"Effectiveness of Mind Mapping Technique on Information Retrieval among B.Sc. Nursing Students of Selected Nursing Colleges in Kozhikode"

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ABSTRACT

Educational advancements in nursing emphasise preparing students for lifelong, self-directed learning, where memory and retention are closely linked. Nursing students often struggle with organising and retaining subject matter, which is compounded by concentration difficulties during classes. This quasi-experimental study aimed to evaluate the effectiveness of mind mapping on information retrieval among B.Sc. nursing students, assess associations with selected demographic variables, and gauge opinions on the technique. A quasi-experimental design with 60 B.Sc. nursing students from selected colleges in Kozhikode used convenience sampling, with pre- and post-tests comparing experimental and control groups. In the experimental group pretest, 53.33% had moderate knowledge, 36.67% good, and 10% poor, with none excellent; post-intervention, 53.33% achieved excellent and 46.67% good knowledge. The control group pretest showed 50% good, 36.67% excellent, 10% moderate, and 3.33% poor knowledge. Post-test in the experimental group showed significant gains, with no excellent knowledge pre-intervention rising to 53.33%. The paired t-test yielded a t-value of 12.35 ($p < 0.05$; table value = 2.05), indicating the effectiveness of mind mapping.

Keywords: Mind mapping, information retrieval, nursing education

INTRODUCTION

Memory and learning are closely interconnected, yet nursing students often struggle to organize and retain vast curricular information, compounded by concentration challenges during classes. This underscores the need for innovative teaching strategies to foster effective information retrieval and lifelong learning in nursing education. Mind mapping emerges as a promising visual tool to address these issues by enhancing recall, critical thinking, and knowledge synthesis.

Nursing's comprehensive curriculum demands retention of substantial information, often leading students to rely heavily on textbooks rather than developing critical thinking skills. Educational reforms emphasize preparing students for self-directed, lifelong learning through strategies that promote retention, recall, and analysis. Traditional note-taking follows linear sequences with full sentences, limiting creativity, whereas mind mapping leverages visualization and association to engage both brain hemispheres (Firat et al., 2022; Wu et al., 2020; Rosciano, 2015—all from TNNMC JNEA, Vol. 11, Issue 1, Jan-Jun 2023).

Mind mapping, an active learning approach, boosts students' ability to analyze, comprehend, synthesize, recall, and generate ideas by using keywords, diagrams, and radial structures instead of linear notes. This technique counters textbook dependency and improves information retrieval in complex subjects like nursing. Studies confirm its efficacy in promoting original thought and memory consolidation (Adodo, 2013; Sikha Moni Deka et al., 2018—TNNMC JNEA, Vol. 11, Issue 1, Jan-Jun 2023).

Problem statement

A study to assess the effectiveness of mind mapping techniques on information retrieval among BSc nursing students of a selected nursing college, Kozhikode

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Objective

- To evaluate the effectiveness of the mind mapping technique on information retrieval among Nursing students before and after intervention
- To find the association between selected demographic variables and information retrieval.
- To assess the opinion regarding mind mapping technique

Hypothesis

- H_1: There is a significant relationship between mind mapping technique and information retrieval scores
- H_2: There is a significant association between information retrieval and selected demographic variables.

METHODOLOGY

Research approach: Quantitative research approach

Research design: non-randomised control group design(quasi-experimental)

Population of the study: BSc nursing students

Sample: 4th-semester BSc Nursing students of KMCT college

Sample size: 60 BSc Nursing students who achieved first class in the university exam.

Sampling technique: Convenience sampling technique

Criteria for sample collection

- ❖ inclusive criteria
  - Students willing to participate
  - Students available during the study period
  - Students do not use the mind mapping technique
  - 4^{th} sem BSc nursing students
  - Students who passed with First class in the university exam
- ❖ exclusive criteria
  - Students absent during intervention
  - Students who failed in university
  - Students who got a distinction and a second class

Tools

Part 1: Demographics

Designed to elicit baseline data including age, gender, religion, and family income from B.Sc. nursing students.

Part 2: Knowledge Assessment

Consists of 20 items evaluating perceived memory and information retrieval on nursing subjects, administered as pre- and post-tests.

Part 3: Opinion Scale

A Likert-scale opinionnaire to measure students' views on mind mapping technique usability and effectiveness.

Data Collection Procedure

Following institutional ethical approval, written permissions were obtained from the principal of KMCT College of Nursing, Kozhikode. Fourth-semester B.Sc. nursing students (n=60; 30 experimental, 30 control) then underwent a structured sequence over several days.

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Pre-test: Administered to both experimental and control groups using the close-ended, self-administered questionnaire (Parts 1-2) to establish baseline information retrieval levels.

Intervention: Experimental group received mind mapping technique training on selected nursing topics; control group underwent traditional lecture and reading methods.

Post-test: Conducted on day 3 for both groups using the full questionnaire (Parts 1-3), including Likert-scale opinionnaire, to evaluate retention gains and technique opinions.

Ethical Considerations

The research proposal received approval from the institutional research committee at KMCT College of Nursing, Kozhikode. Ethical clearance was subsequently secured from the KMCT Ethics Committee, ensuring compliance with research standards. Informed consent was obtained from all 60 B.Sc. nursing student participants after explaining the study's purpose, procedures, voluntary nature, and right to withdraw without penalty. Confidentiality was maintained by anonymising data and storing responses securely.

RESULTS

Table-1: Frequency(percentage) distribution of socio-demographic characteristics of the sample.

N=60

DEMOGRAPHIC VARIABLE	FREQUENCY	PERCENTAGE
Age		
18-20	40	66.7
21-23	19	31.7
24-26	1	1.6
27-29	0	0
Gender		
Male	17	28.3
Female	43	71.7
Others	0	0
Religion		
Hindu	14	23.3
Islam	37	61.7
Christian	9	15
Family income		
10000-20000	17	28.3
21000-3000	16	26.7
31000-40000	9	15
>41000	18	30

Most participants (66.7%) were aged 18-20 years, followed by 31.7% aged 21-23 years, with minimal representation from 24-26 years (1.6%). Females dominated (71.7%) over males (28.3%). Islam was predominant (61.7%), followed by Hinduism (23.3%) and Christianity (15%). Family income showed balanced distribution: ₹41,000+ (30%), ₹10,000-20,000 (28.3%), ₹21,000-30,000 (26.7%), and ₹31,000-40,000 (15%).

Table 2: frequency and percentage distribution of information retrieval in the experimental group and control group. N=60

	Control Group		Experimental Group	
	Pretest	Posttest	Pretest	Posttest

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Score	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Excellent	11	36.67	1	3.33	0	0	16	53.33
Good	15	50	16	53.33	11	36.67	14	46.67
Moderate	3	10	12	40	16	53.33	0	0
Poor	1	3.33	1	3.33	3	10	0	0

In the experimental group, most participants exhibited moderate knowledge (53.33%) at pretest, with 36.67% good, 10% poor, and 0% excellent. Postintervention, this shifted significantly to 53.33% excellent and 46.67% good, eliminating moderate and poor categories entirely. In the control group, pretest showed majority good knowledge (50%), 36.67% excellent, 10% moderate, and 3.33% poor. Posttest revealed minimal change: 53.33% good, 40% moderate, 3.33% excellent, and 3.33% poor.

Table 3: Comparison of information retrieval between experimental and control group

		Mean	Mean difference	Standard deviation	't' value
Experimental group	Pretest	9.28	6.39	3.14	12.35
	Post test	15.67		2.5	
Control group	Pretest	13.98	3.17	3.79	4.22
	Post test	10.81		3.12	

In the experimental group, information retrieval scores among B.Sc. nursing students were low at pretest (M = 9.28, SD = 3.14) but increased substantially postintervention (M = 15.67, SD = 2.50). The paired-samples $t(29) = 12.35$, $p < .001$ (table value = 2.05 at $\alpha = .05$), exceeded the critical value, confirming significant gains and mind mapping effectiveness. In the control group, pretest scores were higher (M = 13.98, SD = 3.79) but declined slightly posttest (M = 10.81, SD = 3.12), suggesting natural forgetting over 3 days without intervention. These findings support Hypothesis 1 (H_1).

Analysis of the association between selected demographic variables and information retrieval of the experimental group and the control group.

There is no significant association between the selected demographic variable and information retrieval of the experimental group.

Table 4: Opinionnaire about mind mapping technique on information retrieval

Questions	opinion	Percentage
Mind mapping helps me retrieve information more quickly	Strongly disagree Disagree Neutral Agree Strongly agree	 10 66.7 23.3

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Using mind mapping improve my understanding of relationship between ideas	Strongly disagree	
	Disagree	
	Neutral	10
	Agree	73.3
	Strongly agree	16.7
I find it easier to recall information after using a mind mapping	Strongly disagree	
	Disagree	
	Neutral	6.7
	Agree	66.7
	Strongly agree	26.7
Mind mapping help me to organize information in a meaning full way	Strongly disagree	
	Disagree	
	Neutral	10
	Agree	73.3
	Strongly agree	16.7
Mind mapping reduces the time I spend searching for relevant information.	Strongly disagree	
	Disagree	3.3
	Neutral	10
	Agree	60
	Strongly agree	26.7

Majority of the subject have a favorable opinion on mind mapping technique. For about 66.7% subject mind mapping helps to retrieve information more quickly,73.3% mind mapping improves the relationship between the ideas and 66.7% subject find it easier to recall information after using mind mapping technique.

RECOMMENDATIONS

On the basis of the finding of the study the following recommendation have been made.

- Similar study can be replicated on a large sample to validate and generalize the study findings.
- Incorporate mind mapping in teaching strategies.
- Mind mapping can be compared with other teaching methods
- Delayed post test can be done

CONCLUSION

The quasi-experimental study effectively demonstrates mind mapping's positive impact on information retrieval skills among 60 BSc nursing students, using convenience sampling across experimental and control groups. Pretest results showed the experimental group with predominantly moderate knowledge (53.33%), improving

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dramatically post-intervention to excellent (53.33%) and good (46.67%) levels, while the control group exhibited minimal gains.

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