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Research Article

The feasibility analysis and Evaluation of cancer hospital's nursing three-basic training implemented by entrusted general hospital

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Aim: To delineate the exam result distribution of nursing three-basic training implemented by entrusted general hospital and its factors, and to explore the feasibility of entrusted training.

Background: The level of "three-basic practice", basic theory, basic knowledge and basic skills, is a significant criterion scaling the professional quality and nursing skills of nurses and a critical index of the quality of a hospital.

Methods: Entrust the general hospital with rich training experience and a strong network teaching and training platform to implement three-basic training for cancer hospital nurses and perform statistical analysis of the result of three-basic exam.

Results: Nurses' mean theoretical score was 94.60±6.32, with a median score of 96 and a pass rate of 97.19%.Nurses' BLS score was 87.49±4.34, the median was 88 and the pass rate was 98.18%. Different departments and ages had significant impact on both nurses' theoretical and BLS scores($P< 0.01$), whereas different education degrees and professional titles had significant impact on nurses' theoretical scores ($P< 0.05$).

Conclusions: It is feasible for cancer hospital to entrust the general hospital with strong comprehensive strength to implement the three-basic training. Nursing three-basic exam results were affected by multiple factors, which reminded managements that they should adjust the training key point of nurses based on their different departments and levels, improve senior nurses' emphasis on the training and carry out a whole stuff training in order to optimize the effect of three-basic training.

Keywords: nursing three-basic training, entrusted training, result, feasibility analysis

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Background

Three-basic training of clinical nursing represents the training of basic theory, basic knowledge and basic skills [1]. The level of "three-basic" practice is a significant criterion scaling the professional quality and nursing skills of nurses and a critical index of the quality of a hospital [2, 3]. Recently years, with the increasing number of nurses registered in hospitals and limited training area, "three-basic" training of nurse is more overwhelming than ever. The "three-basic" training and assessment are confronted with challenges including the increasing number of nurses, the specialized work and the limited resources of nursing administration etc., all of which lead to the dilemmas such as difficulty of efficient training, negative emotion, examination-oriented education and little reaped effect [4].

Nursing quality and emergency skill capacities exert direct influences on patients' life and health and are also closely correlated with the development and improvement of specialized hospitals. Therefore, in order to further consolidate the foundation of nursing and to ensure nursing safety, our hospital attempted to entrust the comprehensive

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hospitals, which are rich in training experience and powerful network educating and training platform with the "three-basic" cultivation of nurses.

Methods

Subjects

605 employed nurses in June 2014, aging younger than 45 in Sun Yat-sen University Cancer Center were included in our study. The information was used with prior patients' written consent and the approval of the Institutional Research Ethics Committee of the Sun Yat-sen University Cancer Center.

Methods

(1) Theory training and testing. There are mainly four parts in theoretical training: primary medical knowledge, clinical nursing standard reference, nursing specialist of oncology department and medical health laws and regulations. After self-learning through the entrusted hospital "network educating and training platform" for 2 weeks, nurses were grouped together for an examination online in the computer center and were evaluated automatically by computational system.

(2) Operation training and testing. Major part of operation training is Basic Life Support (BLS), which included cardio-pulmonary resuscitation (CPR) and the use of defibrillator. Due to the specific characteristics of nursing and the limited time of skill assessment, only 2 to 3 teaching backbones selected by department of intensive care unit, anesthesia, outpatient and each nursing unit in our hospital were chosen to participate in this training program. This program was organized by the educating faculty with rich teaching experience from emergency department of the commissioned hospital including theoretical lessons of BLS and operational practice in the center of clinical skill of entrusted hospital.

In order to ensure the quality of skill training and testing, only after these teaching backbones are qualified for operational practice, can they obtain the opportunity to take clinical skill testing. After they got a satisfied result, they were appointed as teachers in our own hospital and were in charge of the training and testing of nurses from different departments. They played the role of ensuring that every nurse can have the opportunity of training and pass the training course. Operational examine was supervised by nursing department and the final score was the average of two or three instructors.

(3) Evaluating standard reference. Three scales were defined based on the final theoretical and operational testing mark. Excellence is defined as the score above 90; ordinary is defined as the score between 80 and 90, while a score under 80 is unqualified.

(4)We analyzed the training results of nurses from different departments or with different educational background and professional titles and their influence on the training score.

Statistical analysis

Data were analyzed using SPSS software (version 16.0; SPSS Inc., Chicago, IL, USA). Frequencies, percentage, mean SD and median were used to describe nurse characteristics and training outcomes. One-way ANOVA was used to compare the difference of different groups and LSD test was used for comparison between two groups. Two-tailed tests of mean differences were used throughout, and the 0.05 level was used as the criterion for determining statistical significance.

Results

General constitution of trained nurses

The age of the included 605 nurses ranges from 21 to 45, with an average of 31.21±6.14. Among them 209 are from internal medicine department (34.55%), 204 from department of general surgery (33.72%), 58 from anesthesia department (9.58%) and 134 remaining nurses from outpatient department, physical examination department and non-first-line department (22.15%). Female nurses account for 97.69% of all training participants. Contract employment relationship accounts for 75.04%. The Han nationality constitutes 98.84% of them and nearly half of them (49.92%) graduate from junior college, while 1/3 of them (34.22%) have bachelor's degree. Nurse practitioners account for 47.6% and nurses-in-charge account for 25.62%.

Distribution of theoretical and operational testing results

Theoretical grade of trained nurses ranges from 67 to 100, with an average score of 94.6±6.32, the median score of 96 and the percent of pass is 98.18% (Table 1). Based on

feedback from teachers of entrusted hospitals, BLS skill of our nurses remained to be increased in terms of cardiac compression, use of breathing bags, defibrillator use.

Table 1. Distribution of theoretical and operational examination of trained nurses (n=605)

Score	Theoretical examination		Operational examination	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
~80	17	2.81	11	1.82
80-90	72	11.90	375	61.98
90-100	516	85.29	219	36.20

Comparison of theoretical and operational examination grade among groups

Seven factors including affiliated department, employment relationship (employee or contractor), gender, nationality, age, education background and professional title were explored and analyzed. We found that there is no difference among employment relationship, gender or nationality and the examination grade in terms of theoretical and operational examination grade ($p>0.05$).Whereas, affiliated department, age, educational background and professional title exert an influence on the score of theoretical score while only the former two factors exert an influence on the score of operational score (Table 2).

Clinical first-line surgery and internal medicine nurse acquired a higher score than nurses from department of emergency, outpatient or physical examination and anesthesia department. Both theoretical and operational scores showed an increase followed by a decrease trend in terms of age. Peak theoretical score was obtained by nurses aging between 35 and 40, while peak operational score by nurses aging between 20 and 35. Nurses of bachelor or above degree get a higher theoretical score than those with secondary school or junior college, while nurses-in-charge and co-chief superintendent nurses get better theoretical score than nurses and nurse practitioners and this score of nurse practitioners are better than that of nurses (Table 2).

Discussion

Feasibility of delegated training program in the nursing "three-basic" training

Grades of delegated training are more reliable than those of traditional training

Content and examination method of nursing "three-basic" training have been an issue which is worthy of be explored and probed [5]. We used to adopt theoretical knowledge from nursing-related books in our previous examines [6]. The qualified rate and excellent rate were 99.2% and 87.96%, respectively in 2013, both of which were higher than those of the current study result. However, as has been illustrate by Zong-Yong Zhong [2], traditional theoretical examines are filled with disadvantages including test-oriented education and poor clinical effect.

Therefore, for the first time, our hospital attempted to delegate comprehensive hospitals with plentiful of training experience and powerful network educating platform to train our nurses and test the effect. Specialized medical knowledge and skills were mastered so that nurses can avoid the limitation of only general skills in specialized hospital. Then nurses were gathered together at the computer center of the delegated hospital for online examination. Rules and regulations were strictly observed by supervisors in case of unreliable factors might affect the result of training. Thus, the percentage of pass, although lower in delegated training, is more reliable to reflect the ability of mastering new skills and knowledge they have obtained from the training.

Table 2. Influence of related factors on the theoretical and operational examination grade of trained nurses (n=605)

	Frequency (n)	Theoretical test grade	Operational test grade
Department			
First-line Internal Medicine①	209	95.10±4.86	88.46±3.83
First-line Surgery ②	204	94.99±5.87	87.78±4.12
Non-first-line Nursing ③	27	93.81±6.22	85.71±4.75
Outpatient ④	96	94.96±6.49	85.61±4.75
Physical examination ⑤	11	82.00±20.39	86.63±3.64
Anesthesia ⑥	58	93.95±5.10	87.96±4.90
F		3.36	6.834
P		<0.01	<0.01
LSD-t test		①⑤b①⑥a ②⑤b②⑥a ③⑤a④⑤b ④⑥a	①③b ①④b②④b ③⑥a④⑥b
Age			
21~①	105	93.49±7.73	87.10±3.95
25~②	151	93.50±7.27	88.00±3.84
30~③	192	95.60±4.75	88.47±3.87
35~④	93	96.18±3.66	87.12±5.31
40-45⑤	94	94.00±7.95	85.31±4.94
F		5.431	6.300
P		<0.01	<0.01
LSD-t test		①③b①④b ①⑤a②③b ②④b	①③b ①⑤a ②⑤b ③⑤b ④⑤b
Education background			
Secondary school ①	99	94.25±6.13	87.27±4.81
Junior college ②	299	94.09±7.25	87.46±4.07
Bachelor or above degree ③	207	95.59±4.82	87.89±4.48
F		4.163	0.840
P		<0.05	>0.05
LSD-t test		①③a②③b	
Professional title			
Nurse ①	153	92.89±8.27	87.15±3.98
Nurse practitioners②	288	94.71±5.71	87.89±4.28
Nurse-in-charge③	155	95.99±4.97	87.35±4.61
Co-chief superintendent nurse ④	9	98.33±1.23	88.55±6.74
F		10.246	2.285
P		<0.01	>0.05
LSD-t test		①②b①③b①④b ②③b②④a	① ②a

Non-first-line Nursing includes nurses from the nursing department, clinical trail institute and department of health. arepresents $p<0.05$, b represents $p<0.01$.

Progressive improvement of the nursing quality of cancer hospital through delegated training

During the process of CPR, neglecting the observation of patient facial color is one of common deficiency. The degree of compression, veracity of method, location and technique are in great need of improvement. As for the use of breathing bags, insufficient airway open, asymmetrical compression of breathing bags and lack of standardization of mask-fixed method needs to be corrected. In terms of defibrillator use, unskilled master of procedures, lack of assessment for the safety of surrounding condition during charge and release also aroused our attention.

The administration of nursing in our hospital brought BLS training and common rescue disposal of cancer patients into this training of specialized nurses in order to aroused the concentration of improving basic emergency rescue skills of each nurse. In addition, through open questionnaire, we are informed that the clinical preliminary knowledge, specialized nursing regulations and executive ability were dramatically improved after this training. Therefore, delegated training contributes to discover practical issues, boost the emphasis of management layer, improved the nursing quality continuously and the nursing safety level of the whole hospital. BLS is considered as one of the most preliminary emergency skills, which should be paid enough attention. More training should be performed in specialized hospitals and ensure the pass rate of every nurse and doctor. Since these kinds of patients are rare in daily work, most departments usually ignore the training and emphasis on this critical skill, thus leading to the above feedback problems.

Entrusted training helps to establish the "Training the Trainer" style

With this BLS training, the entrusted comprehensive hospitals exploit its advantage of emergency department and adopt the "Training the trainer" mode. After nurses passed the examination, they should undertake the responsibility of training colleagues from other departments. This mode not only saved the nursing resources from bilateral hospitals but also produced a group of outstanding trainers from our own hospital. Therefore, nurses from local hospital can provide high-quality training courses consecutively, which can also alleviate issues of training time and situations brought by the increasing number of nurses. Once the relation of delegation was established, trainers can achieve long-term guidance from entrusted hospital, which can greatly consolidate and update knowledge and skills related to emergency.

Attentions to Factors influencing the "Three-basic" training and testing ought to be paid

As healthcare reform proceeds in China, the findings of this study provide valuable and meaningful evidence and suggestions for management and policy makers. The grades of nurses from different departments, at different ages, with different degree levels and professional titles varied greatly. Each factor exerts a different influence on the theoretical and operational grades, indicating that nursing management should pay more attention to these factors related with "three-basic" training and make adjustment based the emphasis of different departments and levels [7]. In addition, with the increasing number of nurse and the changes of inter structure, employment relation, gender and nationality ect., should also be concerned [8, 9].

Increasing "three-basic" training for the non-first-line and more specialized departments

Clinical first-line surgery and internal medicine nurse acquired a higher score than nurses from other departments, which might be attributed to the low frequency of being confronted with patients with nursing problems or emergency medical problems for nurses from those departments. Due to objective factors, knowledge and skills mastered by nurses from different departments determined their difference in the theoretical score. Our study indicates that while improving specialized training, administrators should pay more attention to the training of elementary knowledge and skills for nurses of non-first-line and specialized departments.

Improving emphasis on "three-basic" training of senior nurses

With the increase of age, nursing age also ascends, which can be another influence of age. Other researches have indicated that nurses with a nursing age over five or ten years obtained a better score of training than nurses with lower nursing age, which is similar with our current study. Due to the special nature of medical nursing, the accumulation of clinical experience and the improvement

are of critical importance. However, we found that with the increase of age after reaching the peak score, the score of both theoretical and operational declines.

We analyzed the reasons as the followings. Firstly, senior nurses are more likely to be occupied in management or transferred to non-first-line department. In addition, particular considerations are given to aging nurses in each department. Whereas, nursing education by personal example as well as verbal instruction makes great difference in junior nurses cultivation, which indicates that emphasis on "three-basic" training of senior nurses should be improved so that a pioneering role can be played.

Decline the disparity in professional title and degree through whole personnel training

Our study has illustrated that there is no difference of operational score among nurses with different degrees and professional titles. However, nurses of different educational background obtained different theoretical scores.

In the course of theoretical training, although time of self-learning is the same and limited, different levels of basic knowledge and clinical experience also exert varied influences on nurses' understanding of key points. The degree and professional title effect could be alleviated through practicing personal training, increasing practical intensity, just as the operational testing. Therefore, administrators should keep investigating the training methods and contents, improve "three-basic" training standard reference to adjust to the ever changing clinical and nursing requirement. Administrators should boost the input of training, implement the "three-basic" training among nurses of all levels and put more emphasis on training effect of nurses with low salary, low educational background and low title [10,11].

Limitations of our study include that there still requires further establishment of assessing the training effect, cost input and efficiency evaluation to judge whether entrusted training can be considered as a long-term mode.

Conclusion

Nursing "three-basic" training a significant part of establishing comprehension of a hospital and also the preliminary training for nurses, which should be the topic that are frequently emphasized by nursing administrators. Entrusted training of "three-basic" through comprehensive hospitals is a reliable attempt, which can improve training effect after combining the advantages and disadvantages. In addition, nursing administrator should pay more attention to the multiple factors influencing the testing results, implement whole personnel training and adjust training strategies to improve the importance attached to training and consecutively monitor the effect of these factors.

Competing interests

No conflict of interest has been declared by the authors.

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