Applied Nursing Research 36 (2017) 63–67

Contents lists available at ScienceDirect

Applied Nursing Research

journal homepage: www.elsevier.com/locate/apnr

The physician-nurse collaboration in feeding critically ill patients: A multicenter survey

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ARTICLE INFO

Article history:
Received 25 November 2016
Revised 21 March 2017
Accepted 25 May 2017
Available online xxxx

Keywords:
Physician-nurse relations
Cooperative behavior
Nutrition support
Critical illness

ABSTRACT

Aims: Describe physician-nurse collaboration in feeding critically ill patients and explore the influence factors related to this collaboration, which can provide information for clinical practice and future studies.
Background: Appropriate nutrition support is essential and significant for critically ill patients, and the importance of physician-nurse collaboration in other fields has been confirmed, yet there are limited studies put insights into the status of physician-nurse collaboration in feeding critically ill patients.
Methods: A cross-sectional survey with a covering of 15 hospitals was conducted. A 21-item questionnaire was administered to physicians and nurses in critical care units. Descriptive statistics, univariate and multiple stepwise regression analysis were performed to evaluate the physician-nurse collaboration in feeding critically ill patients.
Results: A total of 331 respondents completed the questionnaire. Nurses and physicians were found to have differing perceptions of the physician-nurse collaboration in feeding critically ill patients, with nurses reporting lower levels of collaboration. Nurses consistently gave more negative responses on every survey question compared with physicians. Age, education and clinical experience significantly influenced the nurses' perceptions of cooperation, and age, education, ICU type, and seniority affected the physicians' perceptions of collaboration.
Conclusions: Physicians, nurses and hospital administrators should highlight the physician-nurse collaboration in feeding critically ill patients and reinforce the cooperation based on potential influencing factors. Further research is required to establish feasible cooperative protocol and evaluate the effectiveness of the approach.

1. Introduction

Appropriate nutrition support is now considered as an essential, important but challenging component of standard supportive care in critical diseases, particularly in the intensive care unit (ICU) (Elke et al., 2008; Hooper & Marik, 2015; Kreymann et al., 2006). Research generally suggests that critical illness is associated with a metabolic stress state which is involved with malnutrition and further is coupled with complications of increased infectious morbidity, multi-organ dysfunction, prolonged hospitalization, and disproportionate mortality (Cuesta & Singer, 2012; McClave et al., 2016; Preiser et al., 2015). Additionally, compelling evidence demonstrates that reasonable nutrition support can reduce infection and complications, and promote organ and tissue repair (Marcus, Spohr, Bottiger, Grau, & Padosch, 2012). Nevertheless, these accumulated studies (Heyland et al., 2013; Kondrup, Rasmussen, Hamberg, & Stanga, 2003; Smith et al., 2011; Whelan & Myers, 2010; Zhu et al., 2014) which focused on nutrition support are mainly associated with nutritional risk screening, formulas, supplements, delivery methods, optimal amount of calories, very few put insights into the role of medical staff in nutrition support.

Physician-nurse collaboration, which was proposed in 1960s in the United States and therewith aroused widespread attention, while a recognized standard definition for physician-nurse collaboration is still absent. Baggs & Schmitt (1988) described physician–nurse collaboration as "nurses and physicians cooperatively working together, sharing responsibilities for solving problems and making decisions to formulate and carry out plans for patient care". Petri (2010) defined physician–nurse collaboration as "an interpersonal process where nurses and physicians present with shared objectives". Generally, physician–nurse collaboration is based on mutual respect and trust, and effective and open communication, both parties possess equal decision making capacity, power and responsibility to manage patient care. Recently, large amount of studies have confirmed that positive physician-nurse collaboration can effectively increases patient safety, reduce the incidence of complications, and also elevate quality of nursing care (Blake, Leach,

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http://dx.doi.org/10.1016/j.apnr.2017.05.007
0897-1897/

Robbins, Pike, & Needleman, 2013; Kuslapuu, Jogela, Starkopf, & Reintam Blaser, 2015; Mousques, Bourgueil, Le Fur, & Yilmaz, 2010).

These findings suggest that targeting the physician-nurse collaboration may provide novel insights into the improvement of nutrition practice, however, there are limited data available on this topic specific to ICUs or nutrition support, the status of physician-nurse collaboration in feeding critically ill patients and the potential influencing factors remain obscure.

2. Aims

Describe medical-nurse collaboration in feeding critically ill patients and explore the influence factors related to this collaboration, which can provide information for clinical practice and future studies.

3. Methods

3.1. Data collection

This cross-sectional multicenter survey on the physician-nurse collaboration in feeding critically ill patients was conducted between March and June 2016 in adult ICUs from 15 hospitals. The physician-nurse collaboration questionnaire is divided into three sections. Firstly, eight questions regarding personnel demographics; Secondly, the Nurse–Physician Collaboration Scale (NPCS) is applied to build standards for nurse–physician collaboration, measure the frequency of cooperative activity, and verify unit-specific relationships between collaboration and quality of care, which was developed by Ushiro (2009) and was translated into Chinese version with sound conformity to the Chinese grammar and the cultural background of China by Jing Chen. The Chinese version of NPCS, with rather high reliability and validity, which has been used to evaluate the status of nurse-physician collaboration in Chinese medical environment and mainly be divided into three constructs: sharing of patient information, joint participation in the cure/care decision-making process, and cooperativeness. The total 21 items are rated on a 5-point likert scale: (1) Never, (2) Rarely, (3) Sometimes, (4) Usually, and (5) Always. Finally, an open-ended question regarding additional thoughts or suggestion to the physician-nurse collaboration in feeding ill patients are included.

Additional clinical variables included age, gender, education, seniority, hospital type, ICU type, clinical experience. The primary outcomes were determined based on the score of the Nurse–Physician Collaboration Scale. As the response data are expressed on an ordinal, likert-type scale, the frequencies and percentages of respondents within each response were calculated and a positive response is where respondents have given a mean answer of >3 on the questionnaire scales.

3.2. Data analysis

Descriptive statistics were conducted to describe the sample of physicians and nurses and their responses to the questionnaire. The *t*-test, ANOVA, and non-parametric Wilcoxon (Mann–Whitney) rank-sum test were used to evaluate and compare differences across the groups. Univariate analysis and multiple stepwise regression analysis were applied to identify influence factors related to this collaboration. Statistical analysis was processed with SPSS 17.0 (SPSS Inc., Chicago, IL, U.S.). All tests were 2 sided, with a P value <0.05 was considered statistically significant.

3.3. Ethical considerations

Ethics approval to launch the study was received by the medical director of the ICU, additionally, informed consent was obtained from the respondents before the investigation.

4. Results

The questionnaire was distributed to 370 respondents across the 15 participating hospitals. A total of 331 completed questionnaires with an overall response rate of 89.46%. Table 1 describes the demographic characteristics of the respondents. 65 physicians with a mean age of 32.72 years old and 266 nurses with a mean age of 29.88 years old were included. The majority of respondents were from tertiary hospital (81.57%) and general ICU (69.49%).

Fig. 1 illustrates the score of respondents rating the physician-nurse collaboration in feeding critically ill patients in their ICU. Overall, in the dimensions of "sharing of patient information", "joint participation in the cure/care decision-making process" and "cooperativeness", physicians' scores were higher than nurses, statistically significant differences were observed.

We dichotomized the score of each item as 1–3 vs 4–5 (negative response vs positive response), Table 2 presents means, positive percentages of respondents' responses for each item from the Nurse–Physician Collaboration Scale and the Wilcoxon rank-sum Z values, P values comparing the two groups. Physicians reported significantly higher levels of cooperation compared with nurses on almost every question, all but questions 2, 4, and questions 6 to 8.

As shown in Fig. 2, a comparison of the overall average for each question by nurses versus physicians showed the proportion of nurses with lower scores (1 to 4) is higher than that of physicians. Although the majority of respondents reporting positive responses to the questionnaire scales (Table 2), in general, the dichotomous positive score of physicians were similarly significantly higher than nurses that 80.8% of physicians had an overall average > 3, as compared with 68.2% of nurses (Fig. 3). We also calculated the difference on positive or negative responses of participants to each item, as shown in Fig. 4, results found that the

Table 1
Demographic characteristics of the respondents.

Characteristics	Nurses (N, %)	Physicians (N, %)
Number	266	65
Age, y		
<25	70(26.3)	6(9.2)
25~	154(57.9)	39(60.0)
35~	35(13.2)	18(27.7)
45~	7(2.6)	2(3.1)
Gender		
Male	22 (8.3)	39 (60.0)
Female	244 (91.7)	26 (40.0)
Education		
Associate's degree	109(41.0)	
Bachelor's degree	155(58.3)	37(56.9)
Master's degree	2(0.8)	24(36.9)
Doctorate degree		4(6.2)
Seniority (clinical)		
Primary title	206(77.4)	23(35.4)
Intermediate title	50(18.8)	29(44.6)
Senior title	9(3.4)	10(15.4)
Other	1(0.4)	3(4.6)
Hospital type		
Tertiary hospital	221(83.1)	49(75.4)
Secondary hospital	45(16.9)	16(24.6)
ICU type		
General ICU	187(70.3)	43(66.2)
Special ICU	79(29.7)	22(33.8)
Clinical experience		
<6	135(50.8)	28(43.1)
6~	61(22.9)	15(23.1)
10~	33(12.4)	16(24.6)
15~	37(13.9)	6(9.2)