

Determinants of research ability among nurses in a tertiary hospital in China: A cross-sectional survey

Ming-zhu Wang^{1#} • Ri-hua Xie^{2#} • Qiao-cong Lu^{1#} • Jie-fen Ou¹ • Li-mei Gao^{1*}

¹Department of Nursing, Affiliated Nanhai Hospital of Southern Medical University (People's Hospital of Nanhai District), Foshan, Guangdong, China.

²Department of Nursing, General Practice Center, Nanhai Hospital, Southern Medical University, Foshan, Guangdong, China.

These authors contributed equally

*Corresponding author. E-mail: nhyhlb@126.com. Tel: 86 139-2862-2964.

Accepted 28th October, 2019.

Abstract. The existing literature on research ability among clinical nurses in tertiary hospitals in well-developed areas in China is sparse. The aim of this study is to explore the level of research ability and its determinants among clinical nurses in China. A cross-sectional survey was conducted and a total of 627 registered clinical nurses were recruited and surveyed with the Scale of Nursing Scientific Research ability. T-test and One-way ANOVA were used in this study. Quantitative results showed that the mean scores for the research ability was 49.64 (SD 23.60, range 0 ~ 120). 559 (89.2%) nurses had weak research ability and 68 (10.8%) had high level of research ability. After adjustment for confounding by multiple linear regressions, this study also demonstrated that determinants including the frequency of reading nursing research articles and the number of participating in research projects were independently associated with research ability.

Keywords: Clinical nurse, research ability, determinants.

INTRODUCTION

Research ability is a multiplicity concept that includes many research aspects ranging from awareness, attitude, knowledge, skill, utilization, designing, data collection and analysis and presentations through participation (McCance *et al.*, 2007; Akerjordet *et al.*, 2012b). According to the identification defined by Segrott *et al.* (2006), there is an important distinction between developing research ability and obtaining research ability. The former focuses on the production of research and answering research questions, while the latter refers to enable individuals and departments to undertake research activities, through creating the essential infrastructure, environment, culture and credibility (Segrott *et al.*, 2006; Akerjordet *et al.*, 2012b).

With the expansion of nursing roles and competencies, research abilities in nursing practice are recognized as significant competencies worldwide (Segrott *et al.*, 2006;

Severinsson, 2014) and are significantly important in providing health services (Newhouse *et al.*, 2011; Brooks *et al.*, 2017; McKee *et al.*, 2017). Studies have found that research ability has benefits in promoting discipline of nursing (Purkis *et al.*, 2008), improving leadership (Severinsson, 2014), providing support for nurses from different organizations (Severinsson, 2012) and facilitating the communication and collaboration between hospitals and academic institutions (Wilkes *et al.*, 2013). In addition, the ultimate rationale for developing research ability among nurses is that it can enhance patient-centered care through evidence-based nursing practice, as well as providing higher and better nursing measures (Segrott *et al.*, 2006; Akerjordet *et al.*, 2012a; Landeen *et al.*, 2017).

Building research ability has been recognized as a priority in nursing research and development (Severinsson,

2014; McKee *et al.*, 2017). However, the previous studies demonstrated that barriers such as lack of designated time, research knowledge and skills, supervision, support, resources and funding prevented nurses from participating in research activities (Kajermo *et al.*, 2008; Moore *et al.*, 2012; Severinsson, 2014; Mitchell *et al.*, 2015; Gullick and West, 2016; Bressan *et al.*, 2017) which exert influence on the development of research ability.

Although several studies have been performed on seeking nurses' research ability in Western countries, evidence from tertiary hospitals in China, especially in Mainland is sparse. Thus, the present study aims to explore the level of research ability among nurses in tertiary hospitals in Mainland China and explore their influencing factors.

MATERIALS AND METHODS

Study design, settings and sample

A cross-sectional design was conducted at the People's Hospital of Nanhai District. A convenience sample was used. Nurses who met the criteria were recruited in this study. Inclusion criteria: registered or licensed practical nurse; and who provided direct care to patients. Exclusion criteria: who did not work in hospital during the survey period (including those who went out for further education and who took sick or maternity leave); and who was not the employee of the hospital where the study performed (including trainees and interns). Data were collected by using self-reporting questionnaires. The optimal sample size calculation was based on the results of using G*Power 3 (Faul *et al.*, 2007). A priori, linear multiple regression indicated that a total sample size of 189 was needed to achieve 95% power to get an effect size of 0.15 at the 0.05 level of significance.

Self-reported questionnaires were distributed to each ward after weekly head nurse meetings through presenting the study's objectives and the requirements of writing by researchers. Head nurse from each ward helped to convey the aim of this project, provide clarification about questionnaire items and answer questions at the department meeting and invited nurses to participate in this study. Interested participants met with the head nurse, filled the consent form and completed the questionnaires. A total of 728 registered nurses were recruited to participate in this study and valid questionnaires were 627 nurses (the response rate was 86.13%).

Measurement

The Scale of Nursing Scientific Research Ability

The level of research ability was assessed by using The

Scale of Nursing Scientific Research Ability (Pan and Cheng, 2011), which was designed by the YIN—HE PAN from Shanxi Medical University in China (Pan and Cheng, 2011). This scale has 6 dimensions and 30 items, including the ability of generating the research ideas (3 items), the ability of searching and reviewing literature (5 items), the ability of designing research protocol (5 items), the ability of practicing research (6 items), the ability of analyzing research data and material (5 items), the ability of writing a research report (6 items). The scale was a five-point ordinal scale (0-4), with a maximum score of 120 points. The total score was graded as low = 0-40, medium = 40-80, and high = 81-120, respectively. The higher score represents higher level of research ability. In our study, the Cronbach's α of research ability and its six dimensions were 0.98, 0.86, 0.89, 0.96, 0.97, 0.97 and 0.98 respectively.

Socio-demographic questionnaire

In this study, participants' characteristics including gender, age, foundational education, highest academic credentials, department, length of service, professional title, teaching experience, administrative position, the number of directing or participating in the research projects, the number of paper publications and the frequency of reading nursing research articles were assessed.

Data analysis

SPSS 22.0 software (Inc., Chicago, IL, USA) was used for data analysis. Descriptive statistics were presented as frequency, percentage; mean (M) and standard deviation (SD). All data met the criteria of normal distribution. T-test and One-way ANOVA were used to analyze determinants of research ability. Multiple linear regression analysis was utilized to estimate the independent determinants of research ability. The significance was accepted as $P < 0.05$.

RESULTS

Participants

The demographic characteristics of the participants were listed in Table 1. The age range of the nurses was 18 ~ 55 years (M 31.44, SD6.94). Most of them were female (95.69%), had no administrative positions (95.06%), did not direct (93.62%) or participate in (89.13%) any research project, had bachelor degree or higher education (79.74%) and had no paper publications (66.19%), while the majority of them were senior nurses (43.06%), from medical departments (32.70%) and had

Table 1. Socio-demographic characteristics and the comparison of research ability among social demographic characteristics (n = 627).

Characteristics	N (%)	Research ability (Mean ± SD)	t/F	P
Gender			3.62	<0.001
Male	27 (4.31)	65.56±18.17		
Female	600 (95.69)	48.92±23.57		
Age (years)			3.02	0.01
18 ~ 25	133 (21.21)	46.38±23.64		
26 ~ 30	207 (33.01)	47.20±23.80		
31 ~ 35	146 (23.29)	50.20±23.59		
36 ~ 40	67 (10.69)	54.24±24.08		
41 ~ 45	37 (5.90)	55.95±22.48		
45 ~ 55	37 (5.90)	58.19±18.70		
Foundational education			23.57	<0.001
Technical secondary school	155 (24.72)	54.94±22.40		
Junior college	353 (56.30)	44.24±22.20		
Bachelor degree or higher	119 (18.98)	58.74±24.94		
Highest academic credentials			-2.47	0.014
Junior college or lower	127 (20.26)	45.03±23.97		
Bachelor degree or higher	500 (79.74)	50.81±23.38		
Department			6.68	<0.001
Medical	205 (32.70)	50.11±24.09		
Surgical	159 (25.36)	45.97±24.97		
OBGY and pediatric	120 (19.14)	44.86±20.98		
Emergency and intensive care unit	72 (11.48)	53.75±22.47		
Others	71 (11.32)	60.39±20.37		
Length of service (years)			3.79	0.002
1 ~ 5	188 (29.98)	46.33±24.19		
6 ~ 10	230 (36.68)	49.77±23.59		
11 ~ 15	93 (14.83)	46.73±22.01		
16 ~ 20	40 (6.38)	56.68±25.89		
21 ~ 25	33 (5.26)	61.58±21.04		
26 ~ 39	43 (6.87)	53.95±19.79		
Professional title			7.84	<0.001
Junior nurse	191 (30.46)	45.97±23.39		
Senior nurse	270 (43.06)	48.49±23.20		
Nurse-in-charge	140 (22.32)	53.72±23.65		
Associate professor nurses or higher	26 (4.16)	66.54±19.32		
Teaching experience			-1.70	0.09
No	291 (46.41)	47.92±23.71		

Table 1. Cont

Yes	336 (53.59)	51.13±23.43		
Administrative positions			-4.46	<0.001
No	596 (95.06)	48.69±23.55		
Yes	31 (4.94)	67.77±16.13		
The number of directing research projects			9.28	<0.001
0	587 (93.62)	48.63±23.66		
1	32 (5.10)	62.22±17.31		
2	8 (1.28)	73.13±13.24		
The number of participating in research projects			13.21	<0.001
0	560 (89.31)	48.06±23.49		
1	46 (7.34)	60.00±21.50		
2~5	21 (3.35)	68.95±16.00		
The number of paper publications			10.71	<0.001
0	415 (66.19)	47.32±22.90		
1	148 (23.60)	49.70±24.03		
2~4	44 (7.02)	62.36±22.07		
5~8	20 (3.19)	69.30±21.22		
The frequency of reading nursing research articles			21.75	<0.001
Once a week	67 (10.69)	64.87±25.47		
Once a month	157 (25.04)	53.72±20.59		
Once a quarter	128 (20.41)	56.55±21.50		
Once half a year	59 (9.40)	47.10±22.82		
Once a year	76 (12.12)	41.04±19.53		
No	140 (22.34)	37.19±22.46		

never read a nursing research article 22.34%).

Ethical approval

The study was approved by the Ethics Committee of the People's Hospital of Nanhai District Foshan, Guangdong.

Level of research ability

The mean score for the research ability was 49.64 (SD 23.60, rang 0~120) and the each dimension index average score from high to low in turn was: the ability of generating the research ideas (2.06 ± 0.76), the ability of searching and reviewing literature (1.95 ± 0.79), the ability of practicing research (1.60 ± 0.94), the ability of designing research protocol (1.51 ± 0.90), the ability of writing a research report (1.51 ± 0.91) and the ability of analyzing research data and material (1.47 ± 0.90). In

total, 38.27% of participants demonstrated low level of research ability, 50.88% of them had medium level of research ability and 10.85% of them had high level of research ability (Table 2).

Determinants of research ability among nurses

The results of *T*-test and One-way ANOVA showed that research ability was significantly different among nurses with different gender, age, education, departments, length of service, professional title, administrative positions, the number of directing or participating in the research projects, the number of paper publications and the frequency of reading nursing research articles (Table 1). However, after adjustment for confounding by multiple linear regression, determinants including the frequency of reading nursing research articles ($\beta=4.65$; 95% confidence interval (CI) 3.64~5.67) and the number of participating in research projects ($\beta = 7.04$; 95%

Table 2. Mean scores of different dimensions of the Scale of Nursing Scientific Research ability (n=627).

Variables	Min - Max	Mean \pm SD (total)	Mean \pm SD (dimension index average score)	n (%)
The ability of generating the research ideas	0 ~ 12	6.20 \pm 2.30	2.06 \pm 0.76	
The ability of searching and reviewing literature	0 ~ 20	9.76 \pm 3.96	1.95 \pm 0.79	
The ability of designing research protocol	0 ~ 20	7.56 \pm 4.53	1.51 \pm 0.90	
The ability of practicing in research	0 ~ 24	9.65 \pm 5.64	1.60 \pm 0.94	
The ability of analyzing research data	0 ~ 20	7.36 \pm 4.51	1.47 \pm 0.90	
The ability of writing a research report	0 ~ 24	9.11 \pm 5.47	1.51 \pm 0.91	
Total research ability	0 ~ 120	49.64 \pm 23.60	1.65 \pm 0.78	
High				68 (10.85)
Medium				319 (50.88)
Low				240 (38.27)

Table 3. Multiple liner regression coefficients among socio-demographics variables (n = 627).

Variables	B	Std. error	Beta	t	P	95% CI
Constant	37.22	1.52		16.69	<0.001	34.24 ~ 40.19
Frequency of reading nursing research articles	4.65	0.52	0.34	9.02	<0.001	3.64 ~ 5.67
Number of participating in the research projects	7.04	2.05	0.13	3.43	0.001	3.01 ~ 11.08

$F=55.50$, $P<0.001$, $R^2=0.15$
 $R_{adj}^2=0.148$

CI:3.01 ~ 11.08) were independently associated with research ability (Table 3).

DISCUSSION

Main findings of this study

The findings of this study indicated that research ability in nurses was weak. The results showed that nearly 90% nurses of the survey thought their research ability as medium or weak, while only 10.85% evaluated good. One of the best research abilities of nurses involved in this survey was the ability of generating the research ideas, while the worst was the ability of analyzing research data. For the affecting factors, the frequency of reading nursing research articles and participating in the research projects exerted significant effects on research ability. They were rarely mentioned in other studies (Shang *et al.*, 2018; Wang *et al.*, 2015; Wang and Yang, 2013; Li *et al.*, 2019; Akerjordet *et al.*, 2012b), especially in China.

Interpretation

The findings of research ability among Chinese nurses in

different dimensions were consistent with previous studies in China (Shang *et al.*, 2018; Wang *et al.*, 2015; Zhao *et al.*, 2015; Li *et al.*, 2015). However, studies in other countries have been shown that nurses have higher research ability in accessing relevant literature and conducting interviews (Akerjordet *et al.*, 2012; Friesen and Comino, 2017). The differences may be explained by following reasons. First, most of the nurses in China had junior college as their foundational education which does not comprise much scientific research knowledge and skills. Second, there is still a shortage of nursing personnel in many hospitals in China (Wan and Feng, 2015; Li *et al.*, 2018). According to the National Development Plan for Nursing Care (2016-2020) (China, 2017), the bed-to-nurse ratio should reach 1:0.4 in a noncritical department and 1:2.5-3.0 in a critical department respectively. However, in our study, the bed-to-nurse ratio of noncritical departments and critical departments were 1:0.39 (the number of beds and nurses in the noncritical departments were 1178 and 460 respectively) and 1:2.5 (the number of beds and nurses in the intensive care unit were 16 and 40 respectively). To some extent, these results indicates that nurses may be exposed to a high working pressure and they had to spend much more time to undertake busy ordinary and trivial work than on thinking the rationale when practicing,

which constrains the horizon and reduces the confidence of participating in research activities (Kelly *et al.*, 2013). Finally, most of nurses do not have much research pressure and requirements to be principal investigators (McCance *et al.*, 2007), which did not inspire nurses to participate in research projects.

In order to improve nurses' research ability, different forms of training methods are needed to be developed in clinical practice (Friesen and Comino, 2017). Allowing nurses to read more nursing research articles and increasing their enthusiasm to participate in research projects may be the first effective methods to improve nurses' research ability. Attending journal clubs regularly are essential for nurses to learn about the frontier research knowledge and discover their own learning potential, which can teach them how to critically analyse and synthesize the literature and how to integrate evidence-based nursing into practice through reading and sharing scientific articles (Davis *et al.*, 2014; Westlake *et al.*, 2015). In comparison with traditional journal club's format, flipped journal club and online journal club are good examples to be advocated to nurse managers which can create a collegial atmosphere that encourage dialogue among all participants and improving nurses' sense to read more scientific articles through hinging upon well-selected articles, incorporation of social media, and small-group discussions (Bounds and Boone, 2018). At present, there were relatively few studies on how to increase nurses' engagement in research activities (Mitchell *et al.*, 2015), but multipronged and team approaches, rather than focusing on developing individuals, had been proved to be useful (Jeffs *et al.*, 2013; Mitchell *et al.*, 2015). Carrying out on-the-job trainings with participatory action approaches can increase involvement and ownership among clinical nurses (Janssen *et al.*, 2013). For example, establishing a flexible model that offers mentorship and resources and supports individual nurses' designated role at every stage of the research process can encourage research activities (Mitchell *et al.*, 2015; Renwick *et al.*, 2017). In addition, launching a series of research workshops that nurses are interested in can also inspire their motivation to participate in research projects (Mitchell *et al.*, 2015). Cultivating research culture is also a major measure to be implemented in hospital (Luckson *et al.*, 2018; Begley *et al.*, 2014). An embracing research culture and environment can be created through providing the relevant critical researchers and support, identifying the importance of research within a department, as well as building an open and harmonious working atmosphere (Moore *et al.*, 2012; Wilkes *et al.*, 2013). These methods help nurses to build confidence in participating in research project gradually and promote research ability (Cooper and Brown, 2018; Kjerholt and Holge-Hazelton, 2018). Furthermore, considering the salary and benefit are initiative factors which encourage nurses to participate in research projects, establishing research reward policies, such as increasing payments and giving more opportunities for

career development, should be emphasized by nursing managers (Akerjordet *et al.*, 2012a; Gullick and West, 2016).

Limitations

There were some limitations in this study. One was the convince sampling. Despite the large sample size of this study, all of our participants came from a tertiary hospital in one district, resulting in sample selection bias. Second, six trained researchers handed between 20 and 40 questionnaires to the head nurse of each department to facilitate the distribution and data collection. Therefore, a snowball effect may exist in the sampling procedure because the participants had been asked to fill in the questionnaires. Therefore, randomized sampling and selecting a sample from every level hospital are recommended to future studies to generalize the findings.

CONCLUSION

Chinese nurses in tertiary hospitals may lack research ability. Reading more articles on nursing researches and participating in more research projects can help improve research ability.

ACKNOWLEDGEMENTS

We would like to thank the nurses who participated in the study. And we would like to thank the head nurses for their assistance during the survey.

REFERENCES

- Akerjordet K, Lode K, Severinsson E (2012a). Clinical nurses' attitudes towards research, management and organisational resources in a university hospital: part 1. *J. Nurs. Manage.* 20(6):814-23.
- Akerjordet K, Lode K, Severinsson E (2012b). Clinical nurses' research capacity in a Norwegian university hospital: part 2. *J. Nurs. Manage.* 20(6):824-32.
- Begley C, McCarron M, Huntley-Moore S, Condell S, Higgins A (2014). Successful research capacity building in academic nursing and midwifery in Ireland: an exemplar. *Nurse. Educ. Today*, 34(5):754-60.
- Bounds R, Boone S (2018). The Flipped Journal Club. *West J. Emerg. Med.* 19(1):23-27.
- Bressan V, Bagnasco A, Bianchi M, Rossi S, Moschetti F, Barisone M, Pellegrini R, Aleo G, Timmins F, Sasso L (2017). Barriers to research awareness among nurses in Italy. *J. Nurs. Manage.* 25(4):243-245.
- Brooks C, JM Holland S, Gamble K, Rothwell H, Pancir D, Ballinghoff J, Aiken L (2017). Increasing Research Capacity in a Safety Net Setting Through an Academic Clinical Partnership. *J. Nurs. Admin.* 47(6):350-355.
- The Ministry of Health of the People's Republic of China (2017). National development plan for nursing care (2016–2020). *Chin. Nurs. Manage.* 17(01):1-5.
- Cooper AL, Brown JA (2018). Journal Clubs: Engaging Clinical Nurses

- and Midwives in Research. *J. Contin. Educ. Nurs*, 49(3):141-144.
- Davis C, Hendry I, Barlow H, Leonard A, White LA, Coetzee M (2014).** Journal club: Integrating research awareness into postgraduate nurse training. *Curationis*, 37(2):E1-9.
- Faul F, Erdfelder E, Lang AG, Buchner A (2007).** G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav. Res. Methods* 39(2):175-191.
- Friesen EL, Comino EJ (2017).** Research culture and capacity in community health services: results of a structured survey of staff. *Aust J. Prim. Health*, 23(2):123-131.
- Gullick JG, West SH (2016).** Building research capacity and productivity among advanced practice nurses: an evaluation of the Community of Practice model. *J. Adv. Nurs*. 72(3):605-19.
- Janssen J, Hale L, Mirfin-Veitch B, Harland T (2013).** Building the research capacity of clinical physical therapists using a participatory action research approach. *Phys. Ther.* 93(7):923-34.
- Jefferis L, Smith O, Beswick S, Maoine M, Ferris E (2013).** Investing in nursing research in practice settings: a blueprint for building capacity. *Nurs. Leadersh. (Tor Ont)*, 26(4):44-59.
- Kajermo KN, Unden M, Gardulf A., Eriksson LE, Orton ML, Arnetz BB, Nordstrom G (2008).** Predictors of nurses' perceptions of barriers to research utilization. *J. Nurs. Manage.* 16(3):305-14.
- Kelly KP, Turner A, Gabel Speroni K, McLaughlin MK, Guzzetta CE (2013).** National survey of hospital nursing research, part 2: facilitators and hindrances. *J. Nurs. Admin.* 43(1):18-23.
- Kjerholt M, Holge-Hazelton B (2018).** Cultivating a culture of research in nursing through a journal club for leaders: A pilot study. *J. Nurs. Manage.* 26(1):42-49.
- Landeen J, Kirkpatrick H, Doyle W (2017).** The Hope Research Community of Practice: Building Advanced Practice Nurses' Research Capacity. *Can J. Nurs. Res.* 49(3):127-136.
- Li XD, Chen HJ, Wang L, Kong XY, Ying J (2019).** Scientific Research Capability and Continuing Education Needs for Nurses with Master's Degrees in China. *J. Contin. Educ. Nurs*. 50(2):61-68.
- Li J, Wu X, Li Z, Zhou X, Cao J, Jia Z, Wan X, Jiao J, Liu G, Liu Y, Li F, Song B, Jin J, Liu Y, Wen X, Cheng S (2018).** Nursing resources and major immobility complications among bedridden patients: A multicenter descriptive study in China. *J. Nurs. Manage.* 27(5):61-68.
- Li X, Zhou X, Zhao S, Li J, Che W (2015).** The level and influencing factors of scientific research capacity among clinical nurses in 3A-level hospitals in Xi'an. *Chin. J. Nurs. Admin.* 15(03):199-200.
- Luckson M, Duncan F, Rajai A, Haigh C (2018).** Exploring the research culture of nurses and allied health professionals (AHPs) in a research-focused and a non-research-focused healthcare organisation in the UK. *J. Clin. Nurs.* 27(7-8):e1462-e1476.
- McCance TV, Fitzsimons D, Keeney S, Hasson F, McKenna HP (2007).** Capacity building in nursing and midwifery research and development: an old priority with a new perspective. *J. Adv. Nurs.* 59(1):57-67.
- McKee G, Codd M, Dempsey O, Gallagher P, Comiskey C (2017).** Describing the implementation of an innovative intervention and evaluating its effectiveness in increasing research capacity of advanced clinical nurses: using the consolidated framework for implementation research. *BMC Nurs.* 16:21.
- Mitchell K, Baillie L, Phillips N (2015).** Increasing nurse and midwife engagement in research activity. *Nurs. Stand*, 29(23):37-42.
- Moore J, Crozier K, Kite K (2012).** An action research approach for developing research and innovation in nursing and midwifery practice: building research capacity in one NHS foundation trust. *Nurs Educ. Today*, 32(1):39-45.
- Newhouse RP, Stanik-Hutt J, White KM, Johantgen M, Bass EB, Zangaro G, Wilson RF, Fountain L, Steinwachs DM, Heindel L, Weiner JP (2011).** Advanced practice nurse outcomes 1990-2008: a systematic review. *Nurs. Econ.* 29(5):230-50; quiz 251.
- Pan Y, Cheng J (2011).** Revise of scientific research ability self-evaluation rating scales of nursing staff. *Chin. Nurs. Res.* 25(13):1205-1208.
- Purkis J, Jackson JA, Hundt G, Stockman C (2008).** Increasing nursing research capacity in the workplace. *Nurs. Times*, 104(37):28-31.
- Renwick L, Irmansyah Keliat BA, Lovell K, Yung A (2017).** Implementing an innovative intervention to increase research capacity for enhancing early psychosis care in Indonesia. *J. Psychiatr. Ment. Health Nurs.* 24(9-10):671-680.
- Segrott J, Mclvor M, Green B (2006).** Challenges and strategies in developing nursing research capacity: a review of the literature. *Int. J. Nurs. Stud.* 43(5):637-51.
- Severinsson E (2012).** Research supervision: supervisory style, research-related tasks, importance and quality - part 1. *J. Nurs Manage.* 20(2):215-23.
- Severinsson E (2014).** Capacity building - a challenge for nurse managers. *J. Nurs. Manage.* 22(4):407-9.
- Shang S, Wu X, Gao Y, Jin J, Li Y, Cheng S, Wen X, Wang A, Li Q, Li M, Cao J, Wu X (2018).** Investigation of nurses' scientific research competency and training demand in Chinese tertiary hospitals. *Chin. J. Nurs.* 53(3):277-280.
- Wan X, Feng X (2015).** A survey on the current status of pediatric nursing human resources in Sichuan province of China. *J. Evid. Based Med.* 8(4):209-14.
- Wang B, Gu Y, Yu H, Li Y, Chen H (2015).** The Analysis of the Academic Research Capacity in Clinical Nurses and Its Influencing Factors. *Nurs. J. Chine. People's Liberation Army*, 32(24):21-24.
- Westlake C, Albert NM, Rice KL, Bautista C, Close J, Foster J, Timmerman GM (2015).** Nursing journal clubs and the clinical nurse specialist. *Clin. Nurs. Spec.* 29(1):E1-e10.
- Wilkes L, Cummings J, McKay N (2013).** Developing a culture to facilitate research capacity building for clinical nurse consultants in generalist paediatric practice. *Nurs. Res. Pract.* 2013:709025.
- Zhao M, Kong L, Zhu L (2015).** Investigation on clinical nurses' scientific research capacity in 3A-level hospitals. *Chin. J. Nurs. Admin.* 15(04):283-284.