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Shift change handovers between nurses in Critical Care Units☆

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KEYWORDS
Patient handoff;
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Abstract
Aim: To know the characteristics of the handover performed by nurses working in Critical Care Units in Spain.
Methods: Descriptive and cross-sectional study, whose population was nurses working in Critical Care Units in Spain. An ad hoc questionnaire was used to explore the characteristics of the process, the training received, the information forgotten and the influence of this activity on patient care. The questionnaire was online and dissemination was done through social networks. The sample was selected by convenience. A descriptive analysis was performed according to the nature of the variables and comparison of groups through ANOVA with R software version 4.0.3 (R Project for Statistical Computing).
Results: The sample was 420 nurses. Most of them answered that (79,5%) perform this activity in an individual way, from outgoing nurse to incoming nurse. Location varied according to the size of the unit ($p < 0,05$). Interdisciplinary handover was rare ($p < 0.05$). In the last month, with regard to the time of data collection, 29,5% had to contact the unit due to forgetting relevant information, using WhatsApp as the first channel to transmit this information.

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Conclusions: There is a lack of standardization in the handoff between shifts, in terms of the physical space where it is done, tools to structure the information, participation of other professionals and the use of unofficial communication channels to contact for omitted information during the handover. Shift change was identified as a vital process to ensure continuity of care and patient safety, so further researchs are important for patients handoffs.

PALABRAS CLAVE
Pase de guardia;
Transferencia de pacientes;
Cuidados críticos;
Seguridad del paciente;
Comunicación

El traspaso de información en los cambios de turno de enfermeras en Unidades de Cuidados Críticos

Resumen
Objetivo: Conocer las características de los cambios de turnos que realizan las enfermeras de Unidades de Cuidados Críticos en España.
Método: Estudio descriptivo y transversal, cuya población eran enfermeros y enfermeras que trabajasen en Unidades de Cuidados Críticos de España. Se utilizó un cuestionario ad hoc que exploraba las características del proceso, la formación recibida, el olvido de información y la influencia de esta actividad en la atención al paciente. El cuestionario era online y la difusión se realizó a través de redes sociales. La muestra fue seleccionada por conveniencia. Se realizó un análisis descriptivo según la naturaleza de las variables y comparación de grupos a través de ANOVA con R software versión 4.0.3 (R Project for Statistical Computing).
Resultado: El total de la muestra fueron 420 enfermeras y enfermeros. La mayoría de participantes (79,5%) contestaron que realizan está actividad de forma dirigida, de enfermera saliente a enfermera entrante. El espacio físico donde se realizaba el cambio de turno variaba en función del tamaño de la unidad ($p < 0,05$). La realización interdisciplinar del cambio de turno fue escasa ($p < 0,05$). En el último mes (enero del 2020), respecto al momento de recogida de datos, el 29,5% contactó con la unidad por olvido de información relevante, utilizando WhatsApp como primer canal para transmitir esta información.
Conclusiones: Existe una falta de estandarización del proceso, en cuanto al espacio físico donde se realiza, las herramientas para estructurar la información, la participación de otros profesionales y el uso de canales de comunicación no oficiales para contactar por información omitida durante la realización del traspaso. El cambio de turno se identificó como un proceso vital para garantizar la continuidad de los cuidados y seguridad del paciente, por lo que es importante seguir investigando sobre el traspaso de información.

What is known/what it contributes

Shift change handovers between nurses enable the transfer of responsibility and patient care. This transfer promotes continuity of care and helps decision-making for the next shift.

What it contributes

The present study brings us closer to understanding routine shift changes between critical care nurses in terms of the physical space where it takes place, the participation of other professionals, the use of tools, training received, and the management of forgotten information, among other elements.

Implications of the study

This study is a first step in laying the groundwork for an untapped area, reflecting the diverse ways that this activity is conducted, and the scope for improvement in terms of standardisation and training that could be promoted. This paper may be an opportunity to stimulate further research on handovers.

Introduction

The transfer of essential information and responsibility for patient care from one healthcare professional to another is known as information transfer (IT).[1–3] The purpose of IT is to ensure continuity of care and contribute towards patient safety,[1,4] and therefore this activity is a critical point in

care activity. Ineffective IT can be a contributing factor to adverse events, such as medication errors, increased length of stay, and increased costs and complaints.[5,6]

Concern about quality and safety in IT has been growing since 2007, when the World Health Organization together with The Joint Commission put IT into the spotlight, including its improvement as one of the ''Nine patient safety solutions''.[7] However, it was not until 2015 when the Spanish Ministry of Health, in one of the objectives of the Patient Safety Strategy (2015–2020), promoted communication between professionals, specifically standardised communication, within hospital units (shift change, duty change) and during patient transfers to other units or levels of care.[8]

There is a need for research into IT,[9] and handovers during shift changes particularly. This type of IT is essential and unavoidable because no professional can maintain responsibility for patient care 24 h a day, 365 days a year.[10]

IT at shift changes between nurses allows the transfer of responsibility and patient care from the outgoing nurse to the incoming nurse,[11] helps continuity of care for the next shift,[12–14] and helps the incoming nurse to make decisions on planning interventions.[15,16] Shift changes can take place through direct contact between professionals, either at the bedside or another location, using recordings, in writing, or the hospital's allowed methodology.[2]

In the Critical Care setting (CCU), shift change has a number of special characteristics, due to the intensive level of monitoring and care delivered by nurses and the use of high-tech equipment, among others.[17] In this area, the study of incidents and adverse events in intensive care medicine (SYREC) identified communication between professionals as a contributing factor in 5.76% of reported incidents, and in more than half of sentinel cases.[18]

This research topic was chosen because the authors detected shortcomings in routine care practice for safe shift changes; and because national studies interested in this activity have focused their research on the inpatient[19] and emergency department[20] settings. Therefore, the aims of this study are to determine the characteristics of the shift change handover between CCU nurses and to identify any differences between these characteristics according to age, level of training, and experience in CCU, and the number of beds in the CCU where they work.

Method

A cross-sectional descriptive observational study. The study population was nurses from CCUs in Spain, applying non-probabilistic convenience sampling.

Inclusion criteria were that the participants were actively working in the CCU in a care capacity. Nurses with CCU experience of less than 6 months were excluded, because this was considered a period of learning and testing in the unit.

Data collection instrument and variables studied

An ad hoc questionnaire was designed considering the dimensions of interest suggested in the literature on this topic, in terms of limitations and strengths in this activity. It comprised 5 dimensions, with a total of 38 items.

1. The first dimension consisted of 12 questions on socio-demographic and occupational data; age, sex, academic training, CCU experience, shift duration, hospital management, university hospital, number of hospital beds, type of unit, number of beds in CCU, care and intervention registration system, autonomous community.
2. The second dimension comprised 16 questions inquiring about the characteristics of the shift change routinely conducted.
   - –Reception and handover, which can be from the outgoing nurse responsible for the patient to the incoming nurse responsible for the patient and vice versa, or in group form, where patient information is received by several nurses and then the patients are shared out. Interdisciplinary clinical sessions were not included in this option.
   - –The physical space where it takes place: nursing station, near the patient's environment, or at the bedside.
   - –How the information to be provided during the shift change is routinely planned.
   - –The use of systems to organise the information: SBAR (Situation, Background, Assessment, Recommendation) technique, M. Gordon's patterns, V. Henderson's needs, human body systems, or the CCU's own system. Henderson's needs and M. Gordon's patterns are not included in the literature as tools for the shift change; however, they are the 2 most common structures for nursing assessment and, because here is currently no validated tool to organise information in Spain, these 2 systems were introduced to establish whether they were used for this activity.
   - –The participation of other professionals: resident doctors, attending physicians, nursing care assistants, unit supervisors, undergraduate students, and post-graduate students.
3. The third dimension with 4 questions explored incidences of forgetting information during the shift change and the channel used to report this information. The most commonly used channels were asked, such as instant messaging (WhatsApp) and phone calls: to the supervisor, to the incoming shift, or to the CCU control station. In dimensions 2 and 3, a Likert scale was applied with 5 possible response options: very frequently, frequently, sometimes, rarely, and never, which later in the analysis was reconfigured into three: frequently, sometimes, and rarely.
4. The fourth dimension, consisting of 2 questions, asked about the training received during the university stage, whether at a theoretical or practical level, contributing to the development of this activity; it also asked about the level of learning gained during these periods. This dimension was answered on a 6-point Likert scale: a lot, quite a lot, some, a little, not at all, and I do not remember; for the analysis it was reorganised into 4 points: quite a lot, some, a little, and I do not remember.
5. The fifth dimension comprises 4 questions on the relevance attached by the nurses to this activity, with regard to regularisation, learning, and the influence of this process on the patient, which was answered using the following response options: totally agree, agree, neither agree nor disagree, disagree, and totally disagree; which

were subsequently reconfigured into 3 points for the analysis: agree, neither agree nor disagree, and disagree.

Data collection

The questionnaire was designed using the Google Forms tool, which allows the administration and analysis of surveys. It was distributed through social networks (Twitter and Instagram), email, and direct contact with health centre management, care research groups, and nurse leaders. The data collection method was self-completion. The link to access the questionnaire remained open for 30 calendar days (12 January 2020 to 11 February 2020).

Statistical analysis

We made a descriptive analysis for all variables, using percentages and frequencies for qualitative variables and mean and standard deviation for quantitative variables. For comparison between groups according to the dependent variables of age (<30 years and ≥30 years), experience (≤6 years and >6 years), level of training (undergraduate and postgraduate), and number of ICU beds (≤8 beds and >8 beds), 2 subgroups were made for each variable and ANOVA analyses were performed with the responses of each subgroup. R software version 4.0.3 (R Project for Statistical Computing) was used for all analyses.

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Ethical considerations

The recommendations of the 1964 Helsinki Declaration and the 1997 Oviedo Convention were followed for the development and dissemination of the questionnaire, as in the collection and analysis of the data obtained, and the confidentiality of the information and anonymity of the participants was guaranteed in accordance with the provisions of Organic Law 3/2018, of 5 December, on Personal Data Protection and the guarantee of digital rights.

The project was approved by the Ethics and Research Committee (CEI), and by the Nursing Department of the Hospital Universitario La Paz and the Hospital Central de la Cruz Roja San José y Santa Adela, corresponding to the principal investigator.

Results

A total of 420 responses were obtained. Eighty-five percent of the sample were women. The mean ± SD for age was 32.4 ± 8.35 years. Of the respondents, 33.5% had a degree in nursing; 48.5% had from 1 to 6 years work experience in CCU. The rotating shift of 7 h and 10 h was the most common for 75.2% of the respondents. Nurses from 45 Spanish provinces participated, Madrid and Barcelona being the most represented. Most of the nurses worked in public hospitals, university hospitals, and hospitals with more than 500 beds. Of the respondents, 38.1% worked in multi-purpose units, 71.4% of them belonging to units with more than 8 beds. A total of 49.2% of the nurses combined recording interven-

Table 1 Sociodemographic data.

	N = 420
Age, mean ± SD (years)	32.4 ± 8.3
Sex	
Female	85% (n = 357)
Male	15% (n = 63)
Academic training	
Nursing degree	66.9% (n = 281)
Expert	7.6% (n = 32)
Masters	23.6% (n = 99)
Doctorate	1.9% (n = 8)
Experience in CCU	
Less than one year	23.5% (n = 99)
From 1 to 6 years	48.6% (n = 204)
From 7 to 12 years	11% (n = 46)
More than 12 years	16.9% (n = 71)
Rotating shift duration	
7 h and 10 h	75.2% (n = 316)
12 h	24.8% (n = 104)
Hospital administration	
Public	80% (n = 336)
Private	20% (n = 84)
University Hospital	
Yes	86.9% (n = 365)
No	13.1% (n = 55)
Hospital size	
Medium (500 beds or fewer)	42.4% (n = 178)
Large (>500 beds)	57.6% (n = 242)
Types of units	
Cardiac and coronary	8.8% (n = 37)
Burns	0.2% (n = 1)
Intermediate	0.9% (n = 4)
Medical	16.2% (n = 68)
General	38.1% (n = 160)
Postoperative and resuscitation	19.8% (n = 83)
Paediatrics	6.7% (n = 28)
Neonatal	6.4% (n = 27)
Trauma	2.9% (n = 12)
Number of beds UCI	
8 beds or fewer	23.8% (n = 100)

Table 1 (*Continued*)

	N = 420
More than 8 beds	76.2% (n = 320)
Care and intervention recording systems	
Electronic records	45.7% (n = 192)
Paper records	4.5% (n = 19)
Combination of paper and electronic records	49.8% (n = 209)
Autonomous community	
Andalusia	6.1% (n = 26)
Aragon	5.4% (n = 23)
Principality of Asturias	2.8% (n = 12)
Balearic Islands	2.3% (n = 10)
Canary Islands	5.7% (n = 24)
Cantabria	3.1% (n = 13)
Castilla y León	5.2% (n = 22))
Castilla-La Mancha	3.8% (n = 16)
Catalonia	13.1% (n = 55)
Valencian Community	8.5% (n = 36)
Extremadura	2.8% (n = 12)
Galicia	5.9% (n = 25)
Community of Madrid	28.1% (n = 118)
Region of Murcia	1.4% (n = 6)
Comunidad Foral de Navarra	1.9% (n = 8)
Basque Country	2.1% (n = 9)
La Rioja	0.9% (n = 4)
Autonomous city of Melilla	0.2% (n = 1)

tions and patient care in electronic form in the electronic medical record and on paper on the vital signs chart (Table 1.

Shift changes between nurses and CCU nurses are routinely *directed* by 79.5% of the respondents and the most common physical space where they are conducted is the *nursing station*, by 60.5%. A total of 64.1% frequently *plan* this activity. The most frequently used tool for organising information is *human body systems*, used by 56.7%. *Undergraduate nursing students* most frequently participate, at 50.5% according to the sample (Table 2).

With regard to the comparisons made for the variable age, significant differences were observed between the groups for the variable level of theoretical training ($p > 0.05$), the level being higher in the group under 30 years of age (Table 3) (see also the Supplementary material).

In the comparisons for the experience variable, significant differences were observed between the groups for the variables reporting forgotten information via WhatsApp ($p < 0.05$), being more frequent in the group with 6 or fewer years' experience; and level of practical training ($p < 0.05$), the level being higher in the group with 6 or fewer years' experience (Table 4) (see also the Supplementary material).

In relation to the comparisons with the variable number of CCU beds, significant differences between the groups were observed for the variables receiving directed handover ($p < 0.05$), being more frequent in the group with 8 beds or fewer; handover in the nursing station ($p < 0.05$), being more frequent in the group with 8 beds or fewer; handover at the bedside ($p < 0,05$), being more frequent in the group with more than 8 beds; participation of attending physicians in the handover ($p < 0.05$), being greater in the group with 8 beds or fewer; participation of postgraduate students in the handover ($p < 0.05$), being greater in the group with more than 8 beds, and participation in the handover of a supervisor ($p < 0.05$), being greater in the group with 8 beds (Table 5) (see also the Supplementary material).

None of the comparisons made for the training level variable established a significant relationship (see Supplementary material).

On forgetting information during shift change, the nurses were asked if they had had to contact their unit in the last month to report this relevant information and 29.7% (n = 125) answered yes. The relationship of shift length 7 h and 10 h or 12 h with forgetting information in the last month and contact with the CCU was studied, and no significant relationship was found between any shift ($p > 0.05$).

Of the respondents, 98.8% (415) perceived this activity as quite influential for patient safety and 99% (416), for continuity of care.

Discussion

This study contributes to the dissemination of knowledge about information handovers between nurses, specifically those taking place during shift changes in CCU in Spain. Shift changes are a frequent, critical, and inherent activity in continuous care, which still needs to be studied and improved.

With regard to the socio-demographic characteristics of the sample, it is worth highlighting the great similarity between the studies conducted in the national framework. As in the studies by Talleda and Fatjo i Hurio[21] and Pérez Corral and Simón-Borao,[20] most of the sample was female, with a mean age between 33.4 and 36.7 years, and standard deviations between ±7.2 and ±9.7 years. In the study by Talleda y Fatjo i Hurio,[21] also conducted in the field of Critical Care, 78% of the sample had more than one year's work experience in the ICU, 76.4% in this study.

According to the results of this study, shift changes taking place in CCUs with fewer than 8 beds are commonly directed; this is a practice that follows the line of other studies at national level.[19–21] In this sample, the participation of other professionals such as attending physicians or supervisors in shift changes between nurses is not common, unlike in the international setting, where this activity is usually in a group setting, with the collaboration of several nurses with different levels of competencies.[11,22,23] Both methods (directed and group) can involve distractions, interruptions, and hierarchical pressures (depending on the level of experience).[26] Group handover has the advantage that the patient's situation is known to a large part of the nursing team, but it also carries a higher risk of information saturation and therefore distractions.[10,16] The extent to which female students participate was not asked, but the fact that their presence is so common at shift changes is an interesting aspect for study and advancing the handover.

Table 2 Characteristics of shift change handover.

	Frequently	Sometimes	Rarely
Reception and handover of information			
Directed	79.5% (n = 334)	10.7% (n = 45)	9.8% (n = 41)
Group	22.6% (n = 95)	6.9% (n = 29)	70.5% (n = 296)
Physical space where it takes place			
Nursing station	60.5% (n = 254)	15% (n = 63)	24.5% (n = 103)
Near the patient's bed	42.9% (n = 180)	26.9% (n = 113)	30.2% (n = 127)
At the bedside	39.7% (n = 167)	24.05% (n = 101)	36.1% (n = 152)
Frequency with which planned	64.1% (n = 269)	16.2% (n = 68)	19.7% (n = 83)
Systems for organising information			
SBAR	7.6% (n = 32)	6.2% (n = 26)	86.2% (n = 362)
Gordon's patterns	10.7% (n = 45)	9.3% (39)	80% (336)
Henderson's needs	10.2% (n = 43)	10% (42)	79.8% (335)
Human body systems	56.7% (n = 238)	5.5% (23)	37.8% (n = 159)
CCU's own system	49.3% (n = 207)	7.1% (n = 30)	43.6% (n = 183)
Participation			
Attending physicians	3.3% (n = 14)	5.5% (23)	91.2% (n = 383)
Resident physicians	2.6% (n = 11)	3.8% (n = 16)	93.6% (n = 393)
Nursing assistants	29.5% (n = 124)	21.4% (n = 90)	49% (n = 206)
Unit supervisor	6.9% (n = 29)	7.1% (n = 30)	86% (n = 361)
Undergraduate student	50.5% (n = 212)	28.8% (n = 121)	20.7% (n = 87)
Postgraduate student	35.7% (n = 150)	15.2% (n = 64)	49% (n = 206)

Table 3 Comparisons between groups according to age.

	<30 years N = 201	≥30 years N = 219	p-Value
Level of learning during theoretical training at university			**0.049**
Does not remember	5 (2.4%)	13 (5.9%)	
A little	143 (71.1%)	164 (74.9%)	
Some	36 (17.9%)	22 (10%)	
A lot	17 (8.4%)	20 (9.1%)	

Statistically significant comparisons (<0.05) in bold.

Table 4 Comparisons between groups according to experience in CCU.

	≤6 years N = 303	>6 years N = 117	p-Value
Reporting forgotten information via WhatsApp			**0.003**
Rarely	55 (18.2%)	28 (23.9%)	
Sometimes	50 (16.5%)	33 (28.2%)	
Frequently	198 (65.3%)	56 (47.9%)	
Level of learning during practical training at the university			**0.026**
Does not remember	6 (1.9%)	7 (5.9%)	
A little	116 (38.3%)	56 (47.9%)	
Some	63 (20.8%)	21 (17.9%)	
A lot	118 (38.9%)	33 (28.2%)	

Statistically significant comparisons (<0.05) in bold.

Table 5 Comparisons between the groups according to number of beds in the CCU.

	≤8 beds N = 100	>8 beds N = 320	p-Value
Directed reception (from outgoing to ingoing nurse)			**0.027**
Rarely	5 (5%)	36 (11.2%)	
Sometimes	6 (6%)	39 (12.2%)	
Frequently	89 (89%)	245 (76.6%)	
Shift change handover: nursing station			**0.013**
Rarely	17 (17%)	86 (26.9%)	
Sometimes	10 (10%)	53 (16.6%)	
Frequently	73 (73%)	181 (56.6%)	
Shift change handover: near the bed			**<0.001**
Rarely	46 (46%)	81 (25.3%)	
Sometimes	23 (23%)	90 (28.1%)	
Frequently	31 (31%)	149 (46.6%)	
Shift change handover: at the bedside			**0.033**
Rarely	45 (45%)	107 (33.4%)	
Sometimes	26 (26%)	75 (23.4%)	
Frequently	29 (29%)	138 (43.1%)	
Rarely	42 (42%)	141 (44.1%)	
Sometimes	6 (6%)	24 (7.5%)	
Frequently	52 (52%)	155 (48.4%)	
Participation of attending physicians in shift changes			**0.024**
Rarely	85 (85%)	298 (93.1%)	
Sometimes	8 (8%)	15 (4.69%)	
Frequently	7 (7%)	7 (2.19%)	
Participation of postgraduate students in shift changes			**<0.001**
Rarely	68 (68%)	138 (43.1%)	
Sometimes	12 (12%)	52 (16.2%)	
Frequently	20 (20%)	130 (40.6%)	
Participation of supervisor in shift changes			**0.009**
Rarely	77 (77%)	284 (88.8%)	
Sometimes	13 (13%)	17 (5.3%)	
Frequently	10 (10%)	19 (5.9%)	

Statistically significant comparisons (<0.05) in bold.

The physical space where the shift change takes place, nursing station, near the patient's environment, or at the bedside, varies according to the number of beds in the CCU. In the studies by Martín Pérez et al.,[19] Llapa Rodríguez et al.,[24] and Street et al.,[25] directed shift changes mainly take place in the nurses' station. In the Street et al.[25] study, the third most common location was the patient's bedside and most nurses did not agree that patients should participate or that they could be assessed during the activity. This handover location has been recommended as a method that ensures a patient-centred approach and patient safety, as well as improved patient and nurse satisfaction.[6] However, implementing bedside handovers entails several challenges, as it is not only a change of location, but also includes patient involvement, the management of sensitive health data, structuring of the activity, and training nurses and other professionals in this practice.[6]

The structuring of IT through the use of mnemonic tools or rules, specific to or adapted for each unit or service, is one of the recommendations of The Joint Commission.[7] In the present study, we asked about several tools, some being specific for shift changes, such as SBAR,[26] others that are

used for nursing assessment, such as V. Henderson's needs or M. Gordon's patterns, and the options of the ICU's own system and human body systems were also included. The latter two were the most frequently used, the assessment tools were scarcely used, which makes sense because the purpose of these tools is different from those specific to the handover. It is worth noting that SBAR is barely used, which is the most widespread mnemonic rule for promoting quality strategies on this topic and the most referenced. There are more than twenty IT tools and it is possible that others of these are more frequently used and were not asked about. Also, the use of tools is a component for effective shift change handover, but it is not the only one that will ensure the success of this activity.[10,26]

Using the WhatsApp social network as the first channel of communication to contact the unit when relevant information has been forgotten, as identified in the group of respondents with 6 or fewer years of CCU experience, exposes a need for standardisation. The use of this medium may have legal repercussions due to the exchange of confidential patient information through a private means of communication. Again, the use of techniques to structure the activity may avoid the omission of relevant data.[2,10,27] With standardisation of this activity, the method of contact in the event of forgotten information should be stated. Another response option for reporting missing information was the ''call to the supervisor'', but its weight could not be analysed because there was not enough sample. The inclusion of this response option is influenced by the English-language literature where supervisors are commonly involved in shift changes. It is possible that this option was not an alternative among the respondents because it has no practical basis in their area.

Learning about this activity from university training was low in the younger and less experienced groups of critical care nurses. The training of national health system professionals in patient safety issues is one of the objectives for fostering a culture of safety and translating it into improvements in care. The National Patient Safety Strategy 2005–2011[28] already included improving communication between professionals, which is the basis for shift changes between nurses. And the 2015–2020 Strategy[8] places more specific emphasis on this process and states the benefits of standardisation. However, this had not yet been transferred to university education, as can be seen. The high participation of female undergraduate students in the shift change may reflect a paradigm shift in learning this activity. Even so, training in IT remains a pending subject and, professional competencies could be developed to conduct handovers effectively through training programmes[10,27,29]; starting at the university stage and including this subject in the continuing education courses on patient safety for professionals.

Limitations

The use of a non-validated questionnaire with closed questions may have limited the respondents ability to respond. There may also have been barriers to the representation of critical care nurses in Spain, either by autonomous communities or by hospitals. Nevertheless, the questions were selected according to the authors' perceptions and the literature review.

Conclusions

There is a lack of standardisation of IT between CCU nurses, in terms of the physical space where it takes place, the tools for structuring the information, and the participation of other professionals. Most hand overs are directed from incoming nurse to outgoing nurse, with the nurse's station being the most common physical space where it takes place. Most of the information is organised according to the human body systems, and there is no tool as such. The use of other unofficial communication channels to report information omitted at the shift change handover highlights the need to standardise the procedure. Training on this procedure is a pending issue, although undergraduate nursing students were identified as the group most involved. Shift change was identified as a vital process to ensure continuity of care and patient safety, and therefore it is important to continue researching IT, adapting and validating scales that assess the quality of shift change handover to ensure effective communication and patient safety.

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Conflict of interests

The authors have no conflict of interests to declare.

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Appendix A. Supplementary data

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