A Survey of the Perceptions, Knowledge, Attitudes and Practice of Evidence-Based Medicine among Rehabilitation Medicine Trainees and Consultants in a University-Based Tertiary Hospital

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ABSTRACT

Objectives. The study aimed to determine the perceptions, attitudes, knowledge and practice of Evidence-Based Medicine (EBM) among Rehabilitation Medicine trainees and faculty. It aimed to compare trainees and faculty in terms of perceptions, attitudes, knowledge and practice. The study also intended to identify the barriers in the practice of EBM.

Methods. The study utilized a cross-sectional design. The study included residents or trainees and consultants at the Department of Rehabilitation Medicine-Philippine General Hospital. A questionnaire exploring the perceptions, knowledge, attitudes and practice of EBM and the barriers in its practice was developed based on review of previous studies. Focus group discussions were conducted with the residents and consultants separately to probe the responses in the questionnaire.

Results. Thirty-four trainees and consultants participated in the study. Trainees considered themselves having received more training in literature search (p=0.005) and critical appraisal (p=0.01) than consultants. Majority had fairly accurate conceptions of EBM. Thirty-eight percent of participants considered themselves competent in developing a clinical question and in doing a literature search. About 18% considered themselves competent in appraising literature. There were no significant differences between trainees and consultants in terms of their perceived knowledge and skills in EBM techniques. Consultants and trainees expressed positive attitudes towards EBM. In a week, some 50% search the literature at least twice and appraised an article. Eighty percent of Rehabilitation Medicine physicians (physiatrists) spent at least 2 hours per week reading related literature. In terms of practice of EBM, the trainees rated themselves higher in searching and appraising literature than the consultants but the differences were not significant. More than 90% indicated interest in further training in EBM. Majority cited lack of time, lack of understanding of statistics and inadequate information sources as barriers to EBM.

Conclusion. Physiatrists have fairly accurate perceptions; positive attitudes; some knowledge / skills; and a high level of interest in EBM. There were no significant differences between consultants and trainees except in the aspect of training in literature search and appraisal. The lack of personal time, lack of understanding of statistical analyses and inadequate information sources were the most common perceived barriers in the practice of EBM in Physiatry.

Key Words: evidence-based medicine, physiatry, rehabilitation

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Introduction

Evidence-Based Medicine (EBM) is regarded as a paradigm shift in medical practice. Introduced in the early 1990's, its practice is believed to be the judicious use of the best and clinically relevant research combined with clinical expertise, clinical circumstances and patient values in making clinical decisions.[1] Despite the surge of the EBM concept in total biomedical literature listed in Medline from 1990 to 1997, the use of the keyword "evidence-based" in Physical Medicine & Rehabilitation (PM&R) literature was almost lacking in the same inclusive years.[2] DeLisa emphasized the inclusion of EBM concepts in PM&R Continuing Medical Education (CME) and graduate medical programs to build the scientific foundation of the specialty.[3]

In this day and age of rapid developments and discoveries in health and medicine, so much information is available that can be utilized in the clinical setting and in the field of research. The MEDLINE, database of the National Library of Medicine, stores 16 million references from more than 5,200 biomedical journals and the volume is rapidly growing.[4] It is therefore important to gain skills that will allow physicians to navigate this vast sea of resources. Keeping abreast with the expansion of medical literature and integrating this information to patient care makes doctors more efficient and more relevant to the present times.

It is essential to incorporate EBM in Physiatry for several reasons: a) it contributes to the foundation of current PM & R knowledge [3]; b) it facilitates the growth of relevant research[3]; c) it narrows the gap between PM & R research and clinical practice; d) it aids in clinical decision-making[1]; e) it stimulates critical thinking; and f) it guides the physiatrist to be a good researcher and a good end-user of research.

There are also interesting viewpoints expressing dissent towards EBM. Journals are usually interested in positive conclusions. If studies supporting the null hypothesis do not find their way to publication and only positive studies do, then the application of EBM based on positive studies alone is worthless or cost-ineffective in the long run.[5] The practice of EBM entails investment of time in searching and appraising literature. Many physicians may not be able to make this investment easily. It is also argued that much time is spent on critical philosophy of an abstract nature leaving little or no time for its practical application.[5] There are still gray zones where scientific evidence is still lacking or conflicting as clinicians seek to meet individual patient's needs. Current data in PM&R are often and still insufficient to guide practice. The practice of rehabilitation medicine usually involves multiple strategies which can vary in sequence due to a diverse patient population.[6] Evidence utilizing these multiple strategies may still be wanting. There is still paucity of studies incorporating clinically relevant endpoints. The existing databases may not include studies where interventions and patients are similar to the local setting.

To date, there is little data on the practice of EBM among physiatrists in the Philippines. This study provides an overview of the present status of EBM in PM & R to provide future directions.

Objectives

1. To determine the perceptions, knowledge, attitudes, and practice of EBM among PM & R trainees and consultants.
2. To compare trainees and consultants in terms of perceptions, knowledge, attitudes, and practice.
3. To identify the barriers to the practice of EBM.

Methods

The study utilized a cross-sectional design. The study was done at the Department of Rehabilitation Medicine, Philippine General Hospital in 2004. A convenient sample of rehabilitation medicine physician trainees (any level) and faculty/ visiting consultants were invited to participate in the study. Participants signed a written consent form. There was no foreseen or observed harm in the procedures of the study. A 29-item self-administered questionnaire was developed surveying the perceptions, knowledge and skills, attitudes, practice of EBM, interests and barriers in its practice. The items in the questionnaire were based on review of literature.[1,7,] The item scores for most of the aspects surveyed were based on a 5-point scale. For training in literature search and critical appraisal, a higher score would indicate more extensive training. For perceptions about EBM, a higher score would indicate increased tendency towards agreement with the items on tenets of EBM. For knowledge and skills in EBM techniques, a higher score would suggest higher perception of competence in the specific area. For attitudes towards EBM, a higher score would indicate increased tendency towards agreement with the items on feelings or attitudes towards EBM. For interest, a higher score would suggest more interest in EBM. For practice of EBM, the items included the number of articles appraised per week; number of times of literature search per week; and number of hours of reading for clinical decision-making per week. The questionnaire also included the demographic data. Questionnaires were administered to residents and consultants. Focus group discussions were then conducted with the residents and consultants separately to probe the responses in the questionnaire.

Data Analysis

Measures of Central Tendency (mean, median), Dispersion (standard deviation, inter-quartile range), and Ratio and Proportion were used to describe the characteristics of the population and responses to items. The Mann Whitney test was used to determine the difference between trainees and consultants in terms of perceptions, knowledge and skills, attitudes, and practice at $\alpha \leq 0.05$.

Results and Discussion

All thirty-four trainees and consultants who participated in the study had a mean age of 36 years and an average of 6 years in practice. There were almost an equal number of trainees and consultants (Table 1).

Table 1. Characteristics of the study population

n= 34	
Age in years, mean (+/-SD)	36 (+/-6)
Gender	
Female, n (%)	22 (65%)
Male, n (%)	12 (35%)
Type of Rehabilitation Medicine physician	
Resident / Trainee, n(%)	15 (44%)
Visiting Consultant / Faculty, n(%)	19 (56%)
Number of Years in Training or Practice, mean (+/-SD)	6 (+/-5)

SD standard deviation

Training in Literature Search and Critical Appraisal

Among the residents, the median score for the items ranged from 2 to 3 while that of the consultants ranged from 1 to 2 (Table 2). The higher the score, the greater is the extent of training in literature search and appraisal. Three percent of the population felt that they had at least adequate training in literature search and critical appraisal in medical school that increased to 20% during residency training. These figures were less than those reported in a foreign study where 34% of physiatrists felt that they had at least adequate training in appraisal in medical school that increased to 59% after residency training.[7]

Table 2. Training in literature search and critical appraisal

Items	n=34 Residents / Trainees n=15 Median (IQR)	Faculty / Visiting Consultants n=19 Median (IQR)	p
Critical Appraisal in Medical School	2	1 (1-3)	0.12
Literature search in Medical School	2 (2-3)	1 (1-3)	0.13
Critical Appraisal in Residency Training	3 (2-4)	2 (1-3)	0.01
Literature Search in Residency Training	3 (3-4)	2 (1-3)	<0.01

Scores based on a 5-point scale: 1=none; 2=a little; 3=some; 4=adequate; 5=extensive; IQR inter-quartile range

The trainees considered themselves having received greater exposure to both literature search and appraisal (p=0.005 and p=0.01, respectively) than the consultants during residency training. This may be attributed to the structured research curriculum of the training program and their active participation in EBM workshops.

Perceptions on EBM

Both residents and consultants had a median score of 4 in items for perceptions in EBM. Majority had fairly accurate conceptions of EBM. The differences between consultants and trainees were not significant (Table 3). Misconceptions were not too many. In the focus group discussions, it was interesting to note that a few perceived EBM to be largely statistics but the majority viewed EBM as a method of making clinical decisions based on evidence.

Knowledge and Skills in EBM Techniques

For most items in knowledge and skills in EBM techniques, the median score among residents and consultants was 3.

There were no significant differences between the consultants and trainees in terms of their perceived skills in performing a medical literature search; appraising evidence; evaluating research designs; assessing statistical methods; and in interpreting results and applying to patient care (Table 4).

Thirty-eight percent of participants considered themselves competent in developing a clinical question and in doing a literature search. Only 18% considered themselves competent in appraising literature. Roughly 10% were competent in assessing study designs and statistical methods (Figure 1).

In another study, the residents considered themselves more skillful than the faculty in overall computer skills and in literature search. Consultants deemed themselves more competent in application of results and formulation of the clinical question.[7]

Table 3. Perceptions of EBM

Items	n=34 Residents / Trainees n=15 Median (IQR)	Faculty / Visiting Consultants n=19 Median (IQR)	p
Evidence-based medicine (EBM) is an integration of the best clinical evidence, clinical expertise and patient values	4 (4-5)	4 (4-5)	0.34
EBM can be used for clinical decision making	4 (4-5)	4 (4-5)	0.31
EBM is a paradigm shift in medical practice	4 (3-4)	4 (3-4)	0.78
One component of EBM is asking a clinical question	4	4	0.52
EBM entails searching the literature	4 (4-5)	5 (4-5)	0.34
Appraisal of literature is an important part of EBM	4 (4-5)	5 (4-5)	0.53
One of the tenets of EBM is integrating the data	4 (4-5)	4 (4-5)	0.70

Scores based on a 5-point scale: 1=strongly disagree; 2=disagree; 3=not sure; 4=agree; 5=strongly agree.

Table 4. Knowledge and skills in EBM techniques

Items	n=34 Residents / Trainees n=15 Median (IQR)	Faculty / Visiting Consultants n=19 Median (IQR)	p
Formulating focused clinical question	3 (2-3)	3 (2-4)	0.22
Performing a medical literature search	3 (3-4)	4 (3-4)	0.36
Appraising evidence	3 (2-3)	3 (2-3)	0.72
Evaluating research designs	3 (2-3)	3 (2-3)	0.60
Assessing statistical methods	2 (2-3)	2 (2-3)	0.84
Interpreting results and applying to patient care	3 (2-3)	3 (2-3)	0.66

Scores based on a 5-point scale: 1=not at all competent; 2=know a little; 3=somewhat competent; 4=competent; 5=very competent.

The study of Covell et al, asked physicians regarding sources of information used in clinics. Responses showed that more than half of the time, physicians relied on human resources pertaining to information needs for patient care.[8] This suggests that physicians do not always utilize the most appropriate resources when faced with dilemmas in clinical practice. Williamson et al, further noted that practitioners and opinion leaders used their own experience and criteria in evaluating value and validity of literature.[9] The study of Haynes et al, showed that about 81% of doctors performed 2.7 searches / month with mean search duration of 23.6 minutes.[10] Also, when clinicians were compared to

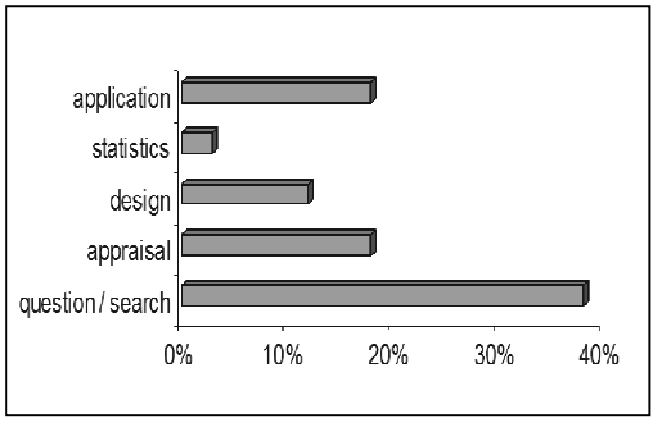

Figure 1. Distribution of participants competent in EBM skills

librarians, the former were less precise in the retrieval of the relevant articles.[10] McColl and Smith reported that general physicians had limited awareness in extracting journals and had some understanding of technical terms in EBM.[11] Schwartz et al, noted the increased use of more sophisticated statistical methods in rehabilitation literature and the lack of standardized format for explaining statistical procedures.[12]

Attitudes

With regard to attitudes towards EBM, the median score for the items in both levels was 4. There was strong recognition of the importance of EBM in clinical practice in general. However, many felt that practicing EBM may place an unreasonable demand on them as it entails investment of time and requires intellectual effort. There were no significant differences in attitudes towards EBM between trainees and consultants (Table 5).

McColl observed that most general practitioners were open to the promotion of EBM and were agreeable that EBM can improve their patient care, despite their limited awareness and skills in EBM activities.[11]

Practice of EBM in the Clinics

Thirty percent searched the databases once a week. Another study found that most doctors did 2.7 searches a month.[10] More than 50% appraised no more than one article per week. The majority (68%) devoted at least 2 hours of reading each week. In a foreign study, the median number of reading hours per week was 4 hours and the median number of peer-reviewed articles read was 3 articles.[7] A survey showed that most PM & R residents scanned only one out of six journals for important studies.[13]

The trainees rated themselves higher in searching and appraising literature than the consultants but the differences were not significant (Table 6).

Table 5. Attitudes towards EBM

Items	Residents / Trainees n=15 Median (IQR)	Faculty / Visiting Consultants n=19 Median (IQR)	P
	n=34		
I believe EBM will help me in my patient care	4 (4-5)	4 (4-5)	0.90
I feel that EBM is impossible to practice	4 (3-4)	4	0.70
I feel that practicing EBM places an unreasonable demand on physiatrists	3 (2-4)	4	0.13
I believe that EBM is necessary in the practice of Rehabilitation Medicine	4 (4-5)	4	0.72

Scores based on a 5-point scale: 1=strongly disagree; 2=disagree; 3=not sure; 4=agree; 5=strongly agree.

Table 6. Practice of EBM in Rehabilitation Medicine

Items	Residents / Trainees n=15 Median (IQR)	Faculty / Visiting Consultants n=19 Median (IQR)	p
	n=34		
Appraisal of medical literature related to decision-making, number of articles per week	2 (1-2)	1 (1-2)	0.23
Searching databases to answer clinical question, number of times per week	2	2 (1-2)	0.33
Read related literature and incorporate in clinical practice, hours per week	2	2	0.47

Level of Interest

More than 90% of the participants expressed interest in further honing their EBM skills. The consultants were more interested than the trainees in further training in literature search & appraisal; and interpretation and application of results. The differences, however, were not significant (Table 7).

In another study, residents had greater interest in training in the formulation of the clinical question, appraisal of literature, and application of evidence.[7]

Barriers

The most commonly cited barriers were: lack of personal time, lack of understanding of statistical analyses and inadequate information sources (Table 8).

Table 7. Interest in EBM in Rehabilitation Medicine

	n=34		
Area	**Residents / Trainees n=15 Median (IQR)**	**Faculty / Visiting Consultants n=19 Median (IQR)**	**p**
Development of clinical question	3 (2-3)	3 (2-3)	0.79
Literature Search	3 (2-3)	3	0.54
Critical Appraisal	3 (2-3)	3	0.54
Application of Evidence to Patient Care	3	3	0.62

Scores based on a 3-point scale: 1=not interested; 2=neutral; 3=very interested.

Table 8. Perceived barriers to the practice of EBM in Rehabilitation Medicine

	n=34		
Barrier	**Residents n (%)**	**Consultants n (%)**	**Total**
Insufficient time	11 (73)	17 (89)	28 (82)
Inadequate information resources	9 (60)	8 (42)	17 (50)
Lack of training in literature search	1 (7)	0 (0)	1 (3)
Lack of training in critical appraisal of literature	2 (13)	7 (37)	9 (26)
Inadequate skills to critically appraise literature	4 (27)	9 (47)	13 (38)
Inadequate skills to search the literature	4 (27)	2 (11)	6 (18)
Lack of understanding of statistical analysis	10 (67)	11 (58)	21 (62)
Lack of support for EBM among my colleagues in the department	1 (7)	1 (5)	2 (6)
Lack of interest	1 (7)	2 (11)	3 (9)

The lack of time as a barrier has also been cited in other studies. Aiyer and Hemmer reported that inadequately trained faculty could hamper the implementation of EBM in a training program.[14] McAllister cited lack of relevant studies, practicality issues, novelty and lack of skills as barriers.[15]

A number of EBM strategies and activities have been outlined for a rehabilitation department in a foreign study.[7] Establishing a regular EBM Journal Club and a Critically-Appraised Topic Library; holding CME Activities and Workshops in EBM; incorporating EBM activities during rounds and conferences; and updating the rehabilitation medicine library with relevant PM & R journals online and in print are some strategies that can be implemented to promote EBM in Physiatry in the local setting.

The study had several limitations. As it was a survey, it only provided overview of perceptions, skills or knowledge, attitudes and practice of EBM among Rehabilitation Medicine physicians. Also, the questionnaire was not pilot-tested and validated. This study relied on perceptions of the participants in terms of their skills or knowledge and practice of EBM and no actual performance-based measurements of these were made.

Conclusion

Physiatrists have fairly accurate perceptions; positive attitudes; some knowledge and skills; and a high level of interest in EBM. There were no significant differences between consultants and trainees except in the aspect of training or exposure in literature search and critical appraisal. The lack of personal time, lack of understanding of statistical analyses and inadequate information sources were the most common perceived barriers in the practice of EBM in Physiatry.

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