

A descriptive correlational study of nurse-physician collaboration in adult critical care in Greece



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SUMMARY

- Inter-professional collaboration is linked with improved patient outcomes and critical care nurses' retention. However, poor nurse-physician collaboration has been reported in several countries; whereas no specific evidence exists for Greece.
- Aim: We aimed to explore nurse-physician collaboration and associations with nursing workforce characteristics in Greek adult intensive care units.
- A descriptive correlational design was employed, based on a two-stage random sampling involving 15 hospitals and 34 intensive care units (ICU) in the Athens metropolitan area. Data were collected through the Collaboration and Satisfaction About Care Decisions Scale (CSACD) instrument and a short personal data questionnaire.
- In the study, 355 nursing personnel members were included (response rate: 58.5%). The average CSACD score was 36.72 (SD 12.43), implying low levels of collaboration and satisfaction with care decisions. There was a strong positive association between responders' years of ICU experience and CSACD score ($r = .675, p < 0.0001$). Head nurses reported higher CSACD scores compared to staff nurses ($F = 7.67; p = 0.001$). We observed no significant association between responders' age, gender, highest level of education and years of overall nursing experience and CSACD score. In a multivariate model, only type of post was significantly associated with CSACD score.
- Low levels of nurse-physician collaboration and satisfaction with care decisions were observed in ICU nurses in Greece. The findings suggest that, in Greek ICUs, the collaboration culture is mostly affected by unit-level practices and cannot be substantially influenced by employee characteristics. Therefore, interventions to increase collaboration should be instituted at the hospital and unit-level.

INTRODUCTION

High levels of nurse-physician collaboration have been associated with improved patient outcomes, such as lower mortality (Baggs et al., 1999; Wheelan et al., 2003), lower rates of intensive care unit (ICU) readmission (Baggs et al., 1999), ventilator associated pneumonia (Boev C & Xia Y, 2015; Manojlovich et al., 2009), central catheter-associated bloodstream infections (Boev C & Xia Y, 2015) and pressure ulcers (Manojlovich et al., 2009). Nonetheless, the effectiveness of inter-professional collaboration and communication is still a challenging issue among ICU personnel, especially in Southern Europe (Georgiou et al., 2017; Papatthanassoglou et al., 2012; Puntillo & McAdam, 2006).

Collaboration has been defined as "nurses and physicians working together, sharing responsibility for solving problems, and making decisions to formulate and carry out plans for patient care. It may be conceptualized both at the individual-patient decision level and at the level of ICU organization" (Baggs et al., 1999). Nurses appear to consistently perceive the level of inter-professional collaboration lower than physicians (Nathanson et al., 2011). Results of a European (Papatthanassoglou et al., 2012), an Italian (Karanikola et al., 2014) and a Cypriot (Georgiou et al., 2017) survey reveal moderate levels of collaboration in critical care and associations with moral distress in critical care nurses.

Exploration of the factors associated with nurses' self-perceived efficiency of collaboration is important in providing insight to support collaborative practices. Barriers towards high collaboration standards hinder nurses' ability to contribute effectively to optimal patients' outcomes.

Aims

We aimed to explore nurse-physician collaboration in adult ICUs in Greece by investigating: a) levels of nurse-physician collaboration,

❖ A descriptive correlational study of nurse-physician collaboration in adult critical care in Greece ❖

and b) associations with workforce characteristics including gender, professional experience and education.

METHODS

Design

We employed a descriptive, correlational, cross-sectional design.

Sample and Setting

We used a combination of random and direct element sampling to obtain a sample of ICU nurses in Athens, Greece. Initially, 15 hospitals (involving 34 ICUs) were randomly selected from the Athens metropolitan area, and, subsequently questionnaires were distributed to all members of the nursing personnel in those ICUs. Neonatal/ pediatric ICUs encompassing less than 6 beds were excluded as we deemed that the type of collaboration might not be representative of a typical adult ICU.

Data collection

We collected data through a questionnaire comprising the Greek version of the Collaboration and Satisfaction About Care Decisions Scale (CSACD) (Baggs et al., 1992) and a questionnaire addressing background data. We used CSACD with permission from the developer of the original scale. CSACD includes ten 7-point Likert scale items addressing nurses' perceptions of the level of collaboration regarding sharing responsibility for solving problems and making decisions related to the provided care (scale range: 10-70). Overall, higher item scores denote higher satisfaction with collaboration, with the exception of item 10 ("I have considered seeking other employment outside this unit or hospital related to an incident that occurred while collaborating with a physician"), for which higher values denote higher dissatisfaction with collaboration. The short accompanying questionnaire included questions about unit characteristics, demographic and educational background.

We visited the participating units repetitively to distribute questionnaires and to increase the response rate. Questionnaires were returned anonymously, in sealed envelopes. Return of a completed questionnaire implied consent to participate in the study.

Ethical issues

The study protocol was approved by the institutional review boards of the participating hospitals, and the Ethics Committee of the Faculty of Nursing, University of Athens. Principles of confidentiality, anonymity and the right to decline participation were diligently observed.

Data analysis

Data were tested for normality and logarithmic transformations were employed as needed. Means and standard deviations (SD) are reported. The Cronbach's alpha coefficient of reliability of internal consistency of the scale used was assessed. Due to the lack of established norms, the midpoint of the CSACD scale was arbitrarily considered as a cut-off (Papathanassoglou et al., 2012). We considered values below the 50th quartile as low, those between the 50th and the 75th quartile as moderate, and above that level as high. Comparisons were assessed through the student's t or Mann Whitney U test and analysis of variance (ANOVA), as appropriate. Pearson's r (r) correlation coefficients were also explored. To explore variables potentially mediating significant associations (age, gender, years of experience) we employed step-wise regression analysis. A nominal significance level $\alpha = 0.05$ was used. Data were analysed through the Statistical Package for Social Sciences (SPSS, Inc, Chicago, IL version 20.00).

Characteristic		Value
Age (years) mean (SD)		34 (7.2)
Gender male: female (%)		83: 17
Experience (years) mean (SD)	Nursing experience	10 (7.4)
	ICU nursing experience	6.5 (6.1)
Position (%)	Nurse assistant	10.4
	Staff nurse	84.2
	Head nurse	5.4
Type of ICU (%)	Medical/ Surgical	72.9
	Coronary	18.9
	Cardiac surgery	4.8
	Neurosurgical	3.4
Educational background (%)	Associate Degree	12.4
	Diploma	67.9
	Bachelor degree	7.3
	Master's degree	11.2
	PhD	1.2

Table 1. Respondents' background data (n = 355). ICU: intensive care unit, SD: standard deviation

RESULTS

Respondents

We distributed 607 questionnaires, of which 355 were returned completed (response rate: 58.5%). The characteristics of participants appear in Table 1. The respondents' mean age was 34.1 (SD 7.2) and 83% were women. The average overall nursing experience was 10.4 (SD 7.4) years, and the ICU nursing experience was 6.5 (SD 6.1) years.

Collaboration and satisfaction with care decisions

Cronbach's α for the CSACD scale was .885. The average CSACD score was 36.7 (SD 12.4) probably implying low levels of collaboration and satisfaction with care decisions. In Table 2, average scorings per item are presented. The lowest score was noted with regard to the item "Decision-making responsibilities for patients are shared between nurses and physicians"; and the highest with regard to the item "Open communication between physicians and nurses about patient care decisions takes place". Moreover, the item "I have considered seeking other employment outside this unit or hospital related to an incident that occurred while collaborating with a physician" received low degree of agreement from responders.

Associations of CSACD scores with nurse and unit characteristics

We observed no significant association between responders' age, gender, highest level of education and years of overall nursing experience and CSACD scores. However, there was a strong positive association between responders' years of ICU work experience and CSACD scores ($r = .675$, $p < 0.0001$). Head nurses reported higher CSACD scores compared to staff nurses ($F = 7.67$; $p = 0.001$). To further explore this association we employed a multiple regression to control for age, gender and length of ICU experience. The association between CSACD and type of post remained significant; whereas none of the control variables showed significant associations with CSACD scores.

With regard to nurse staffing, we observed non-significant trends for moderate associations between higher nurse/ patient ratios and CSACD scores. There were no significant differences in CSACD

scores across different types of units.

Item	Mean (SD, n)
1. Nurses and physicians plan together to make decisions about care for the patients in this unit.	3 (1.9, 70)
2. Open communication between physicians and nurses about patient care decisions takes place.	4 (1.8, 15)
3. Decision-making responsibilities for patients are shared between nurses and physicians.	3 (1.8, 21)
4. Physicians and nurses cooperate in making decisions about patient care.	3 (1.9, 94)
5. In making decisions, both nursing and medical concerns about patients' needs are considered.	4 (1.8, 3)
6. Decision-making for patients is coordinated between physicians and nurses.	3 (1.8, 48)
7. How much collaboration between nurses and physicians occurs when making patient care decisions?	3 (1.8, 74)
8. How satisfied are you with the overall collaboration between physicians and nurses at this unit?	3 (1.8, 95)
9. How satisfied are you with collaboration in this hospital overall?	3 (1.6, 92)
10. I have considered seeking other employment outside this unit or hospital related to an incident that occurred while collaborating with a physician.	2 (1.9, 52)

Table 2. Average CSACD item ratings (7-item Likert scale). SD: standard deviation

DISCUSSION

We addressed, for the first time, nurse-physician collaboration and associations with work-force characteristics in ICU nursing personnel in Greece. The main findings of this study were: a) low nurse-physician collaboration and satisfaction with care decisions scores, b) lowest collaboration scores with regard to shared decision-making and highest scores in relation to nurse-physician communication and c) type of post was the most significant determinant of collaboration,

The observed collaboration scores were very similar to results reported in Cypriot ICU nurses (Georgiou et al, 2017), but considerably lower compared to those reported in recent European, Italian and an earlier US study (Baggs & Schmitt, 1997; Karanikola et al., 2014; Papathanassoglou et al., 2012). A factor potentially implicated in the low collaboration scores in the present study may be power inequalities in the Greek healthcare system. Previous reports in nursing personnel in Greece reveal low authority and poor inter-professional collaboration in nurses (Papathanassoglou et al., 2005; Papathanassoglou et al., 2012; Patiraki-Kourbani, 2003). The incongruity between relatively low overall collaboration score and low mean score on the item about considering leaving the job because of poor collaboration, along with a high score about satisfaction from the openness of nurse-physician communication is noteworthy and may be interpreted taking into account the aforementioned context. In a medically- driven care system, nurses may form low expectations with regard to nurse-physician collaboration and over-estimate current collaboration practices (Georgiou et al., 2017).

In contrast to results of previous Cypriot and European studies (Georgiou et al., 2017; Papathanassoglou et al., 2012), gender and years of overall nursing experience did not appear to associate with collaboration scores. Moreover, although bivariate analyses showed a strong association between collaboration scores and length of ICU nursing experience, multivariate analyses revealed the type of post as the most significant determinant of collaboration scores. Moreover, no association was observed with responders' educational background. This contrasts with results of a European survey (Papathanassoglou et al., 2012), where a positive association was reported between collaboration scores and educational level. Knowledge can be both

a catalyst and a barrier towards effective collaboration (Hawryluck et al., 2002). The lower collaboration scores in less experienced responders may be interpreted on the basis that novice nurses are not adequately socialized within the types of knowledge they may be "allowed" to implement (Hawryluck et al. 2002). Differences in the perception of inter-professional communication between junior and senior staff in ICUs have been previously reported (Reader et al., 2007).

Taken together, these findings may suggest that, the collaboration culture in Greek ICUs is influenced, predominantly, by unit-level practices and cannot be substantially influenced by employees' characteristics. Therefore, interventions to increase collaboration should be instituted at hospital and unit level, rather than at employee level.

Limitations

The main limitations herein stems from the low response rate and sampling confined in the metropolitan Athens area and public-sector ICUs only. Also, based on the present design, we were not able to control for potential confounding variables, such as patients' acuity and unit protocols. Moreover, although we reported the observed levels of collaboration as "low" based on quartile values no established norms exist.

CONCLUSIONS

Our findings reflect low levels of nurse-physician collaboration and satisfaction with care decisions in ICU nurses in Greece, whilst type of post was reported as the major determinant of self-reported collaboration scores. Although nurses' empowerment at the employee level has been suggested as a recommended strategy in previous studies (Georgiou et al., 2017; Papathanassoglou et al., 2012), based on these findings, interventions at the unit and hospital level seem more appropriate. Measures to enhance inter-disciplinary collaboration are called for. In that respect, nurses need to appeal to hospital administration and to regulatory bodies. Inter-professional collaboration needs to be included among indices of quality and as an important factor in standards of care.

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❖ A descriptive correlational study of nurse-physician collaboration in adult critical care in Greece ❖

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