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Interactions Between Intensive Care and Palliative Care Are Influenced by Training, Professionals' Perceptions and Institutional Barriers

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Abstract

Background: There is growing interest in the use of a Palliative care approach in Intensive care. However, it tends to remain inconsistent, infrequent or non-existent, as does its acceptance by intensive care physicians. This study sought to explore the perceptions, level of knowledge, perceived barriers, and practices of physicians regarding palliative care practices (PC) in Intensive Care Units (ICU). **Methods:** Descriptive-correlational study. Participating physicians working in ICU in Colombia (n = 101) completed an ad hoc questionnaire that included subscales of perceptions, knowledge, perceived barriers, and PC practices in ICU. A Structural Equation Model (PLS-SEM) was used to examine the reciprocal relationships between the measured variables and those that could predict interaction practices between the 2 specialties. **Results:** First, results from the measurement model to examine the validity and reliability of the latent variables found (PC training, favorable perceptions about PC, institutional barriers, and ICU-PC interaction practices) and their indicators were obtained. Second, the structural model found that, a greater number of hours of PC training, a favorable perception of PC and a lower perception of institutional barriers are related to greater interaction between PC and ICU, particularly when emotional or family problems are detected. **Conclusions:** PC-ICU interactions are influenced by training, a positive perception of PC and less perceived institutional barriers. An integrated ICU-PC model that strengthens the PC training of those who work in ICU and provides clearer guidelines for interaction practices, may help overcome perceived barriers and improve the perception of the potential impact of PC.

Keywords

palliative care, critical & intensive care, knowledge, perception, practice & procedure, structural equation model

Introduction

Intensive care focuses its efforts on the management of life-threatening conditions, functional support, the reduction of morbidity and mortality, and the active search for recovery in critical situations[1]; sometimes even at the expense of patients' quality of life.[2] It is estimated that about 20% of patients in the United States die in an Intensive Care Unit (ICU)[3] and the global figures vary between 20 and 35%, depending on the geographic area, the country's income level and matters related to institutional organization.[4] For example, countries with upper-middle income levels have higher ICU mortality rates than those with high or low incomes.[1,4] Angus et al.[3] reported that over 50% of the 540,000 terminally ill patients hospitalized in the United States in 1999 died in an ICU. Another study, conducted also in the US, showed that the use of ICUs in the last month of life of older adults with a range of advanced chronic diseases has increased, despite the increase in referrals to hospices or deaths at home.[5] Similarly, a more recent international multicenter study found that 4 out of 10 older adults with cancer stayed in an ICU for an average of 5 days in their last month of life.[6]

Different studies have shown that ICU patients frequently present multiple symptoms (pain, emotional distress, dyspnea,

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delirium, among others), which are managed sub-optimally. For example, more than 2 decades ago the SUPPORT study[7] pointed out that a high percentage of patients in ICU presented comorbidities such as pain, weakness, fatigue, loss of appetite, dyspnea and sleep disturbance. They also found important difficulties regarding team communication and a high frequency of aggressive treatment in end-of-life patients. It has also been pointed out that many ICU patients manifest psychological impact and detriment in their quality of life,[8] particularly when they experience threatening pre-existing diseases.[9] This is not surprising considering that they are constantly exposed to invasive treatments, which can result in neuropsychiatric alterations in up to 80% of cases.[10]

Palliative Care (PC) is an interdisciplinary approach to health that seeks to alleviate suffering and improve the quality of life of people facing life-threatening diseases, optimizing the evaluation and treatment of physical, psychological, social, and spiritual problems and integrating the family in the caregiving process.[11] Although it may seem to be an approach opposed to that of the ICU, many patients require both and benefit from their complementarity. Almost all critical patients and their families have PC management needs: symptom control, effective communication for adequate care, adequacy of therapeutic efforts to the patient's prognosis and their values and preferences, and planning transitions to other care contexts, among others.[12] Integrating PC into ICU treatment can improve the quality of life of patients and their families, help them understand treatment processes and prognosis, and advise them in decision-making. It can foster emotional and spiritual support; improve end-of-life care; increase satisfaction for patients, families and caregivers; encourage the appropriate use of limited and costly critical care resources; decrease ICU stays; and bring economic benefits.[11-15] In the Ethicus study, aimed at determining the frequency and types of end-of-life practices in European ICUs,[16] the importance of increasing interaction and communication between the medical team, family members, social workers, and religious support services was evidenced. On the other hand, in a qualitative study on what patients and relatives considered quality PC in ICU, the following were reported: timely, clear and compassionate communication on the part of the clinician; decision making focused on the patient́s preferences, objectives and values; preservation of dignity and comfort; easy access and proximity of families; and interdisciplinary support during critical moments and mourning.[17]

Although there is growing interest in the use of a palliative care approach in ICU[18] and the fact that a variety of models and protocols have been developed for it,[11,12,19] PC management in ICU patients tends to remain inconsistent, late, infrequent or non-existent, as does its acceptance by intensive care physicians.[2,18] Consequently, the management of pain and other symptoms continues to be sub-optimal[12,19,20] and the experience of critically ill or terminally ill patients and their families is unsatisfactory, contributing to stress and conflict, even for the healthcare team.[21,22]

It should be noted that while many intensive care doctors have experience in managing certain patient and family PC needs, few have been specifically trained to provide this type of care.[18,20] In this respect, it has been found that the lack of knowledge in palliative care among resident doctors in ICU and other specialties contributes, in addition to conflicts and feelings of guilt, to a poor perception of the dying process and end-of-life decisions, such as not initiating or suspending life support.[23,24] It is therefore recommended that professionals working in ICU seek support from PC teams, in order to complement their clinical and scientific tools to provide their patients with comprehensive care rather than emphasizing medical aspects of care. This includes, among other aspects, communicating assertively with the patient and his or her family in order to promote adequate decision-making, establishing realistic and appropriate care goals, and help them understand the patient's condition and prognosis.[12,25,26] However, the use of a palliative care approach in ICU continues to be a challenge around the world, especially in countries where PC is as yet being developed.[1,11,16,27,28]

In Latin America and in Low and Middle Income Countries (LMIC) such as Colombia, studies on collaborative work between PC and ICU are very scarce.[26,27] This is added to the fact that PC is yet underdeveloped and access to this type of care is still limited.[29] Given these conditions, it was considered necessary to explore PC perceptions, level of knowledge, and the perceived barriers experienced by physicians working in ICU, as well as joint PC-ICU work practices.

Methods

Study Design and Population

A descriptive, cross-sectional and correlational study was conducted. Physicians working in Colombia's ICUs were invited to participate in a nation-wide survey through the Colombian Association of Critical Medicine and Intensive Care (AMCI) between April and July 2016; also, direct invitations were extended to doctors working in different ICUs in Medellín in August 2016. According to the inclusion criteria, participants had to be professional doctors certified by a university entity and currently working in an ICU of healthcare institutions in Colombia, who voluntarily decided to participate and gave their informed consent. The study was approved by the institutional ethics committee at Universidad Pontificia Bolivariana, approval number 26012016.

Instrument

An ad hoc questionnaire was drawn up from literature review and expert judgment. The questionnaire consists of 63 items that are scored on a 5-point Likert scale, with 0 indicating "no agreement" and 4, "total agreement," organized in 4 subscales: perceptions (21 items), level of knowledge (19 items), practices (14 items), and perceived barriers (9 items) about the use of PC in ICUs. The instrument was reviewed by experts in

intensive care and palliative care, to verify its content validity. Also, sociodemographic (age, gender and city), work (years working in ICU) and academic-related variables (PC training hours) were also included.

Data Analysis

Descriptive statistics of all variables and totals per sub-scale were obtained. Scores for each variable were standardized on a 0 to 100 scale to make comparison possible. A model explaining the relationship between the variables was developed using a structural equation model (PLS-SEM), which was tested using the Smart-PLS[30] statistical package. Two models were tested: a measurement model, which provides information about the construct validity of latent variables included in the theoretical model, and a structural regression model, which reflects the theoretical relationships specified between training hours, perceptions, barriers, and PC practices. The limit values for testing the reliability of the constructs were: Cronbach's Alpha (> 0.70) and Composite Reliability Coefficient (CFC; > 0.70). The following were used to test construct validity: Factor loadings (>.60), AVE test (> 0.50 for each construct) and HTMT (< 0.90 between constructs). The coefficients analyzed to test the structural regression model were the explained variance (R2), effect size (f2), and standardized regression coefficients. To calculate the significance of the coefficients, the Bootstrapping technique was used, which provides t statistics and the corresponding p-value. In PLS-SEM, the R2 values equal to 0.75, 0.50, 0.25 are described as substantial, moderate, and weak respectively. As for f2, the values 0.02, 0.15 and 0.35 are considered small, moderate and large respectively.[31-33] Finally, sex and age were controlled for, and variance inflation factor (VIF) for all latent variables was assessed to detect problems associated to common method variance (CMV). VIFs greater than 3.3 may be indicative abnormal collinearity and also CMV issues.[33]

Results

Sample Characterization

The final sample was of 101 participants, of whom 69 were men (68.3%) with an average age of 44.7 years (D.T. = 9.1 years, age range: 23 to 70 years). Regarding the specialty, 83 were specialists in intensive care, 13 were from other specialties, and 5 were general practitioners; 23.8% (n = 24) worked in Bogotá, 22.8% in Medellín (n = 23) and the rest in other cities in Colombia; 30.7% of the participants (n = 31) indicated that they had received some training in pain and PC. The average number of hours of training for these professionals was 61.24 (D.T. = 177.08, range = 0-1000).

Perceptions, Knowledge, Barriers, and Practices

With regard to perceptions, it was found that the mean score was approximately 60 points (range: 6.58-88.16). Among the perceptions that seem to present greater dispersion is the idea that PC is unnecessary when the patient is unconscious or deeply sedated, a statement with which 23.8% of the physicians evaluated disagreed, while 28.7% totally agreed. Other perceptions showed high scores indicating adequate knowledge about PC and its application in ICUs. In terms of the practices, the average was 46 points (range: 7.69-92.31). 61.4% of the participants did not have the possibility to work with a PC specialist in ICUs, and when requesting inter-consultations with the PC team, it was found that 3% of the professionals always do this when complex emotional problems are detected and 5%, when they detect symptoms of difficult control or refractory. It should be noted that 23.8% of the participants always request a PC consultation to define joint management and symptom control in patients with advanced stages of disease. In terms of knowledge, the mean score was 64.4 points (range: 8.82-95.69). In general, participants tend to have a moderate level of knowledge in PC. It was evidenced that 57.4% of physicians totally agree that this approach is complementary to active and/or curative treatments. Finally, the mean score for the barriers was 63.8 points (range: 12.5-100.0) (Figure 1). The results indicate that 37.6% of the professionals agree that institutional conditions that do not favor the presence of a PC team supporting the ICU is a barrier to ICU-PC interaction, while 46.5% agree that there is little availability of PC professionals who can support ICUs at institutional level.

PLS-SEM Model

The proposed model for examining the interrelationships between all variables and examining which of them predicted interaction practices was successful. Given that the subscale of knowledge showed high collinearity with that of perceptions, it had to be removed from the model, while hours of PC training were included, given their predictive value in the model. The other VIF coefficients ranging from 1 to 1.11 suggested absence of issues associated to CMV. Regarding the reliability of the scales used, the results exceed the limit values for all the constructs present in the model (Table 1). The results were equally satisfactory in terms of convergent (AVE) and discriminant (HTMT) validity (Table 2).

The results of the structural regression model suggest that there is a significant relationship between PC training hours and accurate perceptions about them. Also, perceptions are positively related to ICU-PC interaction practices. Finally, it was evidenced that perceived barriers mediate the relationship between perceptions and practices. The introduction of participants' sex and age as controls did not alter the significance of the remaining paths. It should be noted that the only interaction practices maintained in the model were inter-consultations when emotional and family problems were encountered. The results of the structural regression model partially support the study's hypotheses; the R2 values vary from weak to moderate, while the results in terms of f2 range from small to substantial (Table 3). Figure 2 shows the resulting structural model, which includes the latent variables and their constituting items, as

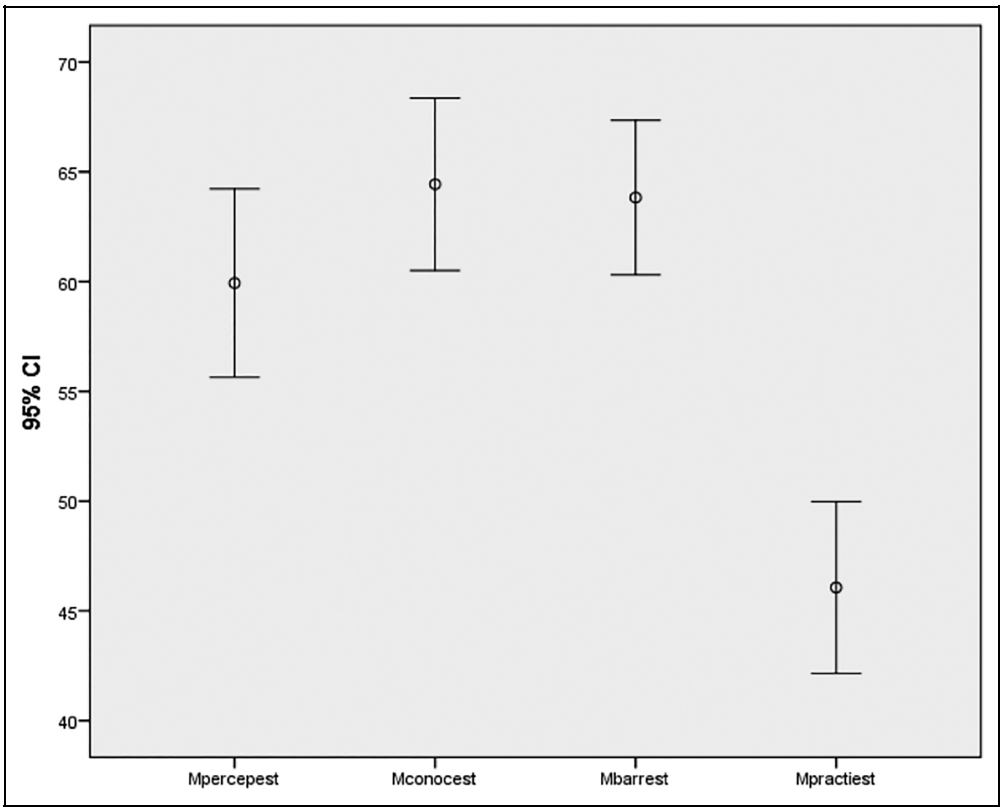

Figure 1. Level of perceptions, knowledge, barriers and practices perceived by participating physicians.

Table 1. Measurement Model: Scales Reliability.

Latent variables	Cronbach's alpha	Composite reliability	Average variance
Barriers	0.749	0.822	0.540
Perceptions	0.946	0.955	0.727
Practices	0.935	0.969	0.939

Table 2. Measurement Model: Discriminant Scale Validity (HTMT).

Latent variables	Barriers	Training	Perceptions
Training	0.281		
Perceptions	0.299	0.713	
Practices	0.320	0.558	0.648

Table 3. Structural Model.

Latent variables	Original sample	Mean values	Standard deviation	T	p
Adjusted R^2					
Barriers	0.089	0.103	0.042	2.117	0.035
Perceptions	0.488	0.495	0.084	5.800	0.000
Practices	0.388	0.403	0.103	3.784	0.000
F^2					
Barriers to practices	0.028	0.036	0.029	0.958	0.339
Training to practices	0.974	1.059	0.353	2.755	0.006
Perception to barriers	0.110	0.129	0.054	2.023	0.044
Perception to practices	0.501	0.566	0.289	1.732	0.084

well as the Beta values of each of the relationships between them.

Discussion

This study focused on examining the perceptions and level of knowledge that intensive care physicians in a LMIC have in relation to PC, their interaction practices with PC, and the perceived barriers to interacting with PC. Hours of PC training were found to positively influence favorable perceptions of PC and negatively influence perceived barriers, which in turn influence increased interaction practices, particularly when emotional and family problems arise. In this respect, it has been mentioned that having more favorable perceptions of PC and fewer difficulties in accessing it is related to a positive experience in caring for terminally ill patients at home or in hospitals.[34] In the Liverpool Care Pathway study, conducted in 2 Spanish-speaking countries to examine the effects of the implementation of a quality care program for end-of-life people, it was demonstrated that perceptions are mediated by socio-political, cultural and religious aspects, as well as personal ones.[35] Thus, it is important to intervene in matters such as beliefs, customs, affective bonds, and trust, among others, in order to change medical perceptions about the use of PC. In a similar study carried out by Gatta and

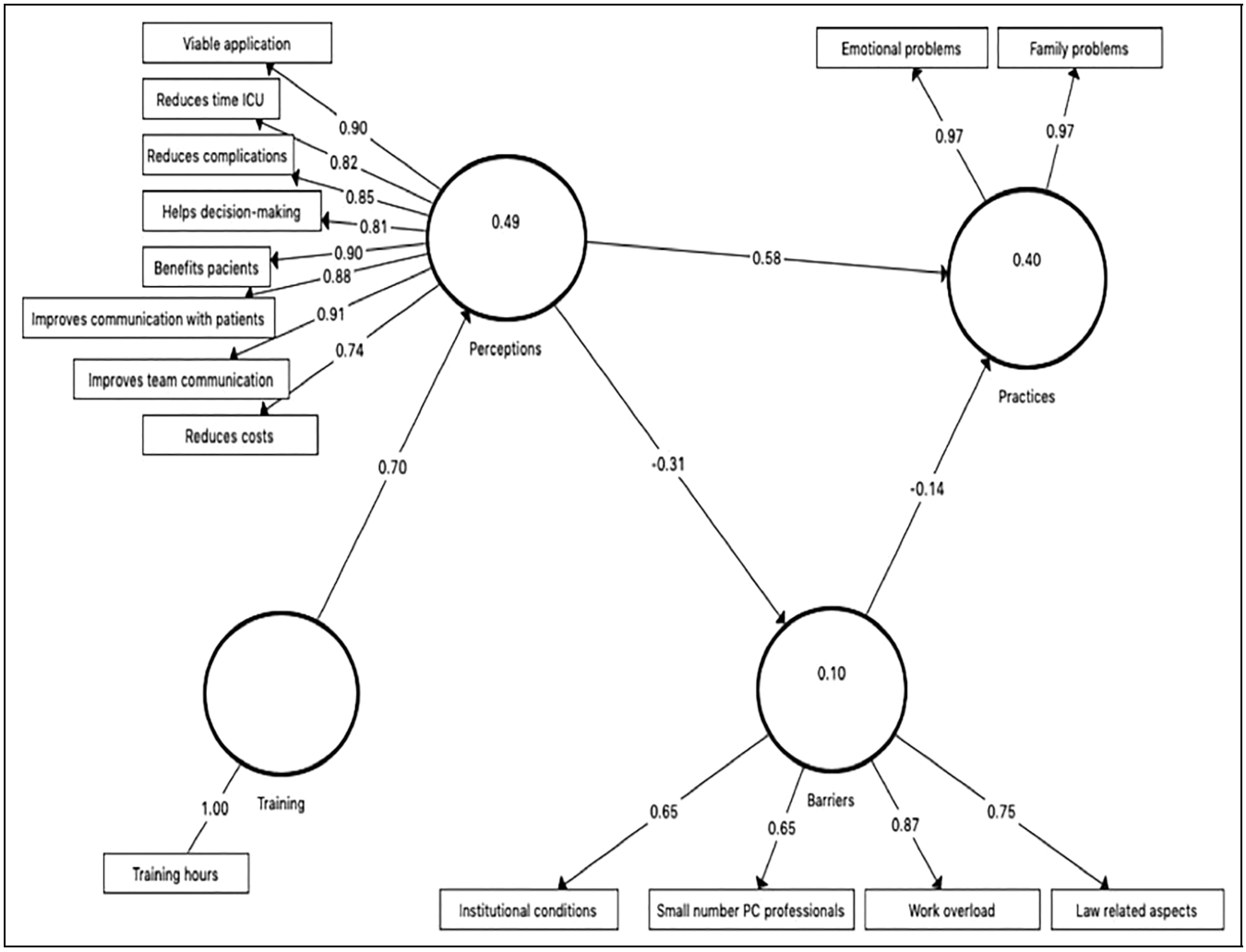

Figure 2. Resulting structural model: Relationship between training hours, perceptions, barriers and ICU-PC interaction practices found.

Turnbull,[36] it was evidenced that intensive care physicians indicated that PC was part of their work in the ICU and that they were personally satisfied when applying it. Participants identified many activities performed by PC practitioners that are useful for the intensive care team. They also described a variety of motivations for inter-consulting with the PC group.

Unfortunately, there are very few studies that have been conducted in the Latin American context or in countries where PC is still in under development.[27,28] Some of them highlight the lack of knowledge regarding PC in healthcare professionals and even in senior undergraduates; the absence of institutional protocols and government policies that offer a framework for its application in the healthcare context and particularly with patients in critical condition; as well as the difficulty to apply PC in patients treated in ICU.[37,38] A retrospective study that examined the limitation of advanced support in ICU patients found that only about 10% of patients who died in ICU received PC and that this intervention favored discussions with families and actions aimed at limiting therapeutic efforts, facilitating orthothanasia or "good deaths."[39] Another study involving HIV/AIDS patients admitted to ICU indicated that only 15% of those who died in the unit received PC and inter-consultation was delayed, even though their disease was in a very advanced stage. However, it was found that receiving PC was related to a significant decrease in potentially inappropriate interventions, and 26% of patients were discharged from the unit, favoring their contact with the family.[40]

The results of these studies call for the need to establish an integrative ICU-PC, model given the high mortality and unfavorable events for ICU patients and their families, particularly in LMIC. The interaction between the 2 specialties has multiple advantages such as: increased patient comfort and family satisfaction and understanding; decreased anxiety, depression and family post-traumatic stress; decreased use of non-beneficial treatments, hospital stays, mechanical ventilation, and fewer conflicts regarding therapeutic goals[2,17,26]

It should be noted that to improve the ICU-PC interaction, it is not only important to promote quality of life and patient comfort, but also the mutual support of professionals from both disciplines for optimal symptom management. It would be useful to design and implement culturally adjusted protocols to facilitate assessment and joint ICU-PC management of

common symptoms and problems that affect quality of life, communication and decision-making and problem-solving in advanced disease and end-of-life.[20,23,25,26,35]

Limitations

The use of virtual surveys presents disadvantages that include a sampling frame limited by technological barriers and lower response rates than when using on-site modalities.[41] In the present study, the virtual response rate was less than 10%, which lead to the use of on-site strategies in order to limit bias. In addition, the results are based on participants' self-reports, which addresses their subjective perception but does not allow access to more objective information, a matter that may threaten the study's validity. In order to avoid these drawbacks, future studies should include objective variables such as actual knowledge and skills in clinical exercise and real barriers and PC interaction practices (e.g., number of inter-consultations with PC). Finally, the study design makes it impossible to determine whether the existence of PC teams in the institutions where participants work influences their responses; thus, the results of this study should be taken as a guide for future hypotheses and intervention studies.

Conclusion

In sum, this study sought to examine the perceptions and level of knowledge of intensive care physicians in a Latin American country with respect to PC, as well as to identify joint PC-ICU practices. It was found that PC practices in ICU are inversely related to perceived barriers and positively related to favorable PC perceptions. Also, perceptions have an influence on perceived barriers, while training hours lead to better perceptions of PC and fewer perceived barriers. The results indicate the need to establish an integrative ICU-PC model that strengthens the PC training of those who work in ICU and to implement clearer guidelines for interaction practices that help to overcome perceived barriers and improve the perception of the potential impact of PC.

Authors' Note

*Data are available upon request.

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