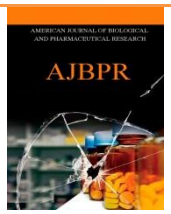
e-ISSN - 2348-2184
Print ISSN - 2348-2176

AMERICAN JOURNAL OF BIOLOGICAL AND PHARMACEUTICAL RESEARCH

Journal homepage: www.mcmed.us/journal/ajbpr



A STUDY OF THE ROLE OF CLINICAL ANATOMY IN FIRST MBBS

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Article Info

Received 29/05/2015
Revised 16/06/2015
Accepted 19/06/2015

Key words: -
Anatomy, Practice, Doctors, Medical Graduates, Clinical Anatomy, Anatomist, Clinician, Teaching Method

ABSTRACT

It is an undeniable reality that anatomy has a chief role to play in the practice of training doctors. It is a worldwide common belief that anatomy must be taught and learnt in such a way that it becomes clinically meaningful and is linked to the proficiency mandatory for new medical graduates. To facilitate clinical anatomy instructions, one method is to have regional anatomy taught by both anatomists as well as by clinicians. A study was conducted on 45 medical students admitted to the first MBBS course in the year 2014 at K.J.Somaiya Medical College. The aim of this study was to evaluate any difference in the level of knowledge of gross and clinical anatomy among first year MBBS students when taught by Anatomist alone; Clinician alone and by both anatomist and clinician. In addition the students' perception regarding the teaching method was estimated using a structured questionnaire. Our study confirmed the fact that the group taught by anatomist and clinician was the best. Conclusion: Anatomists and clinicians should identify core anatomical knowledge in a clinical context. They should set some strategy on an anatomy curriculum which they feel any independent medical practitioner must be acquainted with. A need based curriculum can be developed in each institute so as to arrange interactive sessions of preclinical and clinical teaching which will be more useful for the students in subsequent years.

INTRODUCTION

Anatomy is considered as a major subject not only in the preclinical years but also in the clinical years. Even in post graduate studies of surgical faculties, it is very helpful to revise the knowledge of gross anatomy as it provides visual positive corroboration in the learning process [1]. Dissection of cadavers is certainly the best mode of learning gross anatomy and it has played an important role, right from the time of Vesalius in 1538 up to the latest edition of Gray's Anatomy.

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Nowadays owing to newer teaching modalities as well as reduction in curriculum time allotted to anatomy worldwide, there is an increasing call for clinical application in the teaching and learning of Anatomy [2]. It is a worldwide common belief that anatomy must be taught and learnt in such a way that it becomes clinically meaningful and is linked to the proficiency mandatory for new medical graduates. Hence problem based learning has been initiated for preclinical students of Anatomy which will augment the integration of basic and clinical sciences. Another way to facilitate clinical anatomy instructions is to have regional anatomy taught by both anatomists as well as by clinicians [3]. Anatomists can demonstrate the gross anatomy of a particular region, with the help of dissection procedures, prosected specimens, illustrations and photographs while a surgeon can demonstrate the same, either on the patient

or during actual surgical procedures. This plays a very constructive role in make the learning of anatomy more realistic and effective. The student learns the detailed anatomy & common anatomical anomalies of that particular region from the anatomist, whereas a surgeon demonstrates the same structures in layers during a surgery [4,5]. What makes this type of teaching different from a typical anatomy course is that, it goes beyond simple identification. It is in fact, anatomy seen in a clinical setting. It also helps to accomplish the goal of vertical integration and improves on what is taught by the anatomist.

This approach, of a classical anatomic perspective is very different from a surgical perspective. They are nearly opposites. In the typical anatomy course, a wide section is opened in a cadaver, so students can view as much as possible, but in a surgical procedure, the smallest incision possible is made and structures are viewed [6]. Thus, the practical aspect is stressed upon, starting from how anatomical knowledge is applied and working backwards from the objectives to the factual details. This makes Anatomy so much more relevant—suddenly it becomes essential to know not only the one course of a vessel traditionally described in textbooks, but also its anatomical variants. Basically, students no longer learn for a test, but for their professional life [7].

The present study was designed as an investigational study to reveal whether a clinician can teach better clinical anatomy, as he has practical exposure to real situations, as compared to an anatomist who has only theoretical or textbook based knowledge **[8].** The aim of the present study was to evaluate any difference in the level of knowledge of gross and clinical anatomy among first year MBBS students when taught by Anatomist alone; Clinician alone and by both anatomist and clinician.

MATERIAL AND METHODS

A study was conducted on 45 medical students admitted to the first MBBS course in the year 2014 at K.J.Somaiya Medical College. After approval from institutional ethical committee, informed consent was taken from each student participating in the study. The students were randomly divided into three groups of 15 each. Adequate explanation was given to the students regarding the objectives and the relevance of the study.

Learning objectives were set and the groups were informed in advance about these objectives. In first group, gross anatomy of the inguinal region and its related clinical topic of inguinal hernia were taught by a senior faculty from the anatomy department. The class lasted for 120 minutes and was conducted over a period of 2 days. Simultaneously the second group was taught the same two topics at the same time by a faculty from the surgery department. The surgeon explained the anatomy of the inguinal region and then a case of inguinal hernia was shown to the students where the surgeon demonstrated all the signs of the hernia and even allowed the students to examine the patient. The third group was explained the anatomy of the inguinal region by the Anatomist, and subsequently a faculty from the surgery department explained the clinical anatomy of an inguinal hernia and demonstrated the case of inguinal hernia to the students. All the lectures were taken on multimedia using power point presentation.

To assess the achievement of knowledge by the students of each group, a post-test of same set of 10 MCQs (Multiple Choice Questions) was conducted for all the three groups. The first 5 MCQs were on the gross anatomy of the inguinal canal and the remaining 5 were on clinical anatomy of inguinal hernia. All test papers were marked under blind conditions.

In addition the students' perception regarding the teaching method was estimated using a structured questionnaire.

RESULTS

The questions of every test paper were categorized into two parts- (i) gross anatomy (ii) clinical anatomy. Marks obtained by each student were converted into percentage. Knowledge acquired by the students of respective groups was measured in terms of test percent scores.

To analyse the students' perception, regarding the teaching methods, they were subjected to, a structured questionnaire which was given to all the 45 students and a feedback was obtained.

Table 1. Percent Means of Test Scores

	Group I (n=15)	Group II (n=15)	Group III (n=15)
	% Mean	% Mean	% Mean
Gross Anatomy	65.24	62.5	62.1
Clinical Anatomy	60.18	63.12	64.37
Total	67.35	68.22	70.65

Table 2. Group I

No.	Questions	Agreed (%)	Disagreed (%)	Neutral (%)
1	Teaching Method used was useful to understand the topic	55.2	42.8	2
2	Learning objectives were achieved	58	40.1	1.9
3	Problem solving ability improved	51.3	45.7	3
4	Instructors were helpful	65.4	31	3.6
5	Presentation was good	60	38.6	1.4
6	Teacher-student interaction was present	68	31	1
7	Method will be helpful in the university exam	75.5	22	2.5
8	Method will be useful in studying clinical subjects later	66.7	31.3	2

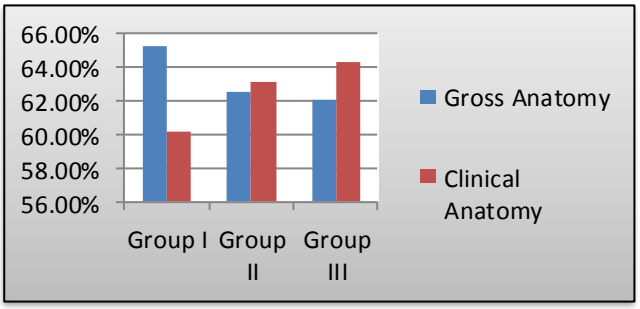
Table 3. Group II

No.	Questions	Agreed (%)	Disagreed (%)	Neutral (%)
1	Teaching Method used was useful to understand the topic	61.7	37.3	1
2	Learning objectives were achieved	65.5	32.5	2
3	Problem solving ability improved	66.1	32.9	1
4	Instructors were helpful	56	42	2
5	Presentation was good	60.2	34.8	5
6	Teacher-student interaction was present	55	42	3
7	Method will be helpful in the university exam	64.4	34.6	1
8	Method will be useful in studying clinical subjects later	81.6	16.4	2

Table 4. Group III

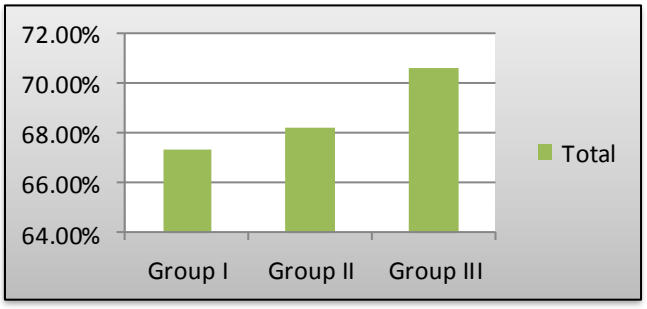
No.	Questions	Agreed (%)	Disagreed (%)	Neutral (%)
1	Teaching Method used was useful to understand the topic	75.5	23.5	1
2	Learning objectives were achieved	70	27	3
3	Problem solving ability improved	75.7	24.3	-
4	Instructors were helpful	65.1	33.9	1
5	Presentation was good	73.6	24.4	2
6	Teacher-student interaction was present	72	25	3
7	Method will be helpful in the university exam	64.8	33.2	2
8	Method will be useful in studying clinical subjects later	85	15	-

Figure 1. Graphic Representation of Percent Means of Test Scores



Results revealed that the group which was taught by clinician alone (GROUP II) or by both anatomist and clinician (GROUP III) fared better than the group taught by anatomist alone (GROUP I). Also Group II & III fared better in the questions on clinical anatomy and GROUP I fared better in gross anatomy questions.

Figure 2. Graphic Representations of Percent Means of Total Test Scores



When the total of gross and clinical parts was analyzed, the performance of group III i.e. group taught by anatomist and clinician was found to be the best and was statistically significant.

Students' Perception Towards Teaching Methods

Figure 3. Graphic Representation of Feedback Analysis of Group I

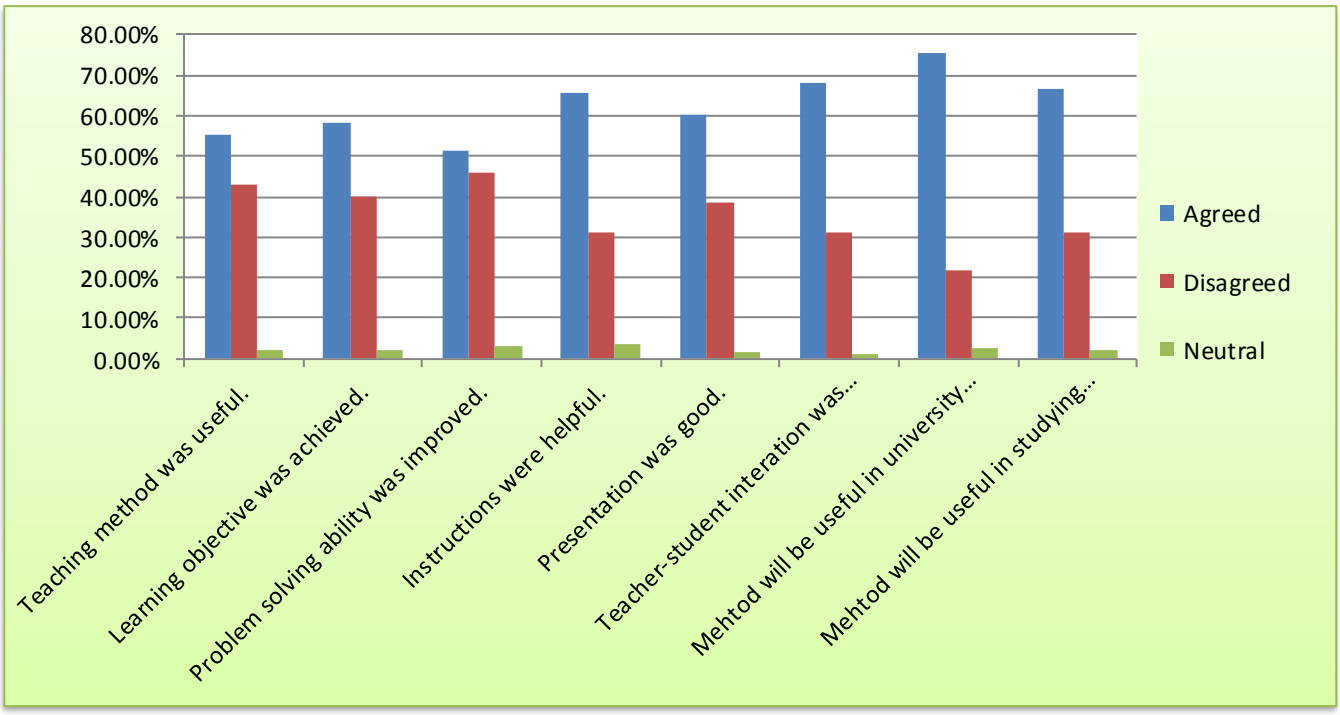


Figure 4. Graph Representation of Feedback Analysis of Group II

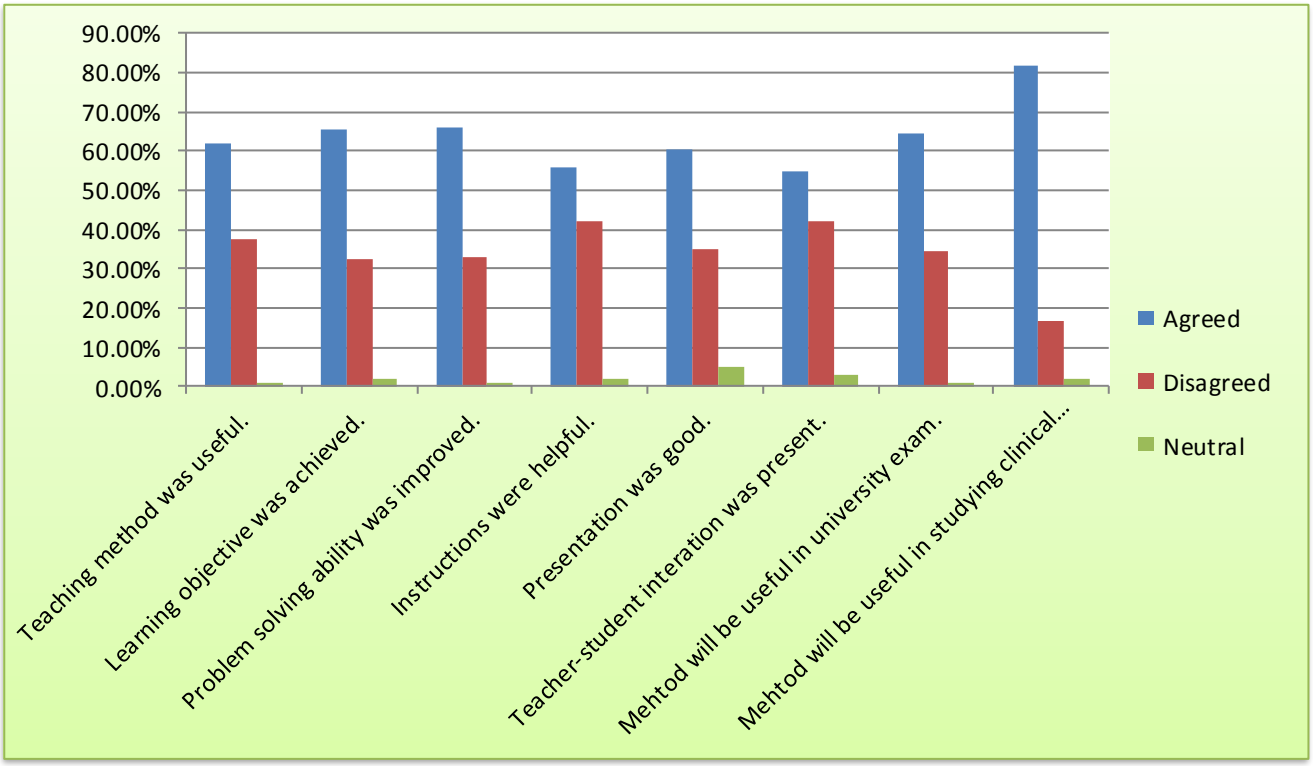
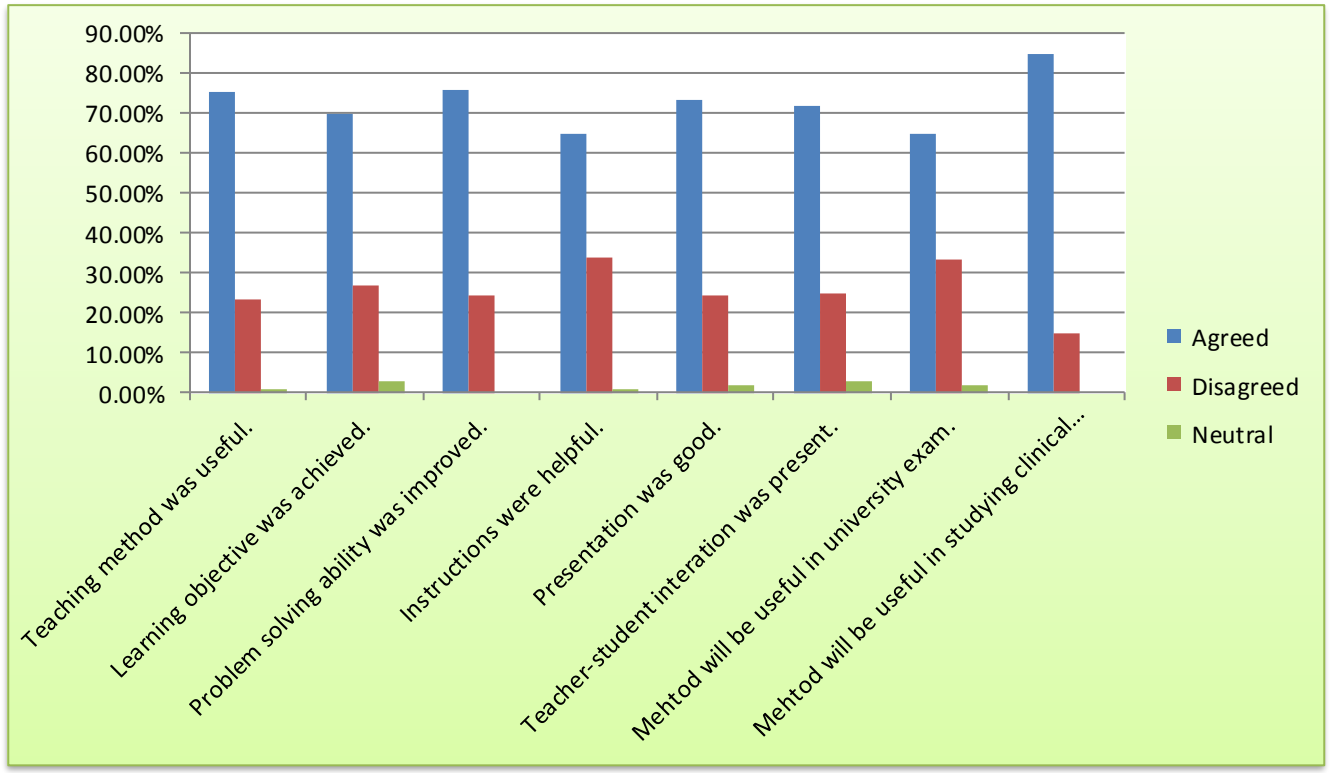


Figure 5. Graph Representation of Feedback Analysis of Group III



DISCUSSION

The main purpose of the present study was to assess students' attitudes to the teaching of anatomy within a clinical framework. The study informs us that, medical students are undoubtedly inclined towards integration of anatomy with clinical medicine. They find the use of clinical examples/scenarios/case histories not only of great significance but also consider them to be motivational tools. Fairly poor performance of clinical section of Group I could be ascribed to little contact of anatomists to clinical situations. An Anatomist is exposed to various clinical subjects during his/her graduation (MBBS) only. The situation is worse with those anatomists who are non medical. In a number of medical colleges especially in southern India as well as abroad, non medical post graduates in anatomy are teaching undergraduates. These non medical anatomy graduates have never been exposed to clinical subjects. Hence their clinical knowledge is only theoretical or speculative, from text books, which cannot be of much use to the students [9-11].

An analysis of the students' responses to the teaching methods, collected through the feedback questionnaire was performed. The percentage of students agreeing to most of the questions ranged from 55-85. More than 80% of the students of Group II and Group III agreed that the method of teaching employed for them would be useful to them in the clinical years later. Among Group I, students majority (75.5%) felt that teaching by an anatomist would be useful for appearing for the university exam as first MBBS anatomy exams are more anatomically than clinically inclined. Only 51.3% felt that by being taught by anatomist alone, problem solving ability improved. But more than 60% of the students were happy with their instructors, their presentations as well as the interaction with them.

Among Group II students, as the topic was taught completely by the clinician, they were not very familiar with the type of teaching and hence could not interact much with their instructors. There was an overall 60% positive response to all the parameters.

An elevated satisfaction level was visualised among Group III students as compared to the other groups, regarding nearly all the parameters. A large majority of them (more than 70%) were happy with the teaching methods, the instructors, their presentations etc. Majority also felt that learning objectives were achieved and problem solving ability improved. Only 33% were unsure whether the clinical teaching would be useful in the university examination.

Stevenson et al, in a similar study, were of the opinion that clinicians were better in several areas like knowledge, preparedness, encouraging of in-depth understanding and ability to focus the group while anatomists only demonstrated overspecialized knowledge

[12,13]. They assert that clinicians can teach the anatomy which they are familiar with and use frequently. They can teach with a comprehensive appreciation of anatomical facts, which are appropriate to patient care. They can accentuate clinically useful facts in more exciting ways by citing instances of genuine clinical cases. When instruction is given by a pure anatomist with no clinical experience, he will not be concerned with the basis of clinical importance of anatomical facts. Therefore knowledge cannot be imparted in a motivating or appealing manner and will not be profitable to the student [14].

Endeavouring to teach anatomy in a more clinically meaningful way, some countries have handed over the subject completely to clinicians, going beyond the anatomist [15]. But there is no strong substantiation as yet to prove that students will perform better in preclinical subjects when taught by clinicians alone [16].

It is an undeniable reality that anatomy has a chief role to play in the practice of training doctors. Over the last few years, to lessen the factual load on students and to allot time for teaching other skills like ethics, humanism etc, the curriculum of anatomy has been reduced globally [17]. Irrespective of the methods of teaching anatomy or time allotted in the medical curriculum to the subject, it has become an established fact that 'gross anatomy' should be taught to medical students as 'clinical anatomy' [18]. Study conducted by Prince et al.,2003 showed that the effects of clinically oriented teaching combined with recurrence of topics in the curriculum are more powerful than those of traditional or innovative didactics [19].

However, there isn't much consensus regarding what should be incorporated or for that matter what should be set apart from an anatomy course or even which clinical cases might be apt for preclinical students [20]. It is therefore crucial that anatomists and clinicians should identify core anatomical knowledge in a clinical context. It is suggested that a few senior anatomists along with experienced clinicians must approach the subject together and set some strategy on an anatomy curriculum which they feel any independent medical practitioner must be acquainted with.

CONCLUSION

There is a call to focus on moving from highly in-depth anatomical topics towards functionally and clinically significant topics, irrespective of the method of teaching. The present study clearly states that desired objectives are accomplished by joint efforts of clinician and anatomist. MCI in its 'Vision 2015' has also advocated integrated teaching. An integrated teaching of Anatomy incorporates practical application of the knowledge of basic sciences thus helping students to become lifelong learners. Anatomists and clinicians should identify core anatomical knowledge in a clinical context. They should set some strategy on an anatomy curriculum which they feel any independent medical practitioner must be acquainted with. A need based curriculum can be developed in each institute so as to arrange interactive sessions of preclinical and clinical teaching which will be more useful for the students in subsequent years. An understanding of the science of anatomy is important for the benefit of the patients. Patients are under the belief that anatomy is an essential aspect of medicine and that their doctors are well-versed in anatomical knowledge. If Anatomy continues to be down-played in the medical curriculum, the reputation of the medical profession as seen by a patient, will be in danger.

ACKNOWLEDGEMENT

Authors are thankful to Dean Dr. Geeta Niyogi Madam for her support and encouragement. Authors are also thankful to Mr. M. Murugan for his help. Authors also acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors / editors / publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

SPS drafted the manuscript, performed the literature review & SR assisted with writing the paper.

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