EVIDENCE-BASED MEDICINE IN THE TIMES OF COVID-19: A CROSS-SECTIONAL SURVEY TO UNDERSTAND THE INDIAN PERSPECTIVE

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Abstract:

Introduction: During the COVID-19 pandemic, there is a tremendous amount of literature published regularly. In a country like India, historically, where there is a paternalistic approach to practicing medicine, there is a lot of hindrance to evidence-based medicine (EBM). Doctors have always weighed one's clinical experience superior over any other form of decision-making. This system of practice has made decision-making difficult for the physicians during this pandemic as COVID-19 is a reasonably new disease entity and the physicians lack enough 'prior experience' dealing with such a situation. Our survey tries to address the common barriers to evidence-based medical practices especially during the COVID-19 pandemic in India. We also try to explore the various source of information used by the doctors.

Methods: It is a descriptive cross-sectional survey. The questions were provided in multiple-choice question format. An online survey comprising of 10 questions entitled "Hurdles faced by physicians to assimilate evidence-based guidelines on COVID-19" was made using Google Forms (Google Inc, California, US) and circulated through email to medical practitioners in the Ghatkopar (Mumbai, India) Medical Association's register from 17th June 2020 to 1st September 2020.

Results: Our survey collected 213 responses, out of which 80.3% (n=171) of doctors were involved in care, counseling, or management of COVID-19 patients. The most opted primary sources for evidence-based information during this pandemic were teachings of/discussions with medical colleagues (71.4%, n=152), followed by online webinars (59.6%, n= 127) and social media (41.8%, n=89).

When questioned about the main obstacles faced by them to obtain evidence-based information, the responses were as follows: Overload of medical literature (53.5%, n=114), limited access to quality resources (40.8%, n=87), unfamiliarity with the bio-statistics analysis (39%, n= 83), difficulty in locating relevant medical literature (38%, n=81), unfamiliarity with the research methodology (37.1%, n=79), lack of time (30%, n=64).

Our respondents' perspective concerning EBM attributes: 57.3% (n=122) think evidence-based practice takes their clinical experience into account. 93.4% (n=199) of them have shown an interest in broadening their skills. There was no significant difference between doctors' attitudes with less than 10 years and more than 10 years of experience (chi-square value = 0.857, p = 0.65).

Conclusion: Our survey results highlight the balance maintained between evidence-based medicine and experience-based medicine by Indian physicians. They identify the importance of EBM while

acknowledging its shortcomings. They realize the significance of developing their repertoire to understand, appraise, and practice EBM.

Keywords: EBM, COVID-19

Introduction:

The concept of evidence-based medicine (EBM) emerged through a series of articles published by Prof. David Sackett, the former Chairman of the Department of Clinical Epidemiology and Biostatistics McMaster University, in the Canadian Medical Journal in 1981 [1]. This series, named "Reader's guide to medical literature," was printed to demonstrate the advantage of an evidence-based approach in all aspects of patient care. Prof. Guyatt and colleagues could illustrate a transition from a classical approach (based on advice from colleagues, reference articles, personal anecdotal experience) to an evidence-based approach (included literature research, critical appraisal of articles, systematic reviews) for clinical problem-solving [2].

The current definition of the term "evidence-based medicine," coined by Prof Gordon Guyatt, is "the integration of the best available evidence with clinical expertise and the individual patient's values, preferences, and unique circumstances." [3].

Many clinicians consider experience-based and evidence-based approaches contradictory to each other. They fail to recognize that clinical expertise is, in fact, a vital component of evidence-based medicine. In India, the paternalistic approach of practicing medicine hinders implementing evidence-based assertions in daily clinical practice. Several misconceptions about evidence-based medicine resist its application; for instance, it follows a cook-book approach and fails to account for the patient's perspective [4].

The hoarding of hydroxychloroquine and chloroquine, based on a few flawed and inconclusive research studies and political persuasion, led to a detrimental impact on patients with rheumatological conditions worldwide. It led to a substantial shortage of these drugs for patients who required these for their treatment [5]. It also highlighted the significance of

appraising clinical studies before applying the results in clinical life. Integrating EBM studies in students' and residents' medical curriculum in a holistic fashion increases critical thinking competency. It promotes EBM's correct usage in everyday practice, yet the Indian undergraduate and post-graduate medical curriculum are devoid of evidence-based medicine teachings [6-8].

Moreover, in India, the second-most populous country globally, there are many uninsured people due to poverty and illiteracy, and 70% of total expenditure is on healthcare in uninsured families. 80% of care providers are private practitioners, and with pharmaceutical companies' vigorous marketing tactics, all physicians must be up to date and not fall prey to prescribing inappropriate drugs. Critically appraising articles and using the best quality evidence helps reduce unnecessary expenditures of patients and improves the healthcare outcome [6]. A study proves that providing unbiased, evidence-based information is the best way to improve old patients' pharmacotherapy by reducing inappropriate drug prescriptions [9].

Therefore, it becomes indispensable to question our old and young physicians, whether they need to increase their knowledge to do justice to evidence-based practice (EBP). It will pave the path to making decisions for the way forward for EBM in India. Our survey aims to exhibit the perspective and outlook of Indian doctors towards this practice of medicine.

Materials & Methods

Study design

A cross-sectional survey using Google forms (Google Inc, California, US).

Participants and Sampling

We used a non-random, convenience sampling comprising of the members of the Ghatkopar Medical Association (Ghatkopar is a prominent area in central Mumbai). We approached the secretary of the association and requested approval to carry out our survey study. The

committee accepted our proposal and granted us access to their members' register comprising 318 physicians. We excluded 98 members who practiced alternative forms of medicine, namely homeopathy, and Ayurveda. Seven of the selected members refused to provide consent, leaving us with a sample size of 213. Then, we contacted all of them individually via email and explained our survey's purpose and content. We analyzed the data using the chi-square test in Microsoft Excel 2019. This survey was carried out from 17th June 2020 to 1st September 2020.

Questionnaire

The survey consisted of 10 questions. Out of 10 questions, two focused on years of clinical experience and involvement with COVID management; eight questions focused on exploring information sources, understanding, and implementing evidence-based medical practices. This article focuses on seven questions focused on knowledge, acceptance, and practice of EBM during the COVID pandemic. The questions were provided in the English Language in a multiple-choice question format.

Ethics

We presented the survey to the participants and informed them of its aims, context, and duration.

We also stated that it wasn't compulsory to answer all the questions, and they could cease participating in the study at any point. We designed the survey form to ensure the participants' anonymity and confirmed that it was impossible to attach respondents' names to their survey responses. According to the current Indian regulations, an anonymous survey conducted on health professionals, not including patients, did not need approval by an ethics committee.

Results

Our survey collected 213 responses, out of which 80.3% (n=171) of doctors were involved in care, counseling, or management of COVID-19 patients. 53% of our respondents (n=113) have more than ten years of clinical experience. The most opted primary sources for evidence-based information during this pandemic were teachings of/discussions with medical colleagues (71.4%, n=152), followed by online webinars (59.6%, n=127) and social media (41.8%, n=89). When questioned about the main obstacles faced by them to obtain evidence-based information, the responses were as follows.

(Figure 1)

We assigned values to the Likert scale, ranging from 1 to 5 for strongly disagree to strongly agree, respectively. There was no significant

difference between doctors' attitudes with less than 10 years and more than 10 years of experience (chi-square value = 0.857, $p = 0.65$).

Table 1: The following table displays the outlook of our respondents

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
Evidence-based practice takes into account my clinical experience and judgment.	13.6% (n=29)	43.7% (n=93)	19.7% (n=42)	18.3% (n=39)	4.7% (n=10)
Evidence-based practice takes into account the individual patient's preferences.	5.2% (n=11)	30% (n=64)	27.2% (n=58)	32.4% (n=69)	5.2% (n=11)
Evidence-based practice advocates a rigid, cook-book approach for treatment.	5.6% (n=12)	35.2% (n=75)	29.4% (n=54)	29.1% (n=62)	4.7% (n=10)
The adoption of evidence-based medicine places an unreasonable demand on my practice. (Including financial, infrastructural, and other resource problems)	4.7% (n=10)	40.4% (n=86)	31% (n=66)	20.2% (n=43)	3.8% (n=8)
Evidence-based medicine helps me make decisions about patient care.	16.9% (n=36)	74.6% (n=159)	7% (n=15)	0.5% (n=1)	0.9% (n=2)
I am interested and feel the need to broaden my learning or skills necessary to incorporate evidence-based medicine into my practice.	31.9% (n=68)	61.5% (n=131)	5.6% (n=12)	0% (n=0)	0.9% (n=2)

Discussion

Most of the doctors that responded to our survey are involved in the management of COVID-19. More than half of the respondents feel overloaded with medical literature. There is a tremendous surge of publications on the topic of COVID-19, and there is a considerable niche for confusion and misrepresentations in this scenario [10,11].

71.4% (n=152) of the doctors responded that they rely on discussions with medical colleagues even though the information provided could be based on their experience instead of evidence-based guidelines. 59.6% (n=127) of doctors cite online teaching sessions or webinars as a source. 41.8% (n=89) use social media outlets like Facebook for COVID-related information, whereas only 26.8% (n=57) use journals to obtain necessary information.

Social Media has undoubtedly been a boon to doctors worldwide, given that it is a rapid medium to efficiently distribute new information [12]. However, it is also essential to consider some of the limitations of social media in this setting. The high volume of information shared through social media makes it quite difficult to verify the information, leading to the spread of potentially incorrect information [12,13]. Almost 91.5% (n=195) of physicians positively respond to evidence-based medicine's impact on their clinical practice. These numbers are reassuring at the same time questionable, given the large number of doctors relying on unverified resources. Celebrity figures and bloggers have a strong influence on their audience and can affect the spread of information, regardless of the accuracy [4]. According to one study, 27% of physician that were bloggers had a financial interest that was kept discreet [14]. This can also lead doctors to fall prey to low-quality medical literature and marketing strategies, leading to deleterious medical outcomes [6].

Evidence-based medicine has gained much popularity in recent times, with its roots far more profound in western medicine, so much so that it has earned the recognition of one of the most influential ideas by The New York Times

Magazine's 'Year in Review' in 2001 [15]. Evidence-based practices have indeed shown positive outcomes in the Indian subcontinent. There are documented results from its positive impact in Indian. A study shows how EBP has helped to improve outcomes on preterm birth across India [16].

Medical practice in India is largely subjected to the physicians' individual preference, personal beliefs, anecdotes, and weakly on evidence-based medical literature [4,6]. We need to appreciate that our definition of 'evidence' has changed and evolved with time [4]. This system of clinical practice has doomed the physicians and patients during the pandemic and in their decision-making as COVID-19 is a reasonably new disease entity and physicians lack enough 'prior experience' of dealing with such a situation. The corona virus pandemic unfolds a serious deficit, and a large number of doctors are puzzled due to their traditional medical practice methods.

39% (n=83) and 37.1% (n=79) of our respondents are unfamiliar with the essential components of data analysis and tools for research methodology, respectively. Approximately one out of four think that evidence-based practice does not take into account their clinical judgment and acumen into consideration. However, this belief is in contrast to the basic principles of evidence-based practice, where a clinician's judgment is considered as one of the most critical components. Indeed, an excellent clinical assessment helps make the best clinical decisions from the available data for the well-being of the patients [17]. Some studies show that even physicians favoring evidence-based medical practices do not necessarily have a clear understanding of what comprises evidence-based medicine [18]-further re-enforcing the fact that many doctors have a poor understanding of the fundamentals of evidence-based practice. In reality, there is no real disconnection between clinical judgment and evidence-based medicine. Whatever evidence we obtain from various trials helps the clinician to make better decisions for the patients [19].

Approximately two out of five respondents consider EBM as a rigid cookbook approach. 37.6% (n=80) physicians believe that EBM does not consider the individual patient's preferences. Every patient has unique inherited biological characteristics, and neither experience nor evidence-based medicine can account for that. Higher emphasis on sub-group analysis would help the clinician make decisions for a patient with similar characteristics compared to the subjects of the study [20].

According to the fundamental principles of evidence-based medicine, a systematic review with meta-analysis is the strongest level of evidence [21]. A high adaptation of evidenced-based practice among the doctors would effectively mean thorough scrutiny of the available medical data, a better understanding of choosing the right source of information, making meaningful clinical decisions for their patients, developing a sense of criticism towards non-evidence-driven data.

In a cross-sectional survey, Carmelo Lafuente-Lafuente et al. concluded in their study that previous exposure to evidence-based medicine in

undergraduate and postgraduate training has a positive correlation with using evidence-based medicine in one's practice [22]. Sara Ahmadi-Abhari, Soltani A, Hosseinpanah F. also presented similar results in their study [23]. These studies have also tried to identify the attitude, acceptance, understanding, and application of evidence-based practices [22,23]. We have seen that the respondents have repeatedly demonstrated a positive attitude towards evidence-based medicine, including our study where 93.4% (n=199) of them have shown an interest and feel the need to broaden learning or skills necessary to incorporate evidence-based medicine into their practice. Furthermore, there was no significant difference found between the outlook of young (less than 10 years of experience) and old (more than 10 years of experience) physicians towards EBM (chi-square value = 0.857, $p = 0.65$).

In today's time, evidence-based medicine is surely regarded as the gold standard for clinical practice [24]. However, it is important that we understand its limitations.

Table 2: The following table enlists the limitations and potential solutions of EBM.

Limitations	Solutions
EBM guidelines are based on representative patient populations. It is possible that these do not pertain to the individual patient.	Shared decision making should be used by clinician societies for their patients to decide the best treatment option.
EBM is unjustly influenced by health industries, pharmaceutical companies, and political personalities.	Rule out the potential for bias due to industrial influences and select high-quality, unbiased research articles.
Presence of overload of evidence	Depend on a fixed high-quality and pre-appraised source of evidence.

Table 3: The following table provides a literature review of similar studies in a concise fashion.

Sr No.	Author	Year of Publication	Design of the study	Purpose of the study	Results/Conclusion
1.	Lafuente-Lafuente C, et al.	2019	Questionnaire Survey	Use of EBM by healthcare professionals.	A large proportion of health professionals are interested in EBM but seems to be deterred by their lack of knowledge, skills, and personal time.
2.	Hong B, et al.	2019	Questionnaire Survey	Factors that motivate the use of evidence-based practice among medical and dental trainees.	Lack of time and access to vital sources hinder the involvement of doctors and dentist in EBP.
3.	Mahmić-Kaknjo M, et al.	2015	Questionnaire Survey	To assess the awareness and attitude with respect to evidence-based medicine (EBM) and The Cochrane Library (CL) among physicians.	In spite of having positive attitude towards EBM, there is lack of awareness among physicians about EBM. Educational interventions should be used to make students and practicing physicians aware.
4.	Ebadifard Azar F, et al.	2017	Questionnaire Survey	Use of EBP among healthcare providers	Holding EBM workshops, activities and improving manpower and equipment will enhance EBP.
5.	Al Omari M, et al.	2009	Questionnaire Survey	Awareness and practice of EBM among hospital doctors	Doctor are in favour of practising EBM but lack the skillset and knowledge to use it. Undergraduate and Post graduate EBP programs will aid to implement EBM.
6.	Khoja TA, et al.	2007	Questionnaire Survey	Attitude to EBM in primary care physicians	There is a need to promote EBM and equip the PHC for better implementation of evidence-based guidelines.
7.	Rashidbeygi M, et al.	2013	Questionnaire Survey	Attitude and knowledge about EBM in physicians	Knowledge and attitude of young physicians regarding EBM supersedes their older counterparts.

EBM - evidence-based medicine, EBP- evidence based practice, PHC- primary healthcare center

1- [22]

2- [25]

3- [26]

4- [27]

5- [28]

6- [29]

7- [30]

Conclusions

The current study is limited to responses from only 213 medical practitioners. Individuals who routinely don't follow evidence-based practices might have unknowingly given responses in favor of using it, given the fact that doctors being relatively inexperienced with treating COVID-19 have been continuously looking for information somewhere else. We haven't asked our respondents about any formal training in EBM, which may have a significant impact on how a physician would respond.

Our survey results highlight the balance maintained between evidence-based medicine and experience-based medicine by Indian physicians. They identify the importance of EBM while acknowledging its shortcomings. They realize the significance of developing their repertoire to understand, appraise, and practice EBM.

The inclusion of evidence-based medicine in the undergraduate and postgraduate curriculum needs to be promoted. The topics of bio-statistics, research methodology, literature review, critical appraisals should be elaborated. The medical councils and policy makers should design continuing medical education (CME) courses for furthering this agenda, and should also arrange for free access to medical literature via programs like Open Athens and Shibboleth access. The regulation of pharmaceutical marketing strategies will deter aggressive promotion of certain drug brands. Evidence-based practice will make our physicians more confident and judicious in making their medical decisions and, through large-scale participation in clinical trials, generate high-quality medical evidence that will be of great help to the doctors of today and future generation.

References

1. Prasad K: Fundamentals of evidence based medicine. Fundamentals of Evidence Based Medicine. Springer , 2013. 10.1007/978-81-322-0831-0
2. Hébert PC, Tugwell PX: A reader's guide to the medical literature--an introduction. Postgrad Med J. 1996, 72(843):1-3. 10.1136/pgmj.72.843.1
3. Siwek J: Evidence-Based Medicine: Common Misconceptions, Barriers, and Practical Solutions . Am Fam Physician. 2018, 98(6):343-344.
4. Karthikeyan G, Pais P: Clinical judgement & evidence-based medicine: time for reconciliation . Indian J Med Res. 2010, 132(5):623-626. 10.4103/0971-5916.73418
5. Yazdany J, Kim AHJ: Use of Hydroxychloroquine and Chloroquine During the COVID-19 Pandemic: What Every Clinician Should Know . Ann Intern Med. 2020, 172(11):754-755. 10.7326/M20-1334
6. Prasad K: Evidence-based medicine in India. J Clin Epidemiol. 2013, 66(1):6-9. 10.1016/j.jclinepi.2012.07.006
7. Kotur PF: Introduction of evidence-based medicine in undergraduate medical curriculum for development of professional competencies in medical students. Curr Opin Anaesthesiol . 2012, 25(6):719-723. 10.1097/ACO.0b013e32835a1112
8. Ghojzadeh M, Hajebrahimi S, Azami-Aghdash S, Pournaghi Azar F, Keshavarz M, Naghavi-Behzad M, Hazrati H: Medical students' attitudes on and experiences with evidence-based medicine: A qualitative study. J Eval Clin Pract . 2014, 20(6):779-785. 10.1111/jep.12191
9. Kashyap M, D'Cruz S, Sachdev A, Tiwari P: Evidence-based information leads to reduction in inappropriate drug prescribing: Results from Indian older inpatients. Int J Risk Saf Med [Internet. 2015302020, 21:209-17.
10. Tanne JH, Hayasaki E, Zastrow M, Pulla P, Smith P, Rada AG: Covid-19: how doctors and healthcare systems are tackling coronavirus worldwide. BMJ . 2020, 368:m1090. 10.1136/bmj.m1090
11. O'Connor C, Murphy M: Going viral: doctors must tackle fake news in the covid-19 pandemic. BMJ Publishing Group. 2020, 369:m1587. 10.1136/bmj.m1587

12. Moorhead SA, Hazlett DE, Harrison L, Carroll JK, Irwin A, Hoving C: A new dimension of health care: Systematic review of the uses, benefits, and limitations of social media for health communication . *J Med Internet Res*. 2013, 15(4):e85. 10.2196/jmir.1933
13. Gottlieb M, Dyer S: Information and Disinformation: Social Media in the COVID-19 Crisis . *Acad Emerg Med*. 2020, 27(7):640-641. 10.1111/acem.14036
14. Niforatos JD, Lin L, Narang J, et al.: Financial Conflicts of Interest Among Emergency Medicine Contributors on Free Open Access Medical Education . *Acad Emerg Med* . 2019, 26(7):814-817. 10.1111/acem.13676
15. THE YEAR IN IDEAS: A TO Z; Evidence-Based Medicine. (Dec 9 2001). Accessed: 2020 Sep 25: <https://www.nytimes.com/2001/12/09/magazine/the-year-in-ideas-a-to-z-evidence-based-medicine.html>.
16. Roy MP: Evidence based practices are helping preterm birth outcomes in India. *BMJ*. 2016, 354:4932. 10.1136/bmj.i4932
17. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS: Evidence based medicine: what it is and what it isn't. 1996. *Clin Orthop Relat Res* . 2007, 455:3-5.
18. Mittal R, Perakath B: Evidence-based surgery: Knowledge, attitudes, and perceived barriers among surgical trainees. *J Surg Educ* . 2010, 67(5):278-282. 10.1016/j.jsurg.2010.06.012
19. Karthikeyan G: Evidence-Based Medicine and Clinical Judgment: An Imaginary Divide. *J Am Coll Cardiol* . 2007, 49(9):1012. 10.1016/j.jacc.2006.12.011
20. Yusuf S, Wittes J, Probstfield J, Tyroler HA : Analysis and interpretation of treatment effects in subgroups of patients in randomized clinical trials. *JAMA* . 1991, 266(1):93-98. 10.1001/jama.1991.03470010097038
21. Burns PB, Rohrich RJ, Chung KC: The levels of evidence and their role in evidence-based medicine. *Plast Reconstr Surg* . 2011, 128(1):305-310. 10.1097/PRS.0b013e318219c171
22. Lafuente-Lafuente C, Leitao C, Kilani I, et al.: Knowledge and use of evidence-based medicine in daily practice by health professionals: A cross-sectional survey. *BMJ Open*. 2019, 9(3):e025224. 10.1136/bmjopen-2018-025224
23. Ahmadi-Abhari S, Soltani A, Hosseinpanah F: Knowledge and attitudes of trainee physicians regarding evidence-based medicine: A questionnaire survey in Tehran, Iran. *J Eval Clin Pract*. 2008, 14(5):775-779. 10.1111/j.1365-2753.2008.01073.x
24. Avins AL, Cherkin DC, Sherman KJ, Goldberg H, Pressman A : Should we reconsider the routine use of placebo controls in clinical research?. 2012, 13:44. 10.1186/1745-6215-13-44
25. Hong B, O'Sullivan ED, Henein C, Jones CM: Motivators and barriers to engagement with evidence-based practice among medical and dental trainees from the UK and Republic of Ireland: a national survey. *BMJ Open*. 2019, 9(10):e031809. 10.1136/bmjopen-2019-031809
26. Mahmić-Kaknjo M, Kadić D, Hodžić H, Spahić-Sarajlić S, Hadžić E, Ademović E: Awareness, knowledge, use, and attitudes toward evidence based medicine in a developing country: survey of physicians in a canton in Bosnia and Herzegovina. *Croat Med J*. 2015, 56(6):558-566. 10.3325/cmj.2015.56.558
27. Ebadifard Azar F, Rezapour A, Mousavi Isfahani H, Azami-Aghdash S, Kalavani K, Mahmoudi F: Evidence- based medicine performance among health care providers in Iranian hospitals: A nationwide survey. *Med J Islam Repub Iran*. 2017, 31:77. 10.14196/mjiri.31.77
28. Al Omari M, Khader Y, Jadallah K, Dauod AS, Al-Shdifat AA, Khasawneh NM: Evidence-based medicine among hospital doctors in Jordan: awareness, attitude and practice. *J Eval Clin Pract*. 2009,

- 15(6):1137-1141. 10.1111/j.1365-2753.2009.01260.x
29. Khoja TA, Al Ansary LA: Attitudes to evidence-based medicine of primary care physicians in Asir region, Saudi Arabia. EMHJ - Eastern Mediterranean Health Journal. 2007, 13(2):408-419.
30. Rashidbeygi M, Sayehmiri K: Knowledge and attitudes of physicians towards evidence based medicine in ilam, iran. Iran Red Crescent Med J. 2013, 15(9):798-803. 10.5812/ircmj.7204