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ORIGINAL ARTICLE

Faculty and its Impact on Critical Thinking Abilities of Undergraduate Medical Students – A Delphi Study

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ABSTRACT

Aim: To identify the individual skills / attitude of faculty which influence fostering of critical thinking in undergraduate medical students
Study design: Modified Delphi Study
Place and Duration of study: This study was carried out at University of Lahore from October 2018 to April 2019.
Methodology: Delphi Study was used to develop consensus. Experts were MME/MHPE/ MCPS HPE qualified faculty members with 03 years of teaching experience. A draft questionnaire was developed on Google Forms after thorough literature review and sent to 05 experts for Pilot Study, construct validation and cognitive pretesting. A Wait Time of 04 weeks, rating of questions on 5 point Likert Scale and consensus criteria of 80% were defined before the start of study. SPSS 25 was used for data analysis. During 1st Round, draft questionnaire was amended in the light of opinion of experts to open ended questions and was sent to all the participants for their response.
Results: A total of 27 experts were enrolled in the study. 17 experts (62.96%) responded during the first round. Consensus was achieved for 13 items (65%) out of 20. In the 2nd round, 15 (88.23%) out of 17 responded. Consensus was achieved for all 7 items (100%). The study revealed that majority of our faculty lacks proper training and does not possess knowledge about various educational theories / principles and their application. They do not know how to act as facilitator, conduct tutorials, ask high order questions, reflect and provide constructive feedback.
Conclusion: Individual skills / attitude of faculty hamper fostering of CT in undergraduate medical students. They are mainly due to lack of formal faculty training which should be addressed not only in the medical institutions but in the pre-medical schools as well to inculcate higher order critical thinking skills in students.
Keywords: Critical Thinking (CT), Undergraduate Medical Students, Faculty, Reflections, Feedback

INTRODUCTION

Critical Thinking is a self regulatory thinking process used to evaluate different options before making a decision[1]. It leads to problem solving[2] and decision making. This process of decision making is done through five steps of identifying, defining, exploring, applying and integrating the problems and assumptions which are thoroughly scrutinized and deliberated upon before accepting. It requires application of six basic critical thinking skills of Interpretation, Analysis, Testing, Inference, Explanation and Self regulation. It is an iterative process in which all efforts are used to attain the best possible solution and outcome. Psychologists describe that cognitive development and growth are essential for such problem solving and consider it as an individual's skill[2,3]. Philosophers however, emphasize that attitude of rational and reflective thinking of an individual forms the basis of critical thinking. This attitude fosters in a researcher the ability to question, criticize and evaluate which he can use as per his research needs[2]. Educationists therefore consider the ability of critical thinking as an ultimate goal and desirable outcome of different educational programs[2] because it inculcates inquisitiveness and rational thinking among students[4] and enables them to critically analyze assumptions and decide on real facts[5,6]. They evaluate different perspectives and ideas of others by effective criticism and reflection. Medical students require highest level of CT skills for clinical correlation of symptoms and interpretation of investigations while making differential, provisional and final diagnosis and management plans ensuring effective patient safety[1]. Doctors with good critical thinking skills possess good communications skills, enjoy good doctor patient relationship and avoid medical errors and litigations[7].

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Undergraduate Education System of Pakistan comprises of Matric / FSc stream mainly practiced in public sector schools and O / A Level programs being followed mainly in private schools. Teacher centric strategies are practiced in Matric / FSc system where teaching is done through lectures. Teachers focus on mere transferring of information[8]. Students have to remember innumerable facts and figures which they have to reproduce in summative assessments. Comprehension and critical thinking abilities are therefore not developed[9,10]. Such students get admission in medical schools and lack problem solving and decision-making skills for effective participation in interactive sessions[11]. In contrast, O/A Level system schools follow a blend of both teacher and student techniques. Faculty ensures class participation in creativity assignments during teaching and focus on self directed learning to promote CT[12]. The students are therefore more rational and logical in their approach. A few of these students however, make to medical college due to the existing system of equivalence by Inter Board Committee of Chairman (IBCC).

Teaching critical thinking is not easy. It requires faculty who is well trained and possesses highest level of critical thinking skills and attitude. They should not focus on mere transfer of information but teach according to students abilities[8,13]. They should arouse logical reasoning among students and curb the tendency of students to rote memorization. They should focus more on comprehension rather than memorize facts and figures. They should know how to conduct classes, how to act as facilitator and how to reflect. They should ask high order thinking questions and inculcate clinical reasoning and deductive thinking among students. Unfortunately, due to unprecedented growth of medical colleges in last few decades, it is not easy to find well trained faculty[14]. The available teachers follow old teacher centric strategies and are not ready to change their mindset[15]. This attitude of faculty has a direct impact on the critical thinking abilities of undergraduate medical students which needs to be explored to assess the fostering of critical thinking in them.

METHODOLOGY

The study was carried out as modified Delphi study to develop consensus after IRB permission. Purposive sampling was done to select participants. Doctors with qualification of Master in Medical Education (MME) / Master in Health Professional Education (MHPE) / Member College of Physicians and Surgeons (MCPS) in Health Professional Education (HPE) and teaching experience of minimum 03 years were selected as per Inclusion Criteria. After thorough literature review, a draft questionnaire with open ended questions pertaining to abilities of medical faculty to foster critical thinking was developed in Google Forms. It was sent through emails via a generated link to 05 experts for pilot study, construct validation and cognitive pretesting. In the light of opinions of experts, a questionnaire was developed for use in 1st Round. It was sent to all participants for their response. All the participants were briefed about the research and informed consent was taken. Wait Time of 04 weeks, rating of questions on 5 point Likert Scale ranging from "Not at all important" to "Extremely important" and Consensus criteria of 80%[16,17] were defined before the start of study. SPSS 25 was used for data analysis (percentages, mean, median, standard deviation and inter-quartile range). A questionnaire was prepared for 2nd Round which comprised of additional factors identified from open-ended questions of Round 1 and items for which consensus could not be established. It was sent to participants again for consensus development as described earlier. During the 3rd Round, a new questionnaire was developed. It comprised of the items of Round 1 and 2 with the group response and the individual response and was sent again to the participants who took part in both rounds to ensure consistency and stability of results.

RESULTS

A total of 27 experts were enrolled in the study. 17 experts (62.96%) responded during the 1st Round. They included both male and female doctors who were actively enrolled as medical faculty with experience ranging from 03 to 21 years.

Table 1: Skills and Abilities of Faculty Affecting Fostering of CT among Undergraduate Medical Students

1	Lack of formal training of faculty
2	Poor knowledge of the faculty about various educational theories and principles
3	Non effective application of various educational theories and principles by the faculty to teach critical thinking
4	Lack of skills and ability of the faculty to conduct tutorials
5	Non familiarization of faculty with the art of how to reflect on what is good, what is wrong and how it can be improved
6	Not asking the students to actively engage in reflective practices to write reflections
7	Not providing constructive feedback to students
8	Difficulty to act as facilitator due to no formal training
9	Focus of faculty on mere transferring of information to students rather than motivating them to think critically and logically
10	Not focusing on how to learn rather than what to learn
11	Not asking the students questions like why and how to inculcate analysis and search for cues
12	Not asking the students, questions like what if, so what and what next etc to teach them evaluation of the results
13	Not asking the students, open-ended questions
14	Not teaching the students how to reach conclusion through analysis and evaluation of information
15	Not properly describing the problem to students
16	Not inculcating logic and logical evaluation in students through reality checks and quality checks
17	Not giving enough wait-time to students after posing a higher order thinking question
18	Not motivating students to become deep and lifelong learners
19	Extra work and over commitment of faculty due to administrative tasks other than their teaching specific tasks
20	Less time to prepare critically explicit assignments (lectures, PBLs, CBLs etc) as per syllabus and course

After pilot study, 20 items (Faculty skills / attitude) were identified which were used for consensus development. In 1st round, consensus was achieved for 13 items (65%) out of 20. In the 2nd round, 15 (88.23%) experts out of 17 responded. Consensus was achieved for all 7 items (100%). In the 3rd Round, 14 (93.33%) out of 15 participants responded. Consensus was achieved for all 20 factors (100%) showing consistency and stability of my results[18]. Mean response rate of experts in Delphi Rounds was 81.50%. All the faculty factors are shown in Table 1.

DISCUSSION

Education system of Pakistan falls on the right side of SPICE Model where teacher centric didactic strategies are mostly practiced. Teaching is not only neglected but poorly financed and poorly managed. System of accountability is weak which is further complicated by low salaries of teachers[19]. Faculty is therefore not ready to change his mindset[15]. They are not trained and do not possess sound knowledge about critical thinking and modern teaching strategies. Students are therefore not allowed to question and criticize. Rather they are forced to remember innumerable facts mainly falling in the low level of Bloom's Taxonomy. Good quality learning with inculcation of higher order thinking abilities among pre-medical and undergraduate medical students is therefore is not expected.

The findings of this study reveal that critical thinking skills and attitude of faculty factors play a major role in fostering of critical thinking abilities among undergraduate medical students. Well trained faculty has a positive impact on the critical thinking abilities of students. In contrast, our faculty does not possess proper critical thinking skills and abilities. They are not properly trained and have poor knowledge about critical thinking[20]. They have restricted themselves to old teaching strategies and are not focusing to improve their knowledge about educational theories and principles and their effective application[2,10]. They do not know the art of higher order open ended questioning[14,20] rather focus mainly on lower order cognitive questions and mere transferring of information[8,21]. They do not give enough wait time after asking an open ended question to students for reply[14]. Instead they themselves answer the question. Logical thinking and evaluation is thereby not inculcated. It is imperative that faculty training about questioning techniques should be started to improve their teaching skills. They should be provided knowledge and training about the latest techniques of behaviorism, constructivism and pragmatism to arouse rational and logical thinking and improve students' abilities of critical thinking. At the same time, steps should be taken to change the mindset of faculty. System of accountability should be made more compliant and financial needs of faculty should also be addressed.

Finding well trained medical faculty is really difficult these days because of mushrooming of medical institutions during the past few decades. Existing faculty in medical institutions does not have any formal training for teaching. They do not know; how to act as facilitator[22], how to conduct tutorials, how to give constructive feedback[5] and how to engage students in reflective practices[6,23]. Lack of trainers has compounded this issue[14]. A study carried out in 2010 revealed that PMDC recognized medical institutions did not have master trainers and less than 60% institutions were carrying out teachers training activities[24]. This study has also highlighted these inherent inabilities of medical faculty which should be addressed by modifying their teaching skills through faculty development programs[15] in which master trainers should be trained first to train others in the second phase.

This study reveals that Public and Private Sector Medical institutions established in Pakistan mainly follow teacher centric strategies used in traditional curriculum which do not facilitate development of critical thinking skills and abilities in students. They face a shortage of faculty to carry out small group discussions, tutorials, problem based learning, hands on problem solving etc as per standard guidelines because of old faculty authorization in public sector institutions and extra financial constraints for hiring of faculty in private institutions. Moreover, faculty is assigned additional administrative jobs besides teaching. Faculty therefore remains overworked and does not have ample time to prepare

explicit high order thinking assignments which can inculcate logical, rational and problem solving attitude in undergraduate medical students.

CONCLUSION

Individual skills / attitude of faculty hamper fostering of CT in undergraduate medical students. They are mainly due to lack of formal faculty training which should be addressed not only in the medical institutions but in the pre-medical schools as well to inculcate higher order critical thinking skills in students.

Conflict of interest: Nil

REFERENCES

1. Rowles J, Morgan C, Burns S, Merchant C. Faculty Perceptions of Critical Thinking at a Health Sciences University. Journal of the Scholarship of Teaching and Learning. 2013 Oct;13(4):21-35.
2. Atabaki AM, Keshtiaray N, Yarmohammadian MH. Scrutiny of Critical Thinking Concept. International Education Studies. 2015;8(3):93-102.
3. Tang L. Exploration on Cultivation of Critical Thinking in College Intensive Reading Course. English Language Teaching. 2016;9(3):18-23.
4. Ralston PA, Bays CL. Critical thinking development in undergraduate engineering students from freshman through senior year: A 3-cohort longitudinal study. American Journal of Engineering Education (AJEE). 2015 Nov 30;6(2):85-98.
5. Zhou J, Jiang Y, Yao Y. The Investigation on Critical Thinking Ability in EFL Reading Class. English Language Teaching. 2015;8(1):83-94.
6. Aronson L, Niehaus B, Hill-Sakurai L, Lai C, O'Sullivan PS. A comparison of two methods of teaching reflective ability in Year 3 medical students. Medical education. 2012 Aug;46(8):807-14.
7. Zayapragassarazan Z, Menon V, Kar SS, Batmanabane G. Understanding Critical Thinking to Create Better Doctors. Online Submission. 2016;1(3):9-13.
8. Naqi SA. Peer assisted learning as a formal instructional tool. J Coll Physicians Surg Pak. 2014 Mar 1;24(3):169-72.
9. Manan SA, Mehmood T. Culture and Critical Thinking in Classroom: Narratives from University Students in Pakistan. Asia Pacific Journal of Social Science. 2015;1(3):110-34.
10. Hoodbhoy P. Pakistan's higher education system—What went wrong and how to fix it. The Pakistan Development Review. 2009 Dec 1;48(4):581-94.
11. Dean BL. Citizenship education in Pakistani schools: Problems and possibilities. International Journal of citizenship and Teacher education. 2005;1(2):35.
12. Acharya KP. Fostering critical thinking practices at primary science classrooms in Nepal. Research in Pedagogy. 2016;6(2):1-7.
13. Kabeel AR, Eisa SA. The Correlation of Critical Thinking Disposition and Approaches to Learning among Baccalaureate Nursing Students. Journal of Education and Practice. 2016;7(32):91-103.
14. Saeed T, Khan S, Ahmed A, Gul R, Cassum S, Parpio Y. Development of students' critical thinking: the educators' ability to use questioning skills in the baccalaureate programmes in nursing in Pakistan. Journal of the Pakistan Medical Association. 2012;62(3):200.
15. As' ari AR, Mahmudi A, Nuerlaelah E. Our Prospective Mathematic Teachers Are Not Critical Thinkers Yet. Journal on Mathematics Education. 2017 Jul;8(2):145-56.
16. Parker TA, Guiton G, Jones MD. Choosing entrustable professional activities for neonatology: a Delphi study. Journal of Perinatology. 2017 Dec;37(12):1335-40.
17. Diamond IR, Grant RC, Feldman BM, Pencharz PB, Ling SC, Moore AM, Wales PW. Defining consensus: a systematic review recommends methodologic criteria for reporting of Delphi studies. Journal of clinical epidemiology. 2014 Apr 1;67(4):401-9.
18. Campbell SM, Cantrill JA. Consensus methods in prescribing research. Journal of clinical pharmacy and therapeutics. 2001 Feb 15;26(1):5-14.
19. Ahmad I, Rauf M, Rashid A, ur Rehman S, Salam M. Analysis of the problems of primary education system in Pakistan: Critical review of literature. Academic Research International. 2013 Mar 1;4(2):324.
20. Gul R, Cassum S, Ahmad A, Khan S, Saeed T, Parpio Y. Enhancement of critical thinking in curriculum design and delivery: A randomized controlled trial for educators. Procedia-Social and Behavioral Sciences. 2010 Jan 1;2(2):3219-25.
21. Rashid S, Qaisar S. Development of attitude through critical thinking. Pakistan Journal of Education. 2017 Jul 26;34(1).
22. Dehghanzadeh S, Jafaraghaee F. Comparing the effects of traditional lecture and flipped classroom on nursing students' critical thinking disposition: A quasi-experimental study. Nurse Education Today. 2018 Dec 1;71:151-6.
23. Zhang C, Fan H, Xia J, Guo H, Jiang X, Yan Y. The effects of reflective training on the disposition of critical thinking for nursing students in China: A controlled trial. Asian Nursing Research. 2017 Sep 1;11(3):194-200.
24. Khan MJ, Fatima S, Akhtar M, Owais M. Why should the faculty adopt reciprocal teaching as part of the medical curriculum?. Journal of Ayub Medical College, Abbottabad: JAMC. 2016 Oct 1;28(4):832-5.