

## ORIGINAL ARTICLE

# Perceptions and Practices of Evidence-Based Medicine among Medical Practitioners of Private Medical Colleges in Mangalore City of South India: A Cross-Sectional Study

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## ABSTRACT

**Background:** Evidence Based Medicine (EBM) has become the latest focus among medical professionals for improved health care. However, the practice of EBM in routine health care and its true impact in day to day practice is uncertain.

**Aims:** This study assessed the perceptions, practice and determined perceived barriers in implementation of EBM among practitioners of private medical colleges. **Settings and Design:** A cross-sectional study was conducted from January to March 2020, among medical practitioners in Dakshina Kannada district of Karnataka. **Methods and Material:** After sample size estimation, 160 practitioners were selected by simple random sampling. Informed consent and a self reporting validated questionnaire to assess various aspects of EBM were emailed of them, out of which, 132(82.5%) responded with completely filled in questionnaires. A visual analogue scale was used to determine the attitude of the participants towards EBM. Data obtained was analyzed and represented as proportions. For attitude scale, median and quartiles were obtained. **Results:** Among the participants 96.2% had heard of EBM, however only 42.5% were trained in EBM. Referring to medical textbooks (75.8%) and CME's/conferences (72.7%) were most preferred in clinical decision making. Most of them had a welcoming attitude in current promotion of EBM and strongly agreed that practice of EBM improves patient care. Only 27.6% and 29.9% used EBM and Cochrane database of systematic reviews for decision making, respectively. Most perceived barriers in implementation of EBM included inaccessibility (51.2%) and lack of EBM skills (48.0%). **Conclusion:** The medical practitioners were generally positive towards EBM and had good understanding of the technical terms used as well, which makes it conducive.

**Key words:** Evidence Based Medicine, Medical Practitioners, Perceptions, Practice.

## INTRODUCTION

“Evidence-Based Medicine” (EBM) entered the lexicon as a new term in 1992. Since then, it has become the latest focus in the search for improved health care among medical professionals.<sup>[1]</sup> EBM is defined as the “conscientious, explicit, and judicious use of current best evidence.”<sup>[2]</sup> It integrates individual clinical expertise with the best available external clinical evidence and gives importance to individual patient values and preferences in making clinical decisions about patient care.<sup>[3]</sup>

The practice of EBM is a lifelong process of self-directed and problem-based learning in which, caring for the patients, creates the need for clinically important information about the diagnosis, prognosis, specific therapy, and other clinical and health care-related issues. Instead of reviewing the contents of dozens of journals routinely for interesting articles, EBM suggests to target reading, to issues related to specific patient problems. A more productive way of keeping in pace with

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the current literature may be by developing clinical questions and then searching current databases.<sup>[4]</sup>

EBM “converts the abstract exercise of reading and appraising the literature into the pragmatic process of using the literature to benefit individual patients while simultaneously expanding the clinician’s knowledge base.”<sup>[4]</sup> It helps in making a conscientious effort to research-based clinical decisions, which is most likely to be free from bias, and using the interventions most likely to improve prognosis or survival.<sup>[5]</sup> It has been the focal point of medicine from the academic as well as professional perspectives, including evidence-based practice, evidence-based nursing, evidence-based health, and evidence-based health policy.<sup>[6-9]</sup>

There lays a great deal of discrepancy between the research evidence and introduction of this evidence into the routine clinical practice due to many factors, ranging from the health institutions needs and demands, health-care systems, health professionals, patients to quality of the evidence.<sup>[10,11]</sup> Moreover, more difficulties and challenges are encountered in developing countries, related to EBM implementation and practice.<sup>[12]</sup>

There is uncertainty in the practice of EBM in routine health care and its true impact in day-to-day practice; also application of EBM has many barriers. Most studies in EBM have been conducted in developed countries, whereas very few studies have been carried out in developing countries. Hence, this study was planned to explore the perceptions and practices of EBM among medical practitioners and determine the perceived barriers in its practice.

**MATERIALS AND METHODS**

This cross-sectional study was conducted from January 2020 to March 2020, among medical practitioners in Dakshina Kannada district of Karnataka, South India. The ethical clearance for the study was obtained from the Institutional Ethical Committee. Sample size was calculated based on the previous study<sup>[13]</sup> which stated that 77% of the participants had heard of EBM. At 95% confidence intervals and 5% allowable error, the sample size was calculated as 120 using the formula  $4pq/d^2$ . Adding a non-response rate of 30%, the final sample size was calculated as 156, but was rounded off to 160 participants. The list of medical practitioners was obtained from the enrollment register at Indian Medical Association, Mangalore. Those members whose email IDs were available were included in the sampling frame. Among them, 160 participants were selected using simple random sampling method.

The information sheet containing details of the nature and purpose of this study, the consent form and questionnaire were sent by email to each participant. Out of 160 participants who constituted the sampling frame, 132 (82.5%) responded by sending completely filled in questionnaires, 5 (3.1%) responded

by sending incompletely filled in questionnaires, and 23 (14.3%) did not reply to the email, in spite of the reminder email.

A self-administered, pretested, and validated questionnaire was used which was adapted from the study done by McColl *et al.*<sup>[14]</sup> The questionnaire consisted of closed questions to assess the awareness and usage of EBM resources (e.g., abstracting journals, MEDLINE, and Cochrane Database of Systematic Reviews), understanding of technical terms and perceived barriers to practicing EBM. A visual analog scale (minimum 0 to maximum 10) was used to determine the attitude of the participants toward EBM.

Data entry and analysis were done using SPSS trail version 11.0. Awareness, usage of EBM resources, understanding of technical terms used, and perceived barriers to practicing EBM were represented as proportions. For attitude scale (minimum 0 to maximum 10), median and quartiles (25<sup>th</sup>–75<sup>th</sup> percentiles) were obtained.

**RESULTS**

Among the participants, 84 (63.6%) were male. Majority of them, 84 (63.6%) practiced in an urban setting. Most of them, 127 (96.2%) had heard of EBM.

Among the participants, who had heard about EBM, only 54 (42.5%) were trained in EBM. The modalities of training among participants who were trained in EBM before were, by Continuing Medical Educations (CMEs) among 25 (46.3%), workshops among 23 (42.6%), and by seminars among 6 (11.1%). Of the total participants, majority, 121 (91.7%) felt that they needed training or further training in EBM. Among them, 72 (59.5%) preferred 1 day training program, 37 (30.6%) preferred half a day’s session, and the rest 12 (9.9%) more than a day’s training program. Most of the participants, 86 (71.1%) of them preferred to have workshops as the mode of training. CMEs were preferred by 32 (26.4%) participants.

Majority of the participants, 100 (75.8%) of them referred

**Table 1:** Distribution of various sources of information used by the participants during the clinical decision-making process (n=132)

Sources*	n (%)
Consulting colleagues	72 (54.5)
Medical textbooks	100 (75.8)
Consulting senior doctors	80 (60.6)
Electronic search engines	66 (50.0)
Clinical practice guideline	80 (60.6)
Research articles	76 (57.6)
CMEs/conferences/problem-solving conferences	96 (72.7)
Resident’s manuals	13 (9.8)

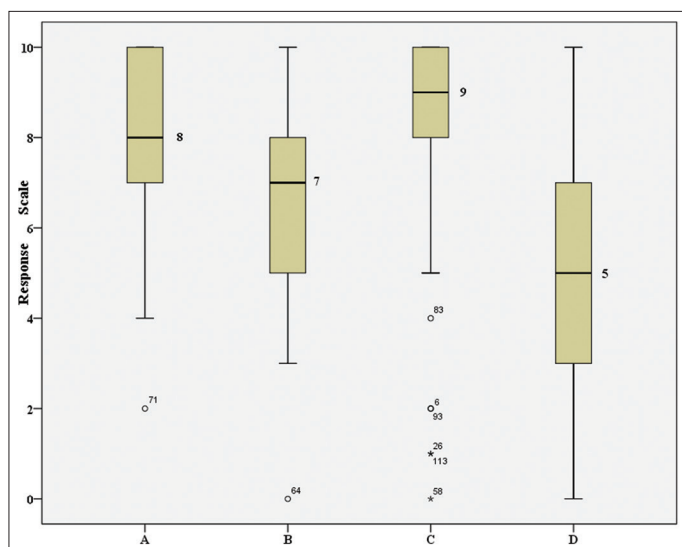
\*Includes multiple responses, CMEs: Continuing medical educations

to medical textbooks, 96 (72.7%) to CME's/conferences, and 80 (60.6%) consulted senior doctors or clinical practice guidelines, as the source of information used during clinical decision making. Among the participants, 76 (57.6%) mentioned referring to research articles in clinical decision-making [Table 1].

Among those who had heard of EBM, attitude regarding EBM was assessed. Most of them were welcoming the current promotion of EBM, although attitude of colleagues was slightly less welcoming. Most of the participants strongly agreed that practice of EBM improves patient care, however, perceived usefulness in day-to-day practice was found to be very less as expressed by the participants [Figure 1].

Awareness and perceived usefulness of relevant information sources were assessed among the participants. The participants had a low level of awareness of extracting journals, review publications, and databases relevant to EBM. One hundred and thirteen (89%) of the participants were aware of Cochrane database of systematic reviews; however, only 38 (29.9%) used it for decision-making. Among the 113(89%) participants who were aware of EBM, only 35(27.6%) used it for decision making. Database of abstract of reviews of effectiveness was used only by 23 (18.1%) of them in decision-making [Table 2].

Most of the respondents understood the technical terms used in EBM and could explain it to others. However, 58



**Figure 1:** Attitude of participants regarding evidence-based medicine ( $n=127^*$ ), box plots show maximum and minimum values, median, and first and third quartiles, \*five participants who did not hear of evidence-based medicine (EBM) were excluded. (A – Attitude toward current promotion of EBM, B – Attitude of colleagues toward EBM [10=extremely welcoming, 0=extremely unwelcoming], C – Practice of EBM improves patient care [10=strongly agree, 0=strongly disagree], D – Perceived usefulness of EBM in day-to-day practice [10=extremely useful, 0=totally useless])

**Table 2:** Awareness and perceived usefulness of relevant journals, review publications, and databases among participants ( $n=127^*$ )

Review publications and databases	Unaware (%)	Aware (%)	Read (%)	Used for decision-making (%)
Cochrane database of systematic reviews	14 (11.0)	48 (37.8)	27 (21.3)	38 (29.9)
Evidence-based medicine	14 (11.0)	48 (37.8)	30 (23.6)	35 (27.6)
Database of abstract of reviews of effectiveness	33 (26.0)	46 (36.2)	25 (19.7)	23 (18.1)

\*Five participants who did not hear of evidence-based medicine were excluded

**Table 3:** Perceived understanding of technical terms used in EBM among participants ( $n=127^*$ )

Technical terms in EBM	Can explain (%)	Some understanding (%)	Do not understand (%)
Cohort study	82 (64.5)	40 (31.6)	5 (3.9)
Case control study	98 (77.2)	28 (22.0)	1 (0.8)
Randomized control trials	101 (79.6)	21 (16.5)	5 (3.9)
Systematic review	75 (59.1)	45 (35.4)	7 (5.5)
Meta-analysis	62 (48.8)	54 (42.5)	11 (8.7)
Relative risk	80 (63.0)	44 (34.6)	3 (2.4)
Absolute risk	78 (61.5)	44 (34.6)	5 (3.9)
Odds ratio	69 (54.3)	43 (33.9)	15 (11.8)
Number needed to treat	40 (31.5)	59 (46.5)	28 (22.0)
Confidence interval	64 (50.4)	42 (33.1)	21 (16.5)
Publication bias	58 (45.7)	49 (38.6)	20 (15.7)
Heterogeneity	45 (35.4)	44 (34.6)	38 (30.0)
PICO	28 (22.0)	25 (19.7)	74 (58.3)

\*Five participants who did not hear of EBM were excluded, PICO: Participant intervention comparator outcome, EBM: Evidence-based medicine

**Table 4:** Perceived barriers in the implementation of EBM among participants ( $n=127^*$ )

Barriers in EBM implementation <sup>#</sup>	n (%)
At individual level	
New concept	59 (46.5)
Do not find it useful	10 (7.9)
Lack of EBM skill	61 (48.0)
Skeptical about the concept	56 (44.1)
Related to the current evidence quality	
Evidence not reliable	34 (26.8)
Too much evidence	37 (29.1)
Evidence not available	26 (20.5)
Not accessible	65 (51.2)

\*Five participants who did not hear of EBM were excluded, <sup>#</sup>includes multiple responses, EBM: Evidence-based medicine

(45.7%) and 45 (35.4%) understood publication bias and heterogeneity, respectively, and could explain it to others. Only 28 (22%) understood and could explain the Participant Intervention Comparator Outcome (PICO) question model [Table 3].

The main perceived barrier in the implementation of EBM at individual level was the lack of EBM skills among 61 (48.0%) practitioners. Fifty-nine (46.5%) and 56 (44.1%) participants perceived that the concept being new and was skeptical about the concept, respectively. Inaccessibility and too much evidence were the major perceived barriers related to the current evidence quality among 65 (51.2%) and 37 (29.1%) participants, respectively [Table 4].

## DISCUSSION

In the current study, 96.2% had heard of EBM compared to Chan and Teng who reported that 77.5% of the participants had heard of EBM.<sup>[13]</sup> In the current study, respondents were generally positive toward the practice of EBM similar to the other studies.<sup>[13-16]</sup> Most of the participants felt the need to be trained in EBM and preferred workshop as the mode of training.

Although, most of the respondents agreed that practicing EBM improved patient care, the median value for perceived usefulness in their clinical practice was 5 on a scale of 0–10 (interquartile range: 3;7), which is similar to the findings of McColl *et al.*<sup>[14]</sup>

The study findings suggest that majority of the participants referred to medical textbooks, consulted senior doctors or clinical practice guidelines and CMEs as the source of information used during clinical decision-making. This is similar to the findings of Chan and Teng who reported that the participants relied primarily on senior colleagues, clinical practice guidelines and textbooks to solve difficult clinical problems.<sup>[13]</sup> In the current study, higher proportion of the participants mentioned referring to research articles in clinical decision-making, while the previous study reported lower proportion of participants referring to research articles.<sup>[13]</sup>

The participants in the current study had a high level of awareness of extracting journals, review publications, and databases relevant to EBM, similar to the findings of Chan and Teng who reported that the level of awareness of EBM and usage of EBM resources were rather high except for Cochrane Database of Systematic Reviews.<sup>[13]</sup> Most of the studies reported low level of awareness of the Cochrane Database of Systematic Reviews, however, in the current study, 89% of the respondents were aware of the same.<sup>[13,14]</sup>

The previous studies reported that the respondents showed

a partial understanding of the technical terms used in EBM.<sup>[13,14]</sup> Hong and Chen in their study reported that most of the physicians had average to good knowledge about EBM.<sup>[16]</sup> However, in the current study, most of the respondents understood the technical terms used in EBM and could explain it to others. PICO question model which is essential for the practice of EBM was well understood and could be explained only by 22% of the participants. The better understanding of most of the terms may be explained by the timeline of the studies, as the current study was done recently, when the understanding of EBM and its practice has better penetration among medical practitioners.

In the current study, inaccessibility (51.2%) and too much evidence (29.1%) were the major barriers related to the current evidence quality, similar findings were reported by McColl *et al.*<sup>[14]</sup> The participants reported that the main perceived barrier in the implementation of EBM at individual level was the lack of EBM skills.

Among the participants, 23 (14.3%) of them did not respond to the questionnaire even after sending them reminder email. We could not get any information about participants who did not respond. However, non-response is a drawback in using mailed questionnaires. Further, as the findings are self-reported, there is possibility that the actual practice may vary.

## CONCLUSION AND RECOMMENDATIONS

The majority of the medical practitioners were generally positive toward EBM but the barriers to practicing it included accessibility and lack of EBM skills. Interpreting of evidence is a key element in the practice of EBM, the respondents showed good understanding of the technical terms used in EBM, thus making the practice of EBM conducive. These findings are self-reported, hence may not reflect the actual practice. Future research needs to focus on the actual practice of EBM among medical practitioners.

## CONFLICTS OF INTEREST

None declared.

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