



A NOVEL ATTEMPT TO INTRODUCE MIND MAPS AS A CREATIVE SELF-LEARNING METHOD AMONGST MEDICAL STUDENTS

Lois James Samuel¹, Yogeeta S.C.Walke^{1*}, Laveena Bandodkar², Padmanabh V Rataboli³

¹Assistant Professor, ²Assistant Lecturer, ³Director Professor, Dept. of Pharmacology, Goa Medical College, Goa, India.

ABSTRACT

Medical students are expected to acquire immense information throughout their MBBS curriculum. Pharmacology, taught in second year of their MBBS course is a vast and volatile subject and hence difficult to retain and recall. Thus students develop an aversion to the subject and they avoid learning it, ultimately resulting in poor performance in the examination. In order to break this vicious cycle and to facilitate their learning we decided to introduce mind map as a learning aid. For our study we chose the topic "Pharmacotherapy of bronchial asthma". The lectures on respiratory system were first taken as per scheduled regular time- table and the students were subsequently given an assignment to make three mind maps on bronchial asthma within thirty days. In order to encourage them and stimulate their creativity we allotted marks for the mind maps. At the end of the assignment they were asked to fill the feedback forms. From the feedback given by the students we found that many students were not using mind map in their academics. They were elated after being introduced to the concept of mind maps. Majority of the students found mind map as a good learning aid and a quick revision tool. Mind map is indeed a very effective tool which helps the students to assimilate vast information in a precise manner. It also helps them to develop an affinity for the Pharmacology which is otherwise perceived by many students as a boring subject. It enables the students to study the subject in an organised and systematic manner.

Keywords: Mind map, Learning aid, Visual depiction, Assimilate information.

INTRODUCTION

Learning is acquisition of knowledge; memory is storage and retention of information [1]. Learning and memory are the two crucial aspects of education. Yet, these are the most challenging and difficult aspects of academics more so in medical education. Medical students in their academic career are expected to acquire immense information [2]. This includes the subject pharmacology wherein many new drugs are being added day by day. Unfortunately there is a paucity of learning strategies available for students as compared to the extensive information required to be assimilated by them. Even these strategies which are available are not being adequately utilized [2].

Mind maps or concept maps have been used as a learning aid in various educational strategies [3]. Mapping is visual depiction of knowledge in an organised manner.

It is gaining popularity in medical education [4, 5]. Mind maps encourage meaningful learning, contribute an extra resource for learning and serves as an advanced organiser [5, 6, 7]. The aptitude of students to consolidate knowledge by recognising acceptable associations between different ideas and thus constructing a mind map enables them to move on to a higher cognitive level [8]. It is known that a succinctly organised frame work plays a key role in acquiring expertise in a specific area [9]. The strategy of making mind maps to acquire higher cognitive levels is simple and inexpensive. It can be easily introduced to medical students [10].

As a means to motivate students and to facilitate learning of Pharmacology more meaningfully, we introduced the assignment of making "Mind map as a learning aid" for second year medical students.

MATERIALS AND METHOD

For our study we chose the topic "Pharmacotherapy of Bronchial Asthma". The lectures on the said topic were first taken as per the regular lecture schedule. A formal announcement was made in advance regarding the assignment of preparing mind maps and the students were given thirty days to complete and submit the assignment. Each student had to make three mind maps on the following subtopics of the bronchial asthma.

1. Drugs used in the treatment of bronchial asthma.
2. Types of bronchial asthma and their treatment.
3. Various dosage forms used in bronchial asthma.

The above mind maps were allotted 7, 5, and 3 marks for the first, second and third subtopics respectively with a total score of 15 marks

The mind maps were graded using the following criteria:

1. Fulfilment of the definition of a mind-map.
2. Cascades and graphical representations concerning the relevant topic.
3. Originality in the presentation.
4. Matter presented such that usage of words is less but ideas conveyed are more.
5. Neatness, use of pictures, legibility and the overall presentation of the mind map.

Three subtopics were allotted separately to three different faculty members to maintain uniformity of assessment. The marks were then added for the final score.

These marks were included for the internal assessment of the students; this was done as an incentive to generate creative interest amongst them. Feedback forms were given which included the following questions.

1. Have you constructed a mind map before? Yes / No
2. Did you learn more about bronchial asthma while preparing the mind map?
Yes / No
3. What were your impressions of learning by using this method?
Satisfactory / Good / Excellent
4. Do you think these mind maps will help you to revise bronchial asthma better before exams? Yes / No
5. Any suggestions:

RESULTS

1. Sixty two percent of the students had not done a mind map before in their academic career.
2. Eighty eight percent of students perceived that they could learn more about bronchial asthma in the process of constructing the mind map.
3. Students' impressions of learning were variable- Sixty two percent opined that it was good, twenty two percent felt that it was satisfactory, thirteen percent said it was excellent and 3% were non-committal.
4. Most of the student (87%) opined that the mind map would help them to revise the topic better before their exams.

5. The following additional suggestions were made by the students:

- a. Mind maps should preferably be assigned for the important/ difficult topics in pharmacology subject such as Central Nervous System/ Cardiovascular System.
- b. Mind map as an assignment is more preferable to an examination or a test
- c. It is an enjoyable and likable assignment and it should be given in every semester.
- d. Mind maps are good for quick revision and quick reference and consequently recommended at all time.
- e. Mind map assignment is a good initiative. There should be more innovative study methods like using mnemonics and peg system.
- f. Mind map could be used as a teaching aid by the teacher to facilitate the learning process of the students.
- g. Mind map should be given as a group activity.

DISCUSSION

The idea of mind map was conceived and popularised by Tony Buzan as a technique to aid learning. Although this technique was introduced four decades ago, we realised most of our students were not using mind map as a learning aid. Mind map is a visual depiction of an idea or a topic in a well-coordinated and categorised manner. The brain finds mind map fascinating, hence easy to grasp and assimilate. Mind map is not supposed to be a full scale comprehensive essay. It should be short, concise and succinct presentation of the information about a topic. One can use lines, key words, icons and colours to make it an attractive and accurate presentation [11].

For the purpose of the assignment, we had asked the students to make three mind maps. The first mind map was on drugs in bronchial asthma. While grading, we found that the creativity of many students was very good. They efficiently presented the exhaustive theory matter in a concise form without excluding any drugs or their salient features. Starting from the centre of the page the students classified the five main categories in a radiating manner with thick branches. Then they sub classified further in thinner branches. Thus on one page all drugs could be presented along with their salient features like their mechanism of action, adverse effects and uses. Many students used various colour schemes representing the various groups of drugs used in the treatment of bronchial asthma.

According to Buzan, making mind maps enables the students to convey their intellectual brilliance [11]. According to Budd, mind map is an effective cognitive tool wherein the student needs to collect vast information, process it, categorise it and represent it briefly [12]. The mind map on drugs enabled them to have clarity in their knowledge about drugs. Since all the five groups of drugs were presented on the same page they could have a comparative understanding of the drugs at one glance. The clarity in concepts and the comparative understanding

would help them to remember the drugs better. Farrand et al (2002) conducted a study among medical students to analyse the competence of mind map as a learning tool. They concluded that mind map was indeed an efficacious tool to memorise written material. It did stimulate earnestness for intense level of processing and better learning. This method would eventually take them a step further from learning by rote [13].

The second mind map was on types of bronchial asthma. The students classified it from mild form to severe form and the respective treatment. Classification in such a manner would help them to understand the progression of the disease. Systematic and progressive learning make it easier for recall as compared to a haphazard effect. Mind map enables the student to organise their thought and thus grasp information in an organised manner [14, 15]. According to Alarf mind map provides a means to refine one's concept and enables better understanding of the topic [16].

The third mind map was on dosage forms used in bronchial asthma. This was the most pictorial of the three. They used pictures and diagrams of various dosage forms like metered dose inhaler, accuhaler, nebuliser, rotahaler and spacer. Anglin and Hassein endorsed that brain has aptitude to retain pictures rather than mere words [17]. Truly "A picture is worth a thousand words". Images form an essential part of mind map. To derive maximum benefit from this technique, inclusion of images, icons, symbols and doodles is advocated. Use of images activates brain's visual ability which in turn enhances immense creativity

and improves memory. Images impart more information as compared to comprehensive written passages [18].

According to Aljarf mind map helps the students to understand relevant details and connect various ideas [16]. The 3 mind maps which were made were well connected in a progressive manner. Through the first mind map they would learn about the drugs, then go on to learn various types of bronchial asthma and their treatment and finally various dosage forms used in asthma.

We introduced mind map as an individual assignment. According to Ornstein each individual's brain has a unique way of perceiving information, categorising it, adapting it and remembering it [19]. Gardner in his study noticed that every individual has unique cognitive and learning skill [20]. Therefore mind map should be a personalised activity so as to cater to individual's requirement. Zampetakis et al found that mind map not only helps in learning and memory they also are an effective strategy to encourage creativity which is utilised for their academics [21]. Students who used mind maps have better conceptual understanding and reasoning as compared to students who use conventional methods for learning [22]. Left side of the brain involves words logic, numbers and linearity whereas right side involves curves, colours, images and space. Mind maps help in integrating right and left side brain activity. Such integration enhances learning greatly [23]. Mind map is an active learning strategy wherein the students can learn and integrate information rather than being a merely passive recipient of information [24].

Figure 1. Drugs used in bronchial asthma

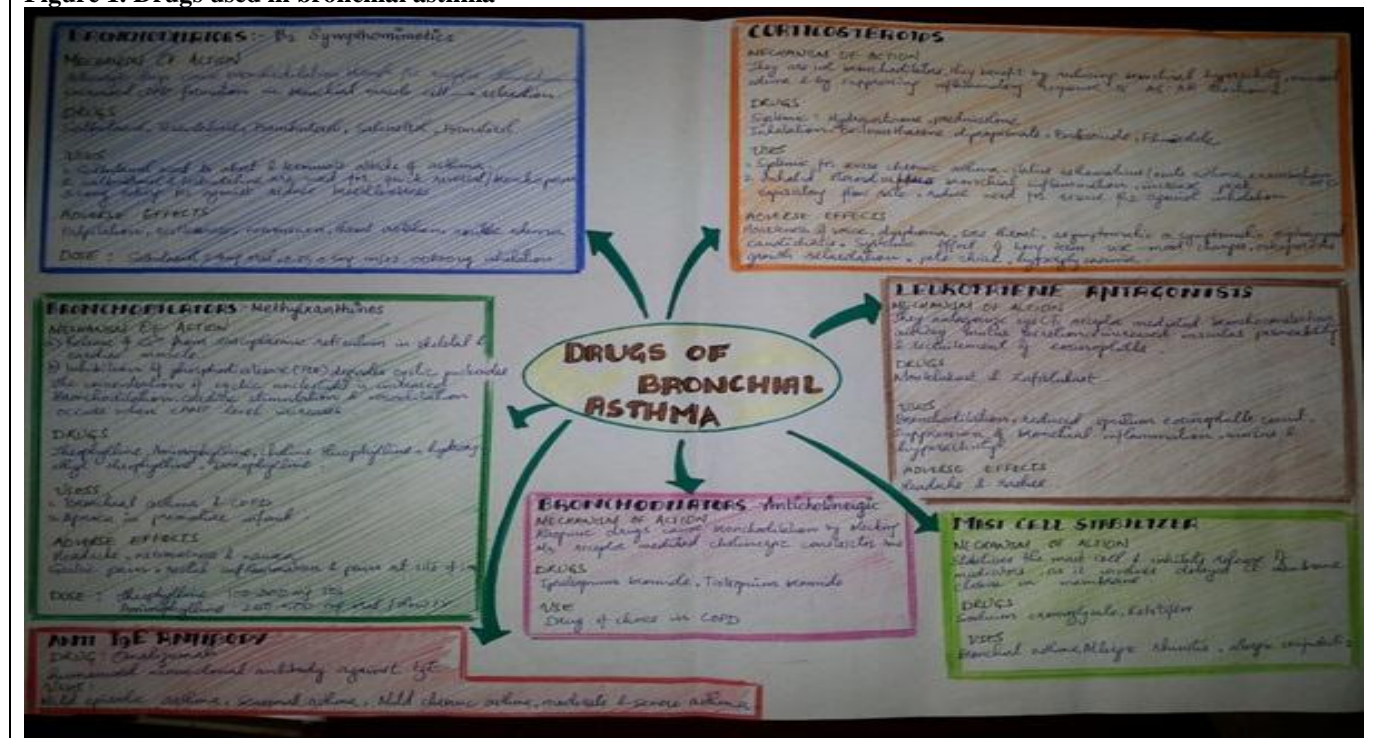


Figure 2. Types and treatment of bronchial asthma

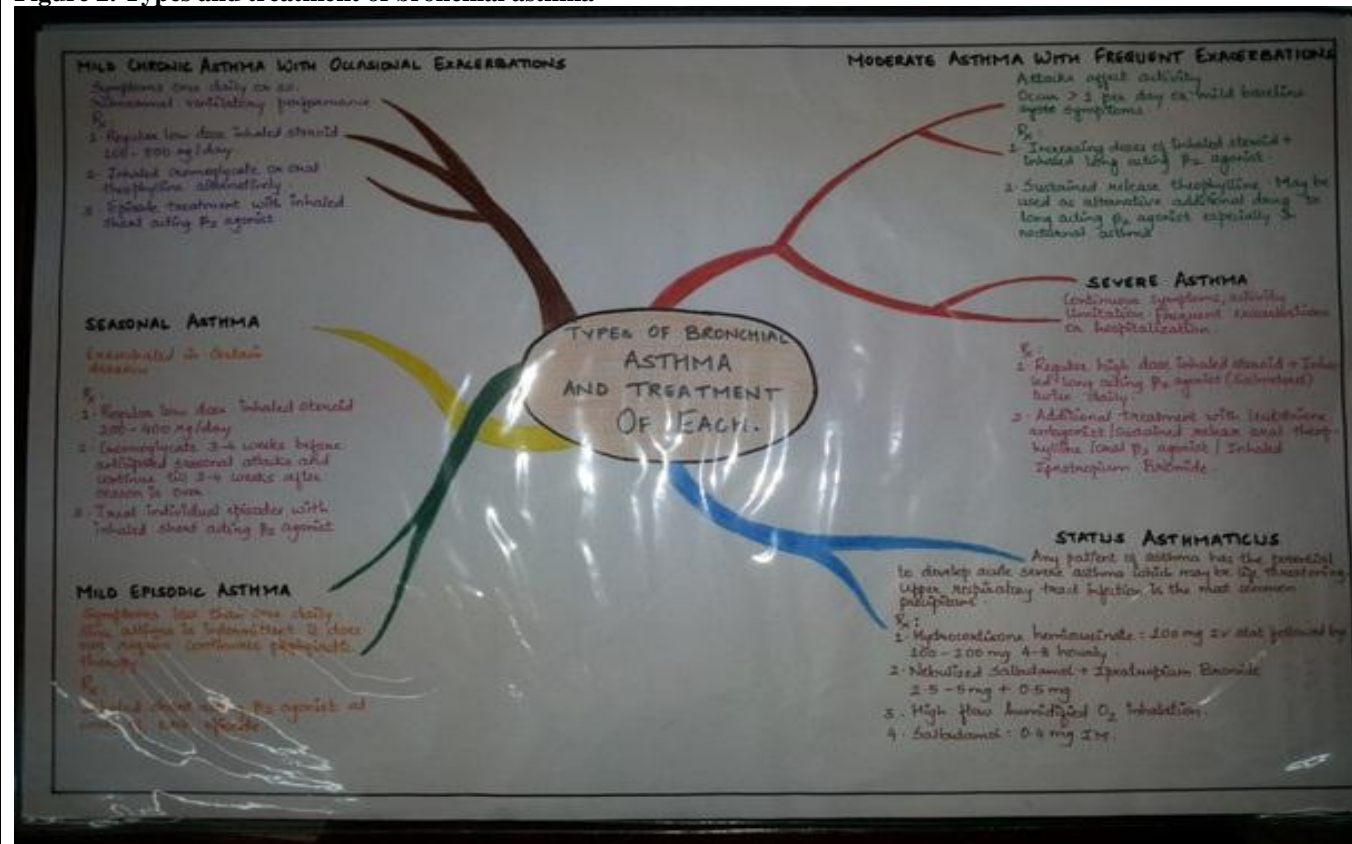


Figure 3. Various dosage forms used in bronchial asthma

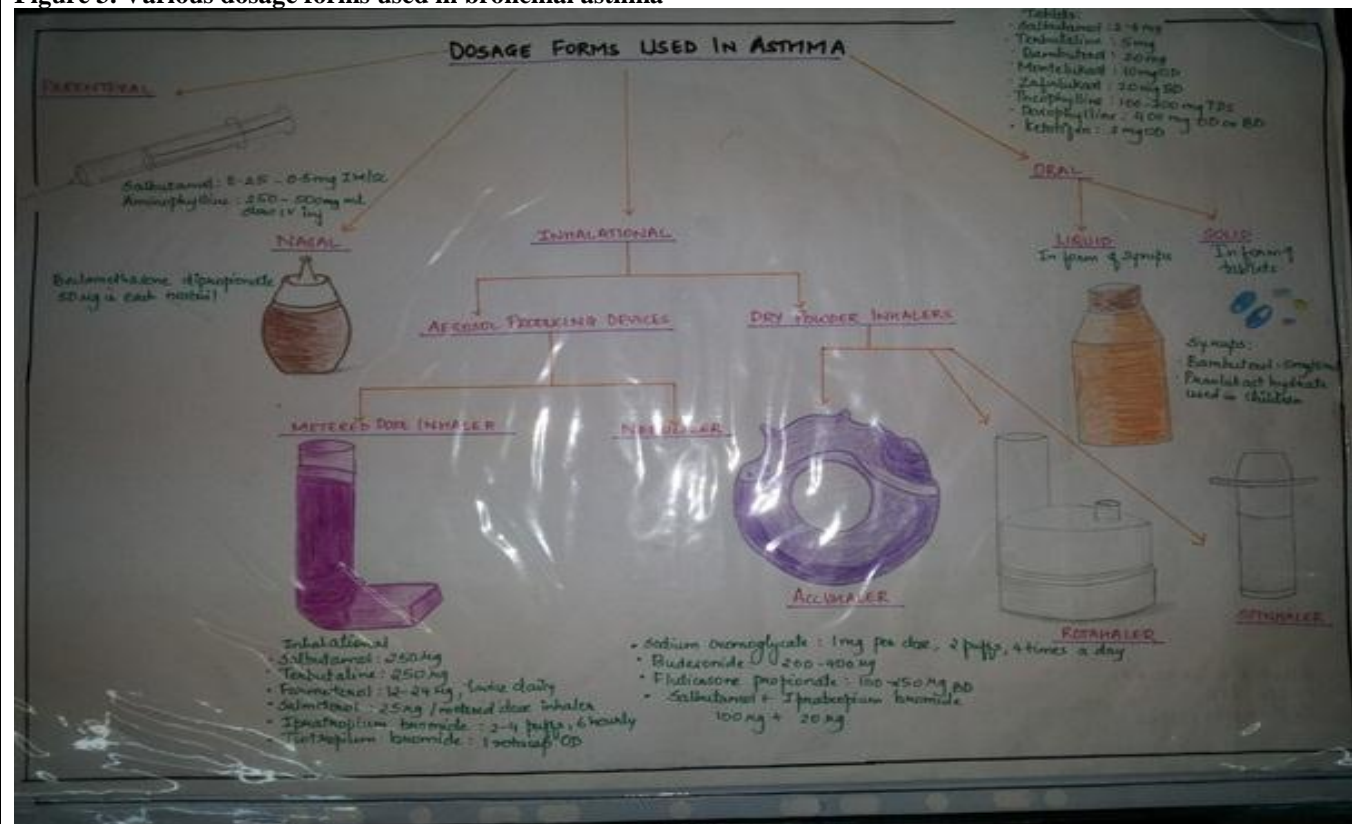
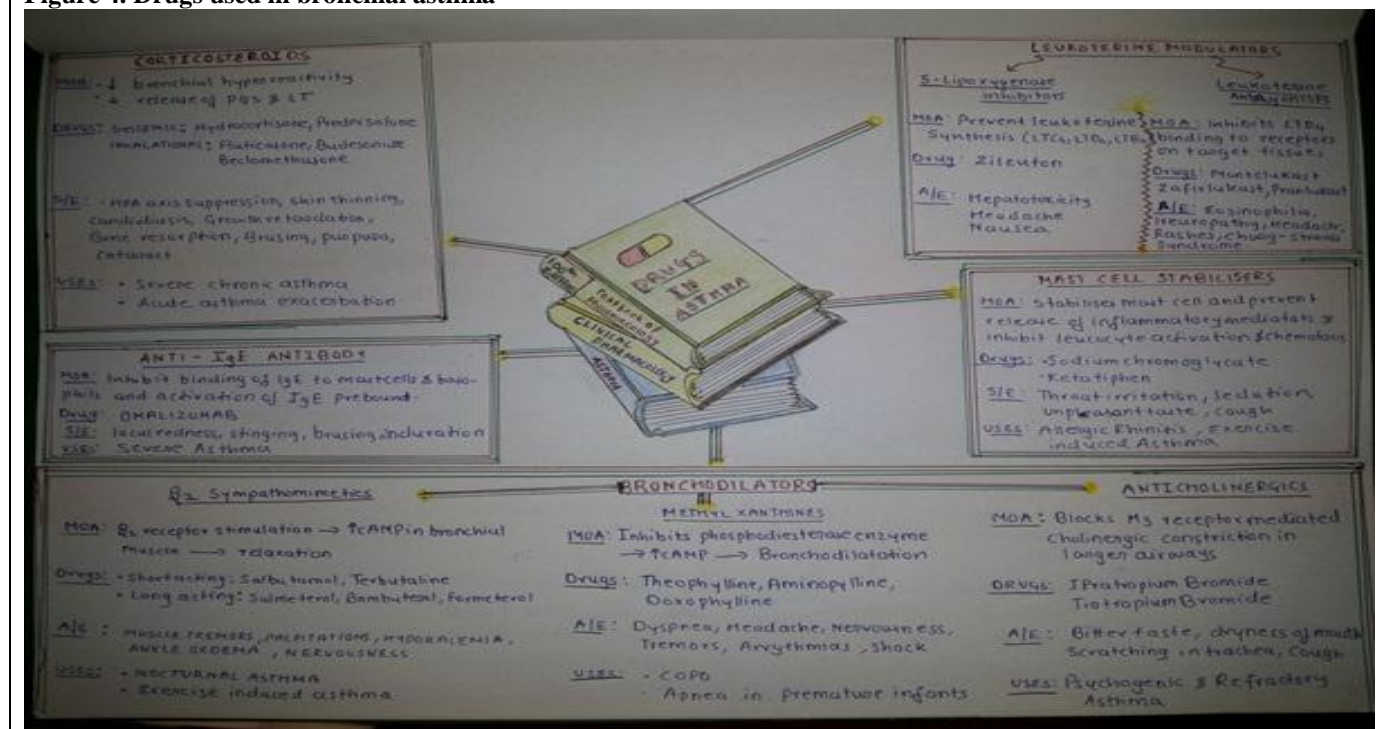


Figure 4. Drugs used in bronchial asthma

CONCLUSION

Mind map is a good learning aid for the second MBBS students in the subject of Pharmacology which is a very crucial subject in their medical career. It is an effective learning tool for assimilating extensive information in a precise manner. It is a tool for quick reference and revision prior to exams. Mind map is an enjoyable, creative learning strategy as opposed to stressful viva voce and written tests in medical education. Mind map can be used by the students to develop an affinity and liking for the subject.

Thus students should be familiarised and trained in creating mind maps and eventually it can evolve as an integral part of medical curriculum.

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CONFLICT OF INTEREST:

The authors declare that they have no conflict of interest.

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