

Implementation of thirst management in the immediate postoperative period guided by knowledge translation and exchange



Implementação do Manejo da Sede no Pós-Operatório Imediato norteada pela Tradução e Intercâmbio do Conhecimento
Aplicación de la gestión de la sed en el postoperatorio inmediato guiada por la traducción y el intercambio de conocimientos

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ABSTRACT

Objective: To evaluate the implementation of the Thirst Management Model in the immediate postoperative period guided by the Knowledge Translation framework.

Method: A quasi-experimental study, in the Post Anesthesia Care Unit of a large university hospital in northern Paraná. Implementation took place in two phases: preparation and implementation and change. Data was collected by observing the practice of nursing professionals. The implementation process was evaluated by measuring adoption and aspects of fidelity, using descriptive analysis of the level of adherence to the evidence in the continuous improvement cycles and the reach of the target audience. The adoption of the Thirst Management Model at pre- and post-implementation times was compared using **Chi-square**.

Results: In the pre-implementation period, 236 events in the care provided by nursing professionals related to thirst management were observed, and 198 in the post-implementation period. Adoption of the evidence went from 28.2% pre-implementation to 78.4% post-implementation ($p < 0.001$). The level of adherence exceeded the 70% target in one of the three cycles: 61.1%, 66.6%, 84.0%. The target audience was reached 100% in the first rapid cycle.

Conclusion: The use of the theoretical framework and its multifaceted intervention significantly increased the adoption of the Thirst Management Model.

Descriptors: Anesthesia Recovery Period; Perioperative Nursing; Thirst; Evidence-Based Nursing; Implementation Science.

RESUMO

Objetivo: Avaliar a implementação do Modelo de Manejo da Sede no pós-operatório imediato guiada pela Tradução e Intercâmbio do Conhecimento.

Método: Estudo quase-experimental, pré e pós-teste, realizado na Sala de Recuperação Anestésica de um hospital universitário de grande porte no norte do Paraná. A implementação aconteceu em duas fases: preparação e implementação e mudança. Os dados foram coletados por meio da observação da prática dos profissionais de enfermagem. Avaliou-se o processo de implementação através da mensuração da adoção e aspectos da fidelidade, utilizando-se análise descritiva do nível de adesão à evidência nos ciclos de melhoria contínua e alcance do público-alvo. Comparou-se a adoção do Modelo de Manejo da Sede nos momentos pré e pós-implementação por meio do **Qui-quadrado**.

Resultados: Na pré-implementação, 236 eventos na assistência prestada pelos profissionais de enfermagem relacionados ao manejo da sede foram observados e 198 na pós-implementação. A adoção da evidência foi de 28,2% pré-implementação para 78,4% pós-implementação ($p < 0,001$). O nível de adesão superou a meta de 70% em um dos três ciclos: 61,1%, 66,6%, 84,0%. O alcance do público-alvo foi de 100% no primeiro ciclo.

Conclusão: Utilizar o arcabouço teórico e sua intervenção multifacetada proporcionou aumento significativo na adoção do Modelo de Manejo da Sede.

Descritores: Período de Recuperação da Anestesia; Enfermagem Perioperatória; Sede; Enfermagem Baseada em Evidências; Ciência da Implementação.

RESUMEN

Objetivo: Evaluar la aplicación del Modelo de Gestión de la Sed en el postoperatorio inmediato guiado por Traducción e Intercambio de Conocimientos.

Método: Estudio cuasiexperimental pre y postest realizado en la sala de recuperación anestésica de un gran hospital universitario del norte de Paraná. La aplicación se llevó a cabo en dos fases: preparación y aplicación y cambio. Los datos se recogieron observando la práctica de los profesionales de enfermería. El proceso de implantación se evaluó midiendo la adopción y aspectos de fidelidad, mediante análisis descriptivo del nivel de adherencia a la evidencia en los ciclos de mejora continua y el alcance del público objetivo. La adopción del Modelo de Gestión de la Sed en los momentos pre y post-implementación se comparó mediante **Chi-cuadrado**.

Resultados: En la preimplementación se observaron 236 eventos en la atención brindada por profesionales de enfermería relacionados con el manejo de la sed y 198 en la postimplementación. La adopción de las pruebas pasó del 28,2% antes de la implantación al 78,4% después ($p < 0,001$). El nivel de adhesión superó el objetivo del 70% en uno de los tres ciclos: 61,1%, 66,6%, 84,0%. El público objetivo se alcanzó en un 100% en el primer ciclo rápido.

Conclusión: El uso del marco teórico y su intervención multifacética condujeron a un aumento significativo de la adopción del Modelo de Gestión de la Sed.

Descriptores: Periodo de Recuperación de la Anestesia; Enfermería Perioperatoria; Sed; Enfermería Basada en la Evidencia; Ciencia de la Implementación.

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INTRODUCTION

Surgical patients tend to have intense thirst in the immediate postoperative period (IPO), and the prevalence of thirst is frequently observed in all age groups⁽¹⁾ in the Post-Anesthesia Care Unit (PACU). Factors that trigger and intensify the experience of thirst in the IPO period include intubation, fluid and electrolyte imbalances, anesthetics, bleeding, anxiety, and prolonged fasting⁽²⁾.

Regarding the team, factors such as fear of respiratory complications, e.g. bronchoaspiration, added to the difficulty of introducing new evidence into clinical practice, whether due to lack of knowledge, resistance, or even the devaluation of thirst, may have contributed to nothing being done to benefit this group of patients for decades⁽³⁾. Prolonged periods of fasting are still adopted in several situations throughout the perioperative period, despite evidence in favor of reducing this time⁽⁴⁻⁵⁾. Furthermore, studies reveal that bronchoaspiration is not directly related to the fasting period⁽⁵⁾.

To reduce thirst in surgical patients and positively impact their experience, the Thirst Study and Research Group (TRG) developed the Thirst Management Model (TMM) over several years⁽⁶⁾. Composed of four pillars, this model recommends that health professionals identify thirst, measure its intensity and discomfort, assess the safety of offering some method of thirst relief, and apply strategies that use cold or cold associated with menthol to surgical patients⁽⁶⁾.

A paradoxical scenario between the high prevalence of thirst in surgical patients and the lack of use of evidence that would allow its management in clinical practice⁽⁶⁾ motivated the TRG to include in 2013, albeit in a preliminary manner, in an unprecedented initiative, the management of thirst in a tertiary level teaching hospital. The first training sessions aimed to raise awareness among the team on the topic, break paradigms and introduce new instruments for recording thirst that did not exist until then⁽⁶⁻⁷⁾. This implementation was carried out using traditional teaching methods, with deficiencies in their support in practice, which made it necessary to go deeper using methods of translating evidence into clinical practice.

In the initial training, important points proposed by models of knowledge translation into practice were not considered, namely: recognition of the scenario where the change is to be implemented; identification

of formal and informal leaders in the sector and establishment of what is intended to be implemented; composition of the group of internal facilitators for decision-making on the implementation process; identification of barriers and facilitators that influence the adoption of evidence; continuous assessment of implementation with feedback to professionals and adjustments, when necessary; use of multifaceted strategies for training, engaging and raising awareness among the team about thirst management; inclusion of strategies to support the implementation of evidence in clinical practice⁽⁸⁻¹³⁾. Therefore, a new approach was chosen with the PACU team regarding perioperative thirst, a topic still surrounded by myths and lack of knowledge, and the assumptions of Knowledge Translation (KT) were adopted.

The KT theoretical concept, developed in Canada, aims to overcome the gap between scientific evidence and health practices⁽⁸⁻¹⁰⁾. The KT process has been described in Brazil as Knowledge Translation and Exchange (KTE)⁽¹⁴⁾, the term used in this study.

The KTE attempts to integrate those who will use knowledge in all stages of research in decision-making or in establishing protocols in the execution of their work⁽⁸⁻¹⁰⁾. It also aims to make the professional an agent of change within their work environment⁽⁸⁻¹⁰⁾, using their experience and local reality as indispensable components for implementing scientifically proven actions⁽¹¹⁾.

Due to the difficulty of translating and applying knowledge to healthcare practice, the use of multifaceted interventions that combine different strategies is indicated as a more effective way to achieve success in changing behavior⁽¹⁵⁾. Thus, the multifaceted intervention for the translation of knowledge "Evidence-Based Practice for Improving Quality (EPIQ)" was obtained, translated as Evidence-Based Practice for Improving the Quality Process. This intervention aims to support the implementation of evidence in clinical practice through a multidimensional approach that aims to improve the quality of care, organizational change and, above all, sustaining the change⁽¹²⁾.

The EPIQ intervention systematizes and operationalizes implementation based on local data, use of evidence, and collaboration of a small group of prominent local professionals, called the Research and Practice Council (RPC), acting as an internal facilitator and implementing the strategies^(11,16).

Therefore, the aim is to effectively implement the TMM in practice and improve the quality of care provided through innovative interventions that transform reality, based on the principles of KTE and guided by the multifaceted EPIQ intervention^(8,16–17). The TMM was a creative and unprecedented model within the surgical scenario, providing the nursing team with tools to treat patients' thirst in the IPO period. Although the TMM had been introduced earlier in the PACU^(6–7), robust evidence-based implementation methods and strategies were necessary to sustain it over time. KTE allows us to consider fundamental aspects for achieving this process's adoption and fidelity objectives⁽¹⁴⁾.

Thus, the present study aimed to evaluate the implementation of the Thirst Management Model in the immediate postoperative period guided by Knowledge Translation and Exchange. What is the level of adoption and fidelity in the TMM implementation process at the IPO period, according to KTE assumptions and operationalized by the multifaceted EPIQ intervention?

METHOD

This is a quasi-experimental pre- and post-test series time study, without a control group, conducted at the PACU of a tertiary referral university hospital in Southern Brazil. The Surgical Center (CC) has seven operating rooms and a PACU with six beds, performing an average of 640 procedures monthly.

The evidence implementation process, i.e., the TMM, was guided by KTE and operationalized by the multifaceted EPIQ intervention. It aimed to reduce the gap

between theory and practice and, thus, improve the quality of care provided to patients during the IPO period^(12,16–19).

The study was carried out between November 2020 and July 2021. During implementation, the activities recommended by the EPIQ intervention were considered, according to the following phases: 1) Preparation and 2) Implementation and Change^(11,16). A detailed description of the process can be found in full in the main author's thesis. A summary of the activities is shown in Figure 1.

The preparation step included carrying out the following activities: pre-implementation data collection (baseline diagnosis); training, awareness-raising, and capacity building of the Council for Practical Research (CPR); identification of barriers and facilitators; review of available evidence; a decision to change practice and planning of changes and KTE strategies (dialogic lecture, reminders, and posters, dynamics, music, audits, and feedback, among others) and obtaining institutional collaboration at different levels of management.

The RPC was composed of 12 professionals, including an anesthesiologist, two head nurses from the surgical center, two nursing assistants from the PACU, three nursing technicians, and four members of the TRG, including the main researcher. The criteria for selecting members were the intention to include key people from the unit who exercised leadership and expertise in the thirst field. The purpose of this group was to bring together leaders from within and outside the implementation unit for decision-making and assistance throughout the process as facilitators^(11,16).

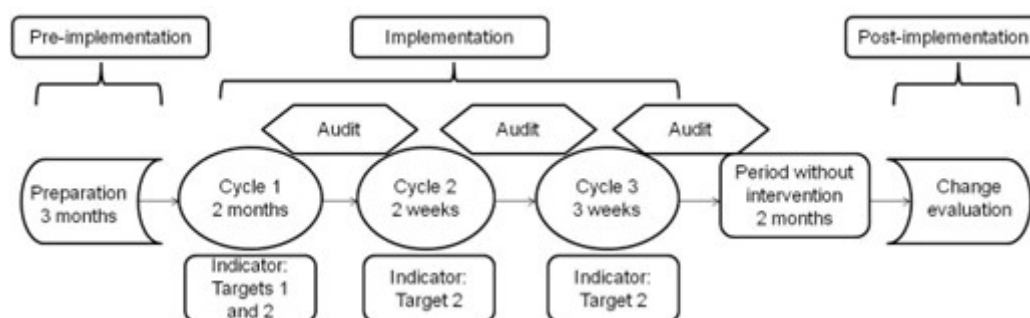


Figure 1 – Steps of Preparation and Implementation and Change according to the intervention *Evidence-Based Practice for Improving Quality*. Londrina, PR, Brazil, 2021

Source: Schematic drawing developed by the authors themselves, in accordance with the Preparation and Implementation and Change stages described by Stevens BJ., et al., 2014⁽¹¹⁾ e Lee SK., et al., 2009⁽¹⁶⁾.

The Implementation and Change step encompassed using various KTE strategies to implement the TMM, followed by continuous evaluation of the process. Three quick cycles of the PDSA improvement tool (plan; do; study; act)⁽²⁰⁾ were carried out to achieve this. Subsequently, there was an intentional period of approximately two months without intervention by the researcher and subsequent evaluation of the change.

For each PDSA cycle, KTE strategies with different purposes were selected. The target audience was the same in all three cycles: nursing professionals working in the PACU and operating room.

Cycle 1: focus on awareness raising and general training on TMM. KTE Strategies: dialogic lecturing, use of reminders with the Patient without Thirst (PASS) project logo and distribution of gifts.

Cycle 2: focus on establishing the Identification and Measurement pillars. KTE strategies: reminders and posters, video "it's easy to lose sight of something you're not looking for", wearing colored glasses of intentionality, the song "I'm thirsty", by Gilberto Gil, and dynamics using thirst intensity assessment scales.

Cycle 3: focus on establishing the Safety and Strategy pillars. KTE Strategies: reminders and posters, theoretical and practical training individually or in pairs on safety protocols for managing adult and pediatric thirst, risk assessment dynamics, production and provision of video with assessment steps by protocol and dynamics of pre-absorptive thirst satiety (a strategy that uses cold to relieve thirst).

The first goal was to reach 100% of professionals working in the PACU in cycle 1 of PDSA, with only those on vacation and leave not included. The second goal was to complete the TMM in 70% of opportunities and was assessed in all PDSA cycles. The RPC's decision to set the 70% target was based on pre-implementation results and the likelihood that it was an achievable target. Full adoption of TMM occurred in less than half of the pre-implementation cases, although thirst management had already been introduced in the PACU. The results show that the first pillar – identification of thirst – was carried out in most opportunities, while the third pillar – safety assessment – was observed in few situations. This difference in the execution of the pillars guided the choice of a goal capable of maintaining or improving the index of indicators of the stages

in progress, as well as being feasible in situations of greater fragility.

Pre- and post-implementation data collection and audits during PDSA cycles were performed through passive observation of nursing professionals' practice in the PACU. Data were recorded in guides that included information on whether or not TMM was performed. Additional data to characterize the patients, such as age, were collected from medical records. The researcher remained in the unit for four hours daily, in different work shifts, and did not interact with the professionals or patients during the TMM.

The study sample was non-probabilistic and determined by the time of data collection. It was formed by events related to thirst management, observed in the care provided by nursing professionals to patients in the IPO period, over the age of three, as this is the minimum age for inclusion in the TMM. Patients (male and female) in the IPO period who were able to verbally communicate their needs to the nursing team participated (indirectly) in the study. Nursing professionals (male and female) working in the PACU who were not on vacation or leave at the beginning of the implementation process participated in it.

As a routine, TMM is already applied together with the evaluation of other parameters of patients in the IPO period, generally at the following frequency: in the first hour of IPO, professionals evaluate the patient every 15 minutes; in the second hour, every 30 minutes, and, after the third hour, hourly. Thus, thirst could be assessed at all these periods. Since thirst management can be performed several times in the same patient, the number of observations of the professionals' practice was adopted as the sample (n) in the present study.

The implementation success was considered to be the total completion of the TMM by nursing professionals in 70% of the opportunities to approach patients in the IPO period in the PACU. In this study, the implementation process was evaluated through adoption⁽²¹⁾ and aspects of fidelity, such as adherence and reach of the target audience^(22–24).

Adoption is defined by the intention, initial decision, or action to try or employ an evidence-based innovation or practice⁽²¹⁾. It can be operationalized by the number or proportion of organizations or environments that agree to carry out the intervention, as well as by the

number or proportion of individuals in these locations who would ultimately carry out the intervention⁽²⁵⁾.

Intervention adoption was defined as the total completion of the TMM by health professionals and presented by the variation in the use of evidence in the pre-and post-implementation times. In this study, adoption was measured by the following indicator: the number of times the complete TMM was performed divided by the total number of times it could be performed x 100.

The criteria for defining the complete adoption of TMM by the professional were: 1) intentional questioning by the professional about the presence of thirst or valuing the patient's spontaneous report, continuing to carry out the other pillars and taking appropriate notes; 2) measurement of thirst intensity; 3) use of a protocol relevant to each age group; and; 4) provision of a strategy that uses cold to relieve thirst. Items 2, 3 and 4 were necessary only in the presence of thirst. Item 4 was included when approved by the safety protocol.

Data was tabulated in an Excel 2010® spreadsheet and analyzed with the aid of the Statistical Package for Social Science – SPSS® (IBM SPSS) statistical software (version 23.0). A chi-square test with a significance level of 0.05 was used to compare adoption in the pre-and post-implementation times.

Additionally, analysis of the complete adoption of TMM was carried out descriptively, through absolute and relative frequency of the individual implementation of each pillar. This implementation was calculated by the following indicator: the number of times the pillar was performed divided by the total number of times it should be performed x 100.

The denominator varied in each pillar, considering the exclusion criteria. Identification Pillar: situations in which the patient was sleeping or verbalized thirst spontaneously. Measurement Pillar: situations in which the patient was asleep or not thirsty. Safety Pillar: situations in which the patient was asleep or not thirsty. Strategy Pillar: situations in which the patient was sleeping, not thirsty, or failed the safety protocol (safety pillar).

Fidelity reflects how an intervention is or is not used in clinical practice, becoming an important factor in understanding the effectiveness of the intervention

and its replication within dissemination efforts⁽²³⁾. In the analysis of fidelity, five elements can be considered, namely: 1) adherence to an intervention; 2) exposure or dose; 3) quality of delivery; 4) participant responsiveness and; 5) program differentiation^(21–22).

Adherence is defined as “a service program or intervention that is being delivered as designed or written, that is, the extent to which those responsible for delivering an intervention adhere to the intervention as outlined by its designers”⁽²²⁾. The subcategories of adherence are content, frequency, duration, and coverage⁽²²⁾.

In the present study, the level of adherence to evidence by professionals was evaluated during the three rapid implementation cycles (PDSA). The results were presented descriptively through absolute and relative frequency, for the individual completion of each pillar and the TMM in full, and were measured using the same indicators described above.

Furthermore, the reach of the target audience in the first rapid cycle was assessed, described by the percentage of professionals covered in relation to the established goal (first goal).

All ethical aspects for research involving human beings were observed and participants signed the Free and Informed Consent Form (FICF). The researcher signed a confidentiality agreement to have access to the unit's medical records. The study was approved by the Ethics Committee under CAAE No 13638519.1.0000.5231 and Protocol No 3,951,468.

■ RESULTS

In the pre-implementation period, the TMM was performed by 24 nursing professionals in 83 patients, totaling 236 observed events. In the post-implementation period, the TMM was performed by 17 nursing professionals in 88 patients, totaling 198 observed events. The characterization data of the professionals and patients are shown in Table 1.

The adoption of TMM by the professionals is shown in Table 2. There was significant variability in the total completion of TMM at pre- and post-implementation times. Furthermore, the individual implementation of each pillar is presented in a descriptive way using absolute and relative frequency.

Table 1 – Characterization of professionals and patients in the pre- and post-implementation times. Londrina, PR, Brazil, 2021

Professionals		
Variables	Pre-Implementation n = 24	Post-Implementation n = 17
Gender	*n(%)	n(%)
Female	*22 (91.6%)	*16 (94.1%)
Male	*02 (8.4%)	*01 (5.9%)
Professional occupation	*n(%)	*n(%)
Nurses	*07 (29.1%)	*09 (53.0%)
Nursing Technicians	*13 (54.1%)	*04 (23.5%)
Residents	*04 (16.8%)	*04 (23.5%)
Additional information		
Participated for the first time in training about thirst	*09 (37.5%)	–
Did not participate in observations in the pre-implementation period	–	*09 (53.0%)

Patients		
Variables	Pre-Implementation (n = 83)	Post-Implementation (n = 88)
Gender	*n (%)	*n (%)
Female	*49 (59.0%)	*50 (56.8%)
Male	*34 (41.0%)	*38 (43.2%)
Age (years)	*n (%)	*n (%)
3 - 12	*10 (12.1%)	*14 (15.9%)
13 - 40	*38 (45.8%)	*27 (30.7%)
41 - 59	*24 (28.9%)	*26 (29.5%)
> 60	*11 (13.2%)	*21 (23.9%)
Mean	†36.8	†40.3

Source: The authors.
Data expressed in *n(%);†Mean.

Table 2 – Variation in the adoption of the Thirst Management Model by nursing professionals in the pre- and post-implementation times. Londrina, PR, Brazil, 2021

Implementation of TMM	Pre-Implementation *n (%)	Post-Implementation *n (%)	χ²	tp-value
Complete adoption – TMM				
Yes	*58 (28.2%)	*134 (78.4%)	94.246	<0.001
No	*148 (71.8%)	*37 (21.6%)		
Implementation of each pillar of TMM (‡n variable)				
Implementation of pillar	Pre-Implementation *n (%)	Post-Implementation *n (%)		
Pillar I – Identification				
Yes	*113 (59.8%)	*137 (85.6%)		
No	*76 (40.2%)	*23 (14.4%)		
Pillar II – Measurement				
Yes	*73 (43.5%)	*65 (64.4%)		
No	*95 (56.5%)	*36 (35.6%)		
Pillar III – Safety				
Yes	*20 (11.9%)	*68 (67.3%)		
No	*148 (88.1%)	*33 (32.7%)		
Pillar IV – Strategy				
Yes	*71 (45.8%)	*52 (65.9%)		
No	*84 (54.2%)	*27 (34.1%)		

Source: The authors.

Data expressed in *n(%); †Chi-square test. ‡n varied for each pillar in relation to the initial n in case the patient is asleep, not thirsty, and fails the safety protocol.

Legend: TMM (Thirst Management Model).

Table 3 shows the results of implementing the TMM in the PDSA improvement cycles. Fidelity, observed by the level of adherence to evidence by the professionals, varied between 61.1% and 84.0% considering the complete administration of the TMM. Thus, the target of 70% established for complete management was exceeded in one of the three cycles and was close in the others.

In the first cycle, the goal was to reach all nursing professionals in the sector, except those who were on vacation or leave during the period. When the dialogic lecture strategy was implemented, the total number of professionals was 55, of which eight were on leave. Thus, the target audience reached was 100%, considering that the 47 active professionals were included.

Table 3 – Level of adherence to evidence by nursing professionals during the implementation of the Thirst Management Model. Londrina, PR, Brazil, 2021

Implementation of pillar (*n variable)	Cycle 1 n= 18 events observed (9 patients)	Cycle 2 n= 16 events observed (7 patients)	Cycle 3 n= 26 events observed (9 patients)
Pillar I – Identification †n (%)			
Yes	†12 (75.0%)	†13 (86.6%)	†22 (91.6%)
No	†4 (25.0%)	†2 (13.4%)	†2 (8.4%)
Pillar II – Measurement†n (%)			
Yes	†10 (58.8%)	†7 (63.6%)	†17 (80.9%)
No	†7 (41.2%)	†4 (36.4%)	†4 (19.1%)
Pillar III – Safety †n (%)			
Yes	†10 (58.8%)	†6 (54.5%)	†15 (71.5%)
No	†7 (41.2%)	†5 (45.5%)	†6 (28.5%)
Pillar IV – Strategy †n (%)			
Yes	†9 (64.2%)	†9 (81.8%)	†14 (100.0%)
No	†5 (35.8%)	†2 (18.2%)	†0 (0.0%)
Complete TMM †n (%)			
Yes	†11 (61.1%)	†10 (66.6%)	†21 (84.0%)
No	†7 (38.9%)	†5 (33.4%)	†4 (16.0%)

Source: The authors.

*n varied for each pillar in relation to the initial n in the case of the patient being asleep, not thirsty and failing the safety protocol; Data expressed in †n(%).

Legend: TMM (Thirst Management Model).

DISCUSSION

The present study demonstrated the implementation of a model for the early and safe management of thirst in surgical patients in the PACU by the nursing team. This is an innovative topic and has only very recently been explored in the literature⁽⁶⁾. The success of the implementation through the use of the KTE theoretical framework and the promising and multifaceted EPIQ intervention deserve mention.

This is a complex approach in which several activities are established and many actors are involved^(12–16). In this study, managers and health professionals from the PACU, nursing heads of the institution, and researchers from the TRG participated.

Assessing the transfer of knowledge into practice is challenging and there is still no consensus on the best ways to assess the success of an implementation⁽²¹⁾. Some studies infer success by measuring clinical outcomes from the patient's perspective, while others

measure the actual goals of implementation by quantifying, for example, desired behaviors⁽²¹⁾. In this study, two variables were used to assess the implementation process: adoption and fidelity⁽²¹⁾.

According to the relevant literature, fidelity is most often assessed during initial implementation, and adoption is often evaluated 6, 12, or 18 months after initial implementation⁽²¹⁾. In this study, adoption of the TMM was measured pre- and post-implementation, with post-implementation data collection occurring five months after the use of the first KTE strategy in the first PDSA cycle. Fidelity was assessed concerning the level of adherence to the TMM during the implementation process and the reach of the target audience in the first PDSA cycle.

The variation in the adoption of the TMM in the pre- and post-implementation times reveals a significant improvement in the practice of thirst management by nursing professionals, after the implementation of the evidence guided by KTE and operationalized by EPIQ.

As this study aimed to implement the TMM in the practice of professionals working in the IPO, the focus for evaluation of the implementation was the total use of the TMM by these professionals after the activities carried out. Thirst management is only carried out when the team identifies and measures thirst, assesses safety, and uses effective strategies to relieve it. However, other relevant assessments could be made, such as the perception of professionals involved in the process, professionals' knowledge about TMM, patient satisfaction, reach of the target audience and effectiveness of each KTE strategy, in addition to the assessment of clinical indicators.

Carrying out all the steps and actions of the EPIQ intervention contributed to greater adoption of the TMM in the PACU. Carrying out the situational diagnosis, composing the RPC, identifying barriers and facilitators, and carrying out the PDSA continuous improvement cycles^(11–12) are actions that deserve to be highlighted. The situational diagnosis helped to identify the main weaknesses in implementing the TMM and the possibilities for change.

The training provided by the TRG using traditional methods contributed to the thirst symptom being included in the patient's medical records, in addition to raising awareness among the team regarding this symptom⁽⁷⁾. However, pre-implementation results often

showed a very low number of opportunities for professionals to identify and assess the safety of offering a thirst relief strategy to the patients.

Diagnosing this reality allowed researchers to select multiple personalized KTE strategies⁽²⁶⁾. These include theoretical and practical training for professionals in the workplace; distribution of safety protocols on the PACU bulletin board, with clear and summarized information and a colorful and attractive design; carrying out interactive and playful activities; use of musical instruments with songs related to thirst; production and individual provision of a video via WhatsApp containing the steps of assessment of adult and pediatric safety protocols. After using these strategies, there was greater achievement of the safety pillar post-implementation.

Pre-implementation data also suggest that over approximately ten years of training in the thirst management scenario, part of the knowledge was adopted by professionals or was sustained. It is believed that the low rate of adoption of the safety pillar is because it requires greater understanding and more time. As for the other pillars that preceded it, they are easier to implement. The complexity of evidence can be a barrier to sustaining practice change, particularly in low- and middle-income countries^(27–28).

Another relevant component of EPIQ that contributed to greater adoption of evidence in the unit was the composition and performance of the RPC. This strategy allowed the involvement of professionals with leadership and the facilitation of knowledge translation⁽¹⁷⁾.

Facilitation is a key element in the process of implementing health innovations in the knowledge translation model, the Integrated Promoting Action on Research Implementation in Health Services (i-PARIHS)⁽²⁹⁾. Facilitators have a key role in helping individuals and teams understand what and how they need to change to apply evidence into practice^(17,29).

The RPC participated in decision-making regarding changes to the practice, such as adapting the perioperative form, producing popsicles (nutrition sector), defining feasible goals for the scenario to be achieved in the PDSA cycles, selecting KTE strategies for the unit, and continuous evaluation and feedback. The selection of RPC members was intentional and considered professionals who exercised formal or informal leadership in the unit, which was relevant throughout the TMM implementation process. When the invitation to join

the RPC was made, some issues were addressed, such as availability of time, definition of frequency, duration, and location of meetings, to ensure everyone's participation. It is important to reflect on these factors because they are related to the fidelity of implementation, that is, the extent to which the activities were developed as planned⁽²¹⁾.

Identifying barriers and facilitators was another key activity within the EPIQ intervention. In this study, the RPC identified organizational and individual barriers and selected strategies to overcome them. Identifying these barriers is essential for resolving critical issues through personalized and effective strategies that enable adequate planning of the implementation of evidence in clinical practice. Therefore, the strategies could be adopted as care protocols in the investigated unit^(9–10,27–28).

Another relevant aspect of the adoption of evidence was the development of activities in a unit already aware of the topic⁽⁷⁾. Over ten years of successive approaches, there was a relevant impact in breaking paradigms, albeit partially, regarding the early provision of liquids in the IPO period. The unit already had a freezer, used specifically for thirst management, and had also medical records. A context favorable to change is indicated as a relevant factor for the success of knowledge translation^(17,29).

Most of the research carried out during the TMM was developed in the same setting as the present study. This situation may have led health professionals to feel a part of the process and consider the evidence relevant and applicable because they were witnessing the results of studies related to their reality^(17,29).

The results of the PDSA continuous improvement cycles revealed that the target set for the total completion of the TMM in 70% of the opportunities was exceeded in the last cycle. In the other two cycles, the complete implementation of the TMM came close to the target and increased considerably compared to the pre-implementation period.

It has been claimed that the improvement in the level of adherence to TMM observed at these times was due to the various KTE strategies used. These strategies consider the context, the users' experience⁽²⁹⁾, the action's objective, the knowledge shared, the target audience, and the mechanisms of change and evaluation⁽³⁰⁾.

Multifaceted strategies combine several interventions and are more effective for changing behavior^(15,26).

This study considered implementation strategies appropriate for low- and middle-income countries, such as educational meetings, training of health professionals, educational dissemination, facilitation of practice, training of local opinion leaders, audits and feedback, personalized interventions, and strategies to improve organizational culture⁽²⁶⁾.

The reach of the target audience in the KTE strategy was assessed only in the first PDSA cycle, and the goal set of covering the entire team was achieved. It should be mentioned that the high turnover of professionals^(27–28) and temporary employment relationships are significant barriers to carrying out implementation studies and assessing fidelity.

The frequent changes in the unit's nursing staff, whether due to the absence of professionals who participated in some KTE strategies or due to new admissions during the process, make it difficult to establish an implementation protocol. During the study, new employees were admitted to the unit and participated in the intervention at different times, depending on feasibility. Moreover, during the PDSA cycles, the institution was facing the most critical moment of the COVID-19 pandemic. Elective procedures were suspended and, as a result, fewer patients were treated in the PACU, health professionals were removed, making data collection difficult, and the PACU was turned into an Intensive Care Unit for COVID-19. Despite the entirely adverse scenario during the pandemic, the use of KTEs significantly increased the adoption of TMM.

The RPC established the goals considering the analysis of pre-implementation data, the survey of barriers and facilitators and the characteristics of the scenario. In the first PDSA cycle, all nursing professionals participated in the KTE strategy – dialogic lecture – and, at that time, the goal was shared with the entire team. There were no negative comments or questions about the objective set and it was found, albeit informally, that most participants were committed to the strategy.

The sustainability of implementation was not assessed in this study. However, some factors may contribute to the routinization of TMM in this unit, namely constant approaches to the topic of thirst, frequent presence of professors and academics carrying out

new studies on this topic in this scenario, creation of the RPC, and naming of the internal facilitator, inclusion of TMM data in the computerized system with the possibility of generating indicators and continuous evaluation of the process, management involvement for the permanent acquisition of inputs needed to make ice popsicles (essential for implementing the strategy pillar) and outsourcing the production of popsicles to the nutrition sector.

The limitations of the study include the lack of sustainability assessment, participation of an unpaired sample pre and post-implementation, failure to assess the qualitative aspects of the implementation process, and the fact that the study was carried out during the pandemic. The latter made data collection difficult, especially during PDSA cycles. The low N shown in Table 3 was due to the fact that data collection occurred during the most critical period of the COVID-19 pandemic at the institution. Operating rooms and ER beds were occupied by patients with COVID-19 who were intubated and waiting for beds in Intensive Care Units, i.e. non-surgical patients who were not part of the study population. The PACU was adapted to another physical space within the surgical center. Also, there was a reduction in the number of surgeries, as elective procedures were suspended and/or reduced. Furthermore, data collection was carried out through direct observation of the professionals' practice by the main researcher in the PACU. Although everyone was aware of the objectives of the study and the reason for the researcher's presence in the unit, it was not possible to analyze whether this interfered with the professionals' behavior.

■ CONCLUSION

The use of the KTE theoretical framework and the EPIQ multifaceted intervention in the process of implementation of the TMM significantly improved the rate of adoption of evidence in the practice of nursing professionals regarding thirst management in the PACU, even in the face of a challenging scenario with data collection taking place during the height of the pandemic.

Regarding fidelity aspects, the level of adherence to evidence by health professionals during the three rapid implementation cycles (PDSA) and the reach of the target audience in the first cycle were evaluated.

An improvement was observed in the total completion of the TMM in the three cycles, and the target established for the study (70%) was exceeded in one of the three cycles. The target audience was reached, with the participation of all professionals working in the unit in the first cycle.

The contributions and innovations of this study for care are the translation and exchange of knowledge into the practice of a topic that was previously little valued and explored: the management of thirst in patients in the IPO period in an innovative, safe, and effective way. Implementing the TMM will improve the nursing care provided in the PACU. Further studies are recommended to assess the sustainability of knowledge in this setting and the qualitative aspects of the implementation process, including the perception and motivation of health professionals.

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■ Availability of data and material

Access to the dataset may be granted upon request to the corresponding author.

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