that the student gives to procedure for the oral health of patients undergoing chemotherapy and evaluate the acceptance of this teaching strategy. **Methods:** Quasi - experimental study, before and after an intervention (video) with senior students of undergraduate nursing. Instruments were employed to evaluate start and end the cognitive and procedural knowledge about oral hygiene, analysis the relevance of the learning experience importance. **Results:** 23 students participated in the study, 82% found the experience useful and 87 % would recommend to. Data showed increased cognitive and technical ($p < 0.05$) knowledge ($p < 0.05$) after the video. **Conclusion:** Educational video improved cognitive and procedural knowledge of undergraduate students in nursing; was well accepted and can be used in the multidisciplinary team training.

Keywords: Nursing care; Oral Health; Knowledge; Oral Hygiene.

RESUMO

Supervisionar condições bucais e ensinar o procedimento de higienização bucal são responsabilidades do enfermeiro. Pacientes em quimioterapia apresentam fatores de risco para alterações bucais e sistêmicas. **Objetivo:** Verificar o efeito do vídeo educativo sobre o conhecimento cognitivo e procedimental de higienização bucal, o grau de importância que o aluno atribui ao procedimento para a saúde bucal de pacientes em quimioterapia e avaliar a aceitação desta estratégia de ensino. **Método:** Estudo quasi-experimental, tipo antes-depois de uma intervenção (vídeo), com alunos do último ano de graduação em enfermagem no interior paulista. Empregaram-se instrumentos para avaliação inicial e final do conhecimento cognitivo e procedimental sobre a higiene bucal; para análise da importância atribuída ao procedimento e da relevância da experiência de aprendizagem. **Resultado:** 23 alunos participaram do estudo; 82% consideraram a experiência útil e 87% a recomendariam. Os dados evidenciaram aumento do conhecimento cognitivo ($p < 0,05$) e técnico ($p < 0,05$) após o vídeo. **Conclusão:** Vídeo educativo melhorou o conhecimento cognitivo e procedimental de alunos de graduação em enfermagem; foi bem aceito e pode ser utilizado no treinamento da equipe multidisciplinar. Número de registro no Clinical Trials.gov: NCT02072577

Palavras-chave: Cuidados de enfermagem; Saúde bucal; Conhecimento; Higiene bucal.

RESUMEN

Supervisar condiciones bucales y enseñar procedimientos de higiene oral son responsabilidades del enfermero. Pacientes en quimioterapia presentan factores de riesgo para alteraciones orales y sistémicas. **Objetivo:** Determinar el efecto del video educativo sobre el conocimiento cognitivo y de procedimiento de la higiene oral, la importancia que el estudiante de Enfermería atribuye al procedimiento para la salud bucal de pacientes en quimioterapia y evaluar la aceptación del método. **Método:** Estudio casi-experimental, del tipo antes y después de una intervención (video) con estudiantes del último año de graduación en Enfermería. **Resultado:** Participaron 23 alumnos, para 82% la experiencia es útil y el 87% lo recomendaría. Los datos mostraron aumento del conocimiento cognitivo ($p < 0,05$) y técnico ($p < 0,05$) después de la exhibición. **Conclusión:** El video mejoró los conocimientos de los estudiantes; fue bien aceptado y se puede utilizar para entrenamiento del equipo multidisciplinario.

Palabras-clave: Atención de Enfermería; Salud bucal; Conocimiento; Higiene bucal.

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INTRODUCTION

Tooth brushing is the most usual and efficient measure to remove dental plaque biofilm, without considering professional intervention¹. Proper oral hygiene is important for overall health; the orientation of the individual to do it on a regular basis contributes to maintaining it.

One way to provide information and contribute to changes in the oral hygiene behavior is associating it with visual technologies, such as videos. They, when compared to written language, have greater impact on learning². The use of videos has shown positive results in teaching³ students to acquire cognitive and procedural skills^{4,5}. Faced with such strategical teaching contribution, in the present study we have used a video, with educational content about techniques of oral hygiene.

This research aims at encouraging undergraduate nursing students to develop skills to perform their educational role on oral hygiene and strengthen their knowledge to assess adequately the oral hygiene of people on chemotherapy treatment. The choice of the theme is justified once this activity is part of their routine as in their future professional practice.

The objectives of this study were to verify the efficacy of an educational video on the cognitive and procedural knowledge of undergraduate students about oral hygiene techniques in patients undergoing chemotherapy, check the degree of importance that the student gives to this procedure and check the acceptance of using a video as a teaching strategy.

METHOD

Partially experimental research, where before and after an intervention, an educational video was used as a teaching strategy on oral hygiene.

The development of the video occurred in three phases: pre-production, production and post-production. In the pre-production phase, the script was developed considering the target audience as well as the filming strategies were defined. In the next phase, the scenes were recorded according to the script; at this stage, a professional from the filming production area contributed by providing adequate lighting, the best angle of the cameras and microphones in the arrangement of environment for the best recording of the sound. At the last phase, post-production, the editing, inclusion of animation and audio of the video were carried out. The time duration of the video of less than ten minutes is recommended².

Video editing was made by a specialized and experienced professional in video education. This video was developed and evaluated by five experts (100% approval) and then employed in the research named⁵ "Effect of the use of simulation (video) on the oral hygiene of people undergoing chemotherapy", which was developed with patients undergoing chemotherapy for hematological diseases, in HCFMRP-USP. In the present

study this educational material is being subjected to testing as educational strategies for professionals. The time duration of the video, reformulate for this clientele, is 8 minutes.

The population consisted of 130 students from Ribeirão Preto School of Nursing, University of São Paulo (EERP-USP), 80 from the fourth year of the Bachelor in Nursing and 50 from the 5th year of the course and Bachelor Degree in Nursing. All were invited to participate in the study, but about 17.7% expressed interest, which is a characteristic observed in another study with similar methodology⁶.

The student selection criteria were: being students of the semesters described above, because at this stage of the course, students have received information about the value of this procedure for groups of healthy people and the ones with chronic diseases such as cancer; therefore, they are able to develop the educational role with patients about this issue, and to identify the patient's degree of knowledge on the topic and complement it, if necessary.

The project was assessed by the Ethics Committee of the EERP-USP as guidelines and regulatory standards for research involving human beings, Resolution #196 on October 10th, 1996, from the National Health Council, and was approved (n^o 26853 - 05/2015). All participants signed two copies of the Informed Consent.

Data collection occurred in the first half of 2013, according to the following steps: initially, before students watching the educational video, the investigator filled an instrument for the identification of the individual; he applied a scale (from zero to ten) to evaluate the relevance of the student assigned to the oral hygiene of people on chemotherapy; he applied an instrument composed of sentences (true or false) related to the knowledge of oral hygiene of people undergoing chemotherapy; he watched the participant do his own oral hygiene, applying the oral hygiene technique that he thought was the right one, and this information was recorded in a specific instrument, which contemplated the steps that should be used for oral hygiene of the patient and the brushing structures⁶. After that, students watched the educational video about the investigation procedure; and performed again, the oral hygiene procedure themselves. As the researcher observed the procedure performed, he noted down on another instrument the steps that should be used to oral sanitation of the patient and the mouth structures brushed⁶, the implementation of the teeth brushing technique, the use of mouthwash and dental floss. Finally, the student evaluated the acceptance of the educational strategy⁷, assigning a value to the video as a method that could favor the knowledge of oral hygiene in people on chemotherapy. The estimated participation time of the subject in the study was approximately 30 minutes.

The suitability of the instruments and the operational and technical feasibility of the research were previously tested with three graduating students from the undergraduation in Nursing

in 2012: two women and one man, aged 24 years and 23 years (two subjects). At the initial evaluation of the instruments and the operational validity of the technique, the three participants obtained significant learning after watching the video which confirmed then that it helps learning. These students also considered the importance of the oral hygiene procedure in people who are undergoing chemotherapy to be very high (average 9.6).

Data were analyzed using the Statistical Package for Social Science (SPSS) version 17.0 for Windows. The variables of demographic characteristics were presented using absolute frequency, percentage and proportion. After verifying the regular distribution of the quantitative mean of correct answers obtained by the subjects in the procedure (Shapiro-Wilk test), the Wilcoxon's signed rank test was used to compare the difference between the averages of correct answers before and after the video.

RESULTS

The study consisted of 23 participants, 20 women (87%) and three men (13%) and the age range varied between 21 and 24 years old (average 22.48).

The frequency of correct answers that portrays cognitive knowledge, when compared to the two periods before and after the video, points the variation (Table 1).

Only 13 (56%) subjects scored 50% or more of the questions in the initial phase; however, the 21 (91.30%) subjects scored more than 50% after the video.

In the initial phase, the mean score was 9.04 ($SD_{io} = 2.03$) and after the exposure to the video 13.52 ($SD = 1.90_d$). There was a difference between the two means ($p < 0.05$).

Note that only ten items were known by most subjects at the baseline and two of the items (9:16) showed reduced successes in the finals, after exposure to the video.

In regard to the development of the technique in oral care, it was evaluated to sequence of 16 items. Among those, 11 items were previously known by most subjects in the initial phase; however, the findings showed significant increase after exposure to the video (Table 2).

In the initial phase, the mean of correct answers on technical execution was 8.83 ($SD = 2.59_{in}$). At the final stage, however, the mean was 15.39 ($SD = 0.99_d$). There were differences in the means of correct answers on technical execution of oral hygiene at two moments ($p < 0.05$) according to the Wilcoxon test.

The mouth parts brushed by students were: gums, teeth, tongue, cheeks, palate and floor of the mouth, and only one participant did not brushed his tongue before watching the video. He justified that he feels very nauseated when performing this procedure.

The mean of importance attributed to the oral hygiene procedure on people under chemotherapy treatment, on a scale of 0 to 10, was 9.6. As for the evaluation of the content featured in

the video, 19 (82.6%) evaluated as very useful; 20 (87.0%) would recommend the video and, regarding the video as aid tool in the performance of activities as a nurse, 21 (91.3%) considered that certainly would recommend it.

DISCUSSION

The sample size, despite intensive screening was small and may have influenced the findings. However, the sample allowed analysis on the effects of the intervention, where the mean score of correct answers were 16 questions, which went from 9.04 before the video to 13.52 after it. That shows an increase of 49.56%. The changes in the oral hygiene behavior associated with visual technologies, in this sample, reinforces the use of a video is a strategy that has an impact on learning⁶ because what we see and hear has great impact on our behavior⁸.

The communicative power of images "can mean much more than what we capture and lies within us a rebound in basic, central, symbolic, archetypal, images with which we identify, or that are connected to us in some way"⁹. They have been used since the first informational records produced by men¹⁰.

According to Table 1, in the most of the questions there was an increase in the number of correct answers after the exposure to video, except on statements 6, 7, 9 and 16. As for the statement 6, the students ($n = 8$) replied wrongly to the item, possibly induced the affirmation that one must perform oral hygiene at waking up and before sleeping only. They said they had interpreted that one was meant to brush their teeth only at waking and before bed and it does not match expected, since there is no recommendation teeth brushing only at these two times of the day.

A study in Brazil shows that the participants had reasonable oral hygiene practices, especially in relation to the frequency of the teeth brushing. The most cited brushing frequency was three times a day, regardless of social status¹¹.

The subjects of this study showed a higher rate of correct answers in alternatives 7:16 (Table 1) before the video, showing that it still remained in doubts about the structures to be brushed and the sequence to be followed, despite having carried out the teeth brushing themselves. In regards to this procedure, regardless of having tooth loss or not, one must carry out the hygiene of the oral cavity with brushing teeth and prosthesis, hard palate, cheeks and tongue¹².

In Table 1, in what concerns to the alternatives 2 and 9, participants had doubts about the formation of dental plaque and the time indicated for brushing after meals. However, the most effective methods to prevent biofilm formation is to prevent or reduce the initial adherence of bacteria to the tooth surface.

Therefore, one can employ tooth brushing as the most efficient and usual measure to remove dental plaque biofilm^{1,13,14}; Applying it is of great importance for the maintenance of the oral health condition, preventing or delaying the colonization of the gingival environment by bacterial species.

Table 1. Cognitive knowledge test on oral hygiene of people undergoing chemotherapy before and after exposure to the educational video (n = 23). Ribeirão Preto, São Paulo. Brazil. 2013

Sentences	Before the video		After the video	
	Correct	Incorrect/ Unknown	Correct	Incorrect/ Unknown
1. Dental plaque is composed of bacteria and food residues which adhere to the teeth when it hardens and forms tartar.	22	1	23	-
2. Dental plaque is formed immediately after food intake.	13	10	15	8
3. The correct hygiene of the teeth prevents gum inflammation, bleeding and softening of the teeth.	23	-	23	-
4. Dental caries can cause widespread infections in immunosuppressed individual	15	8	22	1
5. The oral cavity has microorganisms in its flora that can be the focus of infection.	19	4	23	-
6. The oral sanitation be done upon waking up and before going to sleep.	17	6	17	6
7. All structures (teeth, gums, tongue, cheek, palate and mouth floor) should be brushed.	18	5	10	13
8. Teeth brushing is recommended to remove plaque and rest of food from patients on chemotherapy.	20	3	22	1
9. Oral hygiene should be done until 60 minutes after meals.	2	21	4	19
10. The movements back and forth, circular and vertical are to be employed in brushing the back surface of the teeth.	4	19	16	7
11. At night time the actions of bacteria are smaller.	15	8	21	2
12. The sequence of hygiene steps comprises: flossing, brushing with toothbrush and use of mouthwash	4	19	20	3
13. When applied the mouthwash should be used for up to 30 seconds not to attack the mucous	2	21	15	8
14. The floss should be abolished in patients on chemotherapy treatment.	7	16	19	4
15. The use of toothbrush is contraindicated in patients taking chemotherapy, where manual removal with gauze should be applied.	11	12	19	4
16. The sequence of areas sanitized do not compromise the outcome of the procedure	4	19	3	20
17. The use of toothpaste with high abrasion is recommended to reduce the number of movements needed for mechanical cleaning.	8	15	19	4
18. The amount of toothpaste should be equivalent to a pea.	4	19	20	3

Maximum score 18 (1 to correct answers and 0 to incorrect or unknown answers).

In Table 2, which shows the steps of the brushing technique (Bass technique), it is observed that the number of correct answers was higher in all items, showing improvements in the oral hygiene technique. However, the mechanical toothbrushing when associated with the use of dental floss is important to control biofilm, gingivitis and periodontal disease¹⁵. The floss should be used at least once a day, in sliding motion, similar to letter C. In patients on chemotherapy, bleeding may occur and, only in case of severe thrombocytopenia, the flossing should be stopped⁶.

When they were asked about the mouthwash, five of the 23 subjects reported not having the habit of using it, not doing it even after watching the video. It should be remembered that

the hygiene efficiency is increased with the use of mouthwashes, which provide the change of pH of the oral cavity, such as alkaline solutions, reducing the growth of bacteria and fungi^{14,16}.

According to the subjects of this study, the use of the video is a useful strategy (82.6%), to be recommended (87.0%) and an aid tool in the performance of activities as a nurse. It can be embedded to care practice (91.3%), besides being pleasurable (82.61%) and clear (91.30%). These data can be corroborated by the study¹⁷ which comprises a film with a strong emotional appeal and therefore encourages the learning of content, besides breaking the rhythm of the presentation and changing the routine of the classroom.

Table 2. Steps frequency of the oral hygiene technique, properly executed, before and after exposure to the educational video (n = 23). Ribeirão Preto. São Paulo. Brazil. 2013

Steps	Before the video			After the video		
	Yes	No	Didn't do it	Yes	No	Didn't do it
1. Applied a small amount of toothpaste on the toothbrush.	17	6	-	23	-	-
2. Put the bristles angled between the gum and the tooth.	5	18	-	23	-	-
3. Brushed superior arcade with sweeping movements from top to bottom.	3	20	-	23	-	-
4. Brushed lower jaw with sweeping movements towards the bottom up.	3	20	-	23	-	-
5. Brushed inner part (rear) of the upper teeth with sweeping movements from top to bottom	5	18	-	23	-	-
6. Brushed inside (higher) lower teeth with sweeping movements towards the bottom up.	5	18	-	23	-	-
7. Placed toothbrush on the masticatory surface of the teeth horizontally, making smooth moves back and forth on all teeth.	10	13	-	23	-	-
8. Each of these movements was repeated approximately 10 times.	18	5	-	22	1	-
9. Spit the foam formed whenever necessary.	23	-	-	23	-	-
10. Rinse the toothbrush and mouth.	23	-	-	22	1	-
11. Brushed all the tongue from back to front, with the bristles of the brush, as if sweeping it, to remove plaque formed in the tongue.	14	9	-	23	-	-
12. Rinsed the mouth again.	23	-	-	23	-	-
13. With about 30 cm wire/dental floss, held the most part of it with the middle finger of one hand and the rest the middle finger of the other.	14	9	-	20	3	-
14. Held the wire/floss stretched between the thumb and forefinger while maintaining a small space between them.	15	8	-	21	2	-
15. Gently slid the wire/floss between the teeth, bending it to form a "C" on the surface of each tooth and sliding it between the tooth and the gum.	13	10	-	21	2	-
16. Used about 10 ml of mouthwash, gargling for 1 minute.	12	11	-	18	5	-

CONCLUSIONS

The study results indicate that the educational video helped to improve the cognitive and procedural knowledge of undergraduate nursing students regarding oral hygiene. It provided immediate behavioral changes, because it is a media of easily, accessible and fast feedback.

The strategy was well accepted and can be used as a training tool of the multidisciplinary team, helping to minimize complications in the oral and systemic cavities, especially in people undergoing chemotherapy, since assessing the steps taken by the subjects in the technical implementation of the procedure allows the verification of specific deficiencies, enabling teaching and positive reinforcement as to the best practice.

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