



COMPARATIVE STUDY ON CLINICAL CORE COMPETENCE OF NURSING STUDENTS IN GUANGZHOU AND MACAO

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Abstract: *Objective: By comparing the clinical core competence of nursing students in Guangzhou and Macao, this paper provided training suggestions for the integration of talents in the two places. Methods: Questionnaires were distributed to nursing students in the two places from March 2019 to February 2020. Questionnaires were used to investigate the general information, core competence scale and general self-efficacy scale of nurses. The data were described statistically with mean \pm standard deviation. $P < 0.05$ was considered statistically significant. Results: The core competence of nursing students in the two places was in the middle and high level. Among them, the average score of the nursing students in Guangzhou was ranked from highest to lowest as moral and responsibility ability, caring ability, lifelong learning ability, general clinical skill ability, critical thinking reasoning ability and clinical biomedical ability. The average score of all dimensions of nursing students in Macao was ranked from highest to lowest as clinical biomedical ability, moral and responsibility ability, lifelong learning ability, critical thinking and reasoning ability, caring ability and general clinical skills. Gender, grade and educational background have influence on nurses' core competence. Conclusion: To sum up, nursing students in Macao and Guangzhou have acquired certain core abilities through theoretical study and clinical practice, which need to be improved. Therefore, this study provides suggestions for the integrated development of nursing students in Macao and Guangzhou.*

Keywords- Nurses, Core competencies, Education

1 BACKGROUND

The Guangdong-Hong Kong-Macao Greater Bay Area (GBA) is one of the important strategies for China's future development. It is pragmatic to upgrade cooperation in various fields, including health. This is the consensus on health cooperation jointly issued at the GBA Health Cooperation Conference. In the development of the GBA, health cooperation is aimed at building a high-quality and healthy GBA, and establishing a health service system that is in line with international standards and of high quality and efficiency. In addition, talents are regarded as the first resource for the development of GBA [1]. The development of GBA urgently needs a large number of new nursing talents who are proficient in business and familiar with the medical system of the GBA.

Clinical practice is an important part of higher nursing education personnel training. As nursing staff shoulder the great responsibility of patient care, with the change of time and the expansion of nursing scope, the requirement of nursing core competence needs to increase with time, so as to maintain the professional competitiveness [2]. As Nightingale once said, nurses have to prove they are worthy of being needed. In the clinical situation, how nurses prove that they

are needed is related to their ability [3]. Therefore, in order to improve the quality and efficiency of nursing care and establish its social value and status, the nursing profession must start from the core competence of nursing staff, which is also an important subject that both academic and industrial managers need to face together [4].

The International Council of Nurses defines a nurse's core competence as "the specific knowledge, skills, judgment and personal attributes required by specialist nurses to provide safe and ethically tested nursing services". Cowin et al. believed that the core competence of nurses is the core issue of nursing quality control. Chinese nursing scholars believe that nurse core competence refers to the most important ability that nursing education should focus on cultivating and that nursing professionals must have [5]. At present, the core competence of clinical practice nurses and its influencing factors have attracted domestic and foreign attention [6]. By referring to a large number of literatures and articles on the Internet, it is found that most foreign researches focus on the theoretical structure and evaluation of the core competence of practice nurses, and there are few researches on the current situation of core competence and its influencing factors, and most of them focus on the influence of a single factor on core competence. At the same time, few studies have conducted

in-depth analysis and comparative study on the influencing factors of the core competence of nursing students in Macao and Guangzhou.

Under the development of GBA, by comparing the clinical core competence of nursing students in Guangzhou and Macao, this paper will provide training suggestions for the integration of talents in the two places, and even the specialist nurse normative management in China.

2 METHOD

2.1 Research Objects and Methods:

By distributing electronic questionnaires, the study subjects were selected from nursing students of Guangzhou and Macao from March 2019 to February 2020. Questionnaires were distributed to nurse students in two places by using the software of "Interesting questionnaire". For the privacy of the respondents, the questionnaires were anonymous and only the general information of the respondents was recorded.

2.2 Survey Tools

2.2.1 General information of nursing students

According to the purpose of this study, the general questionnaire for self-counting trainee nurses includes the personal data of the respondents (including gender, region, age and education background).

2.2.2 Nurse Core Competence Scale

Nurse Core Competence Scale was used[7]. The indicators included clinical biomedicine (5 items), general clinical skills (6 items), critical thinking and reasoning ability (3 items), caring (5 items), ethics and responsibility (14 items), lifelong learning (5 items), and 38 items in 6 dimensions. Likert 5 rating is adopted, with a total score of 38-190. The higher the rating, the stronger the core competence. Cronbach's α coefficient of the gross table is 0.960.

has a total score of 10-40, and the higher the score, the better the general sense of self-efficacy. According to the score results, general self-efficacy was divided into three levels: high, medium and low. Scores ranging from 33 points to 40 points were classified as high, 24 points to 32 points were classified as medium and 0 points to 23 points were classified as low.

2.3 Statistical analysis

SPSS statistical software was used for statistical analysis of the data. Descriptive analysis was conducted on the scores of core competence, self-efficacy, self-learning readiness, practice maladjustment and general information. Qualitative data were statistically described by composition ratio (%). The quantitative data were statistically described with mean \pm standard deviation. Kolmogorov-smirnov method was used to test the normality of data distribution. Levene was used to test homogeneity of variance. T-test was performed for the comparison of the mean of measurement data with normal distribution and homogeneity of variance between two groups. If the variance was uneven, the rank-sum Test was used, and the Mann-Whitney Test (U Test) was used for comparison between the two groups, and the Kruskal-Wallis Test (H Test) was used for comparison between the two groups. The factors influencing the core competence of nursing students were analyzed by multiple stepwise regression analysis. Results $P < 0.05$ was considered statistically significant.

3 Results and Discussion

3.1 General information of survey objects

In this survey, a total of 172 questionnaires were issued and 172 were recovered, with a recovery rate of 100%. There were 172 valid questionnaires, with an effective rate of 100%. General information of survey objects is shown in Table 1.

Table 1 General information of survey objects

		Guangzhou		Macao	
		n	Composition Ratio	n	Composition Ratio
Gender	Male	23	26.7%	11	12.8%
	Female	63	73.3%	75	87.2%
Origin of Student	Internal students	61	70.9%	15	17.4%
	Overseas students	25	27.1%	71	82.56%
Education Background	Bachelor degree or above	35	47.7%	79	91.9%
	Bachelor degree or below	51	52.3%	7	8.1%

2.2.3 General Self-efficacy Scale

The general self-efficacy scale is used to evaluate the individual's confidence in completing a certain task, and it is the embodiment of individual self-confidence [8]. There are 10 items in the scale, which have been tested to have good reliability and validity [9]. The internal consistency coefficient Cronbach' a in different countries is between 0.75 and 0.91, and the Chinese version is 0.87, and the retarget reliability is 0.83. Each entry is graded with Likert 4, 1 for "completely incorrect", 2 for "somewhat correct", 3 for "mostly correct" and 4 for "completely correct". The scale

3.2 The difference of core competence of nursing students in the two places

The core competence of nurses is that each nurse personal and professional ability development with the important position, value and development of the core ability of nurses, will enhance the ability of nursing staff structure, to improve and guarantee the quality and ability of nursing staff, enables the nurse's in the environment of the medical progress to update professional knowledge and skills, thus to promote the

personal development of the nursing staff, nursing career development belt and the progress of the favorable factors [10]. Therefore, this survey conducted a survey and comparison of the core competence of nursing students, and made a systematic and comprehensive analysis of the relevant factors affecting the core competence.

This paper analyzes the core competence deficiency of the nursing students in the two places, and provides a basis for the teaching effect test in nursing colleges and the reform of nursing managers' education program, and provides a basis for the research or investigation on the core competence of nursing students in the future. As can be seen from Table 2, the core competence of nursing students in the two places is at a medium and high level. Among them, the average score of the intern nurses in Guangzhou was ranked from highest to lowest as moral and responsibility ability, caring ability, lifelong learning ability, general clinical skill ability, critical thinking reasoning ability and clinical biomedical ability. The average score of all dimensions of nursing students in Macao was ranked from highest to lowest as clinical biomedical ability, moral and responsibility ability, lifelong learning ability, critical thinking and reasoning ability, caring ability and general clinical skills.

Table 2 Overall situation of core competence of nursing students in Guangzhou and Macao

Dimension	Guangzhou		Macao		F	P
	Top score	Actual score	Rank	Actual score		
CBS	25	18.63±2.88	6	21.23±2.03	1	0.489 0.840
GCS	30	22.84±3.04	4	17.39±2.18	6	0.463 0.833
CTRS	15	11.19±1.71	5	10.70±1.17	4	0.169 0.917
Care	25	19.57±2.30	2	17.64±3.71	5	0.397 0.901
MR	70	58.44±5.90	1	57.79±4.65	2	0.424 0.918
LL	25	19.12±2.28	3	18.86±2.16	3	0.415 0.867
Sum	190	149.78±14.80	-	143.61±11.62	-	0.870 0.668

CBS, Clinical biomedical Science; GCS, General clinical skills; CTRS, Critical thinking and reasoning skills; MR, Morality and Responsibility; LL, Lifelong learning.

3.3 Influencing factors of core competence of nursing students in the two places

3.3.1 The influence of gender on the core competence of nursing students

As can be seen from Table 3, the core competence level of male nursing students is higher than that of female nursing students, and the total score of Guangzhou is higher than that of Macao. At present, the number of female nurses is higher than that of male nurses. The results show that the level difference is not insignificant, indicating that gender has no obvious difference in core competence. However, the reason why male nurses score higher than female nurses may be related to the positive and aggressive personality of male nurses. Women, on the other hand, are negative, quiet,

conservative; Men are expected to be dominant and challenging, while women are regarded as submissive and careful. As a standard, men are still not suitable for the profession with feminine characteristics [11]. But with the change of times and the progress of society, the core competence of male nursing students is close to or even higher than that of female nursing students.

Table 3 Influence of gender on core competence of nursing students in two places

Dimension	Guangzhou		t	p	Macao		t	p
	Male(n=23)	Female(n=63)			Male(n=11)	Female(n=75)		
CBS	21.17±1.99	17.70±2.58	5.844	0.000	18.00±1.81	17.29±2.23	1.212	0.242
GCS	24.65±2.71	22.17±2.90	3.568	0.000	22.00±1.81	21.10±2.04	1.438	0.154
CTRS	12.39±1.37	10.75±1.62	4.340	0.000	11.25±0.45	10.61±1.23	1.774	0.08
Care	21.39±1.75	18.90±2.11	5.052	0.000	20.50±0.91	17.17±3.79	3.021	0.003
MR	63.09±4.23	56.75±5.51	4.998	0.000	63.50±2.71	56.83±4.20	5.299	0.000
LL	20.00±2.52	18.79±2.11	2.224	0.029	19.17±1.65	17.00±3.62	3.423	0.001

3.3.2 The influence of different student sources on the core competence of nursing students

As can be seen from Table 4, except for the core competence of lifelong learning, the total scores of overseas students practicing in Guangzhou are all higher than that of internal students. There was no statistical significance (P>0.05) in the difference of the scores of overseas and internal students in Macao. Lifelong learning ability refers to the ability to integrate resources, develop potential like yeast spirit through multiple channels, uphold the attitude of lifelong learning, recognize self-progress and specifically express their growth [12]. Lifelong learning is very important. With the rapid development of medical science and technology, new knowledge is emerging every second. Without continuous learning, it is difficult to keep pace with the rapid pace of society

Table 4 Influence of student origin on core competence of nursing students

Dimension	Guangzhou		t	p	Macao		t	p
	Overseas students (n=25)	Internal students (n=61)			Overseas students (n=25)	Internal students (n=61)		
CBS	20.56±2.55	17.84±2.63	4.394	0.000	17.28±2.24	17.93±1.83	1.061	0.292
GCS	24.44±2.69	22.18±2.95	3.308	0.001	21.29±2.07	20.93±1.83	0.615	0.540
CTRS	12.12±1.69	10.8±1.58	3.440	0.001	10.75±1.22	10.47±0.92	0.860	0.392
Care	20.64±2.33	19.13±2.15	2.888	0.005	17.83±4.03	16.80±1.37	0.971	0.334
MR	61.28±4.06	57.28±6.16	2.988	0.004	57.48±5.04	59.20±1.37	1.306	0.195
LL	19.8±2.22	18.84±2.26	1.806	0.075	18.72±2.33	19.47±0.92	1.211	0.229

3.3.3 The influence of different educational backgrounds on the core competence of nursing students

It can be found in Table 5 that There are differences in the core competence of clinical biomedicine, caring ability and moral and responsibility ability of nursing students with different educational backgrounds; The total score of clinical biomedicine and caring ability of nursing students in the graduate group is higher than that in the undergraduate and junior college the total score of clinical biomedicine, morality

and responsibility and caring ability of nursing students in the technical secondary school group is higher than that in the undergraduate and junior college, and the caring ability is higher than that in the junior college. As can be seen from Table 5, the general clinical skills of trainee nurses in the junior college group are higher than other abilities. The cultivation goal of college students is to have higher requirements on skills, while the cultivation goal of undergraduates is to have higher requirements on comprehensive abilities. In terms of curriculum arrangement, undergraduates pay more attention to nursing education, nursing research and nursing management than undergraduates. There are also some differences in the class requirements. The theoretical study of college students is usually 2 years, and that of undergraduates is 3-4 years, which makes the theoretical knowledge of undergraduates more solid [13]. These factors are associated with the outcome of core competencies.

Table 5 Influence of educational background on nurses' core competence

Dimension	Guangzhou				Macao			
	Bachelor degree or above (n=35)	Bachelor degree or below (n=51)	t	p	Bachelor degree or above (n=79)	Bachelor degree or below (n=7)	t	p
CBS	18.18±2.80	18.38±2.79	4.251	0.108	17.38±3.09	17.57±3.21	0.051	0.822
GCS	21.91±3.64	23.20±2.29	2.340	0.079	21.09±1.98	22.71±2.14	4.282	0.042
CTRS	10.88±1.69	11.20±1.65	1.811	0.152	10.74±1.13	10.29±1.61	0.969	0.328
Care	18.79±2.41	19.73±1.99	4.841	0.204	17.66±3.68	17.43±4.28	0.025	0.874
MR	57.06±5.45	58.51±6.19	2.975	0.136	57.69±4.21	58.86±8.55	0.403	0.527
LL	18.82±2.57	19.13±1.87	0.857	0.467	18.79±2.05	19.57±3.21	0.835	0.363

3.4 The influence of general self-efficacy on the core competence of nursing students

Self-efficacy is an individual's confidence in completing a certain task or achieving a certain goal. It refers to an individual's overall sense of control when dealing with challenges in various environments or facing new things. It is the embodiment of personal self-confidence. People with a high sense of self-efficacy are more confident, dare to challenge difficulties, and are more likely to succeed [14]. Some foreign studies have also shown that the accurate evaluation results of self-efficacy can predict the scores and teaching outcomes of nursing students [15]. The survey found that the score of self-efficacies of trainee nurses was 26.977±6.17. In Guangzhou, 49 nursing students achieved high level, 15 intermediate level and 22 low level. In Macao, 9 nursing students achieved high level, 48 intermediate level and 29 low level. It can be found from Table 6 that the core competence of nursing students with different levels of self-efficacy is different in all dimensions and total scores. Therefore, schools can teach students according to their characteristics and needs. The hospital can also arrange reasonable and feasible internship programs for students, and try to arrange experienced and knowledgeable teachers, so as to enhance the confidence and self-efficacy of students from various aspects such as learning and internship.

Table 6 Influence of general self-efficacy on core competence of nursing students

Dimension	Guangzhou			F	p	Macao			F	p
	High level (n=49)	Medium level (n=15)	Low level (n=22)			High level (n=9)	Medium level (n=48)	Low level (n=29)		
CBS	19.94±2.82	19.34±2.81	16.79±2.08 ^a	10.783	0.000	19.00±0.00	18.16±1.75	15.66±2.08 ^a	22.214	0.000
GCS	24.59±2.12	23.27±2.93	21.14±2.92 ^a	9.008	0.000	22.00±0.00	21.64±2.01	20.31±2.11 ^a	5.112	0.008
CTRS	12.41±1.54	11.44±1.61 ^a	10.07±1.27 ^a	14.040	0.000	12.00±0.00	11.11±0.75 ^a	9.62±1.50 ^a	42.710	0.000
Care	20.88±2.32	19.80±2.25	18.43±1.83 ^a	7.447	0.001	21.00±0.00 ^a	16.27±4.19	18.62±2.27 ^a	9.981	0.000
MR	62.94±6.39	58.85±5.61 ^a	55.11±3.77 ^a	11.991	0.000	65.00±0.00 ^a	57.47±4.93	55.79±1.74 ^a	22.507	0.000
LL	20.88±2.54	18.95±2.097	18.29±1.80	8.298	0.001	22.00±0.00 ^a	17.96±2.20	19.17±1.14 ^a	22.570	0.000

^a was statistically significant with the high-level group (P < 0.05); ^b was statistically significant compared with the median level group (P < 0.05).

4 Conclusion

To sum up, nursing students in Macao and Guangzhou have acquired certain core abilities through theoretical study and clinical practice, but they still need to be further improved since they cannot fully meet the needs of clinical nursing. Especially, the clinical nursing ability and critical thinking dimension score are low, which need to be improved. Trainee nurses the influence factors of core competence include gender, students, academic and general self-efficacy, schools and hospitals should be based on the practice nurse status and influence factors of core competence characteristics, train the ability of clinical ability of biomedical and clinical skills, critical thinking, reasoning, love, morality and responsibility, and lifelong learning and so on seven big core literacy [16]. Therefore, this study provides suggestions for the integrated development of nursing students in Macao and Guangzhou.

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