

Cultural analysis of surgical safety checklist items in Spain and Argentina

Análise cultural dos itens de duas listas de verificação cirúrgica de Espanha e Argentina
Análisis cultural de los ítems de dos listas de verificación quirúrgica de España y Argentina



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ABSTRACT

Objective: To compare the agreement between two surgical checklists implanted in two hospitals in Spain and Argentina, using the international classification for patient safety as a framework.

Method: This was an expert opinion study carried out using an ad hoc questionnaire in electronic format, which included 7 of the 13 categories of the international classification for patient safety. Fifteen surgical security experts from each country participated in this study by classifying the items on the checklists into the selected ICPS categories. The data were analyzed with SPSS V20 software.

Results: There was a greater percentage of classifications in fields related to the prevention of critical events. The category "clinical processes and procedures" was mentioned most frequently in both lists.

Conclusion: The implementation of the surgical safety checklist is variable. Experts considered that the Argentinian list was clearer in every dimension.

Keywords: Operating room nursing. Patient safety. Operating rooms. Quality of health care.

RESUMO

Objetivo: Comparar a concordância entre duas listas cirúrgicas, implantadas em dois hospitais na Espanha e na Argentina, usando como quadro de referência a classificação internacional para a segurança do paciente.

Método: Estudo baseado na opinião de especialistas, realizado através de um questionário ad hoc em formato eletrônico, que inclui 7 das 13 categorias da classificação internacional para a segurança do paciente. Participaram 15 especialistas em segurança cirúrgica de cada país, associando cada item das listas de verificação nas dimensões selecionadas. Os dados foram analisados com o programa SPSS V20.

Resultados: Uma porcentagem mais elevada de coincidências é evidente com domínios relacionados à prevenção de eventos críticos. A dimensão Processos clínicos e procedimentos apresentou uma maior frequência de atribuição em ambas as listas.

Conclusão: Há variabilidade na implantação das listas cirúrgicas de verificação. Especialistas acreditam que a lista da Argentina é mais clara em todas as dimensões.

Palavras-chave: Enfermagem de centro cirúrgico. Segurança do paciente. Salas cirúrgicas. Qualidade da assistência à saúde.

RESUMEN

Objetivo: Comparar la concordancia entre dos listas de verificación quirúrgica implantadas en dos hospitales en España y Argentina utilizando como marco de referencia la Clasificación Internacional para la Seguridad de Pacientes.

Método: Estudio basado en el juicio de expertos realizado con un cuestionario ad hoc en soporte electrónico que abarca 7 de las 13 categorías de la Clasificación Internacional para la Seguridad de Pacientes. Participaron 15 expertos en seguridad quirúrgica de cada país, asociando cada ítem de las listas de verificación con las dimensiones seleccionadas. Los datos se analizaron con el programa SPSS V20.

Resultados: Se evidencia un mayor porcentaje de coincidencias con campos relacionados con prevención de eventos críticos. La dimensión Procesos clínicos y procedimientos obtuvo una mayor frecuencia de asignación en ambas listas.

Conclusión: Existe variabilidad en la implantación de las listas de verificación quirúrgica. Los expertos consideran la lista argentina más clara en cada dimensión.

Palabras clave: Enfermería de quirófano. Seguridad del paciente. Quirófanos. Calidad de la atención de salud.

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■ INTRODUCTION

Patient safety in the operating room received special attention from the World Health Organization (WHO) in 2004 via the World Alliance for Patient Safety. One of its actions was to implement a surgery safety checklist as a quality control tool for each phase of the surgical process⁽¹⁾.

The checklist proposed by WHO is designed to reinforce safety practices, fostering communication and teamwork inside the operating room. The checklist includes 19 items, divided into 3 critical moments of the surgical procedure: before anesthesia induction (phase 1), before skin incision (phase 2) and before the patient leaves the operating room (phase 3). As the surgery progresses, the operating team must verbally review and confirm that all of the safety measures on the checklist have been performed. The checklist also includes a record of the activities carried out.

Between 2007 and 2009, the WHO surgical safety checklist was validated in eight cities in different countries (Toronto, New Delhi, Amman, Auckland, Manila, Ifakara, London and Seattle). The validation process included a broad database of patients 16 years of age or older undergoing noncardiac surgery. The goal was to identify possible problems with its application, room for improvement and acceptance. The authors concluded that the implementation of the checklist reduced rates of major inpatient complications from 11% to 7%, and postoperative death rate from 1.5% to 0.8%⁽²⁾.

Since 2009, more than 3,900 hospitals in 122 countries have implemented the surgical safety checklist. Of these, 1,800 hospitals informed WHO of the routine use of the checklist in surgical activities and 25 countries expressed government commitment to invest in human and material resources to ensure the continuity of the checklist implementation⁽²⁾.

The design and validation of the WHO surgical safety checklist are based on its simplicity, applicability and measurability. However, its widespread dissemination and the possibility for each country and hospital to adapt the checklist to fit their particular context opens room for variations. Such variability can affect the original checklist's construct and conceptual basis, turning it into a task management tool instead of one that ensures quality of care and continuous improvement.

In accordance with WHO recommendations, the checklist has been adapted for Argentina and Spain, with variations worth investigating. Up to the present, there are no similar studies with which to compare results.

Another challenge taken on by the World Alliance for Patient Safety was the development of the International

Classification for Patient Safety (ICPS), which presents a taxonomy for patient safety common to all the countries committed to implementing safety strategies⁽³⁾. The ICPS was created in 2006, however, it is still unfinished. It comprises ten high-level classes (Figure 1) that provide a reasonable understanding among countries regarding patient-safety related aspects and includes concepts that correspond to existing regional and national classifications.

The ICPS is necessary given the differences among countries in healthcare policy development, especially those regarding patient safety. Such differences are due to aspects related to territorial organization and the de-centering of health-related competencies, which influence the variability of the surgical checklist. For example, in Argentina, the list was adapted via a consensual process conducted by the National Advisory Committee for Patient Safety; in Spain, the checklist was included as part of a quality strategy introduced by the Ministry of Health, Social Services and Equality, which must be implemented by each region within the framework of its healthcare competencies.

1. Incident type
 - Clinical administration
 - Clinical process/procedure
 - Documentation
 - Healthcare-associated infection
 - Medication/IV fluids
 - Blood/blood products
 - Nutrition
 - Oxygen/gas/vapor
 - Medical device/equipment
 - Behavior
 - Patient accidents
 - Infrastructure/building/fixtures
2. Resources/organizational management
3. Patient outcome
4. Patient characteristics
5. Incident characteristics
6. Contributing factors/hazards
7. Organizational outcomes
8. Detection
9. Mitigating factors
10. Ameliorating actions
11. Actions taken to reduce risk

Figure 1 – List of high-level classes of patient safety and incident type

The scientific production generated since the creation of the surgical safety checklist addresses the quality of its implementation in terms of compliance, barriers and difficulties⁽⁴⁾, patient's views⁽⁵⁾, and prevention of adverse effects⁽⁶⁾. In general, these studies have presented results that support the continuity of the checklist's use and its implementation in facilities where it has not yet been adopted. However, the literature review conducted in the present investigation found no studies analyzing the variability of different surgical safety checklists or their correspondence to ICPS categories.

The aim of this study was to compare the agreement between two surgical safety checklists implemented in two hospitals in different countries (Spain and Argentina) and identify possible differences. This assessment was made from the perspective of healthcare professionals, based on the framework proposed by the ICPS.

■ METHOD

This was an expert opinion study with the objective of comparing the agreement between two surgical safety checklist implemented in a hospital in Cantabria (Spain) and another in Buenos Aires (Argentina), between May and October 2014, based on ICPS categories. Consensus and expert opinion methods are a set of research techniques used in areas of uncertainty or when experimental observations are limited⁽⁷⁾, as was the case in this study. The literature review did not find any previous research on the theme. One of the methodological flaws of such methods is lack of consensus on the necessary number of experts, inclusion criteria, and criteria to assess level of agreement or consensus among experts. These aspects were previously considered and dealt with accordingly.

Spain and Argentina were chosen because the implementation of the surgical safety checklist occurred in these places as part of distinct healthcare policies. In Argentina, it is part of a nationwide strategy, whereas in Spain, each region develops their own strategy. Hospitals were selected by convenience and in order to ensure their comparability and confirm their correspondence with the original WHO checklist, two lists were reviewed in terms of the number of phases involved in the surgical process and the number of items on the list. It is also worth mentioning that in Spain the nursing staff is responsible for checking the list, whereas in Argentina, this responsibility is assigned to surgical assistants.

The number of experts considered necessary in consensus studies varies greatly in the literature, representing one of the most significant methodological gaps; however, ex-

pert selection should consider aspects such as the professional's experience, reputation and availability⁽⁸⁾. The present study involved 30 experts, 15 from Spain and 15 from Argentina. Experts were defined as healthcare professionals that met one of the following selection criteria: (i) having over 4 years of experience in surgery and working in the chosen hospitals, (ii) being members of clinical safety committees in their respective countries, (iii) having renowned prestige in the area of patient safety in both countries. The experts were sent a presentation letter inviting them to participate in the study together with information on the study's methodology and aims. All of the experts participated voluntarily.

The chosen experts received an e-mail containing the access link to the online questionnaires, designed ad hoc for the study. One questionnaire included the items on the surgical checklist for the hospital in Cantabria and the other, the items on the checklist for the hospital in Buenos Aires. Additionally, both questionnaires included the 13 incident types listed in the ICPS (Figure 1), grouped into seven categories to facilitate application (Figure 2). All of the experts were given both questionnaires and were asked to classify the items on the surgical safety checklist from both hospitals into the corresponding ICPS category.

The agreement analysis was based on the percentage of agreement among experts⁽⁹⁾, who classified each of the items on the two surgical checklists into at least one of the seven ICPS categories. To determine the level of agreement between the items on the surgical checklist and the ICPS categories, the following criteria were established: (i) satisfactory agreement (at least 50% of the experts classified the item into the same category); (ii) equivocal agreement (25% to 49% of the experts classified the item into the same category); (iii) nonclassifiable (less than 25% of the experts classified the item into the same category). The data were analyzed using the Statistical Package for the Social Sciences (SPSS-V20).

1. Clinical administration/documentation
2. Clinical process/procedure
3. Healthcare-related infection
4. Medication/IV fluids/blood/blood products
5. Oxygen/gas/vapor
6. Behaviors
7. Infrastructure/building/fixtures

Figure 2 – Thirteen high-level incidents from the International Classification for Patient Safety grouped into seven categories

The experts were invited to participate in the study and received information on its methodology and objectives and provided voluntary and anonymous consent. Permission was obtained from hospital management to access and use their respective surgical safety checklist. The management of both hospitals dismissed the need for approval from a research ethics committee, as this is an investigation based on expert opinion not involving patients or professionals working at either facility. Confidentiality of the experts and

the hospitals involved was respected at all moments. Furthermore, it abided by the ethical principles set forth in the Helsinki declaration and the fundamental principles of bioethics: autonomy, justice, beneficence and nonmaleficence.

■ RESULTS

The Spanish list presented a greater percentage of agreement in the first phase (before induction of anesthe-

Table 1 – Percentage of agreement between the items on the surgical safety checklist and ICPS categories according to group of experts. Cantabria, Spain, 2014

Checklist item	Percentage of agreement*							Proposed category**
	1	2	3	4	5	6	7	
Team presentation	40.0	36.7	3.3	3.3	0.0	6.7	10.0	Equivocal (1.2)
Patient identity	13.3	36.7	3.3	0.0	26.7	3.3	16.7	Equivocal (2)
Surgery site	10.0	23.3	13.3	0.0	3.3	13.3	36.7	Equivocal (7)
Procedure	10.0	6.7	3.3	3.3	0.0	6.7	70.0	7
Anesthesia team reviews concerns	13.3	6.7	0.0	10.0	3.3	16.7	50.0	7
Surgeon reviews steps	16.7	6.7	3.3	0.0	6.7	3.3	63.3	7
Nursing reviews sterility	6.7	0.0	46.7	10.0	6.7	6.7	23.3	Equivocal (3)
Antibiotic prophylaxis	3.3	0.0	134.3	30.0	0.0	10.0	13.3	Equivocal (3.4)
Radiology imaging	3.3	3.3	0.0	0.0	23.3	20.0	50.0	7
Patient identity	10.0	46.7	0.0	0.0	26.7	10.0	6.7	Equivocal (2.5)
Surgical site	10.0	26.7	10.0	0.0	0.0	16.7	36.7	Equivocal (2.7)
Procedure	6.7	10.0	0.0	3.3	0.0	6.7	73.3	7
Consent	3.3	26.7	3.3	3.3	43.3	3.3	16.7	Equivocal (2.5)
Site marked	10.0	23.3	0.0	0.0	3.3	6.7	56.7	7
Pulse oximeter, electrocardiogram, noninvasive arterial pressure, aspiration	3.3	6.7	3.3	6.7	0.0	50.0	30.0	6
Allergies	10.0	30.0	3.3	13.3	10.0	3.3	30.0	Equivocal (2.7)
Difficult airway/ aspiration risk	6.7	10.0	6.7	0.0	0.0	20.0	6.7	7
Risk blood loss (500ml)	3.3	10.0	0.0	16.7	3.3	13.3	53.3	7
Anesthesia safety check	6.7	3.3	0.0	0.0	3.3	26.7	60.0	7
Procedure	23.3	20.0	0.0	3.3	6.7	6.7	40.0	Equivocal (7)
Instrument count	16.7	10.0	0.0	6.7	6.7	20.0	40.0	Equivocal (7)
Gauze/sponge recount	23.3	6.7	6.7	13.3	3.3	6.7	140.0	Equivocal (7)
Specimen label	6.7	13.3	0.0	13.3	36.7	3.3	26.7	Equivocal (5.7)
Treatment recovery	16.7	3.3	0.0	3.3	10.0	6.7	60.0	7
Transportation equipment	13.3	3.3	0.0	0.0	3.3	63.3	16.7	6

Source: Research data 2014.

*ICPS categories: 1. Teamwork; 2. Communication; 3. Healthcare-related infection; 4. Medication, healthcare products and IV fluids; 5. Documentation and clinical administration; 6. Infrastructure, devices and teams; and 7. Clinical processes and procedures

** Classification criteria: An item was considered part of a given category if the percentage of expert agreement was greater or equal to 50%; equivocal if the percentage of agreement was less than 50% and greater than 25%; unclassifiable if the percentage was less than 25% for all categories.

Table 2 – Percentage of agreement between surgical safety checklist items and ICPS categories according to group of experts. Buenos Aires, Argentina, 2014

Checklist item	Percentage of agreement*							Proposed category**
	1	2	3	4	5	6	7	
Patient identity	16.7	26.7	0.0	0.0	36.7	6.7	13.3	Equivocal (2.5)
Type of surgery	10.0	16.7	3.3	0.0	10.0	6.7	53.3	7
Side	6.7	36.7	0.0	0.0	6.7	6.7	43.3	Equivocal (2.7)
Complementary study	0.0	3.3	0.0	3.3	30.0	6.7	56.7	7
Side marked	30.0	13.3	0.0	0.0	3.3	3.3	50.0	7
Blood reserve	6.7	3.3	0.0	60.0	3.3	3.3	23.3	4
Intensive care unit bed	23.3	16.7	0.0	0.0	23.3	30.0	6.7	Equivocal (6)
Fasting	20.0	23.3	0.0	3.3	0.0	6.7	46.7	Equivocal (7)
Anesthesia team check	13.3	6.7	0.0	0.0	0.0	73.3	6.7	6
Oximeter in place and functioning	26.7	6.7	0.0	0.0	0.0	46.7	20.0	Equivocal (1.6)
Allergies	3.3	50.0	0.0	10.0	16.7	3.3	16.7	2
Difficult airway or aspiration risk	26.7	10.0	6.7	0.0	10.0	3.3	43.3	Equivocal (1.7)
FO scope available	16.7	3.3	0.0	10.0	0.0	60.0	10.0	6
Antibiotic prophylaxis	0.0	3.3	66.7	16.7	0.0	3.3	10.0	3
Instrument sterility	6.7	3.3	56.7	0.0	3.3	23.3	6.7	3
Necessary equipment functioning	13.3	0.0	0.0	3.3	6.7	76.7	0.0	6
Prosthesis material available	0.0	3.3	0.0	23.3	6.7	66.7	0.0	6
Entire team present	83.3	13.3	0.0	0.0	3.3	0.0	0.0	1
Team presentation	20.0	70.0	3.3	0.0	0.0	3.3	3.3	2
Decubitus and patient fixation check	26.7	6.7	0.0	0.0	0.0	16.7	50.0	7
Surgeon reviews patient name	3.3	76.7	0.0	3.3	13.3	0.0	3.3	2
Surgeon reviews surgery step	10.0	40.0	0.0	3.3	0.0	3.3	43.3	Equivocal (2.7)
Surgeon reviews unexpected events	16.7	23.3	0.0	3.3	3.3	3.3	50.0	7
Surgeon reviews duration	13.3	23.3	6.7	0.0	3.3	0.0	53.3	7
Anesthesiologist reviews problems	16.7	20.0	0.0	10.0	0.0	0.0	53.3	7
Procedure performed	33.3	3.3	0.0	0.0	3.3	0.0	60.0	7
Instrument, sponge and needle count	16.7	10.0	3.3	0.0	3.3	13.3	53.3	7
Correctly labeled specimen	6.7	10.0	0.0	3.3	36.7	3.3	40.0	Equivocal (5.7)
Specimen labeling	3.3	6.7	0.0	10.0	43.3	3.3	33.3	Equivocal (5.7)
Problem with instruments or equipment	0.0	0.0	0.0	0.0	3.3	93.3	3.3	6
Surgical portion	13.3	16.7	0.0	0.0	60.0	3.3	6.7	5
Anesthesia portion	13.3	16.7	0.0	0.0	56.7	3.3	10.0	5

Source: Research data, 2014.

*ICPS categories: 1. Teamwork; 2. Communication; 3. Healthcare-related infection; 4. Medication, healthcare products and IV fluids; 5. Documentation and clinical administration; 6. Infrastructure, devices and teams; and 7. Clinical processes and procedures.

**Classification criteria: An item was considered part of a given category if the percentage of expert agreement was greater or equal to 50%; equivocal if the percentage of agreement was less than 50% and greater than 25%; unclassifiable if the percentage was less than 25% for all categories.

Table 3 – Total percentage of ICPS categories classified by experts

Surgical checklist	Category chosen by experts*						
	1	2	3	4	5	6	7
Spain	11.46%	14.8%	6%	5.6%	9.06%	14%	39.06%
Argentina	15.52%	17.60%	4.58%	5.10%	12.08%	17.91%	21.18%

Source: Research data

*ICPS categories: 1. Teamwork; 2. Communication; 3. Healthcare-related infection; 4. Medication, healthcare products and IV fluids; 5. Documentation and clinical administration; 6. Infrastructure, devices and teams; and 7. Clinical processes and procedures

sia), in the classification of checklist items into ICPS categories. The last phase of the list, before the patient leaves the operating room (phase 3), obtained the lowest percentage of agreement.

As shown in Table 1, the first phase of the checklist, which includes the prevention of critical events by surgeons, anesthesiologists and nurses, obtained the highest percentage of agreement of the entire surgical process (Table 1).

In Spain, “verbal confirmation of surgical procedure” obtained the highest percentage of expert agreement. “Patient confirmation by nurse” obtained 73.3% and “Confirmation by all team members”, 70%. Of all the categories, the most frequent classification in all of the checklist phases was “clinical processes and procedures”. The highest level of consensus for the Argentinian list occurred in the first phase (patient entry) and for items related to the prevention of critical events (Table 2).

Of all of the items, “problems with instruments or equipment” presented the highest level of agreement among experts (93.3%). The category that obtained the highest percentage of classification was “clinical processes and procedures”, followed by “infrastructure”.

In the comparison of both lists, (Table 3), the category “clinical processes and procedures” obtained the highest total percentage of classification in both countries. The category with the lowest percentage in Spain was “medications, healthcare products and IV fluids”; in Argentina, the least frequent category was “healthcare-related infections”.

■ DISCUSSION

Both lists incorporated the WHO safety measures, however, the Argentinian list did not include informed patient consent. The decision to include patient consent was made after the checklist adaptation via resolution no. 28/2012 of the National Ministry of Health. This resolution expressly recommends this item's inclusion, as demonstrated in the proposed model.

The recent literature relates surgical safety with infection, antibiotic prophylaxis, and studies on the effectiveness of techniques and procedures⁽⁹⁻¹⁰⁾; however, few articles make reference to compliance with the checklist⁽¹¹⁾. There is no discussion of the provision of safety tools, such as the checklist, from the perspective of surgical safety. In Spain, the National Health System developed a specific strategy as part of the National Quality Plan called “Improving patient safety in healthcare services of the National Health System”⁽¹²⁾, which recommends the checklist's implementation.

In Argentina, resolution no. 28/2012 of the Ministry of Health approved the implementation of the checklist and its manual with quality evidence regarding actions that improve surgical safety⁽¹³⁾. This resolution regulated its inclusion in patient history records with the circulating nurse's signature on each phase of the surgical process.

The implementation of the checklists took place at different places in the hospitals involved in the study, a possible explanation for why the Argentinian expert group considered it easier to match the checklist items with different patient safety dimensions and why consensus on such classification was greater.

In Spain, this difference can be due to how healthcare competencies are decentralized among the autonomous communities in which the list has been implemented comprehensively. Monitoring the results of implementation in different contexts is a complex task. The percentage of expert agreement for the Spanish checklist was lower than in Argentina. This aspect may be due to variations in how the list was implemented in both countries and can be explained in terms of legislative differences. Unlike Argentina, Spain has no legislation related to checklist compliance and patient safety. Furthermore, the two countries adopted different discussion strategies to establish the definitive checklist text and involved decision makers from different backgrounds in its creation.

There was agreement among the group of experts in terms of the processes and procedures dimension, which is

significant because it is a category that confers value to the process and consequently, helps control variability. One of the safety objectives of the list is for patient identity and planned surgery to correspond to the surgery actually carried out. The group of experts did not reach a consensus regarding the category in which this item would be included. In Argentina, it was assigned to categories 2 (communication) and 7 (clinical processes and procedures). The literature emphasizes this item in the sense of preventing this adverse effect. A study conducted with court rulings and claims between 1998 and 2010 in orthopedic surgery and traumatology showed the importance of this item in the checklist. The results showed that 60% of the errors were wrong site, 52% were knee-related, and 40% were arthroscopies⁽¹⁴⁾. The purpose of the checklist is to foster teamwork and communication among the different specialties and professionals that intervene in a surgical process; however, none of the Spanish professionals matched this item to these two categories. This may be because of scarce institutional support, or the perception of control of surgical activity instead of fostering teamwork⁽¹⁵⁾.

Some implementation barriers include confusion or ignorance on correct usage⁽¹⁶⁾, beliefs, attitudes and individual perceptions that could improve with training⁽¹⁷⁾, and the duplication of items within existing checklists⁽¹⁸⁾. The surgical checklists in both countries are in accordance with the structural characteristics of the original list: they were focused, brief, verbal, cooperative, tested, integrated, and included a systematic review of essential safety measures.

Most of the assessments conducted worldwide have been carried out from different perspectives, such as the effects of implementation⁽¹⁹⁾, effectiveness⁽²⁰⁾, patient views⁽²¹⁾, and the attitudes and perception of professionals⁽²²⁾. Ultimately, compliance with the surgical safety checklist depends on staff perception, training and effective leadership⁽¹⁹⁻²⁰⁾. Moreover, the list was adopted according to WHO recommendations in several surgical environments, associated with reduced surgical complications and improved communication between team members.

Comparing the taxonomy used on the checklists for management enhances comparability of results; however, it is not a common object of study. The present investigation illustrates differences in conceptual meaning of checklist items in two countries with the same language. Validating the checklist in different languages and management models can improve its implementation.

Limitations of this study include its setting, as it focused on assessing the checklists of two hospitals in two Spanish-speaking countries. Furthermore, expert subjectivity and the number of participating experts can hin-

der the generalizability of the results. Other limitations include lack of consensus on the expert opinion method, the number of experts needed, and cut-off points. On the other hand, the findings point to the importance of further research on the variability of checklist adaptation, both within and between countries that have adopted this patient safety strategy.

■ CONCLUSION

The adaptations performed when implementing surgical safety checklists include certain variability, therefore, it is important to introduce change gradually and minimize loss of fidelity to the WHO's initial philosophy. According to expert opinion, the Argentinian checklist was clearer in all dimensions.

The experts were not able to match all of the checklist items to ICPS dimensions. This indicates the need for checklists to be elaborated via a more in-depth process to reflect all dimensions more clearly. The results of this study carry important repercussions in the areas of health education, provision and management. Adapting the surgical safety checklist to fit different contexts of use is a fundamental step in the tool's validation process, however, it can imply in both loss of reliability and inadequate use by professionals and managers.

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