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ORIGINAL ARTICLE

Development and validation of a new nursing diagnosis: Perioperative thirst

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Abstract

Purpose: To develop and validate the content of the nursing diagnosis proposal for perioperative thirst.

Methods: A content analysis by 34 judges. An online Delphi panel was used in one round, evaluating criteria of relevance, clarity and precision. Wilcoxon's one-tailed test was used and the content validity index to maintain the item was set to 0.80.

Findings: The content validity index in relation to the evaluated items reached levels between 0.87–1.00. The final components of the diagnosis proposal included the following items as defining characteristics: dry mouth, dry throat, dry lips, thick saliva, thick tongue, constant swallowing of saliva, desire to drink water, bad taste in the mouth, and caregiver's report. Related factors are as follows: pre- and postoperative fasting, oral breathing, dehydration, hypovolemia, insensitive loss of hydration by breathing, dry mouth, habit of drinking water, high room temperature. Associated conditions: intubation, use of muscarinic and nicotinic anticholinergics and water restriction.

Conclusions: All components of the nursing diagnosis were validated in relation to relevance, clarity, and accuracy, demonstrating high levels of agreement between experts. Qualitative observations were found to be fundamental for both combining and excluding some items.

Implications for Nursing Practice: Improvement of refinement and clarity levels of this nursing diagnosis proposal aiding its inclusion in the NANDA International taxonomy and thus enabling greater understanding of the phenomenon of thirst in surgical patients. This study helps to explain and facilitate the identification of defining characteristics, related factors, and associated conditions for nurses, nursing students, and researchers on this subject.

KEYWORDS
Content validation, nursing diagnosis, perioperative nursing, standardized nursing terminology, thirst

INTRODUCTION

Evolution of the understanding of the regulatory mechanisms of thirst and satiety is recent, changing from a single linear model to dynamic and complex neurohormonal networks, mainly through the use of chemogenetic and orthogenic techniques, and neuropixel microelectrode arrays (Armstrong & Kavouras, 2019). As a particularly multifactorial symptom, thirst is also influenced by environmental, personal, and cultural elements, and its impact in the hospital scenario can be observed in the most varied populations, ages, and clinical situations (Conchon et al., 2015; Leemhuis et al., 2019; Nascimento et al., 2020; Walker et al., 2016).

Thirst is one of the most stressful discomforts and generators of suffering in the perioperative period (Nascimento et al., 2020; Walker et al., 2016), with a prevalence of 84.5% (Pierotti, Nakaya et al., 2018), 89% (Pierotti, Fracarolli et al., 2018) and up to 90.8% (Njoroge et al., 2017) of the patients. It presents an average intensity of 6.94 (± 2.2) (Nascimento et al., 2019), and is associated with patients' dissatisfaction during related to anesthetic procedures (Sinbukhova & Lubnin, 2019). Perioperative thirst also causes suffering for pediatric patients (Campana et al., 2015). Due to this scenario, Brazilian researchers developed the perioperative thirst management model, aiming at its identification, measurement, safety assessment, and administration of relief methods (Nascimento et al., 2020).

The NANDA International taxonomy (NANDA-I) is one of the main structures of standardized language in nursing and is constantly improved and expanded with respect to the included diagnoses. Its current classification does not include thirst as a specific diagnosis, but is described only as one of the defining characteristics of the Nursing Diagnosis (ND) of Deficient Fluid Volume (00027) (Herdman & Kamitsuru, 2017). Understanding thirst, solely as by states in which the patient has a low volume of fluids, is an outdated concept and does not describe the complexity of factors that lead to its genesis and satiety. This fact is particularly relevant when it comes to the perioperative patient, in view of the variety of stimuli that trigger thirst in this population (Armstrong & Kavouras, 2019).

Evidence indicates that the thirst stimulus may start even if there is no fluid deficit. Very well hydrated volunteers reported significantly higher mean thirst when imagining situations of intense thirst compared to the baseline state of thirst (imagine thirst, 5.4 ± 0.5; baseline, 1.9 ± 0.6; $t\,(19) = 6.6$; $p < .001$) (Saker et al., 2020).

It is important to note that perioperative thirst and its relief are related to the comfort domain and not only to the patient's hydration function. In this sense, the nurse is able to plan and carry out independent and effective interventions to relieve thirst, restoring and maintaining patient's state of comfort (Nascimento et al., 2020).

Thus, there is a need to make the perioperative thirst a new nursing diagnosis. In a previous study (Nascimento et al., 2021), the authors carried out an analysis of the concept of thirst, resulting in the elaboration of its diagnostic structure. Perioperative thirst was defined as "Sensory, physiological and subjective experience that refers to the desire to ingest water in order to restore homeostasis of body fluids, generating intense discomfort when not attended". Its defining characteristics include dry mouth, constant saliva swallowing, dry throat, whitish lips, dry lips, thick tongue, halitosis, thick saliva, bitter mouth, rough mouth, friable oral cavity, water-seeking behavior, bad taste in the mouth, burning in the throat, caregiver's report, and desire to drink water.

The related factors listed from the concept analysis were: pre- and postoperative prolonged fasting, oral breathing, increased osmolarity, dehydration, insensitive loss of hydration by breathing increased by the use of nonhumid anesthetic gases, hypovolemia, dry mouth, water drinking habits, rapid dehydration in children, and heat. The associated conditions include: diabetes insiptus after pituitary surgery, anesthetics that cause vasodilation and induce states of hypovolemia, intubation, water restriction, use of muscarinic and nicotinic anticholinergics, and nasal buffer. Finally, as a population at risk, patients with diabetes mellitus, extremes of age and need for fasting were considered (Nascimento et al., 2021).

The NANDA-I encourages the proposition of new nursing diagnoses. The higher the level of scientific evidence, the better the possibility for the ND to consistently reflect the criteria that a standardized language should have, facilitating communication between nursing professionals (Herdman & Kamitsuru, 2017). Content validation can provide evidence that the components of the ND proposal for perioperative thirst have acceptable levels of agreement from a group of experts on three main aspects: relevance, clarity, and precision. The experts also offer opinions and suggestions that improve the description of the diagnosis, providing rich material in information for the refinement of the components of the diagnosis (Lopes et al., 2013; Rubio et al., 2003). In view of these arguments, the objective of this study is to develop and validate the content of the ND perioperative thirst proposal.

METHODS

Study design

Content validity study for the proposition of perioperative ND thirst. Content validity is the first validation model to be performed and consists of obtaining the opinion and consensus of experts in relation to the degree to which each component of the diagnosis is relevant (Fehring, 1987; Herdman & Kamitsuru, 2017; Lopes et al., 2013; Rubio et al., 2003). This study carried out content validity in the Brazilian Portuguese language, using the Delphi online technique, in one round of evaluation.

Setting

The study took place between July and September 2019, using a validation instrument developed by the authors and sent to the judges by email. All judges had previously received a letter by e-mail explaining the objectives of the study, with information on how to complete the instrument.

Ethical aspects

The research project received a favorable opinion from the Ethics Committee of the State University of Londrina – CAAE 94634018.5.0000.5231. All Brazilian legal ethical recommendations were observed.

Variables

For data collection, the instrument was divided into three parts. The first referred to the sociodemographic characterization: age, sex,

TABLE 1 Parameters for classifying experts as to the level of expertise

	Practice experience		Academic experience		
			Scientific knowledge (Z)		
Score	Practice time* (X)	Research group time* (Y)	Academic degree (Z_1)	Titration work (Z_2)	Scientific production ND and / or thirst (Z_3)
0	-	-	Graduate	No	No
1	1–7	1–3	Specialist	Yes	Yes
2	8–14	4–6	Master	-	-
3	15–21	7–9	doctorate	-	-
4	22–28	10–12	-	-	-
5	29–35	13–15	-	-	-

Legend: * in years; ND: nursing diagnosis. Expertise Level: Sum of the scores obtained in columns X, Y, Z divided by 3.

and place of residence. The second to professional characterization: academic training (Bachelor's degree, Master's degree, and Doctorate in Nursing), current occupation, time of experience in the current occupation, participation in research groups related to thirst or to the ND theme. This information helped to define the *expertise* of the participating judges.

The third part dealt with the components of the ND proposal for perioperative thirst: defining characteristics (16 items), related factors (10 items), and associated conditions (six items) (Table 1). These components resulted from a previous study that analyzed the concept of perioperative thirst and developed a diagnostic structure for perioperative thirst (Nascimento et al., 2021).

Data sources/measurement

For the content validity analysis of the components of the diagnosis, the Content Validity Index (CVI) was calculated based on the predictive diversity model (collective wisdom), in which the judges' assessment is weighted by their level of expertise (Lopes & Silva, 2016). For the conceptual and operational definitions of each component of the diagnosis, the same statistical tool was used, adopting, however, the item evaluation index as nomenclature.

Judges were chosen based on the assumptions of collective wisdom or crowds, which propose that single estimates are likely to be far from the truth, but the aggregate is close to it. Individual estimation errors are expressive, but impartial, in such a way that they cancel out. Consequently, the heterogeneity of numerous decision makers generates a more accurate aggregate estimate than the estimate of laymen or experts. To measure these estimates, the Prediction Diversity Theorem is used, which assumes that the collective error is equal to the mean individual error minus the group diversity (Lopes et al., 2013; Lorenz et al., 2011).

Each expert independently scored the components of the diagnosis on a scale of 1 (strongly disagree) to 5 (strongly agree). The values denote how indicative the characteristic is for the diagnosis in the evaluation of the relevance, clarity, and accuracy criteria. The following weights were associated with this score: 1 = 0; 2 = 0.25; 3 = 0.50; 4 = 0.75; and 5 = 1. These weights allow the final score to be 1 only when the judges assess that the characteristic is entirely indicative of the tested diagnosis (Fehring, 1987).

Participants

The sample size for a study is defined based on formulas that aim to estimate the CVI of the evaluations of each diagnostic element (Lopes & Silva, 2016). The following parameters were used: 95% confidence level ($Z_{\alpha/2}$ de 1.96), standard deviation (S) of 0.17, and sampling error (e) of 0.06. The sample calculation followed the formula $n_0 = (Z^*S/e)\hat{}2$, which indicated the need for 31 judges.

Considering that the CVI distributions are usually asymmetric and that a small loss of power is possible when applying a non-parametric test, a correction of 5% was used, so that the final sample would be obtained by the ratio $n = n_0/0.95$. The final sample size was 32 evaluators (Lopes & Silva, 2016).

For the selection of judges, nurses who participate or participated in the Research and Study Group in Perioperative Thirst were prioritized. Judges with experience in research with ND were invited, as well as being asked for recommendations for other experts. In order to guarantee a multiprofessional evaluation, anesthesiologists were also invited, as their experience with the surgical patient adds value to the study.

The judges were classified according to their skill level, using the proposal of Benner and collaborators: beginner, advanced beginner, competent, proficient, and experienced. According to this framework, theoretical knowledge and clinical experience are mutually related in the process of training specialists, while the presence of both guarantees *expertise* (Benner et al., 2009).

The level of *expertise* was given by the simple mean of the scores obtained in the criteria Time of practice, Time in research group, and Scientific knowledge (Table 1). The latter was established by the sum of the subitems degree, degree work, and scientific production on ND and/or thirst. The results that presented a final mean with decimal numbers above five were rounded up to the next/higher level of *expertise*. Each score was equivalent to the experts' level of expertise:

beginner (1), advanced beginner (2), competent (3), proficient (4), and experienced (5) (Benner et al., 2009).

Statistical methods

The data were organized and tabulated in a Microsoft Office Excel 2017 spreadsheet and analyzed using the statistical program R, version 3.5.3. Variables of characterization of the judges were presented and analyzed using descriptive statistics, measures of central tendency, and dispersion.

The Shapiro–Wilk test was used, which indicated the nonadherence of the CVI values to the normal distribution. To define the location parameters and the confidence intervals for a pseudomedian of the CVI values, the Wilcoxon test was used. Thus, a defining characteristic would be considered valid if the Wilcoxon one-tailed test did not reject the null hypothesis that the CVI was equal to or greater than 0.8 and/or if the confidence intervals (CI) passed this value or were above it.

FINDINGS

Expert's profile

In total, 61 professionals were invited, of which 34 (55.7%) returned the completed assessment instrument within the stipulated time. The female sex (97.1%) and the South (82.4%) and Southeast (11.8%) regions of Brazil as place of residence predominated. The participants' degrees were undergraduate (11.8%), specialist (14.7%), master's (29.4%), and doctorate (44.1%). Three experts (8%) were trained in medicine with a specialty in anesthesiology, and the remaining professionals were nurses. Two (5.9%) experts had postdoctoral degrees.

Participants were classified as beginners (17.6%), advanced beginners (44.1%), and competent (38.2%) according to their *expertise*. The experts presented professional activities in clinical practice (55.9%) and teaching (44.1%). The time of training in nursing was 15.4 (± 10.6) years on average.

Validation of the operational definitions

Table 2 shows the CVI values referring to the relevance of diagnostic indicators for the proposition of ND perioperative thirst. It was observed that all items had values greater than 0.80 indicating the relevance for the diagnostic proposition.

Table 3 shows the evaluation of the criteria for clarity and precision of the operational definitions of each item of the diagnostic proposal. The values were higher than 0.80.

The items rough mouth and bitter mouth presented CI values less than 0.80. The analysis of the qualitative suggestions allowed the following combinations of the defining characteristics: whitish lips with the item dry lips; water-seeking behavior with the item desire to drink water; bitter mouth with the item bad taste in the mouth; rough mouth

TABLE 2 Expert analysis regarding the relevance of the components of the proposal for the diagnosis of perioperative thirst, Brazil, 2019

Defining characteristics	CVI	95% CI	Wilcoxon*	
			V	*p*
Dry mouth	1.00	-	2850	1.00
Dry throat	1.00	-	2628	1.00
Dry lips	1.00	-	2844	1.00
Thick saliva	1.00	-	2625	1.00
Thick tongue	1.00	0.99–1.00	2829	1.00
Bad breath (Halitosis)	0.99	0.99–1.00	2139	1.00
Whitish lips	0.99	0.87–1.00	1925	0.99
Constant swallowing of saliva	0.99	0.87–1.00	2044	0.99
Water-seeking behavior	1.00	0.99–1.00	2600	1.00
Desire to drink water	1.00	-	2628	1.00
Bad taste in mouth	1.00	-	2628	1.00
Bitter mouth	0.87	0.74–0.99	1449	0.55
Rough mouth	0.87	0.74–0.99	1479	0.61
Friable oral cavity	0.99	0.99–1.00	2130	1.00
Burning in the throat	0.99	0.87–1.00	1938	0.99
Caregiver's report	1.00	-	2628	1.00
Related Factors	**CVI**	**95% CI**	**Wilcoxon***	
			V	**p**
Pre and postoperative fasting	1.00	-	2850	1.00
Oral breathing	1.00	-	2844	1.00
Increased osmolarity	1.00	0.99–1.00	2268	1.00
Dehydration	1.00	-	2850	1.00
Insensible loss of hydration	1.00	0.99–1.00	2409	1.00
Hypovolemia	1.00	-	2628	1.00
Dry mouth	1.00	0.99–1.00	2409	1.00
Habit of drinking water	1.00	0.99–1.00	2400	1.00
Rapid dehydration in children	1.00	0.99–1.00	2628	1.00
Heat	1.00	0.99–1.00	2412	1.00
Associated Conditions	**CVI**	**95% CI**	**Wilcoxon***	
			V	**p**
Intubation	1.00	-	2850	1.00
Nasal plug	0.99	0.99–1.00	2074	0.99
Anesthetics that cause vasodilation and induce hypovolemia states	0.99	0.99–1.00	2291	1.00
Water restriction	1.00	-	2847	1.00
Use of muscarinic and nicotinic anticholinergics	1.00	-	2820	1.00
Diabetes *insipidus* after pituitary surgery	0.99	0.99–1.00	2196	1.00

* Wilcoxon one-tailed test; CVI: Content Validity Index

TABLE 3 Expert analysis regarding the clarity and precision of the components of the proposal for the diagnosis of perioperative thirst, Brazil, 2019

Defining Characteristic	Criterion							
	Clarity				Accuracy			
	Item evaluation	95% CI	Wilcoxon*		Item evaluation	95% CI	Wilcoxon*	
			v	*p*			v	*p*
Dry mouth	1.00	-	2850	1.00	0.99	0.87–1.00	2697	1.00
Dry throat	0.87	0.87–0.99	2397	1.00	0.99	0.99–1.00	2759	1.00
Dry lips	0.87	0.87–0.87	2322	1.00	0.99	0.87–1.00	2492	1.00
Thick saliva	0.87	0.87–0.87	2134	0.99	0.87	0.87–0.99	2295	1.00
Thick tongue	0.99	0.87–1.00	2212	1.00	1.00	0.99–1.00	2268	1.00
Bad breath (Halitosis)	0.99	0.87–1.00	2511	1.00	0.87	0.87–0.99	2107	0.99
Whitish lips	0.99	0.99–1.00	2250	1.00	0.99	0.87–1.00	2065	0.99
Constant swallowing of saliva	1.00	0.99–1.00	2784	1.00	0.99	0.87–1.00	2295	1.00
Water-seeking behavior	1.00	0.99–1.00	2394	1.00	0.99	0.99–1.00	2310	1.00
Desire to drink water	0.99	0.99–1.00	2550	1.00	1.00	0.99–1.00	2613	1.00
Bad taste in mouth	1.00	0.99–1.00	2805	1.00	1.00	-	2628	1.00
Bitter mouth	0.99	0.87–1.00	2295	1.00	0.99	0.87–0.99	2120	0.99
Rough mouth	0.87	0.74–0.87	1462	0.58	0.87	0.74–0.99	1551	0.75
Friable oral cavity	0.99	0.99–1.00	2370	1.00	0.99	0.99–1.00	2573	1.00
Burning in the throat	0.99	0.87–1.00	2223	1.00	0.99	0.99–1.00	2130	1.00
Caregiver's report	0.99	0.99–1.00	2550	1.00	1.00	0.99–1.00	2600	1.00
Related Factors	**Criterion**							
	Clarity				**Accuracy**			
	Item evaluation	**95% CI**	**Wilcoxon***		**Item Evaluation**	**95% CI**	**Wilcoxon***	
			V	***p***			**V**	***p***
Pre and postoperative fasting	1.00	-	2847	1.00	1.00	0.99–1.00	2805	1.00
Oral breathing	1.00	0.99–1.00	2550	1.00	1.00	0.99–1.00	2272	1.00
Increased osmolarity	0.99	0.99–1.00	2310	1.00	0.99	0.87–1.00	2291	1.00
Dehydration	1.00	0.99–1.00	2686	1.00	1.00	0.99–1.00	2535	1.00
Insensible loss of hydration	0.99	0.99–1.00	2573	1.00	1.00	0.99–1.00	2583	1.00
Hypovolemia	1.00	0.99–1.00	2409	1.00	0.99	0.99–1.00	2440	1.00
Dry mouth	1.00	0.99–1.00	2400	1.00	1.00	0.99–1.00	2405	1.00
Habit of drinking water	1.00	-	2625	1.00	1.00	0.99–1.00	2600	1.00
Rapid dehydration in children	1.00	0.99–1.00	2520	1.00	1.00	0.99–1.00	2520	1.00
Heat	1.00	-	2698	1.00	1.00	0.99–1.00	2541	1.00
Associated Conditions	**Criterion**							
	Clarity				**Accuracy**			
	Item evaluation	**95% CI**	**Wilcoxon***		**Item evaluation**	**95% CI**	**Wilcoxon***	
			V	***p***			**V**	***p***
Diabetes *insipidus* after pituitary surgery	0.99	0.87–1.00	2059	0.99	0.99	0.87–1.00	1943	0.99
Nasal plug	1.00	-	2698	1.00	0.99	0.99–1.00	2318	1.00
Anesthetics that cause vasodilation and induce hypovolemia states	0.87	0.87–0.99	1836	0.98	0.87	0.87–0.99	1813	0.98

(Continues)

TABLE 3 (Continued)

Associated Conditions	Criterion							
	Clarity				Accuracy			
	Item evaluation	95% CI	Wilcoxon*		Item evaluation	95% CI	Wilcoxon*	
			V	*p*			V	*p*
Water restriction	1.00	0.99–1.00	2829	1.00	1.00	0.99–1.00	2535	1.00
Use of muscarinic and nicotinic anticholinergics	1.00	-	2840	1.00	1.00	-	2698	1.00
Intubation	1.00	-	2847	1.00	1.00	-	2835	1.00

* Wilcoxon one-tailed test

with the item dry mouth; burning in the throat with the item dry throat; friable oral cavity with the item dry mouth. The halitosis item was removed, as it does not specifically describe the thirsty patient, being a characteristic associated with fasting time, keto breath, or dental alterations.

The related factors also led to combinations of the following items: increased osmolarity with the item dehydration, and rapid dehydration in children with the item dehydration. In the associated conditions, the following items were combined: nasal plug with the item oral breathing, and anesthetics that cause vasodilation and induce states of hypovolemia with the item hypovolemia. The item diabetes *insipidus* after pituitary surgery was removed, due to its low representativeness. The final components of the ND perioperative thirst proposal after the content analysis process are described in Table 4.

TABLE 4 Components after content validation of the perioperative thirst nursing diagnosis. Brazil, 2019

Proposal for the perioperative thirst nursing diagnosis

Definition: Sensory, physiological, and subjective experience that refers to the desire to ingest water to restore homeostasis of body fluids, generating intense discomfort when not fulfilled. Homeostatic and nonhomeostatic mechanisms participate in the genesis and satiety of thirst.

Defining characteristics

Dry mouth
Dry throat
Dry lips
Thick saliva
Thick tongue
Constant swallowing of saliva
Desire to drink water
Bad taste in mouth
Caregiver's report

Related factors

Pre and postoperative fasting
Oral breathing
Dehydration
Hypovolemia
Insensitive loss of hydration by breathing
Dry mouth
Habit of drinking water
High ambient temperature

Associated conditions

Intubation
Use of muscarinic and nicotinic anticholinergics
Water restriction

Population at risk

Surgical patient

DISCUSSION

This study aimed to validate the content of the proposal of the ND perioperative thirst, thus expanding the refinement and clarity of the elaboration of a more assertive, accurate, and relevant diagnosis. Traditionally, content validity studies for ND follow the steps proposed by Fehring (1987). However, other validation methods have been proposed as alternatives to correct weak aspects, mainly in relation to the level of *expertise* of the judges and the way of calculating the CVI (Classifying the level of expertise of the panelists is important and should take into account that theory and practice are mutually related in the process of training specialists (Benner et al., 2009, Lopes et al., 2013). The absence of specialists classified as experienced on thirst as a theme, can be explained by the recent interest in research in this area. However, it is observed that participants had an average time experience as nurses of more than 15 years, and that professionals with doctorates predominated. The inclusion of anesthesiologists allowed a greater diversity of opinions about the phenomenon under study.

The ND proposal for perioperative thirst contains 16 initial defining characteristics. Dry mouth is one of the main indicators present in the assessment of thirst, being reported by 51.8% (Gul et al., 2017), 69.2% (Nascimento et al., 2019), and 87.3% (Pierotti, Fracarolli et al., 2018) of patients. In addition, the perception of a dry mouth is also high and unpleasant, averaging 7.4 (± 2.2) on a dry mouth scale (Serato et al., 2019).

This item caused divergence among experts regarding its maintenance as a defining characteristic or as a related factor. For experts, dry mouth presents high relevance in regards to thirst, but as a defining characteristic and not as an etiological factor. Others pointed out that dry mouth may indeed be present in both categories. The concept analysis pointed out that dry mouth is one of the main characteristics that the patient reports when describing thirst, while studies that explore the physiology of thirst include dry mouth as an important stimulus for the occurrence of thirst as well (Nascimento et al., 2021).

Physiologically, dehydration of the oral cavity sends activation signals to brain regions responsible for thirst control, release of hormones

that regulate thirst and motivation to consume water. These processes are clearly exemplified by the fact that, although all patients receive intravenous fluids during the pre- and intraoperative period, the prevalence and intensity of thirst remain high. Dehydration of the oral cavity is one of the factors of nonhomeostatic thirst and determinant for thirst triggering (Armstrong & Kavouras, 2019; Gizowski & Bourque, 2018; Leiper, 2012). Thus, it was decided to maintain dry mouth not only as a defining characteristic, but also as a related factor.

The discomfort that surgical patients describe as dry throat could be caused by dehydration of the mucosa of the oral cavity, enhanced by contact with the endotracheal tube during the anesthesia-surgery. Patients also often report a burning sensation in their throat (Arai et al., 2013; Conchon et al., 2015). Experts pointed out that the patient's verbal report would be the main indicator of the presence of this item, with visual inspection being a complementary assessment.

Patients report that dry throat is one of the signs that denote the body's request for water and that it influences negatively even in speech, hindering verbalization of words (Silva et al., 2016). A dry throat is reported by 23.6%–75.2% (Nascimento et al., 2019; Pierotti, Fracarolli et al., 2018) of surgical patients with thirst.

The characteristic dry lips is present in 22.5% –79.1% (Nascimento et al., 2019; Pierotti, Fracarolli et al., 2018) of surgical patients with thirst, who also consider it one of the manifestations that cause greater discomfort (Garcia et al., 2019; Maldonado et al., 2020; Silva et al., 2016).

The characteristics thick saliva and thick tongue indicate alterations in the sensitivity of the viscosity of the salivary fluid and the sensation of edema, which is caused by dryness and lack of saliva in the oral cavity. As age increases, there are significant changes in salivary flow, as well as in its composition and lubrication properties, which compromise the functions of saliva (Xu et al., 2019). The opening of the oral cavity during general anesthesia, the use of anticholinergic pharmacological agents, and the anxiety that permeates the surgical experience all act to decrease salivary flow (Gholami et al., 2017).

The item water-seeking behavior was grouped with the item willingness to drink water at the suggestion of the experts. This defining characteristic expresses the patient's desire to drink water, translated into attitudes of solicitation and search for liquids (Armstrong & Kavouras, 2019; Leiper, 2012). This characteristic was reported by 36.5%–87.3% (Nascimento et al., 2019; Pierotti, Fracarolli et al., 2018) of patients with thirst. Patients' actions to relieve thirst, even if temporary, include an attempt to increase saliva production and thus be able to swallow and humidify the oral cavity and throat; trying to sleep or performing a distraction strategy for the discomfort of thirst; performing oral hygiene, rinsing and spitting the water out (Silva et al., 2016).

The characteristics bitter mouth and bad taste in the mouth were grouped, as experts consider that both were the same aspect evaluated, maintaining the label bitter mouth. This item describes the sensation of unpleasant taste in the oral cavity, often quoted as bitter and was mentioned by 63.1% (Pierotti, Fracarolli et al., 2018) of patients and described qualitatively by surgical patients regarding thirst (Silva et al., 2016).

The related factors showed little variation in relation to the clarity and accuracy in the experts' evaluation. The items osmolarity and rapid dehydration in children were grouped with the item dehydration, as in the opinion of experts they presented definitions that could be confounding factors.

Thirst can be classified as homeostatic or nonhomeostatic. Homeostatic thirst is sensitive to alterations in blood composition, such as increased osmolarity and decreased plasma volume and blood pressure. Factors related to homeostatic thirst include: preoperative fasting, dehydration, insensitive loss of hydration, hypovolemia, and heat (Arai et al., 2013; Armstrong & Kavouras, 2019).

Preoperative fasting is an important related factor for this diagnosis. The need for the patient to continue fasting aims to decrease the risk of aspiration pneumonia. Although several specialty associations indicate a fasting time of 6 h for solid foods and 2 h for clear liquids, in practice, the recommendation of "nil by mouth after midnight" is often maintained, regardless of the time scheduled for the surgical procedure (Denkyi, 2020; Panebianco et al., 2020).

A study that analyzed the total preoperative fasting time in 163 patients described the mean time in hours for solid foods of 19 h (± 0.22), ranging from 5 to 46 h. The fluid intake was 13 h (± 0.20), ranging from 1 to 33 h. Despite strong evidence in the past 20 years about the possibility of shortening the fasting time, the change in practice is slow. No difference in behavior which could justify a longer fasting time was found in any of the evaluated surgical clinics, or in the digestive tract clinic. The other related factors (dehydration, insensible loss of hydration, hypovolemia, and heat) complement the homeostatic thirst mechanism. Intraoperative bleeding and exposure of the body's internal structures to the environment contribute to hypovolemia states, stimulating thirst (Arai et al., 2013); Another important mechanism in the regulation of thirst is nonhomeostatic. This is defined as a set of anticipatory impulses that indicate the need for water intake to the body, before homeostatic imbalance occurs (Armstrong & Kavouras, 2019); Conditions associated with an ND correspond to medical diagnoses, injuries, procedures, devices, or pharmaceutical agents. These are conditions that although not independently modifiable by the nurse, support the accuracy of the ND (The habit of drinking water influences the perceived intensity of thirst. Individuals who habitually consume less water reported significantly less thirst intensity when compared to people with higher water consumption. Thus, patients with habitual high water consumption may experience greater intensity thirst in times of deprivation (Armstrong et al., 2020; Conchon et al., 2015; Herdman & Kamitsuru, 2017). The item diabetes insiptus after pituitary surgery was removed, as the experts pointed out that, despite being related to thirst, this item is very specific to the phenomenon under study. Water restriction, the use of anticholinergics, and intubation are conditions in which the nurse has little possibility of intervention, and they act directly in inducing thirst. The need to restrict fluid intake or infusion can lead to extreme thirst, especially in situations such as kidney or heart failure. Anticholinergic agents used to reduce the risk of bronchoaspiration, decrease saliva secretion, and are associated with thirst (Lee et al., 2020; Leiper, 2012; Panebianco et al., 2020). Related factors that act in this way include dry mouth, oral breathing,

and the habit of drinking water. Intubation causes the patient's oral cavity to remain open, thus increasing the dryness of the mouth. These last two associated conditions result in a decrease in the humidity of the oral cavity, activating non-homeostatic thirst mechanisms (Arai et al., 2013).

A limitation of the study to be considered is the fact that the sample was composed of members from a single country, since more varied results can be found in other cultural and clinical practice contexts. In carrying out this study, the participants did not have contact with other judges, thus reducing the possibility of evaluation bias, conditioning the responses.

For future studies, the need for a better understanding of the relationship between the item dry mouth and thirst in the experience of the surgical patient is pointed out, deepening the understanding of its role as a defining characteristic, or a related factor.

CONCLUSION

This study presented the content of the proposal for the perioperative thirst nursing diagnosis validated by 34 experts. All components of the ND were evaluated for relevance, clarity, and precision, with high levels of agreement among experts. Qualitative observations were found to be fundamental for both joining and excluding items.

IMPLICATIONS FOR NURSING KNOWLEDGE

The results of the current study expand the level of refinement and clarity of this ND proposal, aiding its inclusion in the NANDA-I taxonomy, in order to enable better understanding of the thirst phenomenon in the surgical patient. This study helped to explain and facilitate the identification of defining characteristics, related factors, and associated conditions for nurses, nursing students, and researchers on this topic. New diagnoses could improve the NANDA-I classification with structured diagnoses based on evidence.

KNOWLEDGE TRANSLATION

The inclusion of the thirst diagnosis is necessary to improve the communication of nursing professionals, in addition to highlighting thirst for planning actions for its relief.

The diagnostic proposition of perioperative thirst presents nine defining characteristics, eight related factors, and three associated conditions, analyzed in their content.

The standardization of language facilitates the understanding of nurses in different realities, allowing nurses along with the multidisciplinary team to work to alleviate this discomfort.

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