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Research article

Healthcare professionals' use of augmentative and alternative communication in an intensive care unit: A survey study

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ABSTRACT

Introduction: Successful communication between staff and patients plays a key role in the well-being of critically ill patients within an intensive care unit. The use of augmentative and alternative communication strategies could contribute to better pain management, medical outcomes and shorter hospital stays for patients in critical care units.
Objective: To describe healthcare professionals' use of augmentative and alternative communication strategies to communicate with critically ill patients regarding pain in an intensive care unit.
Research method: A quantitative approach was used, and 83 healthcare professionals of different professions responded to a survey consisting of 16 items that focused on their knowledge of and access to augmentative and alternative communication strategies. The results are presented as descriptive and comparative non-parametric statistics.
Setting: The setting of the study was an intensive care unit in a Swedish hospital.
Results: All participants had experience of working in intensive care units with patients with communication challenges. Knowledge of augmentative and alternative communication tools differed between the professions, and less experienced healthcare professionals tended to administer sedative drugs more often than more experienced healthcare professionals.
Conclusion: Healthcare professionals work with vulnerable patients on a daily basis. Their knowledge of communication tools and clinical experience may influence how they communicate and treat pain in patients in intensive care units.

Implications for clinical practice

- All professions in an intensive care unit should have knowledge of Augmentative and Alternative communication tools.
- Levels of sedation may influence communication between health professionals and patients.
- Written guidelines should establish levels of sedation consistent with patient well-being and effective communication.

Introduction

Healthcare professionals in intensive care units (ICUs) work with critically ill patients with many different diagnoses and needs. Typically, critically ill patients are intubated because of respiratory failure or neuromuscular disorder; some may require mechanical ventilation (Tingsvik et al., 2015). These patients may often experience challenges in communicating verbally with healthcare professionals and family members (Costello et al., 2010; Karlsen et al., 2018). Patients in ICUs have described their communication needs as multi-dimensional, ranging from medical discussions with clinicians to the expression of emotions and support (Leung et al., 2018).

To optimise the care of patients with communication challenges, it is important for healthcare professionals to find different

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ways to facilitate communication using appropriate tools. Failure to facilitate communication could lead to complications for the patient, such as worsening sensations of pain, anxiety and a prolonged hospital stay, whereas effective communication may lead to positive results, quicker recovery and more satisfied patients (Blackstone and Pressman, 2016; Happ et al., 2011). Augmentative and alternative communication (AAC) strategies could improve communication between healthcare professionals and patients in ICUs, and communication tools should, whenever possible, be implemented in the daily care of patients (Dithole et al., 2017; Salem and Ahmad, 2018).

AAC includes all forms of communication (other than verbal) and promotes all kinds of augmentative aids for the purpose of communicating with patients with communication challenges. AAC systems are classified as either aided or unaided. According to the American Speech–Language–Hearing Association (ASHA, 2019), in unaided AAC systems the physical functioning of some parts of the body is used as a means to convey messages, such as pointing, gestures, body language movements and facial expressions. Aided AAC systems range from low-technology, which need no electronic programming (e.g. pen and paper, symbol-based communication boards or books), to mid- and high-technology aids, such as speech-generating devices or electronic equipment (e.g. tablets with AAC applications) (ASHA, 2019). Subject to the cognitive and physical abilities and individual needs of the patient, multiple AAC systems may be used in ICUs (Holm and Dreyer, 2018a; Karlsen et al., 2018).

Nurses typically use unaided AAC systems more frequently than aided AAC systems, attempting to find ways to understand critically ill patients by attending to their facial expressions or using a yes/no question system. Often, nurses develop their own ways of communicating with patients, which can change based on the patients' needs or physiological statuses. Nurse–patient communication in the ICU is brief, typically targets basic medical care needs and is focused on informing patients about procedures (Alasad et al., 2015; Patak et al., 2006). Furthermore, patients have expressed the need to know about their health conditions and progress in the ICU and to communicate their emotional needs (Salem and Ahmad, 2018).

The implementation of AAC strategies could assist healthcare staff to understand and value the communication efforts of patients in addition to lowering the amount of stress experienced by patients, families and healthcare staff due to communication challenges (Happ et al., 2014; Hurtig et al., 2015). A review showed that AAC tools could be supportive for both patients and healthcare professionals in the ICU when patients are conscious, alert and on mechanical ventilation (Karlsen et al., 2018). Another review showed that the use of AAC tools in ICUs would probably lead to an increase in the quality of patient care. Healthcare professionals are more likely to meet the patients' needs and enhance their comfort when AAC strategies are implemented (Salem and Ahmad, 2018). There are various barriers to the use of AAC tools in critical care. For example, healthcare professionals have negative attitudes towards the implementation of AAC in ICUs because they feel unsure or ill equipped to implement and use AAC strategies in the ICU due to a lack of training (Cribbin, 2018; Happ et al., 2014; Radtke et al., 2012; Salem and Ahmad, 2018). As such, they do not want to appear incompetent while communicating with critically ill patients in the ICU (Handberg and Voss, 2018).

The use of communication tools could assist critically ill patients to express their thoughts, feelings and basic, medical and emotional needs to healthcare professionals and relatives (Broyles et al., 2012; Karlsen et al., 2018). Communication challenges increase the risk of poor treatment, which supports the need to use AAC in the ICU context. In a Danish study, healthcare professionals explained that they were surprised by how much patients were able to communicate when using AAC (Handberg and Voss, 2018).

In ICUs in which AAC has been implemented, healthcare professionals and patients have often reported improved communication (Costello et al., 2010; Finke et al., 2008, Happ et al., 2014). When healthcare professionals lack training in AAC strategies for enhancing communication with critically ill patients, they are likely to misinterpret a patient's attempts to communicate, which could lead to decisions that could worsen the patient's condition (Dithole et al., 2016; Happ et al., 2011).

Non-verbal patients use unaided methods, such as body language and facial expressions, to communicate (Randen et al., 2013). Non-verbal communication often involves the interpretation of body language, and observational scales are thus important for healthcare professionals in the assessment of pain. Observational scales that are commonly used in ICUs are the Critical Pain Observation Tool (CPOT), the Confusion Assessment Method for the ICU and the Richmond Agitation Sedation Scale (Happ et al., 2011).

Communication challenges are common with critically ill patients (Finke et al., 2008; Karlsen et al., 2018; Mobasheri et al., 2016; Otuzoğlu and Karahan, 2014; Salem and Ahmad, 2018). The patient's level of sedation is a key factor in his or her ability to communicate. A higher level of sedation makes it more challenging for the patient to communicate effectively (Holm and Dreyer, 2018b). Apart from the patient's level of sedation, studies show that, in general, communication between the patient and the healthcare professional depends on the patient's degree of illness and how well he or she responds to interaction (Happ et al., 2011; Karlsen et al., 2018). Healthcare professionals need training to increase their knowledge of AAC and develop strategies that can facilitate their interaction with patients (Cribbin, 2018; Dithole et al., 2017). Therefore, it is important to investigate healthcare professionals' use of AAC strategies for communicating with critically ill patients in the ICU to optimise pain management.

Objectives

The aim of the study was to describe healthcare professionals' knowledge and use of AAC strategies to communicate regarding pain management with critically ill patients within a Swedish ICU. The research questions were as follows: (1) Does the healthcare professional's profession influence his or her knowledge and use of the AAC tools available in the ICU? (2) Is communication between patients and healthcare professionals affected by the length of the healthcare professional's work experience in the ICU?

Methods

The study adopted a quantitative approach, a questionnaire was distributed to healthcare professionals to investigate the research questions.

Data collection tool

In this study, we used an English language questionnaire developed by South African researchers (Johnson et al., 2019), based on questionnaires by Gropp et al. (2019), Hemsley et al. (2001) and Patak et al. (2009), which was translated into Swedish. The commonly used forward-back-translation method (Polit and Beck, 2016) was adopted to translate the questionnaire from English into Swedish: a forward translation of the questionnaire into the target language (Swedish) was followed by a backward translation into the original language (English). The back-translation was conducted by an independent professional translator who was not

familiar with the original document. The original questionnaire consisted of 15 items, but the translated version added a sixteenth item about assessment tools (Table S1 in Supplementary data). The revised questionnaire contained items about biographical information, the need for communication, knowledge of AAC and access to AAC tools.

Content validity

A content validity test confirmed that the questionnaire assessed what it was intended to assess. Two focus groups were conducted on separate occasions to evaluate the questionnaire. The first focus group consisted of five healthcare professionals (four nurse assistants and an ICU nurse), and the second focus group consisted of two healthcare professionals (an anaesthesiologist and a physiotherapist). The participants had significant experience in ICU care (varying between three and ten years). A rating scale from 1 to 4 was used to evaluate each item, with 1 indicating 'not relevant' and 4 indicating 'most relevant'. Items that scored 3 or 4 were divided by the number of experts in the focus groups to produce an item content validity index (I-CVI) that determined whether the item was relevant. For an item to be approved for use in the study, a value of 0.80 or higher was necessary. The total value for the questionnaire gave a scale content validity index (S-CVI) to determine the content validity of the whole scale. The S-CVI value was calculated by adding the I-CVIs together and dividing them by the number of items. An S-CVI value of 0.90 or higher indicates that a survey has good content validity (Polit and Beck, 2016), a condition that was satisfied in this case (Table 1).

Setting and sample

The participants in the study consisted of a purposive sample of healthcare providers, who were recruited based on their knowledge and skills working in an ICU. Therefore, all available healthcare professionals who worked in an ICU at a hospital in western Sweden, were approached. The selected ICU had 14 beds and patients aged six months and older. The most common reasons for staying in this ICU were sepsis, circulatory collapse and trauma. There were 257 employees, including assistant nurses, registered nurses, ICU nurses and anaesthesiologists. Employees were invited to participate in the study regardless of the length of their experience. Upon providing consent to participate, the questionnaire was distributed to healthcare professionals for completion to determine their knowledge and use of the AAC tools available in the specific ICU.

Data collection

At the selected ICU, the healthcare professionals hold a brief meeting before each work shift. The researchers used these meetings to remind the healthcare professionals to answer the questionnaire in an attempt to ensure the best possible response rate.

Data analysis

IBM SPSS Statistics 24 software was used to analyse the data. Descriptive statistics with tables of frequencies were obtained. The answers were ordinal data, and non-parametric statistics were used. For the comparisons between all groups, a Kruskal–Wallis test was used. For paired comparisons, a Mann–Whitney *U* test was used. The significance level was set at $p < 0.05$. The Kolmogorov–Smirnov test showed that the data were not normal distributed.

Table 1
Content validity indices.

		I-CVI	S-CVI
Item	16		0.97
	13	1.00	
	2	0.87	
	1	0.71	

Ethical considerations

According to national regulations ethical approval is not required for surveys on health care professionals when no sensitive personal data is obtained. The Head of the department provided assent to contact health care professionals. Participants consent was assumed upon completion of the questionnaire.

Results

One hundred healthcare professionals were available during the period of data collection (spring 2017), 83 of whom completed the questionnaire (response rate 83%). All of them had experience working with patients with communication challenges. Of the 83 participants, 34 (41%) were assistant nurses, one (1.2%) was a physiotherapist, one (1.2%) was a registered nurse, 33 (39.8%) were ICU nurses and 14 (16.9%) were anaesthesiologists.

Research question 1: Does the healthcare professionals' profession influence their knowledge and use of the AAC tools available in the ICU?

The participants generally agreed that different types of AAC tools were available in the ICU to facilitate communication between healthcare professionals and patients. There were statistically significant differences between professions in terms of knowledge regarding the nurse-call button ($p = 0.001$), the modified nurse-call button ($p = 0.002$), communication boards ($p = 0.002$), alphabet boards ($p = 0.008$) and speech-generating devices ($p = 0.017$) (Table 2). The paired comparisons between professions showed that no significant difference existed between the ICU nurse and assistant nurse participants (Table 3). However, significant differences were noticed between the ICU nurse and anaesthesiologist participants: the anaesthesiologist participants had a lower degree of knowledge about the modified nurse-call button ($p = 0.007$), alphabet boards ($p = 0.048$) and observational scales ($p = 0.013$) than the ICU nurse participants. Similarly, significant differences were noted between the anaesthesiologist and assistant nurse participants: the anaesthesiologist participants had a lower degree of knowledge about the modified nurse-call button ($p = 0.002$), communication boards ($p = 0.039$) and alphabet boards ($p = 0.009$) compared to the assistant nurse participants. Because data were collected for only one registered nurse participant (1.2% of the sample) and one physiotherapist (1.2% of the sample), no statistical analysis could be performed to compare these participants with other participant groups.

Research question 2: Is communication between patients and healthcare professionals affected by the length of the healthcare professional's work experience in the ICU?

Generally, the length of the participants' experience did not affect their communication with patients (Table 4). In most cases, there was no significant difference between participants with shorter and longer periods of work experience in the ICU. However, there was a significant difference in terms of the administration of sedative drugs ($p = 0.005$): less experienced participants (i.e. those with less than 10 years of experience) reported more regular

Table 2
Knowledge of AAC tools by profession.

		Are the following items available in the ICU where you work?				
		Yes	No	I don't know	Total	p-value
Nurse-call button	Anaesthesiologist	14	0	0	14	0.001*
	ICU nurse	31	2	0	33	
	Assistant nurse	33	1	0	34	
	Registered nurse	1	0	0	1	
	Total	79	3	0	82	
Modified nurse-call button	Anaesthesiologist	6	1	7	14	0.002*
	ICU nurse	26	4	3	33	
	Assistant nurse	29	3	1	33	
	Registered nurse	0	1	0	1	
	Total	61	9	11	81	
Communication boards	Anaesthesiologist	11	1	2	14	0.002*
	ICU nurse	31	0	1	32	
	Assistant nurse	33	0	1	34	
	Registered nurse	1	0	0	1	
	Total	76	1	4	81	
Alphabet boards	Anaesthesiologist	8	2	4	14	0.008*
	ICU nurse	28	2	2	32	
	Assistant nurse	31	0	3	34	
	Registered nurse	1	0	0	1	
	Total	68	4	9	81	
Speech-generating devices	Anaesthesiologist	12	1	1	14	0.017*
	ICU nurse	30	3	0	33	
	Assistant nurse	32	1	1	34	
	Registered nurse	1	0	0	1	
	Total	75	5	2	82	
Amplification (for people with hearing impairments)	Anaesthesiologist	4	3	7	14	0.156
	ICU nurse	11	12	6	29	
	Assistant nurse	6	13	13	32	
	Registered nurse	1	0	0	1	
	Total	22	28	26	76	
Verbal assessment scales	Anaesthesiologist	14	0	0	14	0.873
	ICU nurse	33	0	0	33	
	Assistant nurse	33	1	0	34	
	Registered nurse	1	0	0	1	
	Total	81	1	0	82	
Observational scales	Anaesthesiologist	8	2	4	14	0.082
	ICU nurse	30	0	2	32	
	Assistant nurse	25	2	6	33	
	Registered nurse	1	0	0	1	
	Total	64	4	12	80	

* $p < 0.05$.

administration of sedative drugs (Md 2 (Frequently); min 1, max 5; quartiles 2, 2, 3) than participants with more experience (i.e. more than 10 years of experience) (Md 3 (Occasionally); min 1, max 5; quartiles 2, 3, 3) (Table 5).

Discussion

Communication with critically ill patients in ICUs is crucial for appropriate care. Critically ill patients' communication challenges limit their ability to provide subjective self-reports of their pain and may decrease nurses' understanding of how to manage their pain adequately (Booker and Haedtke, 2016). The use of communication tools could assist critically ill patients to express their needs, thoughts and feelings to healthcare professionals (Broyles et al., 2012). The need to use AAC strategies and tools within the ICU has been highlighted in previous research (Costello et al., 2010; Finke et al., 2008; Handberg and Voss, 2018).

The results of the present study show that most of the participants were aware of the AAC tools available for use in the ICU: the nurse-call button, the modified nurse-call button, communication boards, alphabet boards, speech-generating devices, amplification (for people with hearing impairments) and verbal assessment scales. However, differences existed between the different profession participant groups (assistant nurses, ICU nurses and anaesthesiologists) in terms of their knowledge of AAC tools. The anaesthesiologist participants had a lower degree of knowledge about the modified nurse-call button, communication boards and alphabet boards than the nurse participant groups. An explanation for this finding may be that the anaesthesiologist participants do not work as close with critically ill patients as the assistant nurse and ICU nurse participants do, as they typically focus on administering either general or local anaesthetics to the patient. As such, their need to communicate with critically ill patients may be less than that of the nurse participant groups. However, when healthcare professionals are familiar with AAC tools and strategies, it may lead to improved communication by patients about their symptoms and subsequently contribute to shared decision-making during the treatment of critically ill patients in the ICU (Dithole et al., 2017; Karlsen et al., 2018).

In the ICU environment, body language (an unaided AAC system using only the body to enhance communication) is regarded as an important element of communication (Happ et al., 2011; Rombouts et al., 2018). Observational scales are often used to interpret body language (facial expressions and body movements)

Table 3
Knowledge of the availability of objects/instruments by profession.

Are the following items/instruments available in the ICU where you work?	
ICU nurses compared to anaesthesiologists	
Alarm button	0.352
Modified alarm button	0.007*
Communication boards	0.145
Alphabet boards	0.048*
Communication devices	0.557
Amplification (for people with hearing impairments)	0.437
Verbal assessment scales	1.00
Observational scales	0.013*
ICU nurses compared to assistant nurses	
Alarm button	0.540
Modified alarm button	0.505
Communication boards	0.529
Alphabet boards	0.449
Communication devices	0.650
Amplification (for people with hearing impairments)	0.141
Verbal assessment scales	0.325
Observational scales	0.082
Anaesthesiologists compared to assistant nurses	
Alarm button	0.521
Modified alarm button	0.002*
Communication boards	0.039*
Alphabet boards	0.009*
Communication devices	0.344
Amplification (for people with hearing impairments)	0.809

* $p < 0.05$.

when patients lack the ability to self-report their pain (Hadjistavropoulos and Craig, 2002).

However, in the current study, the anaesthesiologist participants had less knowledge about observational scales than the ICU nurse participants. One reason for this finding may be that, due to the nature of their work, the anaesthesiologist participants did not need to use observational scales as often as the nurse participant groups. The question that arises is whether this lack of knowledge on the part of the anaesthesiologist participants might have influenced the use of observational scales by the ICU nurse participants as a basis for decision-making regarding pharmacological treatment to reduce pain in critically ill patients in the ICU. The ICU nurse participants' knowledge of observational scales is probably important to enabling them to interpret pain scores and translating total scores into decisions about pain management.

The results show that there was no difference between the ICU nurse and assistant nurse participants in their knowledge of observational scales. A study by Dovland Andersen (2018) showed the importance of introducing a new observational scale to all healthcare professionals working in the ICU and training all of them in its use. If only a small group of healthcare professionals working in ICUs are trained to use the observational scale, it creates frustration when their colleagues do not use the scale (Randen et al., 2013). This frustration may result in the trained group of healthcare professionals not using the observational scale because of the ignorance of the other healthcare professionals (Randen

Table 4
Frequency of use of communication methods.

How does the patient currently communicate with ICU professionals to provide necessary information?								
		Always	Often	Sometimes	Rarely	Never	Total	p-value
Speech	<10 y	5	11	24	6	0	46	0.968
	≥10 y	3	8	14	2	0	27	
Total		8	19	38	8	0	73	
Written messages	<10 y	2	4	26	11	1	44	0.394
	≥10 y	1	2	21	5	1	30	
Total		3	6	47	16	2	74	
Communication boards	<10 y	2	2	23	13	3	43	0.401
	≥10 y	1	1	17	10	2	31	
Total		3	3	40	23	5	74	
Electronic communication equipment	<10 y	1	1	5	29	9	45	0.235
	≥10 y	1	0	5	20	5	31	
Total		2	1	10	49	14	76	
Sign language	<10 y	3	1	8	20	13	45	0.502
	≥10 y	2	0	4	18	7	31	
Total		5	1	12	38	20	76	
Facial expressions	<10 y	13	18	11	2	1	45	0.396
	≥10 y	6	20	2	2	1	31	
Total		19	38	13	4	2	76	
Interpreter	<10 y	3	8	22	10	2	45	0.670
	≥10 y	1	4	19	5	2	31	
Total		4	12	41	15	4	76	
Speaking valve	<10 y	4	28	12	0	0	44	0.971
	≥10 y	2	17	11	0	1	31	
Total		6	45	23	0	1	75	
Body language	<10 y	13	18	13	1	1	46	0.487
	≥10 y	7	9	11	2	1	30	
Total		20	27	24	3	2	76	
The patient does not need to answer any questions (I do not ask any).	<10 y	1	0	3	9	31	44	0.145
	≥10 y	1	0	4	7	18	30	
Total		2	0	7	16	49	74	
The patient is sedated and cannot answer questions.	<10 y	3	31	12	1	2	49	0.005*
	≥10 y	2	7	18	2	1	30	
Total		5	38	30	3	3	79	

* $p < 0.05$.

Table 5
Median, Min-Max, Percentiles.

		Md	Min-Max	Percentiles		
				25	50	75
Speech	<10 y	3	1–4	2	3	3
	≥10 y	3	1–4	2	3	3
Written messages	<10 y	3	1–5	3	3	4
	≥10 y	3	1–5	3	3	3
Communication boards	<10 y	3	1–5	3	3	4
	≥10 y	3	1–5	3	3	4
Electronic communication equipment	<10 y	4	1–5	4	4	4
	≥10 y	4	1–5	4	4	4
Sign language	<10 y	4	1–5	3	4	5
	≥10 y	4	1–5	4	4	4
Facial expressions	<10 y	2	1–5	1	2	3
	≥10 y	2	1–5	2	2	2
Interpreter	<10 y	3	1–5	2.5	3	4
	≥10 y	3	1–5	3	3	3
Speaking valve	<10 y	2	1–3	2	2	3
	≥10 y	2	1–5	2	2	3
Body language	<10 y	2	1–5	1	2	3
	≥10 y	2	1–5	1.75	2	3
The patient does not need to answer any questions (I do not ask any).	<10 y	5	1–5	4	5	5
	≥10 y	5	1–5	4	5	5
The patient is sedated and cannot answer questions.	<10 y	2	1–5	2	2	3
	≥10 y	3	1–5	2	3	3

et al., 2013), a situation that could ultimately affect the support provided to patients. Although the study at hand found that the ICU nurse participants had knowledge of observational tools, Rose et al. (2012) found that few ICU nurses used pain assessment scales (such as observational tools) when patients were unable to communicate verbally. The same argument could be used when trying to determine the reason for the limited use of AAC strategies in the ICU – trained healthcare professionals may stop using AAC tools to improve communication and simultaneously support shared decision-making during treatment due to the inexperience of healthcare professionals who lack training in the use of AAC strategies and tools.

A patient's level of sedation is important with regard to his or her ability to communicate using AAC tools (Holm and Dreyer, 2018b). However, the results of this study indicate that the length of a healthcare professional's work experience in an ICU context influenced their patients' levels of sedation. Less experienced healthcare professional participants sedated their patients more often, and this may have influenced patient communication. In a study by Randen et al. (2013) it was found that levels of sedation influenced patients' facial expressions, vital parameters and symptoms as well as healthcare professionals' ability to understand and interpret those signs. The reason that the less experienced participants sedated patients more heavily was not evaluated in the current study and could be investigated in future research. ICU guidelines often recommended that healthcare professionals avoid the use of sedatives when possible (Holm and Dreyer, 2018b).

The current study shows that most of the healthcare professionals were aware of the AAC tools available in the ICU for communication with patients. Nonetheless, there was a difference between the professions in terms of their awareness of observational scales for assessing bodily expressions (e.g. facial expressions or body language). Less experienced healthcare professionals sedated their patients more heavily, and this could influence the patients' ability to communicate. However, all healthcare professionals should use AAC to increase the likelihood of meeting the patients' individual needs and enhancing their well-being (Salem and Ahmad, 2018). Patient-centred communication is essential for improving the quality of assessments of patient needs (Blackstone and Pressman, 2016; Johnson et al., 2019), and healthcare professionals should be offered education and training in the use of AAC tools (Cribbin, 2018; Gropp et al., 2019; Happ et al., 2011; Radtke et al., 2012; Salem and Ahmad, 2018).

Limitations

Due to the limited study population, it is not possible to make general statements regarding other populations. This study was conducted at one ICU, and the results thus need to be confirmed in other studies with larger samples. A higher response rate might also have produced results that are more generalisable across professions.

Conclusion

Healthcare professionals in ICUs work on a daily basis with critically ill patients who cannot speak due to medical interventions and physical, medical and emotional conditions. The results of this study suggest that profession and length of experience might influence the quality of healthcare professionals' communication with patients in an ICU.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijtst.2018.11.001.

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Further reading

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