

Effectiveness of Concept Mapping Versus Traditional Approach as a Teaching Method on Knowledge Regarding Selected Topics among Nursing Students

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Abstract

Nursing education is facing sensational changes with changing priorities of the rapidly changing society. We know education is the most powerful weapon which can change the whole nation. The goal of nursing education is to prepare nurses who are competent and caring. But the nurse educators cannot continue always teaching with the methods of the 19th century and hope to prepare the nursing students for 21st century. Rote memorization has been an accepted learning method in the past, but is no longer recommended because deep meaning is not integrated into learning (Kumar, Dee, Kumar, & Velan, 2011). Student nurses must take an active role in the learning experience and become self-directed learners. Concept mapping assists learners to self-critique learning using the decision-making process. Aim of the study: to assess effectiveness of concept mapping versus traditional approach as a teaching method on knowledge regarding selected topics among nursing students.

Design: True Experimental Research design. (Post-test only control group design) was used to conduct the study. Setting: The study was conducted in ST. John's College Of Nursing in Bangalore where GNM, B.Sc., Post. Basic Nursing students are studying with its own tertiary level parent hospital. Subjects & Methods: A total of 100 students who are studying in B.sc 2nd year Nursing. The students in the group A (48) were subjected to the traditional method of teaching, and students in the group B (46) were subjected to the concept mapping as a method of teaching. Tools used to collect the data were: 1) Baseline variables: age, medium of instruction of the Board exam, learning style (Individual, group, both) normally adopted. 2) Knowledge Questionnaire: a structured questionnaire consisting of total 40 MCQ questions for both topics Peptic Ulcer-(20 questions) and Intestinal Obstruction-(20 questions). The findings of the study showed that using concept mapping as a complementary strategy for traditional teaching method had a change in the student's overall knowledge scores. The mean percentage of the knowledge scores using concept mapping was 57.10% & using traditional method was 54.90%.

The findings of this study revealed that there is no significant difference in knowledge score of the students using traditional & concept mapping as a method of teaching. There can be other factors such as the ability & competence of the teacher, method of presentation, language & vocabulary used which may also influence the knowledge that is imparted to the students. Hence it can be concluded that each method has its own influence on the knowledge gained.

Key Words: Lecture method, concept mapping, knowledge score

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Introduction

One way to continue to strengthen the science of nursing education is to trace the development of

educational innovations with an eye toward future research.¹ During the last quarter of 20th century the number of nurses was doubled for each 100,000 of population across the world. With advance of medical technologies harder medical conditions has come under control. Advances in public health have made the dream of living longer come true. All these have added to the need for quality nursing care. In the era which is usually described as information era, delivering quality care requires nurses who learned their lessons well. This gives improvement of teaching and learning activities a high priority. In last 2 decades the nursing body of knowledge has increased remarkably and simultaneously the current nursing education and the health care systems have become more complicated. Therefore nursing educators realize the importance of looking at the nursing education process. It is expected more than even to prepare graduate nurses who are competent, knowledgeable, and skillful, subsequently safe and quality practice can be achieved.³ Nursing students must be able to link learned facts, concepts, principles with new knowledge in order to make sound rational decisions in nursing practice.⁴ Nursing teachers are being encouraged to use teaching methods which enables the students to be more responsible for their learning & that the application of these methods presupposes different orientations different attitudes. Teachers have to adopt the role of facilitator for learning. Innovative teaching & learning strategies in nursing education are expected to promote nursing students to be actively involved in self-regulated learning, to transform traditional one way delivery of knowledge to cultivate patient centered teaching & learning model. The innovative strategies help nursing students to foster the ability of health informatics, communication skills, collaborative skills, reflection, cultural sensitivity, critical thinking as well as evidence based health care.⁵ Nursing as a profession traditionally requires caregivers to have a vast amount of knowledge regarding a variety of topics. Concept

mapping is particularly useful strategy for the synthesis of complex topics, promotion of knowledge & abstract thinking.⁶ A concept map is a graphic presentation of the connection between 2 concepts, and the way they are connected with other concepts in a subject. In order to understand a concept, a learner discovers many potential connections among the existing concepts & becomes mentally involved in deciding which concepts to choose & how to connect them. Such a process leads to high cognitive function, advanced cognitive acts such as analyzing, combining, and evaluating. As a student-centered approach, concept mapping allows learners to learn the new information based on what they have already learned by connecting concepts through linking words. The strategy of concepts in a network of multiple connections throughout the whole learning process.⁷ Concept mapping helps the learners to learn, researchers to create a new knowledge administrators to better structure & manage organization, writers to write & evaluators assess learning.⁸ Rote memorization has been an accepted learning method in the past, but is no longer recommended because deep meaning is not integrated into learning (Kumar, Dee, Kumar, & Velan, 2011). Student nurses must take an active role in the learning experience and become self-directed learners. Concept mapping assists learners to self-critique learning using the decision-making process. New teaching methods must be developed and implemented by nurse educators to assist students to think critically, understand complex relationships, integrate theoretical knowledge into nursing practice, and become lifelong learners (Hinck et al., 2006). One technique that has been suggested is concept mapping.⁹

Need for the Study

As nurses are encountering fast changes in the health care and education systems they are challenging and continually varying complex situations.

Therefore, the teaching strategies should enable the learners to cope with these challenges. In line with this progress era, complexity and the rate of the nursing knowledge production is increasing steadily. Superficial learning and incomplete information have affected the performance of nursing students.

In another study with the aim of determination of the effects of teaching with the concept drawing it seems that concept mapping method increases meaningful learning & boosting up knowledge and information retention. A study suggest that use of more creative methodologies like utilizing web based teaching, portfolios, case studies and a range of other creative teaching strategies in teaching enhance the competencies rather than predominantly using didactic teaching methods such as the lecture method to teach across all subject areas. Student perception refers to the ideas and views related to “what is right and what is wrong” or in other words we can say that “what they think about the educational techniques” that are used in present era. Educational techniques are the means or tools that are used to teach the students. Nursing teachers are being encouraged to use teaching methods which enables the students to be more responsible for their learning .Use of this method can enhance students’ learning experience which is a critical determinant of quality education method on understanding and refine of learning contents.⁵

Therefore the researcher felt that there is a need to develop concept mapping & test its effectiveness with traditional teaching method to assess the knowledge level of the nursing students.

Material & Methods

Formal permission was asked from the principal of St .John’s College of Nursing, Bangalore. Permission was taken from the respective class coordinator and name list of all the students with their clinical rotation were collected.

The participants meeting the selection criteria were identified. Purposive sampling was done depending on their clinical rotation. The sample size calculated for the study minimum was 16 in each group. But total 100 students were included in the main study .One day all the students were gathered in the 2nd year B.sc classroom and the investigator introduced and divided them into Group A and B -and also explained the dates when they need to gather for 1st week.

On the 1st day of the data collection, the study and its purpose were explained using the subject information sheet and informed consent was taken and 1stintervention was given to the students. On the 6th day post-test I was taken and followed by on 7th day 2nd intervention was given. On the 13th day post-test II was conducted. The schedule of the data collection was with these following steps: Samples were identified based on inclusion criteria by purposive sampling. They were divided into 2 groups, group A & group B by purposive sampling method. Method of teaching was identified with random sampling –Lottery method(1st week: concept mapping in morning class and lecture in afternoon class). **Group A received lecture as a teaching method on specific topic (Peptic Ulcer) for 2 hours on day1 and group B received teaching on peptic ulcer using Concept mapping method for 2 hours on the same day .On 6thday (Post-test I)for both the groups tests were conducted using multiple choice questions on peptic ulcer.**

Method of teaching was identified with random sampling –Lottery method(2ndweek: concept mapping in afternoon class and lecture in morning class) .Next week or **day 7th group A received teaching on intestinal obstruction using lecture method for 2 hours & group B received teaching on intestinal obstruction using concept mapping for 2 hours on the same day On 13th day for both the groups tests were conducted using multiple choice questions on**

intestinal obstruction .At the end perception of the students regarding teaching methods were asked with an open ended question. The data analysis was done using descriptive and inferential statistics. The plan of data analysis was as follows:

1. Descriptive statistics-Frequency &

percentage to understand the distribution of baseline variables. Mean & mean percentage to understand the knowledge scores of the students.

2. Inferential statistics –ANOVA, Chi-square, t –test were used to determine the association between research variable & baseline variables.

Results

Table 1- Distribution of students according to selected baseline variables

Sl no	Base line variables	Lecture		Concept mapping		Chi square test	p value
		Frequency	percentage	frequency	percentage		
1.	Age					0.33	0.56
	<20 yrs		70.83%	35	76.09%		
	≥20 yrs		29.17%	11	23.91%		
2.	Medium of instruction	34				1.76	0.18
	English	14	91.6%	45	97.83%		
	Regional language	44	8.33%	1	2.17%	0.31	0.85
3.	Learning style	4	31.25%	13	28.26.%		
	normally adopted	15	6.25%	2	4.35%		
	Individual Group	3	62.50%	31	67.39%		
	both	30					

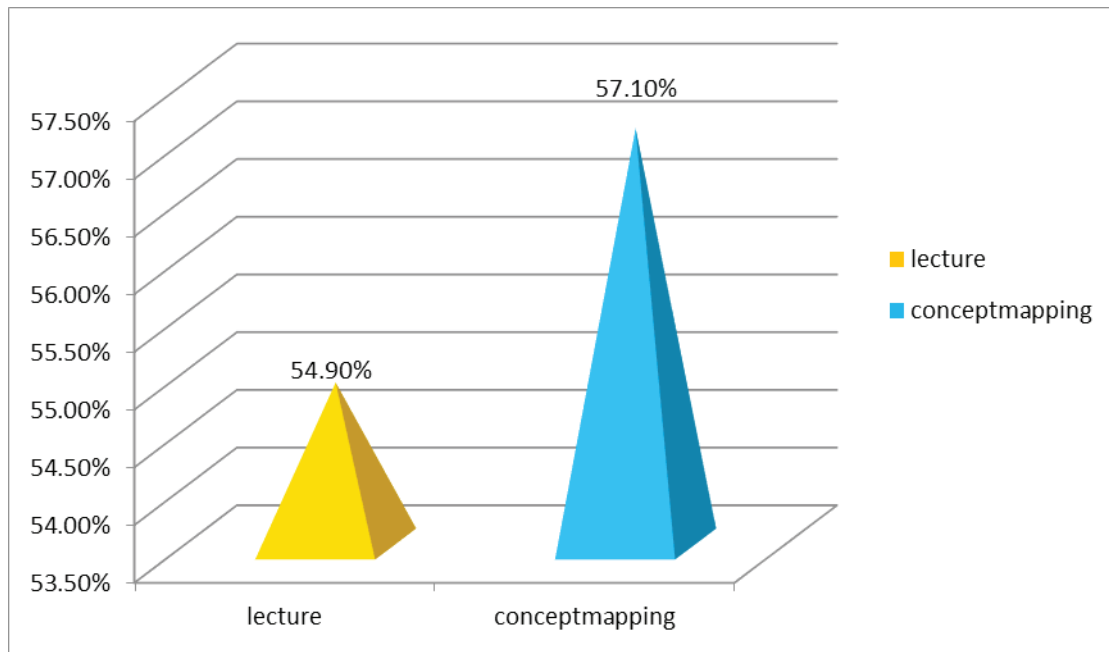
Distribution of students according to selected baseline variables showed that among all the students 70.83% were age group of, <20 yrs in lecture group & 76.09%in concept mapping group.The medium of instruction for board examination the students who

had English were 91.6% in lecture group &97.8% in concept mapping group.For the learning styles what the students had normally adopted in both were of 62.50%.in lecture group &67.39% in concept mapping group. Both the groups were homogenous with p>0.05 for all the baseline variables.

Table 2: Mean, Mean percentage, SD, Paired t test for overall knowledge of the students using concept mapping & traditional approach as teaching method n =94

Method of teaching	Range	Mean	Mean percentage (%)	SD	Paired t test	P value
lecture	4 -17	10.98	54.90%	2.42	0.8889*	0.3764 (NS)
concept mapping	6-16.5	11.42	57.10%	2.43		

*=Paired t test S-Significant NS-Non-significant This table reveals that there is no significant difference in overall knowledge of the students with the use of concept mapping & traditional approach as methods of teaching at 0.05 levels.



The data from above picture shows there is an increased mean percentage of overall knowledge of the students using concept mapping (57.10%) & traditional approach (54.90%) as teaching methods.

Discussion

Findings related to knowledge of the students using concept mapping& traditional teaching methods.

In the study analysis it showed the overall mean

in lecture method was 10.98and in concept mapping 11.42. Statistical analysis showed no significant difference in mean knowledge scores of the students using concept mapping& traditional teaching methods. (paired t test--- t value 0.8889 and p value 0.3764)

A similar study was done in Iran 2010 where concept mapping was compared with lecture to find out its effectiveness on learning with sample size of 66 for 8 sessions during 2 months were in no significant difference was found (p=0.64)¹¹

In this study 2 topics were given ----- from gastrointestinal system Peptic Ulcer and Intestinal obstruction for intervention.

A similar study was done in Tehran in 2004 where classes were taken for 4th year B.Sc nursing students from cardiovascular system, Medical Surgical Nursing. Lecture together with AV aids was used for control group & concept mapping for the intervention group.²

Findings related to knowledge of the students with selected baseline variables of students.

In this study the mean knowledge score of knowledge was 10.72 for the students who were ≤ 20 yrs and 11.61 was for the students who were > 20 yrs. Statistically it was not found significant ($t = -1.1562$ and $p \text{ value} = 0.2536$).but clinically the value shows that higher the age better the knowledge.

The medium of instruction for board examination, the mean knowledge score of the students who had English was 11.07 whereas the students with regional language had mean score of 10.00. There is an increase in knowledge score in use of English language clinically but it is not statistically significant as we had inadequate no of students in regional language group (< 5). It can be attributed to the fact that medium of instruction does not necessarily influence in gained knowledge.

A similar study was conducted Bangalore 2015 to assess nursing students perceptions about traditional & innovative teaching strategies .For medium of instruction English and regional language were used .There was no significant association found with method of instruction and knowledge scores in teaching method. ($p > 0.05$)⁵.

OPINIONNAIRE FOR OPEN ENDED RESPONSE

Along with self-structured knowledge questionnaire, an open ended question stated “Was the teaching method beneficial?” was also administered to the students. Majority of the student responses were:

Lecture: easy to understand, Beneficial
Concept mapping: Easy to learn as all the points in one page, able to correlate, at the same time they have expressed that it was confusing because of different branches, shapes & inadequate notes, very difficult to grasp and it seemed to be a sudden change from the lecture method .The students also suggested that concept mapping can be used during revision time before the examination.

Conclusion

The method of teaching that is used for the attainment of knowledge among nursing students plays a vital part in Nursing Education. Nursing teachers are being encouraged to use teaching methods which enables the students to be more responsible for their learning.¹³ Innovative teaching & learning strategies in nursing education are directed towards enabling students to be more responsible for their learning.¹²

In this study the knowledge was assessed using concept mapping & traditional approach as a method of teaching for nursing students. The mean percentage of knowledge score was using concept mapping than traditional method of teaching.

Conflict of Interest: None declared

Source of Funding: None

Ethical Clearance: This research has been declared ethical by the Institutional Ethical Committee (IEC), St. John’s Medical College and Hospital, Bangalore with the number: 46/2018

Implications:

The result of the study can be implicated in

following areas of nursing education, nursing practice, nursing administration & nursing research.

q **Nursing Education:**

· As lecture continues to be “the” most feasible method of teaching concept mapping can still be utilized together to enhance the critical thinking skills, comprehensibility & develop relatedness of various concepts involved in the topic of significance.

· The findings of the study will help in incorporating concept mapping as a method to improve the academic outcomes.

· Teachers can be encouraged & sensitized to use concept mapping together with their other teaching strategies.

q **Nursing Practice :**

Clinical methods of teaching (Nursing rounds ,case presentations) can incorporate concept mapping as a strategy to discuss patient care ,thereby developing critical thinking ,decision making skills of students as well as staffs.

Nursing Administration:

Concept mapping can be initiated as part of CNE/CPD to educate staffs to avoid the monotony of the regular classes.

q **Nursing Research:**

-It is apparent that further research is necessary using a combination of teaching methods to demonstrate a better quality of education & service.

-The findings of the study will provide a basis to undertake more research to compare different teaching methods.

Limitations:

- Lack of introductory sessions on concept

mapping

- Only 2 sessions were conducted.

■ The exchange of subject content could have happened before the posttest was conducted.

- The evaluation was based only on MCQs.

Recommendation:

■ A study can be conducted to evaluate concept mapping as a clinical teaching method.

■ Study can be conducted to assess knowledge & effectiveness of concept mapping.

■ Studies can be conducted utilizing different evaluation techniques.

■ Further studies can be done to assess the effectiveness using combination of teaching methods.

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