

# Retained mind mapping skills and learning outcomes in medical students



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## Background

Mind map (MM) has been implemented in many medical schools to facilitate medical students' learning experiences. Nevertheless, retained mind mapping skills and its effect on the learning outcomes in long-term follow-up remain unknown.

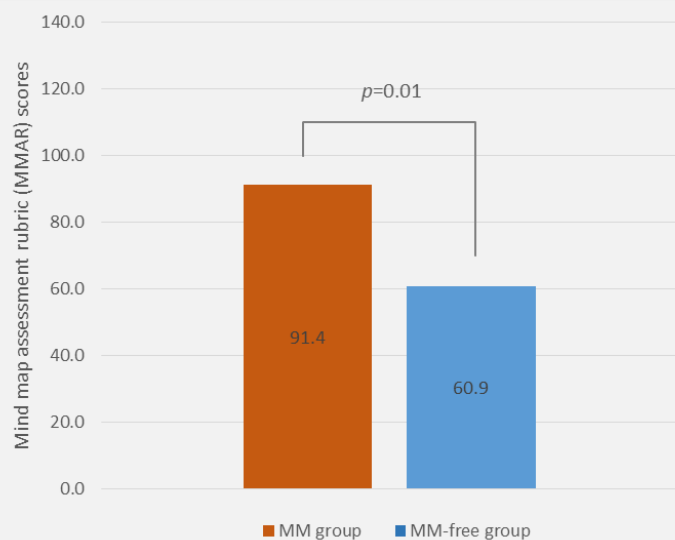
## Materials and methods

A concurrent mixed-methods design with convenient sampling method. All second-year medical students ( $n=48$ ) joined a three-day MM workshop. One year later, we surveyed the students who still use MM and those who did not. Mind Map Assessment Rubric (MMAR) and Grade Point Average (GPA) were compared between two groups.

## Results

With a 100% response rate, 39 (81.2%) of participants were female. The mean age of participants was 20.6 years ( $SD = 0.5$ ). 37 students still use MM (77.1%). With MMAR, participants in MM group scored 28.9 higher than participants in MM-free group significantly ( $p = 0.01$ ) as illustrated in Fig. 1. There were no differences in the median GPAs to both groups. Their perspectives to MM were shown in Tab. 1.

Figure 1. Mind map assessment rubric (MMAR) between groups



## Discussion and conclusion

Without revision in MM, participants' skills deteriorated immensely. There was a trend toward increased learning outcomes with MM group, however, it was not significant. Further study should be done to examine whether more frequent MM use or workshop revision can boost their learning outcomes or not.

Table 1. Categories and subcategories for mind map preferences.

Currently using mind map	n (%)	Categories	Subcategories (n)	Explanation
Yes	37 (77.1)	Content	-Content overview (28) -Data organizing (23) -Safe time for review (3)	-See content outline easier -Making notes easier -Quicker than taking notes
		Thought	-Thought organising (36) -Better understanding (16) -Quick for review (11)	-Reorganising thinking process -Thinking in a sequence -Easier to understand than taking notes -Better for a review
No	11 (22.9)	Conventional methods	-Short notes (5) -Others (6)	-Prefer conventional methods such as short notes, making tables
		Inconvenient	-Take time (5) -Not enough detail (2) -Hassles (2)	-Take longer time than making notes -Missing important details from lectures -Unmotivated to make one

## Reference

1. D'Antoni AV, Zipp GP, Olson VG, Cahill TF. Does the mind map learning strategy facilitate information retrieval and critical thinking in medical students? BMC Med Educ. 2010 Sep 16;10:61.