Evidence-based medicine: A survey among perioperative health care professionals in India

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Introduction

Evidence-based medicine (EBM) has been defined as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of the individual patient.”[1] World-over, doctors are advised to incorporate EBM into their practice to improve patient care. However, this mandates that doctors understand the importance of EBM are able to access recent biomedical literature, appraise its quality, and then take a decision on whether to apply the results of the research into their practice. The inability to perform any of these processes could be a hindrance to the implementation of EBM.

Surveys regarding knowledge of perceptions about and practices of EBM have been conducted among several populations – doctors, nurses, and other allied health professionals.[2-14] There is remarkable consistency among the results of these surveys with respondents showing awareness about EBM and the need to apply EBM in clinical practice.

Background and Aims: Evidence-based medicine (EBM) is defined as the use of scientifically proven evidence for delivering best possible health care to patients. Despite growing emphasis on the need for EBM-based practice, acceptability, and perceptions toward EBM might differ among health professionals. The objective of this study was to assess the attitude, knowledge, and current practices of EBM among perioperative care health professionals in India.

Material and Methods: This was a single point paper-based questionnaire survey carried out in February 2014 among delegates registered for an EBM conference on “perioperative care” held at a Tertiary referral Cancer Centre in India. Participation was voluntary and respondents were given the option of remaining anonymous.

Results: Out of 190 questionnaires, 123 (65%) were returned. Most respondents (98%) agreed that practicing EBM improved patient care. The need to follow departmental protocols (22%) worries about the cost of implementing new treatments (20%) and inadequate skills to critically appraise articles (16%) accounted for major barriers in implementing EBM in clinical practice, with only 15% of respondents stating reluctance to change set practice. “Randomized controlled trial” and “number needed to treat” were the best and least understood EBM terms. Regarding awareness of 10 commonly used EBM-based guidelines in perioperative medicine, the percentage of correct responses ranged from 20% to 88%.

Conclusion: Although most respondents agreed that practicing EBM improved patient care, many of them showed a low level of awareness regarding fundamental aspects of EBM. In addition to encouraging implementation of EBM, there should be increased focus on training in EBM methods.

Key words: Evidence-based medicine, health professionals, patient care

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and lack of time and inadequate EBM skills being stated as the main barriers to the implementation of EBM.

In India, the practices of perioperative care vary widely across the country, ranging from small nursing homes with little or no exposure to research to large teaching institutes with a heavy emphasis on research-related activities. The extent of implementation of EBM in clinical practice by perioperative health care professionals in India is unclear. For the last 12 years, our tertiary referral cancer center has conducted an annual conference on evidence-based management on a different topic every year, which is attended by delegates from across the country. In 2014, the theme of the conference was “perioperative care” - we used the conference as an opportunity to study the attitude, knowledge, and practices of EBM among health professionals involved in perioperative care in India.

Material and Methods

This was a single point paper-based questionnaire survey of delegates (anesthetists, intensivists, surgeons and allied health professionals) attending a conference on evidence-based practices in perioperative care, held at a Tertiary-referral Cancer Centre in Mumbai, India in February 2014. Institutional Ethics Committee and Clinical Trials Registry Registration (CTRI/2014/10/005137) approval was obtained for the study. Participation was voluntary (no incentives were provided), and respondents were given the option of remaining anonymous.

The questionnaire [Appendix 1] consisted of closed questions related to:
1. General awareness of EBM among perioperative physicians.
2. Barriers in implementing EBM in routine perioperative patient care.
3. Ability to access and use EBM resources.
4. Understanding of technical terms used in EBM.
5. Knowledge regarding current guidelines which are recommended for use in clinical an anesthesia practice.

Data were entered into statistical software (SPSS version 18.0; SPSS, Chicago, USA) for analysis. Results were expressed as percentages.

Results

Out of 190 questionnaires, 123 (65%) were returned. A majority of the participants were anesthesiologists (94; 76%) with the rest being intensivists, physicians, and surgeons. Figure 1 shows the nature of the practice of the respondents. Most respondents (121; 98%) agreed that practicing EBM improved patient care. Need to follow departmental protocols (22%), worries about the cost of implementing new treatments (20%), and inadequate skills to critically appraise articles (16%) accounted for major barriers in implementing EBM in clinical practice, with only 15% of respondents stating reluctance to change set practice. Surprisingly, only 66 (54%) of respondents had received formal training in any aspect of research methodology. “Randomized controlled trial” and “number needed to treat” were the best and least understood terms [Figure 2]. Fifteen percent of respondents had never searched an electronic database and 35% never critically appraised literature. However, most respondents (>90%) did attempt to read published research reports. Post hoc subgroup analysis between academic versus nonacademic institutions did not show major differences in the understanding of technical terms used in EBM or access to EBM resources [Tables 1 and 2]. Regarding evidence-based guidelines

Table 1: Awareness of technical terms used in evidence-based medicine (%) - academic (n = 45)/nonacademic institutions (n = 56)

| Technical terms                  | Never heard the term | Have heard it but don't understand the term | Have some understanding | Understand quite well | Understand and could explain to others | Missing data |
|----------------------------------|----------------------|---------------------------------------------|-------------------------|----------------------|----------------------------------------|--------------|
| Randomized controlled trial      | 0/0                  | 2.2/7.1                                     | 20/23.2                 | 31.1/37.5            | 42.2/30.3                             | 4.4/1.7      |
| Number needed to treat           | 6.6/7.1              | 8.8/30.3                                    | 33.3/32.1               | 20/16                | 26.6/14.2                             | 4.4/0        |
| Odds ratio                       | 4.4/7.1              | 8.8/26.7                                    | 42.2/35.7               | 26.6/19.6            | 15.5/10.7                             | 2.2/0        |
| Meta - analysis                  | 0/7.1                | 4.4/26.7                                    | 44.4/30.3               | 24.4/21.4            | 26.6/12.5                             | 0/1.7        |
| Relative and absolute risk       | 0/0                  | 6.6/12.5                                    | 33.3/30.3               | 31.1/35.7            | 26.6/21.4                             | 2.2/0        |

Table 2: Accessed evidence-based medicine resources (%) - academic (n = 45)/nonacademic institutions (n = 56)

| EBM resources                          | Never | Monthly or less | Fortnightly | Weekly | Daily | Missing data |
|----------------------------------------|-------|-----------------|-------------|--------|-------|--------------|
| Searched an electronic database        | 8.8/14.2 | 35.5/25         | 13.3/17.8   | 22.2/32.1 | 15.5/10.7 | 4.4/0        |
| Read published research reports        | 0/3.57 | 33.3/42.85      | 28.8/19.6   | 24.2/30.3 | 8.8/1.7  | 4.4/1.7      |
| Critically appraised literature        | 33.3/33.9 | 40/41           | 11.1/5.3    | 8.8/12.5 | 0/1.7   | 6.6/5.3      |

EBM = Evidence-based medicine
Appendix 1: Survey questionnaire

For each of the questions below, please tick the option that suits you best. For some questions, more than one option may be selected.

How useful do you think research findings are in your day to day management of patients?
• Always relevant (100%).
• Usually relevant (>50%).
• Rarely relevant (<50%).
• Not relevant (0%).

In your opinion, does practicing evidence-based medicine improve patient care?
• Strongly agree
• Maybe
• Unsure
• Disagree.

What do you think are the major barriers to implementing evidence-based medicine in clinical practice? (Can tick more than 1):
• Inadequate literature searching
• Lack of access to full-text articles
• Lack of knowledge of critical appraisal of articles
• Need to follow departmental protocols
• Reluctance to change set practice
• Cost of implementing new treatments.

Have you ever received formal training any of the following? (Can tick more than 1)
• Literature search
• Research methodology
• Biostatistics
• Critical appraisal.

Rate your understanding of the following terms

| Technical terms | Never heard the term | Have heard it but don’t understand the term | Have some understanding | Understand quite well | Understand and could explain to others |
|-----------------|----------------------|------------------------------------------|-------------------------|----------------------|----------------------------------------|
| Relative and absolute risk |                     |                                          |                         |                      |                                        |
| Meta-analysis   |                     |                                          |                         |                      |                                        |
| Odds ratio      |                     |                                          |                         |                      |                                        |
| Number needed to treat |           |                                          |                         |                      |                                        |
| Randomized controlled trial |             |                                          |                         |                      |                                        |

In the past year, how often have you

| EBM resources                  | Never | Monthly or less | Fortnightly | Weekly | Daily |
|--------------------------------|-------|-----------------|-------------|--------|-------|
| searched an electronic database|       |                 |             |        |       |
| read published research reports|       |                 |             |        |       |
| critically appraised literature|       |                 |             |        |       |
| discussed literature/research findings with others in your department/practice (e.g., journal club) | | | | | |

For each of the following statements, please mark true (T) or false (F)
1. Routine bed rest after spinal puncture is recommended _____.
2. Preoperative fasting guidelines are the same for adult and pediatric population _____.
3. Nasogastric tubes should not be used routinely postoperatively after colonic surgery _____.
4. Six hours fasting is adequate for all types of solid and liquids in healthy patients undergoing elective procedure _____.
5. There is no contraindication for central neuraxial blocks on patients on aspirin or nonsteroidal anti-inflammatory drugs _____.
6. As per the National Institute for Health and Care Excellence guidelines, two-dimensional ultrasound guidance with Doppler is recommended for internal jugular venous cannulation in adult and pediatric population in elective situations _____.
7. Intraoperative fluid losses in children should be replaced with dextrose-containing fluids _____.
8. The risk of stent thrombosis is drastically reduced for bare metal stents if surgery is performed at least 12 months after insertion, during which dual antiplatelet therapy must be continued _____.
Appendix 1: Continued

9. Breathing system, ventilator, suction, and airway equipment need to be checked before each new case _____.
10. The central neuraxial block can be performed after at least 6 hours of last dose of subcutaneous unfractionated heparin _____.

Personal details:
Name ___________________________ (optional)
Age ___________________________.
Years of practice after specialization ____________.

Profession (Please tick)
• Doctor
• Nurse
• Other.
If a doctor, what is your specialty? (Please tick)
• Anesthetist
• Intensivist
• Surgeon
• Medical
• Others.
If a doctor, what is your type of practice? (Please tick)
• Private practice
• Freelancing
• Institutional (nonteaching)
• Institutional (teaching).

which are available in the public domain, Figure 3 shows the percentage of correct answers for each question. More than 80% of respondents were ignorant about preoperative fasting guidelines both in children and in adults, which are applicable in day-to-day practice.

Discussion

In this questionnaire-based survey regarding knowledge of attitude toward and practices of EBM among perioperative health care professionals, the approach of majority of respondents toward EBM was positive; however, awareness of EBM tools and implementation of EBM guidelines was lacking. We also found that the major perceived barriers for the implementation of EBM were linked to lack of resources or skills and were not related to unwillingness to adopt new practices.

The results of our study are comparable to several other studies done in various health care specialties which have shown that the general attitude toward EBM is positive and that the majority of health care professionals believe that the institution of evidence-based practice improves patient outcomes. Our survey findings also parallel those of Sadeghi-Bazargani et al. who conducted a systematic review of studies looking at impediments to EBM practice; among 106 identified studies, the most frequently reported barriers were research-
related, resource-related, and lack of time.\textsuperscript{[15]} Similarly, Zwolsman \textit{et al.} carried out a review of studies looking at the implementation of EBM among general practitioners and found that inadequate skills and insufficient time were the most common barriers.\textsuperscript{[16]}

Our study shows that there appears to be unequivocal acceptance of evidence-based practice as an essential and useful component of perioperative patient care. It is also encouraging to know the majority of respondents do refer to research findings. However, the survey has identified several inadequacies in knowledge regarding EBM and barriers to the implementation of evidence-based practice, which may be common to all health specialties, not just perioperative care. These lacunae need to be addressed to facilitate implementation of EBM by health care professionals.

Our survey has some limitations. This study was conducted among individuals attending an EBM conference, 59\% of whom worked in an institutional setting. It is therefore likely that this was a biased sample which is not representative of perioperative health care professionals across the country and that the actual awareness and implementation of EBM in perioperative care are actually much lower. We created our own questionnaire based on other studies but did not measure the validity or reliability of the questionnaire we used. Surveys which rely on self-reporting of knowledge or practices carry the risk of biased reporting because participants may be unwilling to reveal their ignorance (“socially desirable answering”). Unlike some other studies, we did not use “dummy terms” to pick up this phenomenon.\textsuperscript{[4,6,10]}

What steps can we take to facilitate evidence-based practice? Research methodology workshops should be held periodically to develop literature search and critical appraisal skills. There should be increased awareness about freely accessible online tools such as the PubMed tutorial and critical appraisal checklists.\textsuperscript{[17,18]} Individual departments and academic societies should conduct journal clubs where major research papers can be discussed and reviewed. National bodies must disseminate guidelines based on latest available evidence. Departments and institutions should develop individualized evidence-based protocols and standard operating procedures. The use of EBM should be incorporated into undergraduate training, and regular re-training should be a requisite for career advancement.

\textbf{Conclusion}

Our survey of health professionals involved in perioperative patient care in India shows that awareness of the need for EBM and benefits of evidence-based practice is high. However, there appear to be several barriers to the implementation of evidence-based practice in perioperative care.

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\textbf{Conflicts of interest}

There are no conflicts of interest.

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