

Application Research on Community Nursing Practice Teaching Combined with Diabetes Health Management

Fuan Wang Kongju Wu

Pingdingshan University, Pingdingshan, Henan, 467000, China

Abstract: Objective Discuss and reform community nursing practice teaching mode, and improve effects of community nursing teaching. Method Students are grouped into experimental group and control group randomly. Students in the experimental group manage individualized health of diabetes patients in the observation group, and students in the control group conduct group health education and management for diabetes patients, no individualized health management. Results Students in the two groups compare cognition about this course and community nursing before teaching, no remarkable difference (all P values are > 0.05), and compare diabetes knowledge and living behaviors of the old in the two groups, no remarkable difference (all P values are > 0.05). After teaching, students in the two groups compare recognition of this course and community nursing as well as test performance, and there are remarkable differences (all P values are < 0.05). And comparison of diabetes knowledge and living behaviors of the old in the two groups shows remarkable differences (all P values are < 0.05). The implementation of individualized health management mode in community nursing practice teaching can improve students' professional knowledge and competence, and help diabetes patients to form good behaviors and life styles. The combination of community nursing practice teaching and individualized health management for diabetes patients can improve students' professional knowledge and competence, and help diabetes patients to control illness state and improve their physical conditions.

Keywords: Community nursing; Practice teaching; Diabetes; Health management D

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1. Introduction

Community Nursing is a required course set for higher education on nursing in China, and is of high practicalness, being an important method for students majored in nursing to understand community nursing^[1]. Early in 2006, the Ministry of Education explicitly pointed out that "Colleges and universities shall reinforce building of community nursing, accelerate construction of community nursing base and cultivation of community nursing talents to improve overall qualifications and service level of community health personnel"^[2]. Due to the development imbalance of community nursing in China, larger investment into and faster development of community nursing in Beijing, Shanghai and other first-tier cities, and shortage of community nursing talents in remote areas and mid and small-sized cities^[3-4], the

slow development of community nursing services directly influences construction of practice base for community nursing, and practice teaching of Community Nursing. Students are relatively strange to community nursing, and lack interest in Community Nursing, which influences teaching effects and cultivation of community nursing talents, as well as development of community health management.

Diabetes has globally become a major public health problem in the 21st century. In China, the insufficient cognition of most patients on diabetes has caused poor blood glucose control of some diabetes patients, led to diabetes complications, life quality reduction and fatality rate increase^[5-6]. In 2005, Chinese government issued China Guideline for Diabetes which especially emphasizes the application of health education, individual guidance and

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other measures for health management^[7]. However, the shortage of community health personnel makes it difficult to implement diabetes health management in communities.

Community nursing teaching constitutes an important link of students participating in community practices and diabetes health management. The relatively large difference^[8] in total credit hours (18-63) and practice hours (9-18) also influences the development of community nursing practice teaching. The author's university sets 54 credit hours and 18 practice hours for Community Nursing in the nursing undergraduate program. Since undergraduate students upgraded from junior colleges have mastered certain medical knowledge and skill and has had almost 1 year of clinical nursing practice, and more than 90% of students have obtained the qualification certificate for nurse. Thus, the practice teaching reform on Community Nursing was reformed during undergraduate learning to enable students to participate in health management of community diabetes patients. Report on reform results is as follows.

2. Objects and Methods

2.1 Objects

The objects include 2015 undergraduate students upgraded from junior college in Pingdingshan University School of Medicine, as well as the old with diabetes in Pingdingshan Sunset Apartment for the Aged.

2.2 Implementation Methods

Take class as unit, and randomly pick up 2 classes as experimental group and another 2 classes as control group. Students of the two groups are taught by the same teacher for community nursing, lasting for same credit hours and practice hours. In addition, teaching materials, contents, time and modes of theoretical teaching and on-campus simulation training for the two groups are the same, and time and contents of off-campus practice are the same but different modes and requirements. Diabetes patients who have been diagnosed by general hospitals at municipal or above level, have full capacity and have no cognitive disorder in the apartment for the aged are service objects, who are grouped into observation group and control group based on the date when they settle in the apartment. Students in the experimental group conduct individualized health management for the old in the observation group: 2-3 students manage one diabetes patient as a group, and contact with the object at least once every week, and visit the patient at least once every month, which shall be done during practice courses for Community Nursing and on weekends. Practice contents include: health edu-

cation, guidance on behaviors and life styles, medication guidance, mental nursing, questionnaire, measurement of height, weight and blood glucose, sorting out and analysis of materials. Students in the control group conduct group health propaganda and guidance for the old in the control group. The practice contents of students in the control group are the same as those of the experimental group, but with no individualized health management. Community practice time is from September 10, 2016 to December 10. Questionnaire survey shall be done to students and the old with diabetes respectively before and after practice teaching.

Refer to Community Nursing^[3], Medical Statistical Analysis^[9], Preventive Medicine^[10] for design of questionnaire contents, and form the final questionnaire after pre-investigation and modification. KMO value of questionnaire for students is 0.805, and Cronbach a coefficient is 0.793. Main contents include: five-grade method is applied for each option of interest in the course of Community Nursing, course necessity, understanding of community nursing and function of community nursing practice to improve personal competence, from least important-very important (very bad-very good) and 1-5 points for each of them. KMO value of questionnaire for the old with diabetes is 0.795, and Cronbach a coefficient is 0.807. Main contents include: diabetes incidence reason, influencing factors, behaviors and life styles, physical examination for weight and blood glucose; status of health management demand as well as health concepts. Wherein, awareness rate is applied for statistics of basic knowledge; five-grade method is applied for behavior and health concept, never-frequent (least important-very important) and 1-5 scores for each of them.

Investigation method and time: Anonymous questionnaire is applied for investigation, which shall be filled in, collected and screened on the site. Investigation before practice was made during September 10-15, 2016, and December 5-10, 2016 for investigation after practice.

2.3 Statistical Method

SPSS20.0 software is applied for statistical analysis for materials, χ^2 inspection for qualitative materials, t inspection for quantitative materials, $P < 0.05$, with remarkable difference.

3. Results

3.1 Students

3.1.1 Basic Information

There are 217 2015 undergraduate students upgraded from junior colleges majored in nursing, composed of 198 girls

Table 1. Comparison of Cognition and Practice Effects of Students in the Two Groups (\pm) \bar{x}

Item	Control group	Experimental group	<i>t</i>	<i>P</i>
Cognition on the course and community nursing				
Interest in community nursing course	2.91±0.80	4.13±0.63	12.14	0.00
Significance of setting the course of community nursing	3.52±0.71	3.63±0.76	0.62	0.48
Significance of community nursing practice	3.12±1.02	4.24±0.96	8.58	0.00
Suitability of total credit hours	3.67±0.84	3.76±0.94	1.12	0.26
Suitability of practice hours	3.52±0.76	3.59±0.83	1.07	0.28
Interest in community nursing	2.39±0.97	3.30±1.07	7.60	0.00
Effects of community nursing practice				
Cooperation ability enhancement	2.79±0.41	3.10±0.66	4.81	0.00
Thinking ability improvement	2.99±0.69	3.50±1.02	5.10	0.00
Referencing ability improvement	2.39±0.65	4.09±0.74	20.90	0.00
Sorting out and analyzing ability improvement	2.56±0.77	4.33±1.00	17.12	0.00
Communication ability improvement	3.06±0.71	4.35±0.69	22.98	0.00
Problem solving ability improvement	2.90±0.81	4.26±0.84	11.17	0.00
Enhancement of theoretical knowledge mastery	3.12±0.78	3.72±0.66	7.18	0.00
Application ability improvement	2.86±0.56	4.18±0.62	19.24	0.00
Comprehensive ability improvement	3.04±0.87	3.93±0.52	6.27	0.00

Table 2. Comparison of Student Performance

Grade	Average score		Score distribution (%)				
	$\bar{x} \pm s$	<i>t</i> (<i>P</i>)	Excellent	Good	Medium	Pass	χ^2 (<i>P</i>)
Control group	73.5±7.8	9.21	5.9			41.28	45.95
Experimental group	85.5±7.2	0.00	33.7	42.9	18.4	5.1	0.00

(91.2%) and 19 boys (8.8%). Among them, 109 students are in the experimental group, being 22.57 ± 1.43 years old on average, and 108 students are in the control group, being 22.81 ± 1.31 years old on average. According to the investigation results before community nursing teaching at the beginning of the semester, no remarkable difference exists in cognition to community nursing course and community nursing among students in the two groups (all *P* values are > 0.05).

3.1.2 Comparison of Students' Cognition and Practice Effects

The comparison of cognition on significance of community nursing course and suitability of total credit hours and practice hours after practice teaching shows no remarkable difference (all *P* values are > 0.05); the comparison of interest in community nursing course and community nursing, significance of community nursing practice and effects of community nursing practice all shows remark-

able differences (all *P* values are=0.00). And it is obviously that students in the experimental group have better evaluation on community nursing practice to improve individual cooperation ability, thinking ability, referencing ability, sorting out and analyzing ability, problem solving ability, communication ability and comprehensive ability than students in the control group. See Table 1 for detailed results.

3.1.3 Comparison of Test Performance

After the completion of the course at the end of the semester, the comparison of average scores and good rate of closed-book test with the same examination paper for the students in the two groups shows remarkable differences (all *P* values are = 0.00). See Table 2 for detailed results.

3.2 Diabetes Patients

3.2.1 Basic Information

Comparison of age, gender, education background and

Table 3. Comparison of Basic Information of the Two Groups of Patients

Item	Observation group (n1=52)	Control group (n2=57)	χ^2	P
	Percent (%)	Percent (%)		
Age				
<70	23.1	26.3	0.18	0.912
70-	46.2	45.6		
80-	30.8	28.1		
Gender				
Male	46.2	45.6	0.00	0.955
Female	53.8	54.4		
Educational level				
Below junior high school	44.2	43.9	0.11	0.946
Senior high school/secondary vocational school	30.8	33.3		
Junior college and above	25.0	22.8		
Medical history				
<5 years	48.1	45.6	0.09	0.955
5 years -	30.8	33.3		
10 years -	21.2	21.2		

Table 4. Comparison of Diabetes Knowledge Awareness Rate for Patients in the Two Groups before and after Practice

Item	Before practice (%)			After practice (%)		
	Observation group	Control group	χ^2 (P)	Observation group	Control group	χ^2 (P)
Daily salt intake shall be lower than	19.2	21.1	0.06(0.81)	59.6	29.8	9.79(0.00)
Daily oil intake shall be lower than	26.9	24.6	0.08(0.78)	46.2	38.6	0.64(0.43)
Average daily vegetable intake shall not be less than	40.4	36.8	0.14(0.70)	61.5	45.6	2.77(0.10)
Average daily fruit intake shall not be less than	48.1	45.6	0.07(0.80)	73.1	43.9	9.52(0.00)
Average daily bean intake shall not be less than	40.4	29.8	1.34(0.25)	73.1	45.6	8.46(0.00)
Relationship between smoking and diabetes	36.5	42.1	0.35(0.55)	69.2	42.1	8.09(0.00)
Relationship between drinking and diabetes	46.2	47.4	0.02(0.90)	76.9	50.9	7.94(0.00)
Relationship between obesity and diabetes	34.6	43.9	0.97(0.32)	86.5	40.4	24.72(0.00)
Relationship between exercise shortage and diabetes	48.1	42.1	0.399(0.53)	80.8	52.6	9.60(0.00)
Relationship between diet and diabetes	40.4	45.6	0.30(0.58)	69.2	45.6	6.18(0.01)
Fasting blood glucose of healthy people shall be lower than	30.8	36.8	0.45(0.50)	55.8	36.8	3.92(0.05)
Food which needs strict control includes	25.0	35.1	1.31(0.25)	61.5	31.6	9.83(0.00)
Food which can be appropriately added includes	36.5	31.6	0.30(0.59)	75.0	43.9	10.88(0.00)
Diabetes complications include	30.8	31.6	0.01(0.93)	63.5	40.4	5.81(0.02)
Normal value of blood pressure is	17.3	26.3	1.29(0.26)	65.4	24.6	18.39(0.00)
Implication of food exchange list	32.7	19.3	2.56(0.11)	71.2	40.4	10.43(0.00)
Total	34.6	35.0	0.03(0.87)	68.0	40.8	129.87(0.00)

Table 5. Comparison of Behaviors, Life Styles and Cognition of Patients in the Two Groups before and after Practice

Item	Before practice ($\pm s$) \bar{x}			After practice ($\pm s$) \bar{x}		
	Observation group	Control group	$t(P)$	Observation group	Control group	$t(P)$
Smoking condition	2.52 \pm 1.46	2.18 \pm 1.36	1.27(0.21)	1.83 \pm 1.04	2.12 \pm 1.42	1.25(0.21)
Drinking condition	2.87 \pm 1.27	2.86 \pm 1.42	0.02(0.98)	2.02 \pm 0.67	2.60 \pm 1.37	2.82(0.01)
Intake of greasy food	2.79 \pm 0.96	2.79 \pm 1.10	0.01(0.10)	2.23 \pm 0.92	2.42 \pm 0.91	1.09(0.28)
Intake of sweet and salty food	2.75 \pm 1.03	2.88 \pm 1.00	0.65(0.51)	2.08 \pm 0.84	2.39 \pm 0.82	1.95(0.05)
Intake of fruits and vegetables	3.60 \pm 0.69	3.70 \pm 0.80	0.73(0.47)	4.62 \pm 0.49	3.72 \pm 0.78	7.28(0.00)
Emotion control	2.81 \pm 0.95	3.21 \pm 0.86	2.32(0.02)	4.15 \pm 0.78	3.21 \pm 1.08	5.26(0.00)
Daily exercise >30min	2.79 \pm 1.02	3.16 \pm 1.18	1.75(0.08)	4.08 \pm 0.79	2.98 \pm 1.06	6.15(0.00)
Regular weight measurement	2.65 \pm 0.76	3.04 \pm 0.82	2.50(0.01)	3.67 \pm 0.99	2.82 \pm 0.87	4.78(0.00)
Regular blood glucose measurement	2.67 \pm 0.68	2.84 \pm 0.77	1.21(0.23)	3.85 \pm 0.98	2.79 \pm 0.75	6.36(0.00)
Regular blood pressure measurement	2.21 \pm 0.92	2.42 \pm 0.80	1.28(0.21)	3.96 \pm 1.01	2.40 \pm 1.03	7.95(0.00)
Medication following doctor's advice	3.15 \pm 0.75	2.84 \pm 0.75	2.17(0.03)	3.96 \pm 0.82	3.30 \pm 0.73	4.48(0.00)
Regular foot examination	1.71 \pm 0.70	1.77 \pm 0.76	0.43(0.67)	4.04 \pm 0.91	1.95 \pm 0.99	11.47(0.00)
Significance of health management	3.71 \pm 0.80	3.40 \pm 0.78	2.04(0.04)	4.42 \pm 0.72	3.84 \pm 0.84	3.85(0.00)
Significance of diet control	3.60 \pm 0.72	3.68 \pm 0.74	0.63(0.53)	4.31 \pm 0.78	3.79 \pm 0.82	3.38(0.00)
Significance of exercise	3.73 \pm 0.84	3.56 \pm 0.73	1.12(0.26)	4.42 \pm 0.72	3.86 \pm 0.88	3.68(0.00)
Significance of taking medicines following doctor's advice	3.58 \pm 0.78	3.74 \pm 0.84	1.03(0.30)	4.44 \pm 0.67	3.77 \pm 0.87	4.54(0.00)
Total	2.95 \pm 0.58	3.00 \pm 0.56	0.29(0.78)	3.63 \pm 0.98	3.00 \pm 0.66	2.14(0.04)

medical history of diabetes patients in the two groups shows no remarkable difference (all P values are > 0.05). Most of the patients in the two groups are over 70 years old, and most of them are female with academic degree lower than junior college, and the number of patients with less than 5-year medical history is close to 50%. See Table 3 for detailed results.

3.2.2 Diabetes Knowledge Awareness Rate

Before practice, the comparison of diabetes knowledge awareness rate among the patients in the two groups shows no remarkable difference (all P values are > 0.05), awareness rate of each item is lower than 50%, and average awareness rate is respectively 34.6% and 35.0%. After practice, the patients in the two groups show no remarkable difference in terms of awareness rate of acceptable daily intake of oil and vegetables ($P > 0.05$), and that for the other items has remarkable differences ($P \leq 0.05$). Awareness rate for most items in the observation group is higher than 60%, and the average awareness rate is 68.0%, showing a remarkable improvement; while the awareness rate for all items in the control group is lower than 60%, and the average awareness rate is 40.8%, showing a less remarkable improvement. See Table 4 for detailed results.

3.2.3 Behaviors, Life Styles and Cognition

Before practice, the comparison of behaviors, life styles and cognition of patients in the two groups shows remarkable differences in emotion control, regular weight measurement, medication according to doctor's advice and significance of health management ($P < 0.05$), while other items show no remarkable difference ($P > 0.05$). After practice, the comparison of behaviors, life styles and cognition of the patients in the two groups shows no remarkable difference in smoking and intake of greasy food ($P > 0.05$), while other items show remarkable differences ($P < 0.05$). Changes of behaviors and life styles of the observation group are obviously better than that of the control group. See Table 5 for detailed results.

3.2.4 Health Condition Inspection

Before practice, the comparison of body mass index, fasting blood glucose, blood glucose 2 hours after meal, systolic blood pressure and diastolic blood pressure shows no remarkable difference (all P values are > 0.05). After practice, the comparison of body mass index of the patients in the two groups shows no remarkable difference ($P > 0.05$), while the comparison of fasting blood glucose, blood glucose 2 hours after meal, systolic blood pressure

Table 6. Comparison of Measurement Indexes of Patients in the Two Groups before and after Practice (\pm) \bar{x}

Grouping	Body mass index (kg/m ²)	Fasting blood glucose (mmol/L)	2-hour postprandial blood glucose (mmol/L)	Systolic blood pressure (mmHg)	Diastolic blood pressure (mmHg)
Before practice					
Observation group	24.21±2.15	7.10±1.09	10.75±1.11	137.02±6.59	86.12±5.56
Control group	24.40±1.97	6.92±1.07	11.00±1.07	134.88±6.42	86.54±7.64
<i>t</i>	0.49	0.85	1.18	1.72	0.32
<i>P</i>	0.63	0.40	0.24	0.09	0.75
After practice					
Observation group	23.46±1.53	6.40±0.87	8.33±0.79	129.62±7.40	81.44±4.98
Control group	23.68±1.28	6.82±1.07	9.70±1.10	132.98±7.49	84.21±5.77
<i>t</i>	0.60	2.24	7.55	2.36	2.67
<i>P</i>	0.55	0.03	0.00	0.02	0.01

and diastolic blood pressure shows remarkable differences ($P < 0.05$). See Table 6 for detailed results.

4. Discussion

4.1 Necessity of Reform of Community Nursing Practice Mode

With changes of disease spectrum and population aging, community nursing provides an emerging development direction for the nursing in China. In the future, some nurses will walk out of hospital and be engaged in community nursing in communities^[11]. However, the nursing education in China is far from being able to adapt to demands for cultivation of community nursing talents^[12]. Therefore, it is necessary to arrange community nursing practice in nursing course setting as early as possible, cultivate students' thinking about community nursing in the practice course of Community Nursing, introduce job opportunities and development space of community nursing, cultivate their interest in community nursing, and encourage them to be engaged in community nursing^[13]. Traditional on-campus simulation training and practice teaching mode of community nursing visiting cannot meet all the demands for cultivating modern community nursing talents, and under guidance of new health concepts, the practice course of Community Nursing has to enter communities, establish the concept of community nursing, and pay attention to cultivating students' thinking ability, practice ability, independence and comprehensive ability.

4.2 Urgent Demands of the Old with Diabetes for Community Nursing Services

According to investigations, there is a serious lack of community nursing talents in Pingdingshan, and most of the nurses only have the secondary vocational school

education level. They are mainly engaged in community medical care, and have no time for community health education, preventive health guidance, tracking visiting and health management, which makes it difficult to realize comprehensive and continuous "Six-in-One" community health services. Although some community health service centers have established chronic disease health management files which are just formalistic and have no substantial dynamic management. Incidence, development and prognosis of diabetes are all closely related to behaviors and life styles. Since the elderly people have worse memory, diabetes patients in apartment for the aged especially need guidance and remind from professional personnel, and effective health management can help patients to control emotion, improve health conditions, and prevent and delay occurrence of complications.

4.3 Necessity of Students in Medical Schools Participating in Diabetes Health Management

Medical students taking professional practice in apartments for the aged can, on the one hand, animate atmosphere in apartments for the aged, make the elderly people happy, increase their health knowledge and skills, and promote them to form good behaviors and life styles in the background of being lacking in professional technicians of community health; on the other hand, it can forge students' communication skills, cultivate self-confidence, intensify theoretical knowledge, enhance practice skills and comprehensive ability, and cultivate students' sense of responsibility and professional sense of mission for health of community groups.

5. Conclusion

The research combines practice teaching of Communi-

ty Nursing and diabetes health management, which is beneficial to cultivating students' sense of community nursing, enabling them to recognize necessity, urgency and universality of community nursing, and forming the employment idea of working in communities. The application of individualized health management and providing certain tasks and management targets for students can fully motivate students' initiative and enthusiasm to forge and improve students' communication ability, service ability, thinking ability, ability to collect, sort out and analyze materials, strain capacity as well as practice application ability; meanwhile, this helps diabetes patients to understand basic knowledge about diabetes, set up scientific health concepts, and form good behaviors and life styles, which are conducive for controlling illness conditions and improving health conditions.

Suggestions: Medical college students are suggested to take professional practices in the apartment for the aged, care about diabetes patients, chronic disease patients and all the elderly people, and help them to improve health conditions and life quality.

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