

Registered nurses' attitude towards physician-nurse collaboration in a Malaysian private hospital

Wai Mun Tang, Tze Yee Wong, Cherish Chai

Background: Positive physician-nurse collaborative relationship is the key determinant for patients' outcomes.

Objective: The purpose of the study was to investigate registered nurses' attitude towards physician-nurse collaboration and its association with demographic characteristics.

Methodology: The study was descriptive and cross-sectional. The data of the study was collected using the "Jefferson Scale of Attitudes toward Physician-Nurse Collaboration". The sample size of the study was 127 registered nurses recruited using convenience sampling. Descriptive statistics and inferential statistics *t*-test were used for data analysis.

Results: The results showed that nurses' attitude towards physician-nurse collaboration was positive ($M=3.25$, $SD\pm 0.29$). The attitude of the participants was highly positive towards "shares education and collaboration" ($M=3.42$, $SD\pm 0.36$), "nurse's autonomy" ($M=3.42$, $SD\pm 0.44$), and "caring vs. curing" subscales ($M=3.41$, $SD\pm 0.41$). However, the participants rated lowest for "physician's authority" subscale ($M=2.12$, $SD\pm 0.83$) and particularly on the item "doctors should be dominant authority in all health care matters" ($M=2.11$, $SD\pm 0.99$). Furthermore, *t*-test analysis revealed no significant association between nurses' attitude towards physician-nurse collaboration and demographic characteristics such as age, gender, and educational level ($p > 0.05$).

Conclusion: The results of the study provided some crucial evidences on nurses' attitude towards physician-nurse collaboration. The evidences are useful for the relevant stakeholders to initiate relevant strategies to improve and strengthen the relationship gap between physicians and nurses.

IeJSME 2017 11(1): 12-20

Keywords: Attitude, physician-nurse, collaboration, registered nurses

Introduction

Collaboration is a sophisticated process which involves more than one individual (Henneman, Lee & Cohen, 1995). The original meaning of the term "collaboration" was "to work together" (Dougherty & Larson, 2005). In the context of healthcare, physician-nurse (P-N) collaboration has been defined as "nurses and physicians cooperatively working together, sharing responsibilities for solving problems and making decisions to formulate and carry out plans for patient care" (Baggs & Schmitt, 1988). Moreover, Bridges (2012) elaborated that collaboration is beyond working together but instead mutual respecting, accepting, and sharing of individuals' autonomy and power.

In the hospital setting, physicians and nurses are commonly working together in managing patient care. Collaboration between physicians and nurses is extremely important in ensuring quality of patient outcomes and its significance has been testified in numerous past studies. For example, previous studies had been conducted to investigate the effect of P-N collaboration on duration of hospitalisation and the studies had found that positive P-N collaboration significantly reduced the days of patients' hospitalisation (Cowan *et al.*, 2006; Tschannen & Kalisch, 2009). In a separate study, Boev and Xia (2015) found significant negative correlation between P-N collaboration and rate of hospital acquired infections such as lung and bloodstream infections. Besides patients' outcomes, P-N collaboration is also a crucial determinant towards the quality of nurses' work life such as job satisfaction, turnover intention, and psychosocial well-being such as moral distress and burnout (Karanikola *et al.*, 2014; Ushiro & Nakayama, 2010; Rosenstein, 2002). For example, a study conducted by Karanikola *et al.* (2014) found that poor P-N collaboration was significantly associated with nurses' moral distress which indirectly affected nurses' satisfaction on their care decision as well as intention to leave the organisation. Similarly, Rosenstein (2002) concluded that positive P-N collaboration is an important indicator in

Division of Nursing, School of Health Sciences, International Medical University, No. 126, Jalan Jalil Perkasa 19, Bukit Jalil, 57000 Kuala Lumpur, MALAYSIA

Address for Correspondence:

Wai Mun Tang, Division of Nursing, International Medical University, No. 126, Jalan Jalil Perkasa 19, Bukit Jalil, 57000 Kuala Lumpur, MALAYSIA
Email: waimun_tang@imu.edu.my

enhancing nurses' job satisfaction and reducing turnover rate. Furthermore, Ushiro and Nakayama (2010) reported that P-N collaboration was negatively related to nurses' burnout.

In general, past studies have reported that nurses were found to have positive attitudes toward P-N collaboration (Brown, Lindell, Dolansky & Garber, 2015; El-Sayed & Sleem, 2011; Hasson, Arvemo, Marklund, Gedda & Mattsson, 2010; Johnson & Kring, 2012; Sterchi, 2007; Taylor, 2009; Yildirim *et al.*, 2005). Nonetheless, in comparison with physicians, most of the former studies reported that nurses' attitude were more positive than the physicians (Hasson *et al.*, 2010; Sterchi, 2007; Taylor, 2009; Yildirim *et al.*, 2005). These research findings could be problematic because physicians who were less positive towards the collaboration may view themselves as the primary decision makers and therefore, have the complete authority in reviewing or changing treatment plans without consulting the other healthcare providers. Consequently, other healthcare providers particularly the registered nurses would feel disrespectful and less satisfied with the collaboration relationship (Stein-Parbury & Liaschenko, 2007). The constraints may lead to difficulty in collaborative practice.

In addition, some of the previous studies have investigated the association between nurses' demographic characteristics and attitude towards P-N collaboration. Studies have revealed that nurses' educational level was the most prominent characteristic which showed significant association with attitude towards P-N collaboration (Brown *et al.*, 2015; Johnson & Kring, 2012). Nurses with higher level of education were more positive towards P-N collaboration than those with basic nursing qualification (Brown *et al.*, 2015; Johnson & Kring, 2012). On the other hand, other demographic characteristics such as age and gender revealed no significant associations (Brown *et al.*, 2015; Johnson & Kring, 2012).

In the Malaysian private healthcare setting, P-N collaboration is a great challenge particularly in the aspects of "authority". It is a common phenomenon where physicians dominate the entire patient management while registered nurses and other allied health providers are perceived as the supportive staff in the management. Furthermore, the role of the physicians was commonly viewed highly and more superiorly among the patients in the private healthcare. Henceforth, this situation may create tension, conflict, and interrupt collegiality among the healthcare team. Thus, registered nurses being the profession which has a direct working relationship with physicians need to be equipped in P-N collaboration in order to ensure cooperative and collegial management of the patients. Henceforth, registered nurses need to cultivate the appropriate attitude as well as skills in P-N collaboration and inter-professional learning (IPL) education has been proven to be effective in this aspect (Coster *et al.*, 2008; Dillon, Noble & Kaplan, 2009; Liaw, Siau, Zhou & Lau, 2015). Unfortunately, majority of the private nursing colleges in the country only offer one programme which is the nursing education programme and therefore, the focus of their training is solely on nursing science knowledge and skills. In view of the uniqueness of the college in offering only one educational programme, IPL education is difficult to be implemented and is commonly not integrated in the nursing curriculum or training. Thus, the lack of IPL exposure during the basic nursing education may compromise the quality of P-N collaboration when the registered nurses are qualified and required to work collaboratively with the physicians. Henceforth, private hospital registered nurses particularly among the newly qualified and junior registered nurses may agree that they tend to perceive themselves as more inferior than their physicians colleagues. The differences in social status and self-perception towards one's profession may pose challenges in the P-N collaborative practice relationship. Moreover, studies pertaining to nurses' attitude toward P-N collaboration is relatively limited

in this region except for few studies conducted in neighbouring countries such as Singapore and Indonesia.

The investigation on nurses' attitude towards P-N collaboration is important in view of the changes in the healthcare environment. The evidences found in the study will be useful for the registered nurses' to reflect on their practice and be proactive towards strengthening P-N collaboration. Furthermore, the findings of the study act as preliminary basis for relevant stakeholders such as hospital administrators, healthcare educational institutions, and nursing regulatory bodies to initiate relevant strategies in improving and strengthening the relationship gap between physicians and nurses. The research objectives of the study are firstly, to investigate the attitude towards P-N collaboration among the registered nurses and secondly, to determine whether there is any significant association between the demographic variables (such as age, gender, and level of education) and attitude towards P-N collaboration.

Methodology

Research design

The research design of this study was quantitative, cross-sectional and descriptive which adopted the relativism epistemology. In this research paradigm, researchers sought to investigate the regular human/organisational patterns (i.e., attitude, perception) in a cross-sectional manner and determine the underlying associations of the variables (Easterby-Smith, Thorpe & Jackson, 2008). Hence, the research design was deemed to be appropriate in providing answers to the research questions of the study.

The study was conducted in a 330-bedded hospital which was located in the city of Kuala Lumpur, Malaysia.

The study hospital provides treatments for patients with emergencies as well as referrals for medical specialties. The study duration was approximately three months (between November 2014 and February 2015).

Study participants

Participants of the study were full-time registered nurses working in the private hospital. The entire population of the study ($N = 245$) was invited to participate in the study and convenience sampling was employed to recruit study participants. Nevertheless, 127 (response rate 52%) participants responded to the questionnaire. Creswell (2014) elaborated that a sample size between 30 and 500 was deemed to be appropriate for the investigation on human behaviour in social science research. Henceforth, the sample size of the study was deemed appropriate. Nonetheless, registered nurses who held managerial positions such as ward managers and deputy ward managers were excluded from the study in view of the differences in the nature of their job scope. Furthermore, registered nurses who were on long or special leave (such as medical, maternity and study leaves) were excluded from the study.

In general, majority of the participants were female ($n=111$, 87.4%). The average age of the participants was 27.32 years old ($SD\pm 7.84$) and approximately 50.4% ($n=64$) were aged between 20 and 25 years of old. Furthermore, almost three quarters of the participants had attained the highest education at diploma in nursing ($n=95$, 74.8%) and merely 32 (25.8%) of the participants had educational level higher than diploma which included post basic certificate and nursing degree qualifications.

Table 1: Respondents' age, gender and educational level

Demographic Characteristics	n	%
<i>Age:</i>		
20-25 years old	64	50.40
Above 25 years old	63	49.60
<i>Gender:</i>		
Male	16	12.60
Female	111	87.40
<i>Highest education:</i>		
Diploma	95	74.80
Higher than Diploma	32	25.80

Instrument

The instrument of the study was the 15-item of “Jefferson Scale of Attitudes toward Physician–Nurse Collaboration” (JSAPNC) (Hojat *et al.*, 1999). The scale was adapted with permission from the authors. JSAPNC was found to be the most credible and extensively used instrument in measuring attitude towards P-N collaboration among physicians and nurses (Dougherty & Larson, 2005; Hojat *et al.*, 2003; Liaw *et al.*, 2015; Suryanto, Plummer & Copnell, 2016). Furthermore, its psychometric properties have been testified in previous studies conducted in numerous countries such as in the United States, Korea, Singapore, and Indonesia which indicated high validity and reliability (Hojat *et al.*, 1999; Liaw *et al.*, 2015; Suryanto *et al.*, 2016).

JSAPNC conceptualised attitude towards P-N collaboration into four subscales: “shares education and collaboration”, “caring versus curing”, “nurses’ autonomy”, and “physician’s authority” (Hojat *et al.*, 1999). The response format was in four points Likert scale: “1=strongly disagree”, “2=disagree”, “3=agree” and “4=strongly agree”. Attitude towards P-N collaborative was reflected by the aggregated score on the JSAPNC. The score ranged between 15 and 60. A higher score suggestive of more positive attitude (Hojat *et al.*, 1999).

Validity and reliability

In terms of validity, the chief nursing officer and the nurse educator of the private hospital were invited to verify the content validity of the JSAPNC. The items were found to be congruent with the study objective and therefore, no amendment was required. Furthermore, the construct validity was confirmed through principal axis factoring (PAF). The PAF revealed four factors (subscales), which explained 56.26% nurses’ attitude towards P-N collaboration. In terms of reliability, a pilot study involving 25 registered nurses was conducted in another private hospital. The Cronbach’s alpha coefficient for JSAPNC was 0.79, which indicated acceptable internal reliability. Thus, JSAPNC was deemed to be valid and reliable to be used on the study population.

Data collection procedure

Ethical approval was obtained from the International Medical University Joint-Committee on Research and Ethics. Institutional permission was also obtained from the chief executive officer of the private hospital. Furthermore, participants provided written consent prior participating the study. Privacy and anonymity of each participant was maintained. Participation of the study was on voluntary basis.

As for data collection, eligible registered nurses were approached individually, before or after their shift duties. They were briefed about the study and provided with the JSAPNC along with a consent form. In total, there were 245 registered nurses being approached, however only 127 (52% response rate) of them agreed to participate in the study. The instrument was distributed to the consenting participants. They were given approximately five to ten minutes to complete the questionnaire which was then returned directly to the researchers.

Data analysis

Data analysis of the study was done using SPSS version 18. Descriptive statistics were used to analyse the demographic characteristics of the study sample and research variables. The overall and composite mean scores of JSAPNC and the four subscales were calculated to determine the registered nurses' attitude towards P-N collaboration. Subsequently, the data normality was determined using skewness, kurtosis, and Shapiro-Wilk test. The skewness and kurtosis of the data were -0.08 and -0.14 respectively which reflected normal distribution

(Chua, 2013). Furthermore, the significant level of Shapiro-Wilk test was more than 0.05 ($p = 0.346$) which fulfilled the assumption for normality test (Chua, 2013). Henceforth, inferential parametric statistics analysis, t-test was used to analyse the associations between the demographic variables and nurses' attitude towards P-N collaboration.

Results

Attitude towards Physician-Nurse collaboration

The results revealed that in general, the participants were relatively positive towards P-N collaboration which was evident through the high rating towards the three out of four subscales of JSAPNC namely: "shares education and collaboration" ($M=3.42$, $SD\pm 0.36$), "nurse's autonomy" ($M=3.42$, $SD\pm 0.44$), and "caring vs. curing" ($M=3.41$, $SD\pm 0.41$). The overall and composite mean values for nurses' attitude towards P-N collaboration was 48.69 ($SD\pm 4.37$) and 3.25 ($SD\pm 0.29$) respectively, which reflected positive attitude towards P-N collaboration as shown in Table 2.

Table 2: Mean and standard deviations of items in JSAPNC

Items No.	Items	Mean	SD
Shares education and collaboration subscale:		3.42	0.36
1.	A nurse should be viewed as a collaborator and colleague with a physician rather than his/her assistant	3.42	0.58
3.	During their education, medical and nursing students should be involved in teamwork in order to understand their respective roles	3.61	0.51
6.	There are many overlapping areas of responsibility between physicians and nurses	3.24	0.64
9.	Physicians and nurses should contribute to decisions regarding the hospital discharge of patients	3.08	0.73
12.	Nurses should also have responsibility for monitoring the effects of medical treatment	3.42	0.64
14.	Physicians should be educated to establish collaborative relationships with nurses	3.64	0.53
15.	Interprofessional relationships between physicians and nurses should be included in their educational programs	3.57	0.56
Caring vs. curing subscale:		3.41	0.41
2.	Nurses are qualified to assess and respond to psychological aspects of patients' needs	3.54	0.52
4.	Nurses should be involved in making policy decisions affecting their working conditions	3.43	0.62
7.	Nurses have special expertise in patient education and psychological counselling	3.28	0.60

Items No.	Items	Mean	SD
	Nurse's autonomy subscale:	3.42	0.44
5.	Nurses should be accountable to patients for the nursing care they provide	3.40	0.73
11.	Nurses should be involved in making policy decisions concerning the hospital support services upon which their work depends	3.26	0.63
13.	Nurses should clarify a physician's order when they feel that it might have the potential for detrimental effects on the patient	3.58	0.50
	Physician's authority subscale:	2.12	0.83
8.	Doctors should be the dominant authority in all health care matters	2.11	0.99
10.	The primary function of the nurse is to carry out the physician's orders	2.13	0.92

Note: *Scores ranged from 1 (strongly disagree) to 4 (strongly agree)

Furthermore, the subscale of “shares education and collaboration” and “nurse’s autonomy” were rated the highest among the participants with similar mean values of 3.42. Participants were strongly agreeable towards items on “physicians should be educated to establish collaborative relationships with nurses” ($M=3.64$, $SD\pm 0.53$) and “during their education, medical and nursing students should be involved in teamwork in order to understand their respective roles” ($M=3.61$, $SD\pm 0.51$). The results indicated that nurses in general were positive and supportive towards the concepts of inter-professional learning which will strengthen the P-N collaborative relationship as well as improve nurses’ professional autonomy. Nurses’ perceived that “shares education during university/ training period” is crucial for the establishment of mutual respect and collegiality between medical-nursing students and physician-nurse relationship.

Contrariwise, participants had rated the lowest for the subscale on “physician’s authority” with a mean value of

2.12 ($SD\pm 0.83$). Moreover, items on “doctors should be dominant authority in all health care matters” ($M=2.11$, $SD\pm 0.99$) and “the primary function of nurses is to carry out the physician’s orders” ($M=2.13$, $SD\pm 0.92$) were rated the lowest by the participants. The results reflected that nurses in general were least satisfied with the aspects of professional autonomy in P-N collaborative relationship. Nurses perceived that the authority towards health care matters should be in a mutual and collaborative manner rather than “authoritative” and “hierarchical”.

Association between demographic characteristics and attitude towards Physician-Nurse collaboration

The t-test was used to determine the association between the demographic characteristics and attitude toward P-N collaboration. The analysis results are presented in Table 3.

Table 3: Association between demographic variables and the subscales of JSAPNC

Demographic Characteristics	Shares education and collaboration			Caring vs curing			Nurse's autonomy			Physician's authority			Overall		
	Mean (SD)	<i>t</i>	<i>p</i>	Mean (SD)	<i>t</i>	<i>p</i>	Mean (SD)	<i>t</i>	<i>p</i>	Mean (SD)	<i>t</i>	<i>p</i>	Mean (SD)	<i>t</i>	<i>p</i>
<i>Gender:</i>		1.45	.148		1.59	.115		1.24	.216		.82	.414		1.98	.050
Male	24.81			10.69			10.63			4.56			50.69		
	±2.71			±1.35			±1.31			±1.86			±5.20		
Female	23.85			10.17			10.19			4.20			48.41		
	±2.45			1.20			±1.31			±1.63			±4.18		
<i>Age:</i>		-1.50	.136		-.45	.653		.05	.960		.15	.884		-.91	.366
20-25 years	23.64			10.19			10.25			4.27			48.34		
	±2.53			±1.31			±1.27			±1.63			±4.31		
Above 25 years	24.30			10.29			10.24			4.22			49.05		
	±2.43			±1.14			±1.36			±1.71			±4.44		
<i>Education:</i>		-1.48	.141		-.74	.461		-1.12	.265		-.64	.525		-1.64	.104
Diploma	23.78			10.19			10.17			4.19			48.33		
	±2.58			±1.27			±1.37			±1.59			±4.51		
Higher than Diploma	24.53			10.38			10.47			4.41			49.78		
	±2.16			±1.07			±1.14			±1.88			±3.78		

*Significant at $p < .05$.

The t-test analysis revealed that demographic characteristics (i.e., gender, age and level of education) were not significantly associated with attitude towards P-N collaboration ($p > 0.05$). Even so, in the overall attitude towards P-N collaboration, the results revealed that the male gendered nurses seemed to have a more positive attitude towards P-N collaboration ($M=50.69$, $SD\pm 5.20$) as compared to female gendered nurses ($M=48.41$, $SD\pm 4.18$). On the other hand, male gendered nurses who had attained qualifications of higher than diploma in nursing were found to have slightly more positive attitudes toward items across all the four subscales. Nevertheless, older participants were reported to have a slightly more positive attitude towards “shares education and collaboration” and

“caring vs. curing” subscales. In contrast, younger participants (between 20 and 25 years old) were found to have slightly more positive attitude towards “nurse’s autonomy” and “physician’s authority” subscales than the older participants (above 25 years old).

Discussion and implications

The findings of the study that registered nurses working in a private hospital had a positive attitude toward P-N collaboration is congruent with several past studies (El-Sayed & Sleem, 2011; Sterchi, 2007; Taylor, 2009; Yildirim *et al.*, 2005). Nonetheless, the overall mean value for nurses’ attitude towards P-N collaboration of the current study was reported to be slightly lower compared with previous studies. The rationale for this

could be due to lack of exposure to IPL education since IPL was not mandatory to be integrated in the nursing diploma curriculum. Additionally, the setting of the study was in the private hospital in which private practice physicians were deemed to be more superior and authoritative in decision making pertaining to patients' management. Thus, it is crucial for the higher nursing education institutions to seriously consider integrating IPL in their nursing education curriculum to promote and enhance the future P-N collaborative practice.

Furthermore, the study found that the participants had rated "shares education and collaboration" subscale as the highest. This finding was consistent with previous studies which also found nurses were highly positive towards sharing education between medical and nursing students (El-Sayed & Sleem, 2011; Sterchi, 2007). On the other hand, the low rating for "physician's authority" was found to contradict findings of past studies which reported nurses' were satisfied with physician's authority (El-Sayed & Sleem, 2011; Sterchi, 2007). The incongruence found in the research findings could be related to the diversity of nursing curriculum and healthcare (private hospital) management system. The integration of IPL as well as sharing of modules across healthcare programmes would have facilitated understanding on the respective healthcare professions. However, registered nurses who were trained in isolation nursing education / college were not exposed to such environment and opportunity. Therefore, they may face greater challenges in inter-professional collaborative practice when they start to practice in the work place.

Furthermore, the previous studies were conducted in public or governmental hospitals which have diverse levels of medical doctors which may reduce the gap between nurses and doctors. Nonetheless, the physicians who were practicing in the Malaysian private hospitals were predominantly consultants or medical specialists. Thus, the gap between the registered nurses and the consultants / medical specialists was definitely huge in terms of proficiency, recognition and social status.

Consequently, the P-N collaboration practice would be more challenging for the private hospital registered nurses particularly in the aspect of authority in health care matters.

Limitations and recommendations

The study had yielded important results on the private hospital nurses' attitude towards P-N collaboration. However, the study had a few limitations. Firstly, the research data was collected from merely one private hospital and therefore, the sample size was not adequate to represent registered nurses in the entire Kuala Lumpur area. Furthermore, comparison between public hospital registered nurses was not feasible. Henceforth, a larger randomised sample of registered nurses across the city or country from both healthcare sectors (i.e., public and private) is recommended for future studies in order to increase the statistical power and generalisability. Secondly, future studies should also evaluate on the efficacy of IPL activities in the current pre-registration nursing education curriculums (i.e., nursing diploma and undergraduate academic programmes) in terms of inter-healthcare professionals collaboration particularly P-N collaboration. The evaluation is essential to further refine and revise the existing IPL activities so that future inter-healthcare professional's collaborative practice can be strengthened.

Conclusion

True collaboration is important and requires mutual respect, collegial communication and shared governance in decision making. Comparison of results of this study with other reported studies is helpful to identify the potential reasons concerning what causes the gap between P-N collaborative relationships such as differences in healthcare academic programme curriculum and diversity of the Malaysian private healthcare system. Furthermore, integration and implementation of IPL have been identified as crucial practical implications in addressing the phenomenon.

Acknowledgement

The authors would like to acknowledge and express their deepest gratitude to the International Medical University for funding this study (Ref No: 4.24/JCM-84/2014) and to the IMU Joint-Committee on Research and Ethics for granting the ethics approval for the study. Furthermore, the kind assistance and cooperation from the chief executive officer, chief nursing officer, nurse managers and registered nurses are highly appreciated and acknowledged.

REFERENCES

- Baggs JG, Schmitt MH. Collaboration between nurses and physicians. *Image: The Journal of Nursing Scholarship*. 1988; 20(3): 145-9. <http://dx.doi.org/10.1111/j.1547-5069.1988.tb00055.x>
- Boev C, Xia Y. Nurse-physician collaboration and hospital-acquired infections in critical care. *Critical Care Nurse* 2015; 35(2): 66-72. <http://dx.doi.org/10.4037/ccn2015809>
- Bridges S. Exploration of the concept of collaboration within the context of nurse practitioner-physician collaborative practice. *Journal of the American Association of Nurse Practitioners*. 2014; 26(7): 402-10. <http://dx.doi.org/10.1111/1745-7599.12043>
- Brown SS, Lindell DF, Dolansky MA, Garber JS. Nurses' professional values and attitudes toward collaboration with physicians. *Nursing Ethics* 2015; 22(2): 205-216.
- Chua YP. *Mastering research statistics*. Kuala Lumpur: McGraw-Hill, 2013.
- Creswell JW. *Research design: Qualitative, quantitative, and mixed methods approaches*. (4th ed.). California: SAGE Publications Inc., 2014.
- Coster S, Norman I, Murrells T, Kitchen S, Meerabeau E, Sooboodoo E, d'Avray L. Interprofessional attitudes amongst undergraduate students in the health professions: A longitudinal questionnaire survey. *International Journal of Nursing Studies* 2008; 45(11): 1667–1681. <http://dx.doi.org/10.1016/j.ijnurstu.2008.02.008>
- Cowan MJ, Shapiro M, Hays RD, Afifi A, Vazirani S, Ward CR, Ettner SL. The effect of a multidisciplinary hospitalist/physician and advanced practice nurse collaboration on hospital costs. *Journal of Nursing Administration* 2006; 36(2): 79-85.
- Dillon PM, Noble KA, Kaplan L. Simulation as a means to foster collaborative interdisciplinary education. *Nursing Education Perspectives* 2009; 30(2): 87-90.
- Dougherty MB, Larson E. A review of instruments measuring nurse-physician collaboration. *Journal of Nursing Administration* 2005; 35(5): 244-253.
- Easterby-Smith M, Thorpe R, Jackson PR. *Management Research* (3rd ed.). Singapore: SAGE Publications Inc., 2008.
- El-Sayed KA, Sleem W. Nurse-physician collaboration: A comparative study of the attitudes of nurses and physicians at Mansoura University Hospital. *Life Science Journal* 2011; 8(2): 140-146.
- Hansson A, Arvemo T, Marklund B, Gedda B, Mattsson B. Working together—primary care doctors' and nurses' attitudes to collaboration. *Scandinavian Journal of Public Health* 2010; 38(1): 78-85. <http://dx.doi.org/10.1177/1403494809347405>
- Henneman EA, Lee JL, Cohen JI. Collaboration: A concept analysis. *Journal of Advanced Nursing* 1995; 21(1): 103-109. <http://dx.doi.org/10.1046/j.1365-2648.1995.21010103.x>
- Hojat M, Fields SK, Veloski JJ, Griffiths M, Cohen MJ, Plumb JD. Psychometric properties of an attitude scale measuring physician-nurse collaboration. *Evaluation & the Health Professions* 1999; 22(2): 208-220. <http://dx.doi.org/10.1177/01632789922034275>
- Hojat M, Gonnella JS, Nasca TJ, Fields SK, Cicchetti A, Scalzo AL, Taroni F, Amicosante AM, Macinati M, Tangucci M, Liva C. Comparisons of American, Israeli, Italian and Mexican physicians and nurses on the total and factor scores of the Jefferson scale of attitudes toward physician-nurse collaborative relationships. *International Journal of Nursing Studies*. 2003; 40(4): 427-35. [http://dx.doi.org/10.1016/S0020-7489\(02\)00108-6](http://dx.doi.org/10.1016/S0020-7489(02)00108-6)
- Johnson S, Kring D. Nurses' perceptions of nurse-physician relationships: Medical-surgical vs. intensive care. *Medsurg Nursing* 2012; 21(6): 343-347.
- Karanikola MN, Albarran JW, Drigo E, Giannakopoulou M, Kalafati M, Mpouzika M, Tsiaousis GZ, Papanthanasoglou ED. Moral distress, autonomy and nurse-physician collaboration among intensive care unit nurses in Italy. *Journal of Nursing Management*. 2014; 22(4): 472-84. <http://dx.doi.org/10.1111/jonm.12046>
- Liaw SY, Siau C, Zhou WT, Lau TC. Interprofessional simulation-based education program: a promising approach for changing stereotypes and improving attitudes toward nurse-physician collaboration. *Applied Nursing Research*. 2014; 27(4): 258-60. <http://dx.doi.org/10.1016/j.apnr.2014.03.005>
- Rosenstein AH. Nurse-physician relationships: Impact on nurse satisfaction and retention. *American Journal of Nursing* 2002; 102(6): 26-34.
- Sterchi LS. Perceptions that affect physician-nurse collaboration in the perioperative setting. *AORN Journal* 2007; 86(1): 45-57. <http://dx.doi.org/10.1016/j.aorn.2007.06.009>
- Stein-Parbury J, Liaschenko J. Understanding collaboration between nurses and physicians as knowledge at work. *American Journal of Critical Care* 2007; 16(5): 470-477.
- Suryanto, Plummer V, Copnell B. Collaboration between nurses and physicians in an Indonesian Emergency Department. *Australasian Emergency Nursing Journal*. 2016; 19(2): 82-9. <http://dx.doi.org/10.1016/j.aenj.2016.04.001>
- Taylor CL. Attitudes toward physician-nurse collaboration in anaesthesia. *AANA Journal* 2009; 77(5): 343-348.
- Tschannen D, Kalisch BJ. The impact of nurse/physician collaboration on patient length of stay. *Journal of Nursing Management*. 2009; 17(7): 796-803. <http://dx.doi.org/10.1111/j.1365-2834.2008.00926.x>
- Ushiro R, Nakayama K. Gender role attitudes of hospital nurses in Japan: Their relation to burnout, perceptions of physician-nurse collaboration, evaluation of care, and intent to continue working. *Japan Journal of Nursing Science*. 2010; 7(1): 55-64. <http://dx.doi.org/10.1111/j.1742-7924.2010.00138.x>
- Yildirim A, Ates Akinci F, Ross T, Selimen D, Issever D, Erdim A, Akgün F. Physician-nurse attitudes toward collaboration Istanbul's public hospitals. *International Journal of Nursing Studies* 2005; 42(4): 429-437. <http://dx.doi.org/10.1016/j.ijnurstu.2004.07.007>