The Professional Medical Journal
www.theprofesional.com

DOI: 10.29309/TPMJ/18.4176

ORIGINAL PROF-4176

EVIDENCE BASED MEDICINE;

EVIDENCE BASED MEDICINE PERCEPTIONS OF UNDERGRADUATE MEDICAL STUDENTS IN KARACHI.

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Article received on:
21/07/2017
Accepted for publication:
20/02/2018
Received after proof reading:
02/06/2018

ABSTRACT… Objectives: Evaluate perception and barriers of practice of Evidence based Medicine of first and third year medical students of Jinnah Medical and Dental College Karachi. **Study Design:** Descriptive, cross sectional. **Setting:** Department of Medicine, Jinnah Medical and Dental College Karachi. **Period:** Dec 2013 to Oct 2014. **Subjects & Methods:** Of 100 students, response rate was 71% in each year, first year males were n=20 (28.2%) females n=51 (71.8%) in third year males were n=17 (23. 9%) and females n=54 (76.1%). A student based medicine EBM curriculum was imparted to the first and third year medical students in each of 2 semesters of 18 and 16 weeks duration. A Questionnaire based on Likert scale comprising of 10 questions was filled out at the end of the course of the first and third years during October 2014. **Result:** Response rate was 71%, on Likert scale 4 and 5 First year students interest in EBM Classes was n=61(89.5%) as compared to n=36(50.8%) in third year students. Importance of steps of EBM for practicing clinical medicine was appreciated by n=60(84.5%) of first year students versus 47(66.2 %) in third year students. EBM course helped in understanding importance of articles in practice of medicine articles in n=44(61.9%) of first year students as compared to 39(54.9%) of third years. Barriers perceived were practice of EBM in the institution was lacking as reported by n=35(49.3%) of first year students and n=47(66.2%) in third year students, a longer duration of course was desired by n=41(57.8%) of first year students the respondents agreed versus=35(49.3%) of third years, and the course was considered more theoretical than practical n=35(48.3. %)by first years and n=48(67.6%) by third year students, p values were not significant. **Conclusion:** More Pre-clinical as compared to clinical medical students recognized EBM as an important component of undergraduate education. This positive attitude needs to be nurtured for self-directed learning as is evident in their realization of articles being important for clinical practice. The declining interest is due to EBM not being an examination subject, lack of practice of EBM in the institution, and poor electronic resources and lack of vision of the institution to embed EBM in the curriculum in to sustain interest as students moved to higher levels and will remain a barrier till senior faculty give way to innovations in the field of medical education.

Key words: Evidence Based Medicine; Undergraduate Education, PICO.

Article Citation: Samad F, Saeed Z, Hasan Z, Fahim MF. Evidence based medicine; evidence based medicine perceptions of undergraduate medical students in Karachi. Professional Med J 2018; 25(6):896-902. **DOI:**10.29309/TPMJ/18.4176

INTRODUCTION

Evidence-based medicine (EBM) is defined as the 'conscientious, explicit, and judicious use of current best evidence and patient values[1,2] as defined by Sacket who is regarded as the father of EBM. Going further back in 981-1037 Ibn Sina outlined the principles in Al-Qanoon a famous treatise which was a part of medical curriculum in Europe[3] Integral to EBM is the ability to access the latest scientific evidence in regard to the patients clinical problem and to critically appraise the literature for its validity and applicability to the patient keeping his needs foremost.[4]

EBM seeks evidence in practice of medicine as opposed to traditional medicine and imparts the ability to critically review the literature for its internal and external validity, considering the research evidence while the latter does not.[5] EBM laid down the principles for grading the evidence in the form of an Evidence Pyramid and levels of Evidence.[6]

The existence of EBM was almost absent and EBM

databases were unheard of in both faculty and students. When the author was given additional charge of developing Medical Education department of the institution, she developed an EBM curriculum in 2007 for the 1st and 3rd year medical undergraduates. Fortunately the institution was receptive to the curriculum. This study was undertaken to assess the perceptions and barriers by the 1st and 3rd years at the end of their 2nd semester in October 2014.

MATERIAL AND METHODS

A student's based medicine (EBM) curriculum was developed by the author in 2007[1,4] for the first and third year medical students and integrated in their curriculum in each of 2 semesters of 18 and 16 weeks. Although it was not an examination subject participation and passing in examinations was mandatory in sitting the annual University examination A Questionnaire based on Likert scale comprising of 10 questions was filled out at the end of the course of the first and third years during October 2014. This was prior to change to the modular system however the latter would have made no difference as the system remains Para clinical with no exposure to patients. Seventy one students in each year participated of a total of 100.

At the first year level the strategy was weekly lectures and basic concepts of EBM, the 5 steps of EBM assess, ask, acquire, appraise and apply. Evidence pyramid, levels of evidence. EBM Databases were discussed and websites provided ,subsequently formulation of a question based on patient population, intervention, comparison and outcome the PICO question was introduced which led to search of the EBM data bases on electronic media. Concepts to study designs and statistical calculation of absolute risk, relative risk, odds ratio, measures of affect i.e. p value and confidence interval were introduced. At the third year level bi-weekly there was a revisit of all topics and there was more in-depth discussion, formulation of PICO questions and search of databases especially Pub Med and these assignments were then shared. Clinical examples used in the EBM course were derived from clinical cases during their posting. Interactive sessions were conducted students building the questions during the session and search being made using electronic media. EBM was integrated with Journal club presentations with critical appraisal and only original research article, and randomized control trial were presented in groups of 3 twice one in each semester and was mandatory to sit the University examination.

Statistical Analysis

Data was analyzed through the software SPSS version 20.0. For Likert scale, frequency and percentages were calculated for all variables. Multiple Bar charts was made to show the comparison of different questions. To see the significance between the groups Chi-square test was applied. P-value < 0.05 was considered to be statistically significant.

RESULTS

The curriculum developed is detailed in Table-I. Response to questions 1 to 6 is shown in Tables-I & II on the Likert Scale, the following results highlight the disagreement on Likert 1 and 2.

1 Is Evidence based Medicine (EBM) essential for Pre-clinical students

Only n=5 (10 %) of first year students disagreed versus n=12(19.9.1%) third year students, p value 0.520

2. Are EBM steps important for practicing clinical medicine?

Of first year students n=4(5.6 %) of first year students disagreed versus n= 8(11.23 %), p value 0.520

3. I am interested in EBM class

Of first year students n=7(9.8 %) were disinterested in EBM Class third year students response was n=16(22.6 %). p value 0.520

4. EBM course helps me in understanding the importance of articles in the practice of clinical medicine

Of first year students n=9(12.7 %) of first year students disagreed **compared** to n=14(19.8 %) of third years p value 0.605

Topic	Course
EBM	Definition
	Evidence pyramid and levels of evidence
Steps of EBM	5A's & PICO
Statistical Calculation	Absolute risk, Relative risk, Odds ratio, P-value and Confidence Interval
Study Design	Cross-sectional
	Case study
	Case control
	Cohort study
	Randomized control Trial Systematic Review Metanalysis
EBM Databases	PICO question and search electronic database
Journal Club Presentations with critical appraisal	Original Research Article
	Randomized control study
	Systematic review and Meta-Analysis

Table-I Course Outline

Questions	1st Year				
	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
Is Evidence based Medicine (EBM) essential for Pre-clinical students	77.5	9.9	5.6	1.4	5.6
Are EBM steps important for practicing clinical medicine	50.7	33.8	9.9	1.4	4.2
I am curious about EBM class	62.0	23.9	4.2	2.8	7.0
EBM course will help me in understanding the importance of articles in the practice of clinical medicine	23.9	38.0	25.4	8.5	4.2
I do not see the practice of EBM in my institution	19.7	29.6	33.8	9.9	7.0
The EBM steps will help me in history taking	21.1	39.4	25.4	7.0	7.0

Table-II. Perceptions First Years

Questions	3rd Year				
	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
Is Evidence based Medicine (EBM) essential for Pre-clinical students	19.7	25.4	38.0	9.9	7.0
Are EBM steps important for practicing clinical medicine	32.4	33.8	22.5	8.5	2.8
I am curious about EBM class	25.4	25.4	26.8	14.1	8.5
EBM course will help me in understanding the importance of articles in the practice of clinical medicine	23.9	31.0	25.4	9.9	9.9
I do not see the practice of EBM in my institution	33.8	32.4	15.5	12.7	5.6
The EBM steps will help me in history taking	19.7	25.4	31.0	16.9	7.0

Table-III. Perceptions third years

5. I do not see the practice of EBM in my institution

Of first year students n=12(16.9 %) disagreed compared to n=13(18.3. %) of third years p value 0.535

6. The EBM steps will help me in history taking

Of first year students n=10 (14 %) disagreed compared to n=17(23.9%) of third years p value 0.585

The barriers to perceptions are represented in Figures I & II scale 4 and 5 are combined to agree and 1 and 2 to disagree.

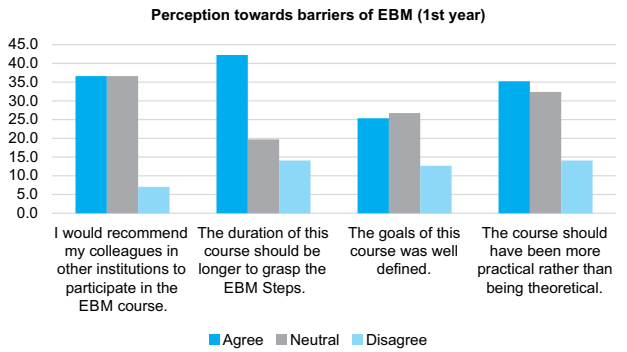

Figure-1. Barriers to perception first years

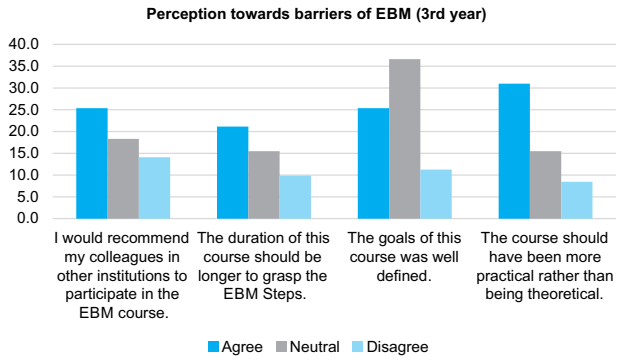

Figure-II. Barriers to perception third years

7. I would recommend my colleagues in other institutions to participate in the EBM course

Of first year students 11(18.5 %) disagreed compared to n=22(31 %) of third years p value 0.422

8. The duration of this course should be longer to grasp the EBM Steps

Of first year students **n**=16(24. %) disagreed versus n=25(22.6%) of third years p value 0.759

9. The goals of this course was well defined

Of first year students n= 17(24 %) disagreed versus n= 16(22.6 %) of third years p value 0.243

10. The course should have been more practical rather than being theoretical

Of first year students n=13(18.3. %) disagreed versus n=12(17.6%) of third years p value 0.333

DISCUSSION

The principles and application of EBM aroused interest in 89.5% of first year students. The enthusiasm however dropped to 50.8% in third year. Steps of EBM for practicing clinical medicine was appreciated by 84.5% of first year students but unfortunately there was a drop of appreciation to 66.2 % in third year students. However it is encouraging that EBM course helped in understanding importance of articles in practice of medicine articles in 61.9% of first year students and 54.9% of third years. Barriers perceived were practice of EBM in the institution was lacking as reported by 49.3% of first year students and 66.2% of third years as they had become more discriminatory, a longer duration of course was desired by 57.8% of first years and 49.3% of third years, and the course was considered more theoretical than practical by 48.3 % of first years and 67.6% of third years. As they progressed to more clinical work they found that EBM was not practiced in their institution 49.1% in first years as compared to 66.2% in third years as there was lack of role modeling and students overburdened with redundant curriculum and lack of resources would have no time to bring into practice the principles of EBM. Although EBM is being practiced for years in the Western medicine, the lack of implementation of EBM by senior faculty has the same effect on juniors and students and they lose their initial enthusiasm as seen in this study. Senior faculty faces difficulty in learning newer technological skills, this acting as a barrier to practice of EBM.[7,8] The Residents also face EBM barriers, in spite of access to electronic media and student attitudes to EBM learning may be one of the factors. An American study found third-year medical students accepting EBM more readily than first-year medical students, as they were able to appreciate the clinical relevance of the subject They participated in a workshop and surveys of skills and attitudes pre and post workshop towards EBM resulted in increased access of journal articles, textbooks popularity remained unchanged[8] this is similar to the finding in this study 61.9% of first year students and 54.9% of third years realized the importance of articles in clinical learning.

At the University of Bristol UK third-year medical students experiencing medical statistics for the first time had improved skills in searching

databases and could relate EBM to clinical medicine.[9]

EBM has become an integral part of undergraduate medical education after recommendation by Association of American Medical Colleges (AAMC).[10] Similarly in the UK to quote – "Statistical reasoning is fundamental to the development of sound critical thinking within Evidence-Based Medicine (EBM)" was not defined by the General Medical Council (GMC) in Tomorrow's doctor[11] however GMC advocates critical appraisal in its 2009 recommendations. In UK all 32 Medical schools teach EBM at the undergraduate level, although the curriculum is not uniform[12] thus it will be appropriate at this stage to review some other studies in developed countries at the postgraduate level

In a study involving Norwegian physicians most of them had not attended EBM Workshops or used EBM data bases and preferred discussion with colleagues rather than accessing databases.[13]

Australian General Practitioners (GPs) were disinterested in EBM, reasons being busy practice, lack of technological skill or a cynical view of the utility of EBM. In addition students found clinicians reluctant to practice EBM and preferred rather to rely on their clinical expertise. Some of them were opponents of EBM and others faced lack of support from the institution.[14]

It is however important to remember that the patient is always first and the proponents and opponents of EBM; should help the patient and not get engaged in academic debates if genuine clinical expertise is available.[15]

Studies from developing countries on undergraduates include an Iranian study at Isfahan University of Medical Sciences a 4- day workshop, of EBM was conducted to asses student's ability to form a clinical question and skill to search the literature The workshop increased students' ability which was significant p 0.004).[16]

In A Malaysian study undergraduates went through a 6 months course in EBM at the end of which there was no change except that they could understand journals better but, they were reluctant to use databases(p=0.144).[17]

Another Malaysian study agreed that poor technological support such as a lack of computer with reliable internet access, as well as a lack of time and poor awareness of EBM are barriers to implementing EBM.[18]

An Indian study in which Faculties teaching EBM were involved there was a consensus on EBM being important for ensuring a better clinical understanding of future clinical practice and its integration in undergraduate curriculum.[19]

There are review articles from Pakistan. .At Shifa College of Medicine EBM is integrated in their academic activities like morning meetings and journal clubs.[20]

Another review article from Peshawar[21] discusses hurdles to EBM in physician in practice of EBM, like inaccessible databases, inadequate libraries, lack of workshops, and role models. Efforts are made by The Shifa College of Medicine and Nursing, Pakistan. A 14 hour workshop was organized for nurses The process increased awareness and interest in EBM,[22]

A survey in Lahore shows that more than 60% of Pakistani physicians have some awareness of EBM, but 71% of medical students and young graduates had no idea of EBM.[23]

A study regarding awareness revealed that only 16 (9 students and 7 doctors) admitted that they had heard about EBM concluding that the concept of EBM is almost unknown at this institution.[24]

Four Dental colleges from Karachi, Pakistan participated in knowledge and awareness study amongst dentists 68% of the participants were aware of guidelines and 88% were willing for training and 52% had no knowledge of EBM.[25]

Workshops on EBM are conducted by Shifa College of Medicine, Islamabad, and University of Health Sciences, Lahore both at undergraduates

and post graduates.[23,26] but implementation needs recognition of EBM by the Pakistan Medical and Dental Council for undergraduate education and by College of Physicians and Surgeons Pakistan for post graduate education and should be part of the examination as has been implemented by the Association of American Medical Colleges in the United States Medical Licensing Examination (USMLE)step I examination and UK[11,27] It is heartening to know that a study by the community health services of a Pakistani institution recommends inclusion of EBM in the curriculum.[28]

The use of evidence in patient care is important and relying on older and redundant modes of patient care should be on its way out and good practices inculcated from undergraduate level to bring in a generation of doctors practicing up to date medicine and contributing to medicine and bringing about a positive impact on health care outcomes.

LIMITATIONS

There was a proposal to carry forward this curriculum to higher clinical levels and give hands on experience to students but it was not possible as there was a lack of teachers and stiff opposition from the basic and clinical faculty. It is not far away that EBM becomes a core curriculum for both undergraduates and postgraduates

CONCLUSION

EBM provides information in all aspects of patient care and this is stored in EBM Databases learning to access this data will result in Evidence based practice. It is identifying and evaluating the best information relevant to a specific clinical problem. The scientific approach to patient care and discriminating attitude to the available literature will result in a generation of caring and soundly practicing doctors. Students should be inducted to attitude right from the first day of their undergraduate education. The potential of students is immense it just needs to be tapped.

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3	Zainab Hasan	Manuscript preparation and proof reading.	
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