Debate Develops Medical Students' Critical Thinking

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Abstract: Debate is an activity used to understand the topic. It is carried out by two groups, namely the "pro" group and the "con" group. The aim of the debate is to explore the reasons behind each point of view. In order for these reasons to be understood persuasively, speakers in a debate should convey the arguments with good communication skills. Debate generates self-confidence and motivation to express students' opinions and respond to an argument. Debate served as a valuable learning activity to improve critical thinking and communication skills. Debate is an effective learning technique because it builds a level of responsibility for learning and active involvement. Unfortunately, debate has not been widely studied in the health field. Debate is suitable for healthcare professionals who are constantly engaged in complex discussions and pragmatic decision making in clinical practice. This critical thinking skill is one of the essential skills required for medical students. It is considered a key component in medical education and training of competent physicians. Critical thinking can help medical students and clinicians achieve increased productivity, better clinical decision making, higher grades, and much more. Therefore, it becomes evident that there is a need to introduce debate learning for medical students.

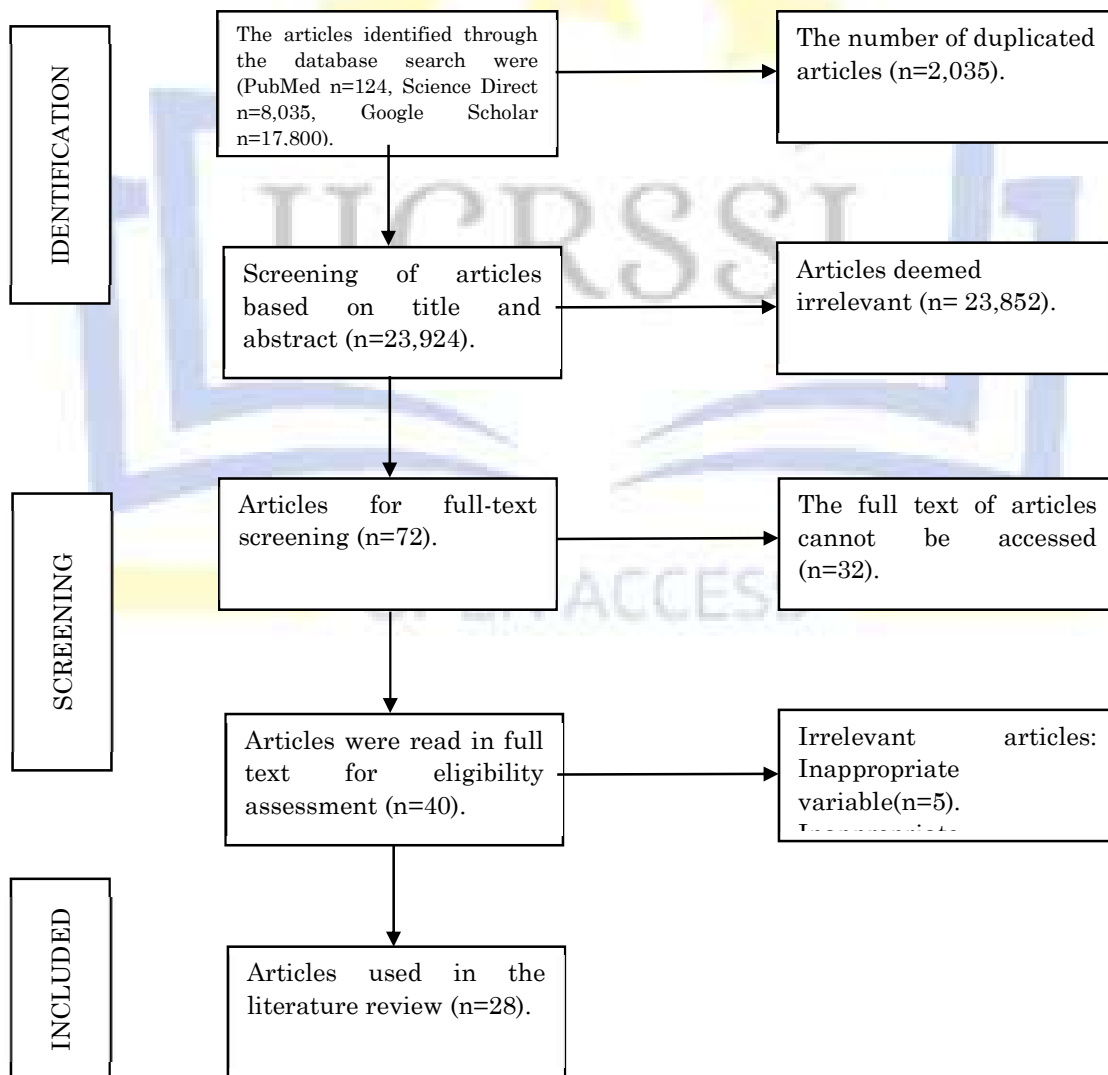**Keywords:** Critical thinking, Medical Students, Debate

INTRODUCTION

Educators have known the importance of critical thinking skills to prepare medical. Despite widespread recognition of its importance, there is a notable lack of consensus regarding how to enhance critical thinking. Meanwhile, debate has been known as a method that develops critical thinking. The purposes of this literature review are to (a) explore the ways in which critical thinking and debate has been defined by researchers, (b) investigate how to develop medical students' critical thinking (c) learn how lecturer can encourage the development of critical thinking skills in their students with debating, and (d) review best practices in assessing critical thinking skills with debating.

METHOD

The method utilized in this study is a literature review in the form of a narrative review. A narrative review is a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing research findings and thoughts from researchers and practitioners. The review follows a format of introduction, method, results, and discussion. While this method has its strengths in providing a comprehensive and holistic overview of a particular topic, it also has its weaknesses in introducing potential biases into the research. It is important to acknowledge that narrative reviews are susceptible to biases that may influence the selection, evaluation, and synthesis of studies. One potential source of bias is the selection of studies, which may be influenced by the reviewer's personal preferences, research question, or prior beliefs. Additionally, the evaluation of studies may also be subject to bias, as reviewers may apply different criteria for inclusion or exclusion based on their own perspectives. Finally, the synthesis of findings may also be influenced by the reviewer's interpretation and presentation of the data. The study was conducted by searching for articles using a combination of several keywords in the search databases of PubMed, Science Direct, and Google Scholar. The databases were chosen based on their reputation, accessibility, and ability to provide literature relevant to the search terms. The keywords used in the search were "critical thinking," "medical student," and "debate." Only articles published in English were considered, and the search was limited to literature published between 1989 and 2021. The inclusion criteria for articles selected for the study were: 1) publication between 1989 and 2021, 2) use of English

language, and 3) studies investigating potential benefits of introducing debate learning as an effective educational technique for developing medical students' critical thinking. Studies that did not meet these inclusion criteria were excluded from the analysis.The researchers retrieved 25,959 articles (124 from PubMed, 8.035 from Science Direct, and 17,800 from Google Scholar) that matched the search keywords from the three data sources. A total of 2,035 duplicate articles were removed. The researchers then conducted a screening process based on the titles and abstracts of the 23,924 remaining articles. A total of 23,852 articles were excluded because they did not match the research needs, were inaccessible, or were written in an inappropriate language. Next, the researchers prepared to read the full texts of 72 articles to assess their eligibility based on the predetermined inclusion and exclusion criteria. For articles that were not available in full text, the researchers attempted to contact the available contacts to obtain access to the relevant full text article. In the eligibility assessment, 32 articles were excluded because they were completely inaccessible. Then, the researchers read the full texts of 40 available articles. Of the 40 articles, five were excluded due to inappropriate variables, and seven was excluded due to an inappropriate population. Therefore, the researchers obtained 28 articles that would be analyzed in the literature review. Data extraction was conducted on the articles used in the literature review, including the title, research area, sample and research subjects, research methods, and outcomes needed for this study. The article selection process is presented in the form of a flowchart as follows:

IDENTIFICATION	The articles identified through the database search were (PubMed n=124, Science Direct n=8,035, Google Scholar n=17.800).	→	The number of duplicated articles (n=2,035).
	Screening of articles based on title and abstract (n=23,924).	→	Articles deemed irrelevant (n= 23,852).
SCREENING	Articles for full-text screening (n=72).	→	The full text of articles cannot be accessed (n=32).
	Articles were read in full text for eligibility assessment (n=40).	→	Irrelevant articles: Inappropriate variable(n=5).
INCLUDED	Articles used in the literature review (n=28).		

DEBATE DEVELOPS MEDICAL STUDENTS' CRITICAL THINKING RESULTS

Critical thinking is the process of actively and successfully conceiving, applying, analyzing, synthesizing, and/or evaluating knowledge as a basis for belief and action, known as critical thinking.(Heard et al., 2020) Simply thinking is not critical thinking. It is a metacognitive because it requires you to reflect on your own thoughts. The roots of the words critical and criteria both mean "judgment" in English. Standards or criteria can include things like depth, accuracy, and relevancy. The true value of critical thinking is only realized when dealing with actual issues and rather than hypothetical ones. The roots of the words critical and criteria both mean "judgment" in English. Standards or criteria can include things like depth, accuracy, and relevancy. At its core, critical thinking involves considering actual issues. In a murder mystery, all the necessary clues are given, the murderer is one of the characters, and the author (or someone else) already knows who do it. But issues are frequently complex and unfinished. The process of full-fledged critical thinking has three steps.(Thomas, 2015) The first step in critical thinking is to pose inquiries. It entails asking pertinent, insightful, and in-depth questions that get to the heart of the subject. The act of critical thinking entails recognizing the existence of unanswered questions. Second, critical thinking entails making an effort to rationally address those queries. Different from other methods of answering problems is the process of reasoning out responses. It differs from responding with the first idea that comes to mind and then utilizing all of the logical prowess to support that response. Third, critical thinking entails having faith in the conclusions. Critical thinking is a connected process with five associated parts, which are as follows:

- The knowledge base: This refers to what the person is aware of and holds to be true. The experience of contradiction must take place.
- Outside circumstances: These are the triggers that cause a sense of contradiction.
- Personal theory: This is the individual's unique character that has developed from the cognitive foundation.
- Feeling of divergence or contradiction: This feeling serves as a catalyst for the other critical thinking procedures.
- Resolving the conflict: This stage, in which the person attempts to resolve the contradiction using a number of methods, incorporates all the critical thinking components.(Paul, 2007) Only by using the mental abilities employed during critical thinking can the process's goal be fulfilled.

 At the end, critical thinking elements including:

- Concentrating on issues and queries.
- Spotting different issues.
- Concentrating on related subjects.
- The capacity to use significant facts and statistics.
- The capability to use reapplication to assess the strength of the proof
- Avoiding self-centered, wishful thinking.
- Recognizing several assumptions.
- Approaching inaccurate or ambiguous information with caution.
- Being aware of both induction and deduction techniques.
- Avoiding clear of logical errors.(Ong et al., 2018).

DEBATE

The intellectual and political discussions of Ancient Greece, such as the Athenian democracy or Shastrartha in Ancient India, are where the history of debate in its many forms begins.(Thale, 1989) During the Age of Enlightenment in the 18th century, debates took on their modern forms and debate groups were founded. Two of Europe's oldest debate groups are located at Trinity College Dublin: The Phil, formed in 1683, and The Hist, founded in 1770 and modeled after an Edmund Burke-based debate group from 1747. Early in the 18th century, debate clubs started to form in London. These clubs quickly

established themselves as significant society fixtures. Debating societies were elite, exclusive organizations that had at least been around in London since 1740. But by the middle of the 18th century, London had developed a thriving debating society culture, primarily as a result of an increase in membership among the city's expanding middle class. Debating societies were an example of the expanded public sphere of the age of enlightenment since they welcomed participants from all genders and social classes and covered a wide range of themes. Debating societies were a phenomenon connected to the concurrent emergence of the public sphere, an area of discourse open to all and free from established authority that served as a forum for critique and the emergence of novel philosophical and theoretical ideas.(Thale, 2015) Debate is a crucial instructional tool for developing analytical thinking abilities and for making students critically evaluate their own ideas. Debate was held on actual or hypothetical subjects. Debate very effective to practice writing, speaking, and listening in addition to building argumentation abilities for persuasive writing and speech. There were various different debate formats, and the regulations for debating changed from competition to competition. Teams with a single student or groups of students could participate in debate. In a typical debate, two teams were given a resolution or topic to discuss and were allotted a certain amount of time to prepare their arguments. Each topic should have a different point of view and why someone should support the issue or not. The purpose of the debate is to find out the reasons from an individual point of view.(Antoniou, 2019) In order for these reasons to be understood convincingly, the speakers in the debate must present their arguments communicatively. Competitive debates are debates that use a certain format. Debater can speak in turn and have the time and opportunity to demonstrate what they want to present. This encourages others not only to express their opinion, but also to hear the other side of the matter. Debate takes many forms: Karl Popper Format, British Parliament Format, Australasian Format, World School Format and others.(Bill & Will, 2013) There are various reasons that motivate people to discuss, including convincing others that their opinion is better, listening to other people's opinions about something, looking for the best solution to a problem, etc. The goal of a competitive argumentation contest is to convince the judges that the team's argument is stronger than the opponents. Therefore, the people who participate in the discussion get the opportunity to think critically and analytically and express themselves openly.(Mustafa, 2016) This uncompromising nature makes the speaker really look for strong arguments for his position. The purpose of the conversation is to speak convincingly and also to hear different opinions and be able to evaluate those differences at the end of the conversation. Debate is a contest of the arguments used to support or refute a motion, and it demands participants to convince an audience of the truth or untruth of the motion. In order for an adjudicator to accept or reject the motion under discussion, all teams involved in the debate must provide an explanation for specific events. Therefore, the arguments presented during a debate round are identical to those presented outside of the round. The effectiveness of debate arguments entirely hinges on how the audience perceives them. Since persuasion is fundamentally a human activity, it will always be flawed and enigmatic.(W.LUCKETT & I., 2006).

DEVELOPMENT OF MEDICAL STUDENTS' CRITICAL THINKING WITH DEBATING

Evidence-based medicine became a genuine thing in the 1990s, spurred by the publication of extensive data on medical blunders. It was included by organizations into medical education programs and best practices. The relationship between speech and discussion can be seen by looking at the three principles of evidence-based medicine.(Kaul et al., 2021) The evaluation and implementation of the best available evidence should serve as the foundation for medical practice. No evidence should be hand-picked to support one's predetermined prejudices; instead, the full body of research should be taken into account when making medical decisions. Shared decision-making with the patient and caregivers is necessary for evidence-based practice. Unfortunately, most educational institutions have avoided emphasizing analysis in their science courses. The second principle of evidence-based practice emphasizes that while making

medical decisions, the full body of data should be taken into account. The best health professions students are capable of weighing the arguments for and against a course of action.(Patrcio & Harden, 2010) Because of medical diagnoses match the standard definition, it might be difficult to determine if a relationship is caused by actual causation or just correlation. Making the strongest possible scientific argument when responding to these kinds of queries demands perseverance and the ability to search across numerous sources of evidence. A student who is able to weigh several pieces of evidence can aid their patients in making decisions that are well-informed.(Maudsley & Strivens, 2000) Not to mention that a student who is at ease with the unpredictability of medicine may develop into a doctor who is more accepting of different viewpoints. Unstated lessons that are instead communicated by gestures, hospital culture, observations, or other subliminal cues. A patient is actually curious about doctor's thoughts. After all, shared decision-making with the patient and caregivers is the third principle of evidence-based practice. It takes time to develop these kinds of communication abilities. Fortunately, this is yet another situation in which excellent speech and debating skills come in handy. Students studying speech and debate gain numerous crucial communication skills.(YUSTINA & MUKHAIYAR, 2018) There will be queries from patients. When the patient asks those questions, the concealed curriculum doctor will cut them off, find a way to leave the room, shift the conversation, or, worse yet, just keep talking over the patient. Information is readily available in our modern world. But, the amount of information available might be intimidating. Because of that, world needs information seekers in medicine like doctors who are driven by the desire to learn new and accurate information. The medical community acknowledges how challenging it can be to find high-quality evidence. There aren't many schools that actually offer information literacy or information seeking courses. Additionally, the majority of the teaching takes place in classrooms or online, not in clinics. But, debating involves active knowledge gathering.(Mamtani et al., 2015) Students gather data and use it to build and present arguments. Students can utilize such knowledge to foresee any holes in arguments.(Keynejad et al., 2017) There are various barriers to learning information literacy and critical thinking abilities, however training in these areas can be successful. These include social and psychological factors in addition to concrete ones. Students might not use opportunities to practice critical thinking even when they are present. Over half of college students in a recent study did not use available services. Even doctors in training who already have a doctorate in medicine see a dearth of critical thinking abilities as a hindrance. The International Guidelines on Information Literacy emphasize the interrelationship between lifelong learning and information literacy development. (Grafstein, 2017) Students should acquire these crucial abilities as soon as possible. These abilities are "self-empowering" and "self-actuating," as stated in the guidelines. There may not be many chances to develop them throughout pupils' regular educational experiences. However, each patient interaction necessitates a careful weighing of the available data, a deliberate decision-making process, and the capacity to explain that process to the patient. (Kennedy, 2007).

DEVELOPMENT OF MEDICAL STUDENTS' CRITICAL THINKING WITH DEBATING

It takes ongoing work from educators to improve the educational system.(Gilkison, 2003) Trials are still being undertaken in a number of areas to produce fresh and efficient teaching strategies. Among these, medical education is one that is likely to undergo modification. This is primarily due to the innovative nature of the discipline, but it's also because there is a significant social demand for aspiring doctors to develop good interpersonal skills in order to interact with a range of patients. The one-way, lecture-based approach to medical education is giving way to a more self-directed style of learning. Problem-based learning (PBL) has been implemented into medical and dentistry education as an alternative to passive lectures. PBL education was first created at McMaster University in Canada in 1969 and is now widely used in many fields of education.(Khoo, 2003) Since then, other medical institutions in the West have included PBL programs in varying degrees of modification into their curricula and have documented the

outcomes. There have been conflicting assessments about PBL education's effectiveness and efficiency along with its growth. While some studies favored PBL above the conventional passive lecture, others questioned its efficacy.(Leung et al., 2003) The Okayama University Dental School began offering tutorial instruction in 1999. In their first, third, and fifth years of study, the students must take tutorial classes, according to the curriculum.(Shingaki et al., 2006) The first-year tutorials are mostly concerned with "how to learn." For instance, practical strategies for gathering knowledge and taking part in group study are taught. The last fifth-year tutorial's primary focus is on "evidence-based medicine" (EBM). In order to develop a treatment plan or an appropriate strategy based on EBM, the students are given a variety of clinical examples. In the past, third-year tutorial study was conducted as an intermediate program tying first- and fifth-year exercises together. As a result, each year's main tutor determined the teaching method. An informal discussion about the analysis of a particular issue was held inside the group as part of the exercise. As a result, the conclusion that debates would be helpful for students, which lead us to implement a full debate structure in the tutorial lessons. The method that can be used are: 1) Tutorial exercise with debate-style tutorial exercises were conducted for each class. 2) Every class will be divided into several groups consist of several medical students. 3) Some of the group will become the affirmative and the others will be the opposition. 4) Then lecturer give a certain topic or scenario. For example: the government should legalize euthanasia, the government should prohibit the use of IRESSA (a drug for lung cancer with several fatal side-effects), and many more. 5) The students will discuss between their own groups and then come to the debate session. The core tutorial classes received 180 minutes each week with an open and formal debate. The debate rules were as follow: a persuasive speech by the side defending the affirmative position for five minutes; a cross-examination by the side defending the negative position for two minutes; a persuasive speech by the side defending the negative position for five minutes; a rebuttal by the side defending the affirmative position for three minutes; and a rebuttal by the side defending the affirmative position for three minutes.

ASSESSMENT IMPLICATIONS FOR MEDICAL STUDENTS' CRITICAL THINKING

A presentation in the format of a debate wrapped up each session. The performance of the other groups was then appraised by each group and lecturer. The group presentations were judged in the first session based on the following five factors: originality, logical presentation style, scientific point of view, appeal, and preparation. A scale of 1-4 was used to grade each item (4: excellent; 3: good; 2: average and 1: inferior.) On the basis of the following five criteria (problem analysis, argument and evidence, rebuttal, speech structure, and questions and answers). Each item was rated on a scale from 1 to 4. The following four criteria were used to evaluate each student: attitudes during group study, selection of study materials, planning and implementation of the study, and extraction of learning topics and recall of associated information from difficulties. The lecturer evaluated whether the pupils satisfied the necessary standards using the four factors listed above and their five subcategories.

The data collection techniques that can be used as an alternative include:

- Ability or skills test tested in this study is a speaking skill test. The test is used to assess the learning outcomes of speaking skills. Assessment is carried out when active debate method learning activities are carried out which starts when students present their opening arguments to closing arguments. Aspects assessed in learning speaking skills include linguistic and non-linguistic aspects.
- Observation is a data collection technique by observing every ongoing event and recording it with an observation tool about things to be observed or researched. Observations were made from the beginning of the learning activity in the form of apperception to the closing activity in the form of reflection on learning activities.(Dedi Efrizal?, 2006)

From several studies, the students found that debate was helpful in getting them to think through their issues thoroughly. (Mirzaie et al., 2019) The PBL tutorial study that has been incorporated into many

medical school curricula is intended to assist students in developing a self-directed style of learning, including strategies for studying subjects independently in addition to addressing the problems presented. Although the objectives are different, it is believed that some of the educational objectives of the tutorial study in lower grades may be covered by the small group discussion process. So, as part of the tutorial activity for the third year, a formal debate was held. The formal argument surpassed our expectations as a teaching tool. The students had been required to analyze a problem from a viewpoint that was different from their own in the case of some assertions, which tremendously aided them in considering the issues from a number of angles and served to cultivate their impartiality.(Huang et al., 2021) Additionally, students learned the value of employing logical thinking, gathering evidence, and effectively presenting it to support their arguments. Although adding a competitive event to the curriculum was deemed undesirable, our observations showed that the students' drive to win the debate. The small group debate was included for another reason, which was to encourage group discussion. The instructors noted that during these talks, as opposed to earlier tutorial activities, the pupils displayed greater involvement and passion. (D'Alessio et al., 2019) Despite the fact that group work is not always successful, the kids learned a lot from active arguing. Some pupils seemed to gain knowledge of cooperative learning as well as an awareness of their own and the other students' opinions and personalities. This method can be used to develop critical thinking for medical student. It start from the basic learning curriculum until the national level debate that can repair the health system into the better one.(Nguyen & Hirsch, 2011)(Litalien, 2017).Text should be single spaced. Spaces should only exist between paragraphs when using block quotes, as seen above. Please do not adjust the font scale or spacing.

CONCLUSIONS

Critical thinking is the process of actively and successfully conceiving, applying, analyzing, synthesizing, and/or evaluating knowledge as a basis for belief and action is known as critical thinking. Educators have known the importance of critical thinking skills to prepare medical Despite widespread recognition of its importance, there is a notable lack of consensus regarding how to enhance critical thinking. Debate is a crucial instructional tool for developing analytical thinking abilities and for making students critically evaluate their own ideas. It has been discovered that using formal discussion as a teaching strategy in tutorials helps students learn new approaches to solving issues and improves their objectivity and logical thinking abilities. The experience of debating a topic pertinent to any profession is training for future education for kids in the lower grades. PBL education is thought to be advantageous for students in the upper grades, who are not used to expressing their thoughts coherently or criticizing those of others in public.

INFORMED CONSENT

The author has obtained informed consent from all participants.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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