

Evaluate the Outcome of AETCOM-BModule for Training the Dental Undergraduate in Conative Domain

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ABSTRACT:

Background: Rapidly changing education environment and competition in health care industry demands competent health care professionals. Dental Undergraduate Curriculum of Dental Council of India is designed to train the students in knowledge and skill domains but the conative domain is not address in a structured manner. AETCOM (Attitude, Ethics and Communication) module designed and implemented by Medical council of India is a unique module for training the undergraduates in conative domain. As the attitude, ethics and communication skills are universal among all the disciplines of healthcare services the same should be applicable for dental undergraduates. A Study in DMIMS Suggested Bioethics competencies for further additions in AETCOM based on recommendation of the UNESCO's Declaration of Bioethics and Human Rights'. So purpose of this study is piloting AETCOM-B module (AETCOM module including the Bioethical competency) among Dental undergraduate and evaluating its outcome for training them in conative domain.

Objectives:To study the perception of Dental interns regarding the effectiveness of existing BDS curriculum towards attainment of competencies with regard to conative domain.

Piloting and evaluating the outcome of AETCOM-B module on a cohort of freshly admitted batch of Dental Undergraduates after completion of their final year

Methodology: Conduct a baseline survey for evaluating the perception of Dental interns regarding the effectiveness of existing BDS curriculum towards attainment of competencies with regard to conative domain. AETCOM-B will be piloted in a freshly admitted batch of dental undergraduate and after completion of their final year the same survey will be collected from the batch. The results of baseline survey and batch under the study will be compared statistically.

Expected Results:- Dental students can be trained, to attain competence in Conative domain and their perception for attainment of competence in conative domain can be improved significantly.

Conclusion: AETCOM-B module can be very useful tool to improve the competence of Indian Dental Graduates in conative domain.

Keywords: AETCOM, Conative domain, competencies, Dental undergraduates.

INTRODUCTION:

Rapidly changing education environment and competition in health care industry demands competent health care professionals. Dental Undergraduate Curriculum of Dental Council of India is designed to train the students in knowledge and skill domains but the conative domain is not addressed in a structured manner. Graduating dentist has to be competent in all cognitive, psychomotor and affective domains according to the Dental Council of India.^[1] Although the Dental Council of India curriculum is subject centered, competence in the Cognitive and psychomotor skills is well achieved in the currently implemented Curriculum.^[2-5] Attainment of competence in affective/conative domain needs to be addressed among Indian Dental Graduate.^[6-12]

Medical Council has designed and adopted AETCOM (Attitude, Ethics and Communication) module for achievement of conative skills in medical graduates.^[13] Piloting this module among the selected nodal centers by Medical Council of India, has proven to be of high significance and satisfaction as perceived by Faculty as well as students.^[14] Dental undergraduate curriculum lacks such module in the curriculum. As the attitude, ethics and communication skills are universal among all the disciplines of healthcare services the same should be applicable for dental undergraduates.

Based on the UNESCO (United Nations Educational, Scientific and Cultural Organization) declaration for bioethics with inclusion of Protection of future generations and Protection of the environment, the biosphere and biodiversity,^[15] a study done in DMIMS (Datta Meghe Institute of Medical Sciences) has formulated suggestions for addition of bioethics in AETCOM module.^[16] So these inclusions regarding Bioethics also need to be evaluated for their relevance and outcome.

So purpose of this study will be to evaluate the outcome of implementing AETCOM module (including the Bioethics competencies as suggested by DMIMS) for dental undergraduates,

towards attainment of competencies in conative domain and their perception regarding the same. This combined module will be termed as AETCOM-B in this article.

BACKGROUND:

In November 2012, **A Fazel et.al.** published a paper on Dental Curriculum Revision in Iran: the author highlighted the gap in the national curriculum and the perceptions of dentists on achievement of essential competencies deriving the need for exploring the necessary amendments with higher emphasis on non clinical skills. He designed a questionnaire based on available competencies document regarding the availability of the essential competency in the curriculum and its need among dentists of Iran. The study concluded that less than 40 dentists believed that existing course provided the essential competencies.^[17]

Yasir Safi et.al. published a paper in June 2015 on Designing and Implementation of a Course on Successful Dental Practice by collecting a questionnaire from practitioners and academicians who revealed the need for inclusions of communication skills, ergonomics, dental ethics, and national rules for practice, medical emergency, clinic design and use of IT in dentistry. The inclusion of such domains in the course was satisfactory and expected to be used as model for further dental education.^[18]

Van der Berg-Cloete et.al., in 2016 surveyed a group of dental students in South Africa regarding the most important non clinical skills in dental students and found that students felt the need of qualities like working with others, personal qualities, managing services as important non clinical skills. The study suggested that the curriculum should focus on developing non clinical skills in dental students.^[19]

AIM AND OBJECTIVES:

To evaluate the outcome of AETCOM-B module for training the Dental Undergraduate in conative domain

Objectives are as follows:

- i. To study the perception of Dental interns regarding the effectiveness of existing Bachelor of Dental Surgery curriculum towards attainment of competencies with regard to conative domain
- ii. Piloting of AETCOM-B module on a cohort of freshly admitted batch of Dental Undergraduates
- iii. Assessing outcome of AETCOM-B module amongst the cohort after completion of their final year

METHODS:

Study settings: The study will be conducted at D.M.I.M.S.U. Wardha.

Research design: Prospective Cohort study

The study will be done in 3 steps; first step will include baseline survey for need analysis by collecting the perception of dental interns, regarding the training received and attainment of

competencies in conative domain under the current dental curriculum using the online questionnaire.

Second step will be Piloting of AETCOM-B on a cohort of freshly admitted batch of Dental Undergraduates.

- Piloting of AETCOM module to the Cohort from 1st year of BDS to final year BDS.
- Inclusion of the suggestions by DMIMS on Bioethics in the module.

Total duration of implementation of the Module will be of 4 professional years based on recommended in the AETCOM module and the inclusion of Bioethics Module based on Suggestions of DMIMS study.

Out of the 39 core and 15 non-core competencies of AETCOM module, 3 competencies (number 8, 9 and 48 in AETCOM Module) of AETCOM will be omitted for piloting due to reduced relevance to the discipline of program of BDS as well to reduce the time burden on final BDS students. All the 10 Competencies of Bioethics as per suggestion of DMIMS study will be included in the study

Piloting of the module will be done as per the guidelines of AETCOM module based on professional year and similar module will be planned for implementation of Bioethics module. The piloting of total 30 Modules will require total 155 hours including 44 hours of self-directed study and 111 hours of engagement with operator (Table 1).

Log book for recording the completion of module and attainment of the desired module will be made based on guidelines of AETCOM module. Feedback will be collected from all participation after completion of every module regarding their experience and relevance of the module in the curriculum.

After the cohort completes the final BDS and enters their Internship the same questionnaire will be used to assess the Perception of the cohort under study regarding the utility of AETCOM-B towards attainment of competencies with regard to conative domain

Participant: Single Dental Institute will be targeted for the study with prior permission from the Management and the Principal of the Institute. Dental Undergraduate students who consent to volunteer in the study will be included only from the targeted college. Intern batch which cleared final BDS in 19-20 will be included in baseline survey and 20-21 batch admitted in first year will be included in pilot implementation. Students admitted in 20-21 who do not want to attend the module (if any) will be used as controls. Only students who attend the module with above 80% attendance will be considered. No benefit or incentive will be provided to the Students participating in the study.

Sampling procedure & Sample size: AETCOM being a recent addition in the MCI curriculum, no published study is found in literature regarding its outcome, so the sample selection will be based on convenience sampling.

- i. **For Baseline survey for need analysis:** complete fresh batch of Dental interns at the beginning of internship (approximately 70-80 students) from single targeted Dental College
- ii. **For Piloting of AETCOM and Bioethics Modules (Cohort):** Complete batch of 100 newly admitted undergraduate students in the same targeted Dental College.

Participants who fail in the university exams of any academic / professional year will be provided with option to withdraw from the piloting / study. If they choose to withdraw, it will lead to reduction in sample size. If this number is significant then separate sessions will be conducted for the odd batch and continued to be included in the study. If any student of senior batch fails and recedes back to this batch in any profession year that student can attend the module but the data of such student will be excluded from analysis due to incomplete exposure to the module.

Data collection tool and process:

The perception of the interns will be collected using the questionnaire and responses of the whole batch will be descriptively evaluated and used as baseline for comparison of the change in perception of the new batch after the implementation of the AETCOM and Bioethics module. The feedbacks of the cohort after every module will be statistically evaluated and used to refine the implementation of the module and prepare the recommendations for revising the curriculum by the apex council.

Students' perception of their attainment of desired competencies is the dependent variable and the desired competencies and the module are independent variables. Other variable like Gender, attendance and overall performance of students in the academics will also be correlated with the outcome of the survey. Students will be instructed to avoid attending any similar training to avoid confounding bias and single operator will administer the module to eliminate operator bias.

Logbook of the participants will also be used as data tool. The log book entries of participants and the task completion or average score of performance in every module will also be collectively evaluated among the participant and correlated based on Gender, Attendance and overall academic performance.

Analysis plan:

Data of the baseline survey and the cohort perception after exposure to the modules will be collected, tabulated and analysed in SPSS software or any other similar software using non-parametric test of significance like Wilcoxon's sign rank test or Mann-Whitney U test. Most of the data will be qualitative hence non parametric tests of significance will be used. The feedback forms of every module will also be evaluated statistically to measure the satisfaction of participants regarding the content of every module, its implementation design and efficacy towards its expected outcome and ability of the operator to administer the module. Confidence interval of 95% will be considered to measure the significance of the tests.

EXPECTED RESULTS:

Based on the literature review, Baseline survey is expected to establish statistically significant evidence regarding lack of attainment of competencies in conative domain under the current curriculum on DCI. The Feedbacks of the Student after every module may form a significant evidence for relevance of every module of AETCOM-B to the dental undergraduate curriculum. A significantly positive outcome of training Dental Undergraduate to attain competence in Conative domain is expected leading to formulation of recommendations to dental council regarding generalisation of the same.

DISCUSSION:

Course curriculum for dental undergraduate was last revised in 2007 addressing domains of Knowledge skill and attitude needed for general dental Practice^[1]

Curriculum is composed of 3 components

1. Basic and clinical subjects common with medical curriculum
2. Basic subjects of dental curriculum which runs concurrently with previous component
3. Specific dental subjects with basis of first two components adequate for dental practice

Curriculum provides recommendation as to what knowledge, skills and attitude the dental graduates is expected to attain at completion of course. They are segregated under general and subject specific recommendations which enumerates list of expected knowledge, understanding, skill and attitude across all the subjects included in the course.

The curriculum lists the expected competencies from a dental undergraduate at completion of course under following heads:

1. General Skill
2. Practice Management
3. Communication
4. Community Resources
5. Patient care
 - a. Diagnosing
 - b. Planning Treatment
 - c. Delivery of treatment

American Dental Education association has also identifies 6 competencies for general dentists including communication and interpersonal skills, professionalism, critical thinking, health Promotion, Practice management and Patient care.^[20]

Based on the same guidelines by ADEA Australian dental council developed the Professional competencies of the newly qualified dentist and released it on Feb 2016.^[21]

In 2008 Canadian Association of Public Health Dentistry released the Discipline Competencies for Dental Public Health in Canada which was listed under 8 criteria's of implementation and evaluation, partnership, collaboration and advocacy, diversity and inclusions, leadership, communication and oral health care.

Further correlated the same with core competencies of Public health agency of Canada 2007^[22]

Yaser Safi et.al.in 2015 published a study emphasising the need of additional training for multiple nonclinical competencies for successful dental practice.^[18] The domains covered were

1. Ergonomics and occupational health
2. Workplace design
3. Professional development
4. Applications of IT in Dentistry
5. Rules and Regulations for dental Practice in the country
6. Safety
7. Medications and para-clinical referrals in dentistry
8. Management of medically compromised patients
9. Medical emergencies
10. Dental ethics
11. Communication skills
12. Dental instruments and equipment

An empirical comparison of Indian Dental Curriculum models with international reinforces the need to revise the dental curriculum towards a competency-based curriculum with special emphasis to leadership skills, interpersonal soft skills, and practice management knowledge as well as skills. ^[10-12]

SatheeshElangovan et.al. Identified that the Indian dental graduates excel theoretically but fail to connect it what is done clinically. They also identified the need to change the Indian dental curriculum from subject centric to more student and community centric learning with emphasis of soft skills and research. ^[7]

VasantiLagali-Jirge studied the readiness of dental interns for private practice and noted that although the curriculum enables the student to perform well in academics practice but they are not prepared for general private practice, although if they work as an apprentice, they develop adequate practice management skills.^[6]

Although the course curriculum covers the general skills and practice management competencies, but most students fail to attain the same and the existing method for evaluation for attainment of these competencies is also very obsolete.^[8]

Effective implementation and outcome of any program has a huge dependence on its curriculum. Subject centered tea bag model of education with cure-oriented teaching and sheer neglect to leadership, management, communication, ethics and attitude is effective to secure marks in MCQ based entrance for post-graduation further provide treatment at tertiary care center. Student are neither aware of basic public problems, community needs nor empowered to work at primary level. Teaching-learning and assessment of subject knowledge rather than soft skill and attitude makes it difficult to work at community level^[8]

VasantiLagali-Jirge published a review in 2015 regarding the overview of Indian dental education and need for paradigm shift. The author highlighted the compartmentalised dental education system which is exam oriented and the instructions are also assessment oriented

with lack of scope for either vertical or horizontal integration. The author strongly suggested the need for a paradigm shift in Indian dental education to a Competence Based Curriculum with reference to the global trends in health education.^[9]

In 2018 Medical council of India introduced and from 2019 implemented the new Competency Based curriculum for medical undergraduates with integration and special emphasis on Attitude, Ethics and Communication (AETCOM) module. This newly designed curriculum addressed most of the short coming of the previous curriculum of 1997 to provide Indian Medical Graduate with the attributes at par with global trends. It provided subject specific competencies with use of Millar's pyramid to assess the levels of attainment of competencies. The major required competencies of the IMG were being a good Clinician, Leader and member of healthcare team, communicator, Lifelong Learner and a committed Professional. The 5 competencies were further divided into 35 sub-competencies. It has provisions for horizontal and vertical integration of competencies along the course with provision for integration of AETCOM module.^[23] Few of the related studies were reported^[24-28].

Indian Medical Curriculum can serve as a road map for developing similar Competency based curriculum for dental specific subjects. The elaborately designed AETCOM model can be integrated in the Indian Dental Curriculum. Utility of AETCOM needs to be evaluated amongst the dental undergraduate to predict the outcome.

Scope:

- This study provides a scope for developing evidence and base line data for the perception of dental interns regarding the attainment of competencies in conative domain as an outcome/attribute of existing curriculum
- This study explores the utility of AETCOM module in curriculum of dental undergraduate for the same.
- This study will also explore the impact and utility of the bioethics module derived from the Suggestions of DMIMS study.
- The outcome of the study can form the foundation for redesigning the complete undergraduate curriculum including knowledge and skill competencies based on Competencies based model.

LIMITATIONS:

- This study also possesses few limitations like existing curriculum for dental undergraduate has not been designed to implement and assess in competency-based system, hence pilot study on cohort will be challenging to implement and assess.
- The existing syllabus is extensively spread over the complete tenure of 4 professional year so incorporating additional 155 hours will be really difficult
- Study being Uni-centric has its own limitation with regards to relevance across different institutes and universities.
- Extensive training to the teaching staff is of core importance to implement and assess the outcome of this study.

- Teaching faculty in Indian colleges are already over burdened with clinical, academic, research and administrative duties, this study can add work load on teaching staff.

Implications (Probable):

- Evidence generated can be used to formulate recommendation to the apex council for policy formation regarding the inclusion of AETCOM module in the curriculum for Dental undergraduate.
- Evidence generated for impact and utility of the bioethical modules as suggested by study in DMIMS can formulate recommendation to the apex council towards its complete inclusion in AETCOM module.
- The Indian Dental Graduate Attributes can be designed in line with Indian Medical Graduate Attributes.
- With holistic Education system and proper training the doctors of every discipline in India can be trained to be more competent in providing humane service in the humanities.

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Annexure:

Table 1	Distribution of AETCOM and Bioethics - modules and contact hours among the professional years of Undergraduate students.					
Professional Year	AETCOM Modules to be implemented	Hours of engagement in the module	Bioethics Module to be Implemented (DMIMS Suggestions)	Hours of engagement in the module	Total number of modules	Total number of hours of engagement
I	5	34	-	-	5	34
II	8	37	-	-	8	37
III	5	25	3	15	8	40
IV	7	34	2	10	9	44
TOTAL	25	130	5	25	<u>30</u>	<u>155</u>
111 student engagement + 44 hours of self directed study = 155 hours of module						