Original Article

Evaluation of metacognitive awareness of reading strategies among medical students

Pallavi Panchu [1], Biju Bahuleyan[1], Seethalakshmi K[1], Tom Thomas[2]

[1]Department of Physiology, Jubilee Mission Medical College and Research Institute, Thrissur, Kerala, India
[2]Department of Biostatistics, Jubilee Mission Medical College and Research Institute, Thrissur, Kerala, India

ABSTRACT

Background- Medical students are expected to be skilled readers and continuous learners. For a lifelong learner, metacognitive awareness of reading strategy is a necessary skill to obtain good academic outcome. The present study was done to evaluate the metacognitive awareness of reading strategies of first year medical students.

Aims: To analyze the overall metacognitive awareness of reading strategies and also the subscales like global reading strategies, problem solving and support reading strategies in first year medical students and the impact of gender on these.

Methods: Metacognitive awareness of reading strategies inventory (MARSI), a validated tool was administered to all the willing participants of the study group. The data obtained was analyzed using chi square and paired t test.

Results: The overall metacognitive awareness of reading strategies was found to be high in our students. Problem solving strategies was utilized most followed by support reading strategies and global reading strategies. On comparing the influence of the sexes, it was noticed that females use better overall reading strategies which was significant. On comparing subscales, both the genders prefer using problem solving skills while the other subscales are used more by females.

Conclusion: From our study we conclude that our learners have good metacognitive awareness regarding reading skills but does the skill turn into practice to achieve good academic scores remains to be seen. We suggest that curriculum should be so designed to help the students use all the subscales and hence all the strategies to become effective learners.

Key words: MARCI, Medical students, Global strategies, Problem solving strategies, Support reading strategies.

INTRODUCTION

A meaningful relationship, if it exists, between the reader and the reading material results in learning. The reading process and reading ability helps the student excel in academics thus making reading an essential skill [1, 2]. The chain of actions employed by the learner to accomplish reading tasks is called reading strategy [3].

To achieve an optimal learning outcome, awareness of reading strategies are of paramount importance. But in the present Indian scenario, academic pressure and peer pressure do not give them an ability to use strategies adequately. Hence a paradigm shift has begun, causing a change in curriculum from teacher centric approach to a learner centric approach making it necessary for students to concentrate on their metacognitive awareness.

Medical education in India is at crossroads. Students join the medical course with good pre-med scores but are disappointed with their performance in professional colleges resulting in a major setback. This is a major source of stress not only for the students but also for the educators and parents. Though this has been the topic of discussion in many forums, no reasonable explanation has been offered for the poor performance of these students. This issue has been addressed in the West and research on the learning pattern of students has been investigated. The role of metacognition has been emphasized by researchers [4].

The intense academic schedule for medical students makes it difficult for the implementation of training of reading strategies. Hence it would be wise for the educators to design a proper course by identifying the reading strategies popularly adopted by the learners [5]. Since, awareness and monitoring of one's comprehension processes are

critically important aspects of skilled reading, we decided to evaluate the same in our student population employing a tool called the metacognitive awareness of reading strategy inventory (MARSI) [6].

MATERIAL AND METHODS

This cross sectional study was done to evaluate the metacognitive awareness of reading strategies among first year medical students studying in Jubilee Mission Medical College, Kerala, India from April-2016 to June-2016.

Out of the 100 first year students, 86 students participated in the study. Metacognitive awareness of reading strategies (MARSI) questionnaire was administered to them during college hours. The purpose of the inventory was explained to them and it took approximately 20 minutes for the students to fill the questionnaire.

MARSI questionnaire: This questionnaire is a validated tool designed by Mokhtahari et al [6]. It consists of 30 statements over 3 subscales which test the global reading strategies, problem solving and support reading strategies. It follows a 5 point Likert scale ranging from 1 (I never do this) to 5 (I always do this). MARSI has a maximum score of 150 which includes a score of 65 for global strategies, 40 for problem solving and 45 for support reading strategies.

Global reading strategies- These strategies aim at setting the stage for the reading act. That is, previewing the text content, predicting what the text is about and setting a purpose for reading [6]. 13 questions were included in this category.

Problem solving strategies- are adopted when problems develop in understanding textual information and included 8 questions [7].

Support reading strategies- has 9 questions involved the use of support mechanism tools aimed at sustaining responsiveness to reading [7].

The overall average and the mean for each sub scale were calculated. Based on this, the reading awareness of students was classified as low (<2.5), medium (2.5-3.5) and high (>3.5).

Ethical clearance: The institutional ethics committee clearance and students consent was obtained.

RESULTS

The data obtained from the inventory was tabulated and the means for the subscales and overall average was calculated and subjected to statistical analysis. Chi square test, and paired t test were employed to analyze the data. 86 students participated. Of these57% were females and the rest were males.

Table 1: Metacognitive awareness of reading strategies in medical students

Strategy	Highest score	Mean of scores	SD	%
Overall	150	103.18	15.01	68.7
Global	65	43.32	7.05	66.6
Problem solving	40	29.9	5.45	74.7
Support reading	45	29.98	5.19	66.6

Table1 shows the metacognitive awareness among medical students in the overall and the various sub scales, with the highest score that can be obtained and the class averages

In **table 2**, we find the classification of the students into low, medium and high scorers according to the mean scores in various subscales of the MARSI inventory.

Table 3 highlights the ranking of subscales on the basis of analysis of the means in different subscales

The gender differences in the overall scores obtained is shown in **table 4**

A comparison of the global reading strategies between the sexes was done which is tabulated in **table 5**.

Table 6 shows the differences in problem solving strategies between the sexes

Table 7 depicts the gender differences seen in support reading strategies.

Table 2: Classification of mean scores of students in various sub scales

	%	Global mean	SD	%	Problem mean	SD	%	Support mean	SD	%	Overall	SD
Low	6	2	.058	3	1.83	.07	10	2.22	.25	2	2.19	.09
Medium	50	3.02	.26	27	3.07	.27	47	3.05	.28	42	3.01	.26
High	44	3.81	.29	70	4.07	.39	47	3.81	.28	56	5.01	.04

Table3: Ranking of subscales

Rank	Subscale	Mean	SD	Difference	T	P
1	Problem	3.73	.68	Prob>Sup	4.25	0.0001**
2	Support	3.32	.50	Prob>Glob	4.32	0.001**
3	Global	3.31	.59	Glob>Sup	0.11	0.910

Glob (global strategy), Prob (problem solving strategy), sup (support reading strategy)
*significant (p<0.05)
** Highly significant (p<0.01)

Table 4: Gender differences in the overall scores

Overall mean		SEX		Total
		F	M	
Low	Count	0	2	2
	% within SEX	0.0%	5.4%	2.3%
Medium	Count	16	20	36
	% within SEX	32.7%	54.1%	41.9%
High	Count	33	15	48
	% within SEX	67.3%	40.5%	55.8%
Total	Count	49	37	86
	% within SEX	100.0%	100.0%	100.0%

P value: 0.022*

Table 5: Gender differences in the global reading strategies

G mean		SEX		Total
		F	M	
Poor	Count	0	5	5
	% within SEX	0.0%	13.5%	5.8%
Average	Count	24	19	43
	% within SEX	49.0%	51.4%	50.0%
Good	Count	25	13	38
	% within SEX	51.0%	35.1%	44.2%
Total	Count	49	37	86
	% within SEX	100.0%	100.0%	100.0%

P value: 0.020*

Table 6: Gender differences in problem solving strategies

P mean		SEX		Total
		F	M	
Poor	Count	2	1	3
	% within SEX	4.1%	2.7%	3.5%
Average	Count	12	11	23
	% within SEX	24.5%	29.7%	26.7%
Good	Count	35	25	60
	% within SEX	71.4%	67.6%	69.8%
Total	Count	49	37	86
	% within SEX	100.0%	100.0%	100.0%

P value: 0.828

Table7: Gender differences in support reading strategies

S mean		SEX		Total
		F	M	
Poor	Count	3	6	9
	% within SEX	6.1%	16.2%	10.5%
Average	Count	17	20	37
	% within SEX	34.7%	54.1%	43.0%
Good	Count	29	11	40
	% within SEX	59.2%	29.7%	46.5%
Total	Count	49	37	86
	% within SEX	100.0%	100.0%	100.0%

P value: 0.02*

DISCUSSION

To be a constructively responsive reader, we cannot overlook the role of metacognition. Failure to evaluate one's progress and to take steps to meet the demands of a reading challenge effectively has become a part of every students' life. Further, 'how to read' is a strategy that is not being taught in professional colleges thus hindering the ability of the learners to learn effectively. In this study we attempted to explore the reading strategies used by medical students.

The data depicted in **table 1** clearly shows that medical students are well aware of the various reading strategies as all of them have scored above 50% in the overall MARSI questionnaire. This is in accordance with the studies done by some researchers [8-10]. So it would appear that our students, like students all over the globe have a good idea of the various study strategies that can be employed but the question remains as to whether the knowledge of these strategies has been put to practice. A study of the academic scores would shed more light on this aspect. On detailed analysis, it is evident that usage of strategies across the various subscales was not uniform. A major bulk of the research work on awareness of reading strategies were done in school children and in countries where English was taught as second language, the first being their vernacular language.

On further exploration of the reading strategies employed by medical students who are lifelong learners, it was found that they rank better in problem solving strategies followed by support reading strategies and global strategies as shown in **table 2 & 3**. **Table 2** further classifies students as high, medium and low scorers based on their mean scores both overall and in the subscales. It was found that most of the students had scored high. Among the subscales, 70% of the students scored high in problem solving, 47% in support reading and 44% in global reading strategies, with 56% students scoring high, overall. Literature shows that most of the participants of this kind of study were medium

scorers, but our medical students are high scorers [8-10].

Research in the domain of reading strategies has shown that metacognitive awareness with regards to reading is defined as the knowledge of the readers' cognition relative to the reading process [11]. Without metacognitive awareness about reading, students are just directionless learners. The process of education imparts reading skills which is an unconscious information processing technique [13].To achieve a particular goal, and to achieve direction, students need to develop strategies which are conscious efforts taken by the learner. An emerging skill can become a strategy when used intentionally. Our students have overall high scores indicating that they are skilled readers aware of the strategies to be used, but tended to be partial to the problem solving strategy while ignoring global reading strategies. Many researchers have noted that global strategies are used least by skilled readers [13]. For good academic performance, a holistic knowledge and use of all the strategies is imperative.

Table 4 depicts the difference in the reading strategies employed by males and females. Though the importance of reading strategies has been highlighted by researchers, there is still a gap in our knowledge regarding how these strategies are being used by different genders. As revealed from the data, females have better strategy awareness with 67% in the high scoring range while males have only average strategy awareness. This finding is in accordance with many studies but the impact of gender on awareness of reading strategies was more in males as suggested by [8, 14-16]. To add to further confusion, Shamis and Szoke et al suggest the lack of influence of gender on awareness of reading strategies [17, 18].

On detailed analysis of subscales as shown in **tables 5,6 and 7**, problem solving strategy was used uniformly by both the sexes while the other two strategies ; global and support reading strategies were preferred more by females which was found to be statistically significant. As educators, the awareness of gender disparity is important in order to seek ways to minimize these differences to provide maximum opportunities to both the sexes to become skilled readers. This observation seems to be the global norm where learners prefer problem solving strategies when compared to other strategies as seen in studies done by Mokhtakari et al, Sajina et al, Madhumati et al and Szoke et al [6, 8, 10, 18]. But Babockzy et al in contrast found that support reading strategies were more in school students [19]. This shift seems to occur as the students enter professional colleges.

One study has also shown that students with better global strategies fare better in exams [20]. As educators, it becomes our role to device methods to encourage the greater use of global strategies to ensure the uniform utilization of all the reading strategies.

CONCLUSION

The current research related to reading has shown that students, worldwide and across various professions have a mediocre awareness of reading strategies but only awareness of reading strategies does not indicate that they are skilled readers. The ability to utilize these reading strategies is the crux of the issue. Our students score very high on awareness of reading strategies which is a requirement in a profession like medicine where reading never ceases. Even though use of global strategies was found to be positively correlated with reading proficiency and thereby academic outcome, this parameter remains to be analyzed from our study population. From our research we conclude that our students demonstrate a clear preference for problem solving strategies, which may not be an efficient method tobring out the best learning outcome, compared to the other strategies.

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Corresponding Author:

Dr. Pallavi Panchu,
Department of Physiology,
Jubilee Mission Medical College and Research Institute, Thrissur, Kerala,
India 680005
Email: drpallavipanchu@gmail.com