

Assessment and Evaluation of the Impact of Concept Mapping and Clinical Teaching Method (Demonstration) on Wound Dressing in Terms of Knowledge and Practice

Jyoti Verma

Abstract

Concept mapping is a teaching strategy that is used to encourage students to learn. It is a set of valuable tools for critical thinking and problem-solving. It is an educational tool used to describe relationships among concepts. Sought to assess and evaluate the impact of concept mapping and clinical teaching method (demonstration) on wound dressing in terms of knowledge and practice, this study adopted a non-randomised control group (quasi-experimental) design. The total size of sample 106. Total enumeration sampling technique was used. In experimental group mean post-test knowledge score (16.39 ± 2.45) was higher than that of the pre-test (9.37 ± 2.8) and the mean post-test practice score (15.55 ± 2.13) was higher than that of the pre-test (6.89 ± 1.48). In control group the mean post-test knowledge score (10.78 ± 2.51) was higher than that of the pre-test (8.1 ± 2.24) and the mean post-test practice score (13.4 ± 2.30) was higher than that of the pre-test (7.38 ± 1.70). The present study revealed that concept mapping method is an asset for the nursing students for improving cognitive and student's active learning. Better outcome can be achieved using concept mapping method.

A concept map is a diagram that depicts suggested relationships between concepts. A concept map typically represents idea and information as boxes or circles, which it connects with label arrows in a downward branching hierarchical structure. Concept maps are a way to develop logical thinking and study skills by revealing connections and helping students see how individual ideas form a larger whole.

Need of the study

The researcher personally observed that concept mapping is an innovative method which facilitates the critical thinking and improves the nursing students' ability in decision making while providing patient care. So, the researcher planned to introduce concept of mapping in clinical area and to see the effectiveness of this new teaching strategy.

Objectives

The study was set with following objectives:

- To assess and evaluate the impact of concept mapping and clinical teaching method on wound dressing in terms of knowledge and practice among BSc nursing 1st year student in (a) experimental and (b) control group.

The author is Assistant Professor, College of Nursing, LLRM Medical College, Meerut (UP).

Guide: Mrs Arul Malar, Reader, Panna Dhai Maa Subharti Nursing College, Meerut (UP).

- To find out the association between post-test knowledge and practice score on wound dressing among BSc nursing 1st year students with their selected demographic variables in (a) experimental and (b) control group.

Review of Literature

Aein & Aliakbari (2017) in a paper on effectiveness of concept mapping and traditional linear nursing care plans on critical thinking skills in clinical paediatric nursing course compare the effectiveness of concept mapping and traditional linear nursing care planning on students' CT. The control group completed nine traditional linear nursing care plans whereas experimental group completed nine concept maps during the course. Both groups showed significant improvement in overall and all subscales of the California CT skill test from pre-test to post-test ($p < 0.001$), but t-test demonstrated that improvement in students' CT skills in the experimental group was significantly greater than in the control group after the program ($p < 0.001$). The study concluded that concept mapping can be used as a clinical teaching-learning activity to promote CT in nursing students.

Nasrin Rasoul Zadeh, et al compared the effect of concept mapping and conventional methods on nursing students' practical skill Score at Tehran, Iran. This quasi-experimental study was conducted on 70 nursing students randomly assigned into two groups of 35 people. The intervention group was

taught through concept mapping method, while the control group was taught using conventional method. The students mean scores were significantly increased after the education and the difference between pre and post intervention of students mean scores were significant in the both groups ($p < 0.001$).

Research Hypothesis (at 0.05 level of significance)

H1: There will be a significant difference in the post-test knowledge and post-test practice scores will be higher than the pre-test knowledge and practice among BSc nursing 1st year students after administration of concept mapping and clinical teaching method (Demonstration) on wound dressing in experimental group.

H2: There will be a significant difference in the post-test practice scores which will be higher than the pre-test practice among BSc nursing 1st year students after administration of clinical teaching (Demonstration) on wound dressing in control group.

H3: There will be a significant association between post-test knowledge and post-test practice scores among BSc nursing 1st year students after administration of concept mapping and clinical teaching method (Demonstration) on wound dressing with their selected demographic variables in experimental groups.

H4: There will be significant correlation between the post-test knowledge and post-practice score regarding wound dressing procedure in experimental and control group.

Methodology

Research design: A non-randomised control group (quasi- experimental) design was used in the study.

Setting of the study: The present study was conducted in Panna Dhai Maa Subharti Nursing College and College of Nursing, LLRM Medical College, Meerut (UP)

Sample: BSc nursing first year students who met the inclusion criteria were included in study.

Sampling technique: Enumeration sampling technique was used to collect the samples, which fulfilled the inclusion criteria.

Sample size: Sample size was 106 nursing students (56 experimental group and 50 control group), who were studying in Panna Dhai Maa Subharti Nursing College and College Of Nursing LLRM Medical College, Meerut (UP).

Data Collection Tool & Technique: The tool

used in this study was semi structured questionnaire and modified JHPIEGO NGO observation checklist.

Content validity: The validity of the content was obtained by submitting the tools and concept map to 10 experts, 9 from the field of nursing and 1 from education department.

Reliability of tools: The reliability coefficient of knowledge test was calculated using Pearson's formula. It was found $r = 0.79$ indicating that the tool is reliable. The reliability coefficient of practice was calculated using Pearson's formula, the value of $r = 0.75$ indicated that tools is reliable.

Ethical consideration: Ethical clearance was obtained from the Swami Vivekanand Subharti University.

All subjects they were informed about the purpose of study and freedom to participate and withdraw any time during the study without causing personal harm or loss. Written consent was obtained from samples before collecting data.

Results

Data presented in Table 2 shows that in post-test knowledge score (16.30 ± 2.45) was higher than the mean pre-test knowledge score (9.37 ± 2.8) with

Table 1: demographic characteristics of subjects regarding wound dressing procedure among BSc nursing 1st year students (n=106)

Sample characteristics	Experimental group (56)		Control group (50)	
	f	Frequency percentage	f	Frequency percentage
<i>Age groups years</i>				
a. 18-20	48	82.14	45	90
b. 21-23	5	14.28	5	10
b. 24-26	3	3.57	0	0
<i>Gender</i>				
a. Female	47	83.92	41	82
b. Male	9	16.71	9	18
<i>Previous qualifications</i>				
a. Intermediate	46	82.14	47	94
b. Graduate	7	12.5	3	6
c. Anyothers	3	5.35		
<i>Previous information</i>				
a. Yes	46	82.14	47	94
b. No	10	17.85	3	6
<i>Source of information</i>				
Printed material	0	0	4	8
Journal	4	7.14	4	8
Attended previous class	30	53.57	34	68
Nursing articles	6	10.71	3	6
Online	6	10.71	2	4
	10	17.85	3	6

Table 2: Knowledge score of the samples regarding wound dressing procedure among BSc nursing 1st year students in experimental group (n=56)

Knowledge score	Mean	Median	SD	Mean difference	SDD	SEMD	Paired 't' value
Pre-test	9.37	10	2.8	7.02	4.39	2.47	2.90
Post-test	16.39	17	2.45				

Table 3: Practice score of the samples regarding wound dressing procedure among BSc nursing 1st year students in experimental group (n=56)

Practice score	Mean	Median	SD	Mean difference	SDD	SED	Paired 't' value
Pre-test	6.89	7	1.48	8.66	4.71	2.11	6.02
Post-test	15.55	16	2.31				

Table 4: Knowledge score of the samples regarding wound dressing procedure among BSc nursing 1st year students in control group (n=50)

Knowledge score	Mean	Median	SD	Mean difference	SDD	SEMD	Paired "t" value
Pre-test	8.1	8	2.24	2.68	2.72	2.36	5.71
Post-test	10.78	11	2.51				

Table No 5: practice scores of the samples regarding wound dressing procedure among BSc nursing 1st year students in the control group (N=50)

Practice score	Mean	Median	SD	Mean difference	SDD	SEMD	Paired "t" value
Pre-test	7.8	8	1.70	5.6	3.63	2.32	2.95
Post-test	13.4	13	2.30				

the mean difference of 7.02; the obtained mean difference was found to be statistically significant as evident from the obtained t value (2.90) for df (55) at 0.05 level of significance which is greater than the table value of 2.00 at 0.05 level of significance. Hence null hypothesis H01 was rejected and research hypothesis H1 was accepted. It can be inferred that the concept mapping and clinical teaching method (demonstration) for BSc nursing 1st year regarding wound dressing procedure was effective in improving knowledge.

Table 3 revealed that the mean post-test practice score 15.55 was higher than the mean pre-test practice score 6.89 with a mean difference 8.66. The obtained mean difference was found to be statistically significant as evident from "t" value 6.02 which is greater than the table value of 2.02 at 0.05 level of significance. This shows that obtained mean difference was true difference and not by chance. Hence null hypothesis Ho1 was rejected and research hypothesis was accepted.

Data in Table 4 shows that the post-test knowledge score (10.78) was higher than the mean pre-test knowledge score (8.1) with

the mean difference of 2.68; the obtained mean difference was found to be statistically significant as evident from the obtained t value (5.71) for df (50) at 0.05 level of significance. So research hypothesis H2 was accepted and null hypothesis was rejected.

The mean post-test practice score of 13.4 was higher than the mean pre-test practice score 7.8 with a mean difference 5.6; the obtained mean difference was found to be statistically significant as evident from "t" value 2.95 which is greater than the table value of 2.02 at 0.05 level of significance (Table 5). This shows that obtained mean difference was true difference and not by chance. Hence research hypothesis was accepted and null hypothesis Ho2 was rejected.

It is evident from Table 6 that the coefficient of correlation (r-value) between post-test knowledge and practice scores were found to be 0.280, which is higher than table value .273. So it can be said that the moderate positive relationship between post-test knowledge and practice score is statistically significant. Hence H4 research hypothesis is accepted and null hypothesis Ho4 is rejected.

Table 7 shows that the coefficient of correlation (r-value) between post-test knowledge and practice scores was found to be -0.16, which is lower than table value of 0.288. So, it can be said that there is no positive relationship between post-test knowledge and practice score is statistically significant. Hence H4 research hypothesis was rejected and also null hypothesis H04 was accepted in control group.

The present study scores proved that modern teaching strategy of concept mapping method is

Table 6: Correlation coefficient between the post-test knowledge and post-practice score regarding wound dressing procedure in experimental group

Score regarding wound dressing procedure among BSc nursing 1st year students	Mean	"r" value
Knowledge	16.39	0.28
Practice	15.55	

Table No 7: Correlation coefficient between the post-test knowledge and post-test practice score regarding wound dressing procedure in control group

Score regarding wound dressing procedure among BSc nursing 1st year students	Mean	"r" value
Knowledge	10.78	-0.16
Practice	13.4	

Table 8: Comparison in knowledge and practice scores regarding wound dressing between experimental and control group

	Knowledge score			Practice score		
	Pre-test	Post-test	Mean difference	Pre-test	Post-test	Mean difference
Experimental group	9.37	16.39	7.02	6.89	15.55	8.66
Control group	8.1	10.78	2.86	7.8	13.4	5.6

more effective to improve the knowledge and critical thinking of the nursing student in experimental group. In the control group, clinical teaching method (demonstration) improved the practice skills of the students regarding wound dressing procedure; at the same time post-test knowledge score also increased due to the influence of demonstration.

Discussion

In experimental group the present data revealed that post-test knowledge score (16.39) and SD (10) is higher than the mean pre-test knowledge score (9.37) and SD (17) with the mean difference of 7.02. The obtained mean difference was found to be statistically significant as evident from the obtained “t” value (2.90) for df (55) which is greater than the table value of 2.00 at 0.05 level of significance. The data revealed that the subjects’ knowledge score was higher in post-test; it is also evident that the mean post-test knowledge score (16.39 ± 2.45) was higher than that of the pre-test (9.37 ± 2.8).

The mean post-test practice score (15.55) and SD (2.31) was higher than the mean pre-test practice score (6.89) and SD (1.48) with the mean difference of 8.66. The obtained mean difference was found to be statistically significant as evident from “t” value 6.02, which is greater than the table value of 2.00 at 0.05 level of significance. This shows that obtained mean difference was true difference and not a chance matter.

The data revealed that the subjects, knowledge and practice scores were higher in study group after implementation of concept mapping and clinical teaching method (demonstration) but in control group the mean post-test knowledge score (10.78) and SD (2.51) was higher than the mean pre-test knowledge score (8.1) and SD (2.24) with the mean difference of 2.68. The obtained mean difference was found to be statistically significant as evident from the obtained “t” value (5.71) for df (49) which was greater than the table value of 2.00 at 0.05 level of significance. The data revealed that the subjects’ knowledge score was higher in post-test. It is also evident that the mean post-test knowledge score (10.78 ± 2.51) was higher than that in the pre-test (8.1 ± 2.24).

The mean post-test practice score (13.4) and SD (2.30) was higher than the mean pre-test practice

score (7.8) and SD (1.70) with a mean difference 5.6. The obtained mean difference was found to be statistically significant as evident from “t” value 2.95 for Df (49) which is greater than the table value of 2.00 at 0.05 level of significance. In the control group clinical teaching method (demonstration) has improved practice skills of students

regarding wound dressing procedure. At the same time post-test knowledge score also increased due to influence of demonstration.

Implications of the Study

Nursing practice: Concept mapping helps the Nurse to think critically and solve problems in a variety of clinical practice settings regarding the patient care.

Nursing education

The changing face of teaching has moved away from didacticism to learning facilitation and with this there is need for teachers to play different roles and use new technique.

Nursing research

The present study might open up new avenues for exploring many other issues in this area. Extensive research must be conducted in this area to identify several effective methods of education.

Nursing administration

Nursing administrator can use the concept mapping method in in-service education and special training programme for the nurses for enhancing the critical thinking, clinical reasoning, decision making regarding patient care.

Recommendations

1. The same study can be done for one group that is only experimental group in hospital setting for the staff nurses.
2. Similar study can be conducted to assess attitude regarding concept mapping among BSc nursing 1st year students.
3. The similar study can be conducted by selecting the other nursing students as a sample.

Conclusion

The present study revealed that concept mapping method is the need of nursing students for improvement in cognitive and active learning. Researcher observed that nursing students faced the problem during the clinical practice for remembering the data of patient. In future, for better outcome; concept mapping method can be adopted in nursing college to improve the knowledge regarding many nursing procedures.

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