



Comparison of the Perception of Patient Safety in the ICU Versus other Wards in a Second-Level Hospital

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Keywords: Patient safety; Perception of patient safety; Intensive care unit.

Abstract

AIMS: Patient safety is difficult to measure, but it should affect all our actions in patient treatment, in the ICU and in any health care. **METHODS.** A descriptive observational study was carried out to evaluate the results of a survey to assess the perception of patient safety by health personnel, with the HSOPS survey, ordered in dimensions, in the ICU and in other hospital wards of a Spanish second level hospital.

Results: 194 questionnaires were collected. The percentages of positive answers in the dimensions “Perception of security”, “Organizational learning / continuous improvement”, “Teamwork between units” and “Problems in shift change and transition between services”, “Expectations of actions by management/supervision” and “Teamwork within the service” were higher in the ICU, with significant differences in the last 2; the remaining dimensions had higher percentages of positive responses in the rest of the services, with greater differences in “Staffing” and in “Support from hospital management in security” (the latter with a significant difference).

Conclusions: The impression of health professionals is that the staffing of services should be increased and management efforts in favor of patient safety should be made more visible. ICU and hospitalization wards’ environment is complex, with many challenges related to patient safety. Two important aspects, such as reduced staffing and adequate support from supervision and service head in promoting patient safety, are always important, but to a greater extent in ICU.



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Introduction

Patient safety is something difficult to measure, but it should affect all our actions in patient treatment, not only in the ICU but in any health care [1]. The patient safety culture is one of the most critical elements that can contribute to improving the quality and safety of health care [2].

Safety culture is the set of individual and group values, attitudes, perceptions, competencies, and modes of behavior that determine the aptitude, suitability, style, and commitment of a healthcare organization [3,4]. It should be present in our daily activities. However, there is a clear lack of theoretical training in patient safety, both in professional training and postgraduate studies.

The objective of our work was to evaluate the patient safety perception of healthcare workers in our ICU in the year 2021, with the intention of undertaking measures to correct the problems detected (continuous improvement), and compare these findings in this environment (special due to the severity of the patients and the high level of technology in the treatment of patients), with those of other hospital wards.

Methods

We carried out a descriptive cross-sectional observational study to evaluate the results of a survey to assess the perception of patient safety by health personnel. A questionnaire was sent electronically, which was answered anonymously by nurses, auxiliary nurses, porters, cleaning workers, and physicians from various services (Medical, Surgical, Operating Room, Pediatrics, Maternity and Oncology) of a second-level Spanish hospital at 2 times when the healthcare pressure from COVID patients was not excessive.

The favorable opinion of the Clinical Trials and Research Committee of our hospital was obtained for the development of this study.

Safety assessment was performed with the Hospital Survey on Patient Safety Culture (HSOPS) questionnaire developed by the Agency for Healthcare Research and Quality [5], and translated into Spanish [6]. It is a semistructured questionnaire with 42 questions grouped into 12 dimensions, and 5 response options on a Likert-type assessment scale: favorable responses to the question statement (“strongly agree” or “always”), intermediate (“neither agree nor disagree” or “sometimes”) and unfavorable to the wording of the question (“strongly disagree” or “never”). The relative frequency of positive responses (number of positive responses divided by the sum of positive, negative, and intermediate responses) was calculated for each question and for each dimension. A dimension was rated as strong if it was $\geq 75\%$ positive response to positively framed questions, or $\geq 75\%$ negative response to negatively framed questions. A question or dimension was considered weak if $\geq 50\%$ of negative responses to questions formulated in a positive sense, or $\geq 50\%$ of positive responses to questions formulated in a negative sense. The frequency of negative responses was also assessed to elucidate the areas where efforts should be focused to improve the safety culture.

The dimensions are:

Referring to your work area / unit: “Non-punitive response to error” (D8), “Organizational learning - continuous improvement” (D4), “Overall perception of patient safety” (D2), “Staffing” (D9) and “Teamwork units” (D11).

- Related to the work of your manager/ supervisor (D3).
- Related to communication: “Communication openness” (D6), “Feedback and communication about mistakes” (D7)
- “Frequency of adverse events reported” (D1).
- Related to your hospital: “Handoffs and transitions” (D12), “Management support for patient safety” (D10) and “Teamwork across units” (D11).

An overall security perception score was built: the negative response “never” or “strongly disagree” was awarded 0 points and the positive response “always” or “strongly agree” was awarded 4 points. The ideal maximum security perception sum score would be 4 (maximum score) x 42 questions = 168 points.

A question on overall perception of the safety culture was included with a numerical score between 1 and 10. In addition, other questions were added to:

- Professional group;
- Socio-labor characteristics: in which year they started working in their current profession; in which year they started working in your service;
- Frequency of notification of adverse events in the last year;
- And finally, 8 questions (53-60) about usual work practices that indicate a safety culture: working with verbal orders, medical history reports, medication changes, diagnostic information, requesting informed consent and assessment of treatment preferences in patients who are probably terminal.

Reliability was assessed (the degree to which the questionnaire consistently measures, without error, its object of measurement in a sample of the the population), with Cronbach's alpha coefficient.

Continuous numerical variables were described as mean and standard deviation (SD). Categorical variables were described as percentages. Student's t-test was used to compare a continuous numerical variable with a dichotomous categorical one. The JI SQUARE test was used to assess 2 categorical variables. The p was statistically significant if < 0.05 .

Results

194 responses were collected, of which 148 were made by women (76.29%). Overall, 94 (48.5%) were nurses, 51 (26.29%) nurse assistants, 45 (23.19%) physicians, 3 (1.55%) porters and 1 (0.51%) cleaning worker. Overall, 11.86% came from the medical ward, 24.74% from the surgical ward, 4.08% from the operating room, 15.46% from Pediatrics/Maternity, 6.63% from Oncology, and 35.05% from the ICU. Although the survey was not initially proposed in the Emergency Department, 4 workers from this service sent their questionnaire. The overall questionnaire completion rate was 38.5% (190/493), with values ranging from 13.33% in the operating room to 73.9% in the ICU. The mean age was 46.11 years (SD 11.59). They had been working in their profession for 17.11 +/- 11.96 years, 10.70 +/- 10.30 years working in our hospital, and 6.78 +/- 6.93 years in your department, with very asymmetric distributions (little lower median, 15, 6 and 3 years, respectively). They worked an average of 36.35 +/- 7.86 hours per week. Only 67 (34.5%) have recently received training in patient safety, with similar percent-

ages among those who have been working <= 2 years and > 2 years (30.44 and 36.13%).

The quality and safety score in patient management was 7.84 +/- 1.53 points (median 8), with 3.09% fails, 12.37% pass, 51.55% remarkable and 32.99% outstanding. These scores were similar in the different services included in the study. On the other hand, the ratings of the degree of security showed differences between professional groups (p < 0.001), with only remarkable and outstanding scores in nurse assistants, wardens and cleaning workers, and percentages of other qualifications (pass and fail added) of 18,1% and 28.9% in nurses and physicians. There were no differences in the score between older and younger workers, seniority, or hours worked per week.

The vast majority of health workers (96.43%) did not report any incident. 3 reported 1 incident, 3 reported 2 incidents, and 1 reported 5 incidents.

Question 1 "The staff supports each other", included in the 5th dimension "Teamwork within the service", had the highest percentage of positive responses (90.72%). Question 31 "Hospital management only seems to be interested in patient safety when an adverse event has already occurred in a patient", included in dimension 10 "Support of hospital management in safety", had the lowest percentage of positive responses (21.16%). The 9th dimension "Staffing" and the 10th "Support of hospital management in safety" were considered Weaknesses (32.25% and 24.7% of positive responses). Dimensions 1st "Frequency of notified adverse events", 2nd "Perception of security" and 11th "Teamwork between units" had percentages of positive responses above 50%. The 3rd dimension "Expectations of actions by the head manager / supervisor that favor safety" and the 5th "Teamwork within my service" were Strengths (76% and 87.56%).

The dimensions with the most negative responses were the 10th "Support of hospital management in security" and the 9th "Staffing", followed by the 8th "Non-punitive response to errors" and the 2nd "Perception of security"; all of them accounted for more than 50% of the total negative responses. The dimensions with fewer negative responses were the 5th "Teamwork within the service" and the 3rd "Expectations of action by the head manager / nursing supervisor that favor safety".

The last 8 questions have percentages of positive responses above 60%, and even questions 55 "When orders are received verbally about treatment, care or procedures to be carried out, the personnel who receives them write them down in the corresponding clinical document", 56 "Before making a new prescription, the list of medications that the patient is taking is reviewed" and 57 "All medication changes are communicated clearly and quickly to all professionals involved in patient care" were Strengths (percentages of positive responses > 75%). All these questions had percentages of negative responses of less than 20% (figure 6).

The assessment of the questionnaires collected in the ICU compared to those of other hospital services showed several results:

*Similar percentages of the different professional groups (Figure 1); And overlapping distributions of Years worked In their ward, With somewhat higher values In other hospital wards (Figure 2).

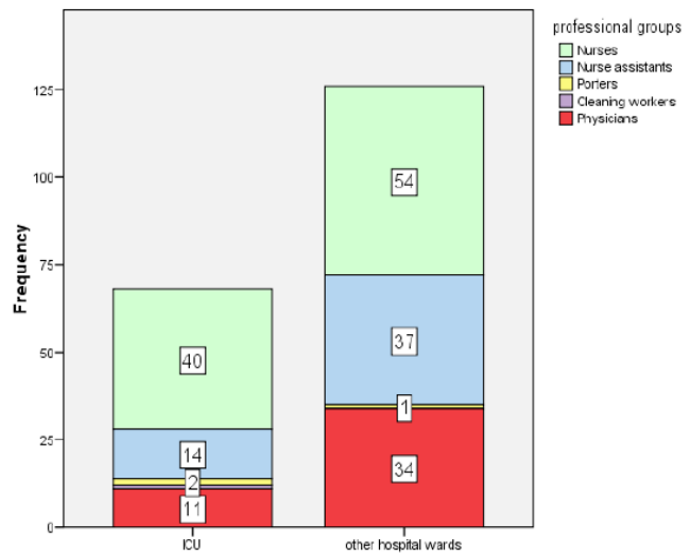


Figure 1: Stacked bar graph of the distribution of professional groups in the 2 groups studied.

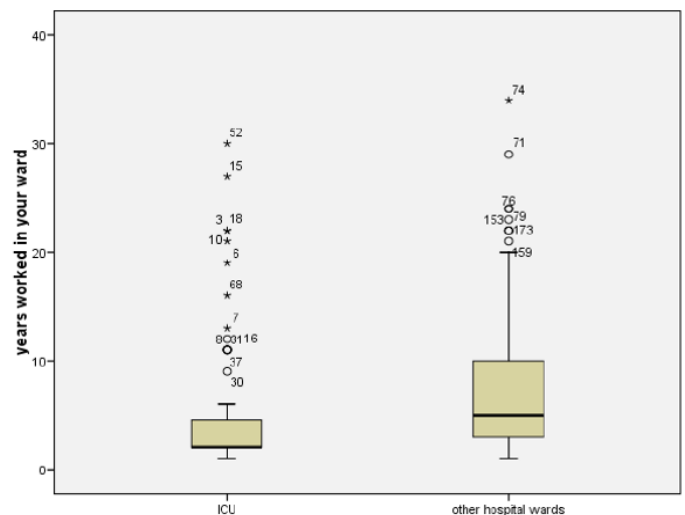


Figure 2: Box plot for the distribution of time worked in the ICU and in the rest of services.

*Scores in the 12 dimensions with some differences. The percentages of positive responses are higher in ICU in the dimensions: 2nd "Perception of security", 4th "Organizational learning / continuous improvement", 11th "Teamwork across units" (with 54,41% positive responses in ICU and 48,61% -weakness- in the other wards), 12th "Problems in shift change and transition between services", 3rd "Expectations of actions by management / supervision that favor patient safety" and 5th "Teamwork within the service" (dimensions 3th and 5th are strengths in ICU and in the other wards, although with significantly higher percentages of positives responses in ICU). And positive responses are higher in the rest of the hospital in the dimensions: 1st "Frequency of reported adverse events", 6th "Communication openness", 7th "Feed-back and communication about mistakes", 8th "Non-punitive response to errors", 9th "Staffing and 10th "Hospital management support in patient safety" (the last 2 dimensions are weaknesses with significantly lower percentages of positive responses in ICU) (Table 1 and figures 3 and 4).

Table 1: Percentages of positive answers in each dimension in the 2 work groups. ICU Intensive Care Unit. ns, non-significant difference. W weakness, S strength.

	ICU		other		p
D1. Frequency of events reported	55,88		64,42		ns (0,182)
D2. Overall perception of patient safety	51,47		50,79		ns
D3. Supervisor / manager expectations and actions promoting patient safety	85,29	S	75,40	S	< 0,028
D4. Organizational learning - continuous improvement	63,73		59,52		ns
D5. Teamwork within units	95,59	S	83,33	S	<0,001
D6. Communication openness	57,84		62,43		ns
D7. Feed-back and communication about error	59,31		67,72		ns
D8. Nonpunitive response to error	55,39		57,14		ns
D9. Staffing	25,57	W	34,80	W	ns (0,115)
D10. Management support for patient management	17,65	W	28,31	W	<0,044
D11. Teamwork across units	54,41		48,61	W	ns
D12. Handoffs and transitions	58,82		55,55		ns

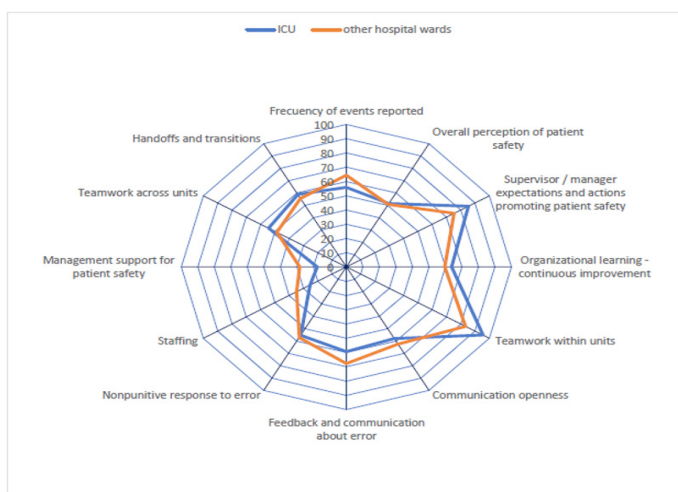


Figure 3: Radial graph showing the percentage of positive responses in the dimensions of each study group.

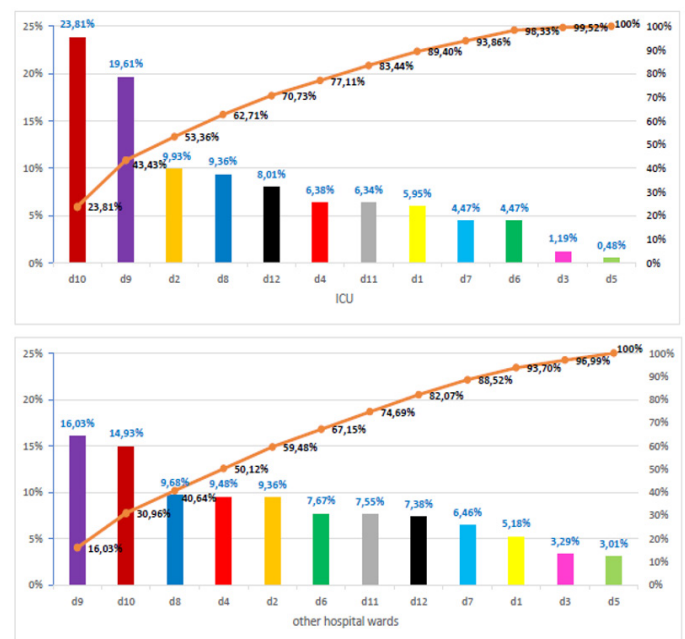


Figure 5: Pareto chart showing the dimensions with the highest percentages of negative responses in the ICU and in the rest of wards.

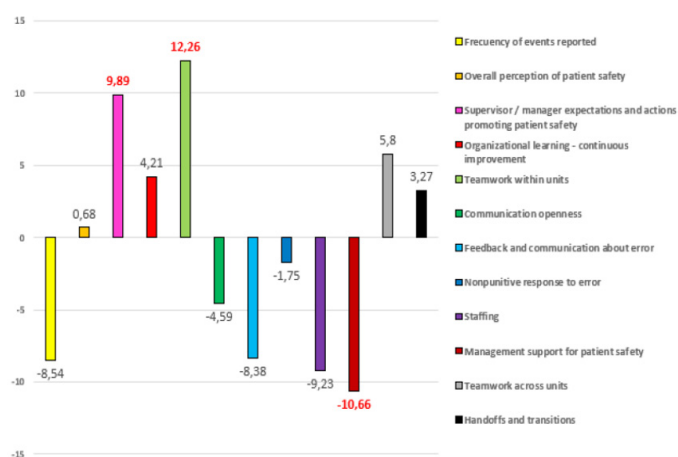


Figure 4: Bar graph showing the difference in percentages of positive responses in the ICU and in the rest of services. Bars with a positive score show that the percentage of positive responses in the ICU is higher than in the rest of services.

*The dimensions with the highest percentages of negative responses are quite similar in the ICU and in the rest of the hospital: 9th "Staffing", 10th "Support of hospital management in patient safety", 8th "Non-punitive response to errors" and 2nd "Perception of security" (Figure 5).

*Security sum score (104,11 vs 100,78) and overall perception of safety culture (8,06 vs 7,72) had similar values in ICU and in other hospital wards, although slightly higher in ICU (pns in both comparisons).

*The percentages of positive answers to the last 8 questions were greater than 50%, although with significant differences in the percentages of answers in the comparison between ICU/ rest of the hospital in question 56 "Before making a new prescription, the list of medications that the patient is taking is reviewed", 57 "Medication changes are clearly communicated to the professionals involved in care", 58 "All information that affects the diagnosis of the patient is clearly communicated to the professionals involved" and 59 "Before signing the informed consent, the patient is asked to repeat what they have understood" (Figure 6).



Figure 6: Stacked bar graph with positive, intermediate and negative responses to questions 54-60 in the ICU and in the rest of the studies evaluated.

Discussion

Errors or adverse events can cause harm to the patient and affect the hospital in a qualitative and quantitative way. For health professionals, they may mean a feeling of failure, and not an opportunity to adequately handle the error and establish mechanisms that avoid them in the future.

Our work shows that the perception of the safety of health workers in the ICU is a little different from the rest of the hospital (Medical, Surgical, Operating Room, Pediatrics, Maternity and Oncology wards). ICU workers are a little younger, with less seniority in their workplace, with a negative connotation for safety (less seniority implies less familiarity with the internal workings of a unit that is technically more complex than others, associated theoretically with a higher probability of error in patient care).

We can see as a strength, in the ICU and in the other departments, the organizational skills and promotion of the quality culture by the department head / supervisor, with a clearly higher percentage in the ICU (> 85%). Moreover, the perception of teamwork is very good in both groups, also higher in the ICU (>96%), which implies collaboration between workers from the same groups and from different professional groups, but also higher in the ICU. These very positive assessments of teamwork and the work of the head of the department and supervisors indicate that there is a very good work environment.

If we talk about the dimensions that are seen as weaknesses, we find that the perception of adequate staffing is poor in both groups, with fewer positive responses in the ICU. Possibly, this data is related to the perception that errors and adverse events may be more frequent in situations with a greater presence of inexperienced or poorly qualified staff, with a perception of "weakness" among ICU staff, a service that already has some differential characteristics compared to health workers from other areas of the hospital. Hospital Managers' support on safety issues is also perceived as weak, with low percentages of positive responses (lower in the ICU, with a statistically significant difference compared to the rest of the hospital), which translates into the feeling of little support received from the Hospital Managers.

In relation to the dimensions of "Communication openness", "Feedback", "Communication mistakes" and "Non-punitive response to error", percentages of positive responses of between 50 and 75% are observed, with little lower percentages in ICU. The justification for these differences is unclear. In ICUs, the development of a safety culture has been pursued for years, we believe that with more intensity than in other hospital areas, as

they are technically complex units and with equally complex patients, are more vulnerable to iatrogenesis than those treated in other hospitals' services. The less openness in communication and the perception of a punitive response to errors are misconceptions of our workers, and we should work every day on continuous learning from errors and on their proactive handling.

No studies have been found assessing the culture of safety with a direct comparison of the ICU with the rest of the hospital. The national study carried out in Spain (2009) [7] describes the findings of several hospital services (6.4% of the total response in the ICU, a much lower percentage than ours, 35%). The percentages of the dimensions are different, possibly because the time elapsed (2009 to 2021) has contributed to the safety culture permeating the different actions within daily work in the hospital. In this paper, there are significant differences between services in the dimension 4th "Organizational learning - continuous improvement", 5th "Intra-service teamwork", 7th "Feedback - communication mistakes" and 12th "Shift change - transition between services", but a direct comparison between ICU and the remaining services is not made.

The comparison of results carried out in the ICUs of other countries found similar results. Several work citations were found in neonatal ICUs, with specific work situations that cannot be generalized to our adult ICU. Lemos et al, in a review of the safety climate of ICUs around the world [8], found that the 3rd dimension "Head of department/supervisor support" and the 4th dimension "Organizational learning/continuous improvement" have high rates of positive responses, and the 6th "Communication openness" and the 7th "Feedback and communication about mistakes" have lower percentages, although none dimension is considered a strength, and with very low reporting of adverse events. Amiri et al [9] showed the usefulness of a safety training program and nursing empowerment in several ICUs of an Iranian hospital, with very low ratings (weaknesses) of dimensions 9th "Staffing", 8th "to none punitive response to errors" and 1st "Teamwork within the unit", with improvement of several of these scores after this training program. Other works [10,11,12] describe the difficulty in communicating mistakes.

Our work may have several limitations. The possibility of both psychological and physical exhaustion of health personnel, in a period between waves of the COVID pandemic, can influence their responses. It is a single-center study, possibly with low external validity. A low response rate is observed in services other than the ICU. A low rate of recent safety training is described, which may be a handicap for adequate patient care. And there are other questionnaires other than SPOPS (SAQ -aimed at "front-line" health care providers- [13], PSCHO, applicable in different types of health organizations, inside and outside the hospital) [14]) that may be useful to assess safety in the ICU environment.

Our work also has positive elements, such as the high response rate in the ICU, representation from various professional groups, and the high reliability and consistency of the test used.

To promote changes in the safety culture, stable staff should be promoted, with adequate academic training and experience, in a work environment without healthcare overload as far as possible, which can promote a change in the safety culture and an improvement in the communication about mistakes, without these being seen as a personal failure or a sanctioning action. Communication with management should also be improved to

make their patient safety efforts more visible.

Conclusions

The perception of patient safety by ICU staff in comparison to the rest of our second-level hospital is not significantly different. The need for a good work environment and teamwork to increase patient safety is evident, as well as coordination between the different hospital services and the support of supervision and management.

In these terms, we present our proposals for improvement, which should be aimed at increasing support and trust in workers by management: increase staffing and make their efforts in favor of patients' safety "more visible". In addition, we propose repeating the questionnaire periodically to keep training staff and promote changes in the safety culture.

Note

All authors of the study "COMPARISON OF THE PERCEPTION OF PATIENT SAFETY IN THE ICU VERSUS OTHER WARDS IN A SECOND-LEVEL HOSPITAL" have participated in the approach and development of the study, collection of questionnaires, mathematical elaboration and writing of the manuscript with the obtaining of conclusions.

Summary statement

What is known about this topic

ICUs are high-risk hospital care areas for patient safety. There are many risk factors involved in the occurrence of adverse events in the ICU: high complexity and severity of processes; multiple interactions between patients and professionals; diagnostic and invasive procedures; administration of multiple drugs, most parenterally; the need for close and permanent communication between professionals; and stress situations to which they are frequently subjected in their care practice.

What this paper adds

"Expectations of action in favor of patient safety by management / supervision" and "Teamwork within the service" are strengths, both in the ICU and in the rest of the hospital wards assessed, although with significantly more positive values in the ICU. "Staffing" and "Management support on patient safety" are weaknesses in the ICU and in hospital wards, although the scores obtained in the ICU are significantly lower. Possibly, these aspects should be the first to be addressed in the continuous improvement of patient safety.

The implications of this paper

What can be done to improve these results? The authors of this study propose increasing support and trusting in workers by hospital leadership and management; increase staffing and make their efforts "more visible" in favour of patients' safety; and repeating the questionnaire periodically to keep training staff and promote changes in the safety culture.

Acknowledgments

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Data availability statement

The data used for this study were obtained from a google-

forms questionnaire and uploaded to an spss database. This database is in possession of the authors of the study.

Funding statement

This study has been carried out without any financial support.

Conflict of interest disclosure

The authors have no conflict of interest, of any kind, for conducting the study.

Ethics aprovement statement

The favorable opinion of the Clinical Trials and Research Committee of our hospital was obtained for the development of this work.

Patient consent statement

Patient data were not used for this study. Healthcare workers were aware that their anonymous data would be used to obtain results related to their perception of patient security.

Permission to reproduce material from other sources

It is not necessary to obtain permission to reproduce material from other sources. A first manuscript of this study, with a global comparison, is being evaluated by a Spanish Nursery Journal (ROL). However, the graphics are different from those sent to your journal.

Clinical trial registrion

This is not a clinical trial, but an observational study.

Authorship note

All the authors have participated in the design of the study, the collection of the questionnaires, the bibliographic search the discussion of the results and the writing of the manuscript.

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