Evidence-based Medicine: Perceived Knowledge, Attitude, and Practice Among Resident Physicians in Various Private Training Institutions in Davao City*

Anna Mae C. Naboa-Marquez, MD; Alvin V. Amoguis, MD, FPAFP and Rojim J. Sorrosa, MD, FPAFP, FPSHPM

Background: Evidence-based medicine is the conscientious and judicious use of current best evidence from clinical care research in the management of individual patients. Several studies have emphasized its value and how its practice can translate into tangible patient outcomes. However, despite its undeniable role in improving patient outcomes, various multinational studies have also shown that very few medical practitioners are aware of or practice evidence-based medicine.
Objective: This study aimed to determine the level of perceived knowledge, attitude and practice of evidence-based medicine among resident physicians in various private training institutions in Davao City.
Methods: This study used a descriptive cross-sectional research approach. Resident physicians from various private training hospitals in Davao City were surveyed.
Results: A total of 174 respondents were recruited, of which 124 agreed to participate and be included in the study. The over-all mean for the level of knowledge and skills was 4.70 (+/-0.32), for the attitude and practice of EBM were 5.28 (+/- 0.59) and 4.98 (+/- 0.27) respectively.
Conclusion: The results of this study demonstrated that the level of knowledge and skills on EBM among resident physicians in various training institutions in Davao City is higher as compared to those cited in the literature, although it is lower than the acceptable level set by the proponents based on best assumption. The level of attitude towards EBM is also lower and only the practice of EBM is above the set acceptable level.

Key words: Evidence-based medicine, knowledge, attitudes, practice, resident physicians

Introduction

Evidence-based medicine (EBM) has now become the new paradigm for medical practice.[1] In fact, over the last decade, it has been the primary focus of most researchers, medical practitioners, and health policymakers.[2] It has gained significant momentum as an approach, which can affect both knowledge and practice within the medical profession.[3] Part of its increasing influence is because EBM does away with the use of mere intuition and unsystematic clinical experience and instead highlights the value of using current and validated literature as

* From the Department of Family and Community Medicine, Brokenshire Integrated Health Ministries, Inc., Davao City

basis for a sound clinical judgment.[4] In 1998, McKibbon also cited that evidence-based practice enhances clinical expertise and knowledge on various disease processes, and recognizes that health care must be individualized and patient-centered.[5]

Indeed, a number of studies underscored the value of EBM and how its practice can translate into tangible patient outcomes. Melnyk, et al. in 2003 found that patient outcomes have improved by as much as 28% when medicine is practiced based on current evidence rather than traditional medical practices.[6] The more recent study by Graham, Lee and Wu arrived at the same conclusion when the researchers applied the principles of EBM in *Helicobacter pylori* therapy, in which case EBM translated into a 90% or greater treatment success rates.[7]

Unfortunately, despite its undeniable role in improving patient outcomes, various multinational studies have also shown that very few medical practitioners are aware of or actually practice evidence-based medicine. In 2002, Young interviewed 50 medical practitioners in Australia and found that medical education in Australia does not prepare physicians for evidence-based medicine.[8] Majority of the respondents deny knowledge of several EBM terms e.g. relative risk reduction, absolute risk reduction, etc. A larger study was conducted to 302 medical practitioners in the United Kingdom. The respondents openly expressed that EBM does translate into better patient outcomes. Majority (60%) of the respondents were not aware of how to use the Cochrane Database of Systematic Reviews and only 40% were aware of such. Majority of them do not use the online database.[9]

These studies highlight the disparity between theory and practice. Disparity is apparent in a number of studies conducted internationally. However, no study could shed light on the practice of EBM in the Philippines. The present study therefore seeks to obtain information on the knowledge, attitudes, and practices of EBM among residents in training in various private training institutions in Davao City. Residents are at the frontline of the practice of medicine, and whose practice of medicine reflects the quality of patient care that is being given to the patient. Data drawn from this study will help develop ways to improve the resident physicians' current knowledge and attitudes on EBM, and eventually lead to a better EBM practice-all in the hope of ultimately raising the quality of health care in the Philippines.

This study aims to determine the level of perceived knowledge, attitudes and practice of evidence-based medicine among resident physicians in various private training institutions in Davao City.

Materials and Methods

Study Design

This study used a descriptive cross-sectional research approach, wherein the levels of knowledge, attitudes and practices of evidence-based medicine among resident physicians in various private training institutions in Davao City were determined. As such, it shall describe the current conditions, practices, situations, or any phenomenon.

Study Setting

The study was conducted within various private training hospitals in Davao City: Brokenshire Integrated Health Ministries, Davao Medical School Foundation Hospital, Ricardo Limso Medical Center, Davao Doctors' Hospital and San Pedro Hospital.

Sample Population

The following inclusion and exclusion criteria were used in selecting respondents for this study:

Inclusion Criteria

- Resident trainees who voluntarily agreed to participate in the study.

Exclusion Criteria

- Resident moonlighters who were not part of the training and residents who have resigned.

Research Instrument

The evidence-based practice questionnaire (EBPQ), the survey tool used for this study, is self-administered, freely available and validated questionnaire, available online at: http://www.ebpq.co.uk/dpage.html. Upton and Upton developed the questionnaire in 2006 and it contains four parts. Along with the respondents' profile, these parts measure 3 subscales, which include knowledge, attitudes, and practice of evidence-based medicine. All positively worded items are measured using a 7-point Likert scale. The first part measures the practice of EBM and contains 6 items. The second part measures the attitudes towards EBM, containing 4 items, while the third part measures knowledge of EBM and contains 14 items. The last part determines the profile of the respondents in terms of age, sex, years of service and department.

Upton and Upton in 2006 validated the Evidence-Based Practice Questionnaire and was found to have an overall internal consistency value of 0.87, while the practice of EBP subscale as an internal consistency of 0.85, attitudes towards EBP of 0.79 and knowledge of EBP of 0.91. It has high construct validity with an r value of 0.3-0.4. The EBPQ can be scored from 1 to 7, the mean score is calculated for each subscale i.e. Knowledge/Skills, Attitudes and Practice. The mean values obtained are interpreted, thereafter.[33]

Data Collection Procedures

Data Collection Process

After obtaining approval by the Ethics Review Committee of the Department of Family and Community Medicine of Brokenshire Integrated Health Ministries Inc., a letter was sent to the Chiefs of Hospitals and Ethics Review Committee of the respective training hospitals, asking permission to conduct the study among their resident doctors. After compliance of requirements set by each hospital and once an approval was obtained, the researcher distributed the self-administered questionnaires to eliminate bias among the respondents in Brokenshire Integrated Health Ministries Inc., Ricardo Limso Medical Center, Davao Medical School Foundation Hospital, San Pedro Hospital, and Davao Doctors Hospital. The nature and purpose of the study were explained thoroughly to the respondents before their consent was obtained. Those who agreed to participate in the study were asked to sign a consent form. The survey questionnaire was given and respondents were given ample time to answer at their own convenience. The interviewer was available only when the respondents have questions about the tool or about the research project. During the data collection, the respondents were busy attending to certain tasks and the researcher had to ask the respondents' contact number. When the primary investigator was not available, the research assistant distributed and collected the survey questionnaires. The survey tools were then collated and the responses of the residents were then tallied, tabulated, and analyzed based on carefully chosen statistical tools.

Data Handling, Management and Analysis

The research instrument Evidence Based Practice Questionnaire (EBPQ) uses a 7-point Likert scale for the subscale knowledge, attitudes and practice of EBM. A respondent gives score of 1 (lowest) to 7 (highest) to each question under each subscale. Data gathered from the study were analyzed using the following statistical measures:

Frequency and Percentage

These were used in determining the profile of the respondents according to age, sex, department, and years in service.

Mean

This was used in determining the level of knowledge, attitudes and practices of evidence-based medicine among resident physicians in various private training institutions in Davao City. In the absence of any available literature that cites acceptable levels of knowledge, attitudes and practice of evidence-based medicine, the proponents have agreed on best assumptions that an acceptable level of knowledge of EBM is at 80% of the highest possible score that a respondent can give which is 7 or a mean of 5.6, especially as all academic societies and accreditation committees in the country now look at EBM to among their points for monitoring and assessment. The same value is expected for attitudes toward EBM. A good attitude towards EBM is again agreed to be at 80% or at a mean of 5.6. Lastly, because of the paucity of available resources to train residents on the practice of EBM, a good practice of EBM is considered to be at around 50% of the highest possible score that a respondent can give which is 7 or a mean of 3.5.

Ethical Considerations

Research proposal was reviewed and subjected for approval by the Family Medicine Department Ethics Board of Brokenshire Integrated Health Ministries Inc. and other participating hospitals. A written and informed consent was given by the respondents of the study. This consent was given only after thorough explanation of the nature and purpose of the study, and only those who agreed to provide their consent were included in this study. Privacy for the data collected in this study was maintained at all times. The respondents' personal details were not reflected on the questionnaire. With respect to the respondents' right to confidentiality, the researchers vouched not to disclose the residents' identities at any given time. Only the researcher has access to the list of names and information. Survey questionnaires were coded and no personal identifying markers were reflected in the tool.

All information obtained in the conduct of this study were kept in the Department of Family and Community Medicine, Brokenshire Integrated Health Ministries, Inc., and shall be kept confidential, unless it is deemed necessary to divulge any of the relevant information obtained from the study.

Results

Demographic Data and Clinical Characteristics

A total of 173 respondents were recruited during the period of data collection, of which 124 or 71.67% agreed to participate and be included in the study.

The demographic profile of resident physicians in various private training institutions in Davao City is shown in Table 1. Majority were females [88 (71%)]. In terms of age distribution, 63 (50.81%) were from ages 20-29 years old, 55 (44.35%) from 30-39 years old, 5 (4.03%) were from 40-49 years old and 1 (0.81%) fall under 50-59 years old. Among the respondents, 35 (28.23%) were from the department of Internal Medicine, followed by Pediatrics with 34 (27.42%), 24 (19.35%) from Family and Community Medicine, 13 (10.48%) from Obstetrics and Gynecology, 9 (7.26%) from Department of Surgery, 5 (4.03%) from Radiology and 4 (3.23%) from Anesthesiology. Half of the respondents were on their first year of residency, 33 (26.61%) were on the second year, 25 (20.16%) were on the third year and 4 (3.23%) were on the fourth year.

Level of Knowledge of Evidence-Based Medicine

The level of knowledge and skill of EBM is shown in Table 2. The last part of the questionnaire containing 14 items measures the knowledge and skills of EBM. A mean of 5 on a Likert scale of 1-7 were given to the sharing of ideas and information with colleagues, dissemination of new ideas about care to colleagues, and ability to apply information to individual cases. A mean of 4 on the other hand were given to ability to review own practice, awareness of major information types and sources, IT skills, ability to determine how useful (clinically applicable)

Table 1. Demographic profile of resident physicians in various private training Institutions in Davao City.

Characteristics	Descriptive statistics (n=124)
Sex, n (%)	
Male	36 (29)
Female	88 (71)
Age, n (%)	
20-29	63 (50.81)
30-39	55 (44.35)
40-49	5 (4.03)
50-59	1 (0.81)
Department, n (%)	
Internal Medicine	35 (28.23)
Pediatrics	34 (27.42)
Family and Community Medicine	24 (19.35)
Obstetrics and Gynecology	13 (10.48)
Surgery	9 (7.26)
Radiology	5 (4.03)
Anesthesiology	4 (3.23)
Year Level, n (%)	
1st Year	62 (50)
2nd Year	33 (26.61)
3rd Year	25 (20.16)
4th Year	4 (3.23)

Table 2. Level of knowledge and skills of evidence-based medicine among resident physicians in various private training institutions in Davao City.

Variables	Level of Knowledge and Skills, x, (+/-SD) Mean
Sharing of ideas and information with colleagues	5.20 (0.95)
Dissemination of new ideas about care to colleagues	5.13 (1.00)
Ability to apply information to individual cases	5.00 (0.93)
Ability to review your own practice	4.87 (0.98)
Awareness of major information types and sources	4.86 (1.02)
IT* skills	4.79 (1.10)
Ability to determine how useful (clinically applicable) the material is	4.77 (1.00)
Knowledge of how to retrieve evidence	4.66 (1.03)
Ability to identify gaps in your professional practice	4.65 (0.87)
Monitoring and reviewing of practice skills	4.56 (0.95)
Ability to determine how valid (close to the truth) the material is	4.48 (1.00)
Ability to analyze critically evidence against set standards	4.47 (1.08)
Research skills	4.19 (1.07)
Converting your information needs into a research question	4.13 (1.07)
Over-all	4.70 (0.32)

*IT, Information Technology

the material is, knowledge of how to retrieve evidence, ability to identify gaps in professional practice, monitoring and reviewing of practice skills, ability to determine how valid (close to the truth) the material is, ability to analyze critically evidence against set standards, research skills, and converting information needs into a research question. The over-all mean for the level of knowledge and skills was 4.70 with a standard deviation of 0.32. This is below the agreed acceptable level by the proponents based on best assumption which is 5.6 and above. The mean for all the subset questions were also below the set acceptable level.

Level of Attitude Towards Evidence-Based Medicine

Level of attitude towards EBM is shown on Table 3. The second part of the questionnaire containing four items measures the attitudes towards EBM. A Likert scale of 1 to 7 was placed between two statements connoting a negative and a positive attitude. A mean score of 4 was given between the statements workload is too great for me to keep up to date with all the new evidence and new evidence is so important that I make the time in my work schedule. A mean score of 5 was given between the statements "I resent having my clinical practice questioned" and "I welcome questions on my practice, evidence based practice is a waste of time and evidence based practice is fundamental to professional practice, I stick to tried and trusted methods rather than changing to anything new and my practice has changed because of evidence I have found." The over-all mean for attitudes towards EBM was 5.28 with the standard deviation of 0.59. This is below the agreed acceptable level by the

proponents based on best assumption which is 5.6 and above.

Level of Practices of Evidence-Based Medicine

Level of practice on EBM is shown on Table 4. The first part of the questionnaire which has six items measures the practice of EBM. A mean of 5 in the Likert scale of 1 to 7 was given to questions if they formulated a clearly answerable question as the beginning of the process towards filling this gap, tracked down the relevant evidence once have formulated the question, integrated the evidence found with expertise, evaluated the outcomes of practice, shared this information with colleagues and formulated a clearly answerable question as the beginning of the process towards filling this gap. A mean of 4 was given to question if they critically appraised against set criteria, any literature that has been discovered. When all these six items were combined, the mean for the practice of EBM among resident physicians was 4.98 with a standard deviation of 0.27. This is above the agreed acceptable level by the proponents based on best assumption which is 3.5 and above. The means for all the subset questions were also above the set level.

Level of Knowledge, Attitude and Practice of Evidence-Based Medicine

The over-all level of knowledge and skills, attitude and practice of EBM among resident physicians is shown in Table 5. This shows that the attitude towards EBM had the highest over-all mean of 5.28 compared to practice as well as knowledge and skills which had 4.98 and 4.70 respectively. However, the mean for knowledge and skills and attitude of 4.7 and 5.28 respectively were below the agreed acceptable level by the proponents based on best assumption. The mean for the practice of EBM of 4.98 on the other hand was above the agreed acceptable level. The standard deviation for all three subscales were noted to be less than 1.

Discussion

This study determined the level of knowledge, attitude and practice of EBM among resident physicians in various private training institutions in Davao City. On the level of knowledge and skills on EBM, a mean of 5 on a Likert scale of 1-7 was given to the sharing of ideas and information with colleagues, dissemination of new ideas about care to colleagues, and ability to apply information to individual cases. A mean of 4, on the other hand, was given to ability

Table 3. Level of attitudes towards EBM among residents physicians in various private training institutions in Davao City.

Variables	Level of attitude, x (+/-SD)	Variables
Evidence based practice is a waste of time	5.83 (1.64)	Evidence based practice is fundamental to professional practice
I resent having my clinical practice questioned	5.52 (1.35)	I welcome questions on my practice
I stick to tried and trusted methods rather than changing to anything new	5.33 (1.26)	My practice has changed because of evidence I have found
My workload is too great for me to keep up to date with all the new evidence	4.44 (1.57)	New evidence is so important that I make the time in my work schedule
Over-all	5.28 (0.59)	

Table 4. Level of practice of evidence-based Medicine among residents physicians in various private training institutions in Davao City.

	Level of practice, x (+/- Variables SD)
Shared this information with colleagues	5.30 (1.25)
Integrated the evidence you have found with your expertise	5.06 (1.27)
Tracked down the relevant evidence once you have formulated the question	5.02 (1.16)
Evaluated the outcomes of your practice	5.02 (1.23)
Formulated a clearly answerable question as the beginning of the process towards filling this gap	5.01(1.06)
Critically appraised, against set criteria, any literature you have discovered	4.48 (1.39)
Over-all	4.98 (0.27)

Table 5. Level of knowledge, attitude and practice of evidence-based medicine among resident physicians in various private training institutions in Davao City.

Variables	Level of Knowledge, Attitude and Practice, x (+/-SD)
Knowledge	4.70 (0.32)
Attitude	5.28 (0.59)
Practice	4.98 (0.27)

to review own practice, awareness of major information types and sources, IT skills, ability to determine how useful (clinically applicable) the material is, knowledge of how to retrieve evidence, ability to identify gaps in professional practice, monitoring and reviewing of practice skills, ability to determine how valid (close to the truth) the material is, ability to analyze critically evidence against set standards, research skills, and converting information needs into a research question. It is important to note that the standard deviation of these 14 questions is at most 1.10, which means that the respondents' answers were not generally diverse and were in fact closer to the mean. This implies that the respondents' answers to these questions were relatively the same. Looking into each question under this domain, the one with the lowest mean was from converting information needs into a research question. This is a significant finding because in the full utilization of EBM concepts, one must start with a question. Snell and Belsey in 2001 enumerated the steps needed for EBM and cited that the entire EBM process begins with creating a research question or any clinical problem that needs to be resolved. Each study must be appraised in terms of validity, reliability, and relevance to the research question at hand. The studies collected are then synthesized, and meaningful recommendations are made in order to improve clinical practice or subsequently create solutions for the identified problem.[10] The process described is important because looking into the subset questions for the level of knowledge, questions such as ability to analyze critically evidence against set standards and ability to determine how valid (close to the truth) the material is, got the lowest means. These three questions are very essential for the whole process of EBM.

In the absence of any available literature that cites acceptable levels of knowledge, attitudes and practices of evidence-based medicine, the proponents have agreed on best assumptions that an acceptable level of knowledge of EBM is 80% of the highest possible score that a respondent can give which is 7 or a mean of 5.6, especially as all academic societies and accreditation committees in the country now look at EBM among their points for monitoring and assessment. The over-all mean for the level of knowledge was 4.70 with the standard deviation of 0.32. This is below the agreed acceptable level of knowledge. This finding is similar to the study conducted by Aguirre- Raya, et al. in 2016, although a different tool was used, that more than half of the 320 health care professionals, comprising of medical students, interns, residents and consultants

interviewed, do not know the definition of EBM and majority of those surveyed did not include the steps that characterize the practice of EBM.[11] Though the mean 4.70 or 67% from this study is below the set acceptable level, it is much higher from that found on the study of Aguirre-Raya et al., that the global knowledge index for EBM was found to be a measly 19%.[11]

One factor that could greatly affect the knowledge of EBM is when it is integrated in the medical school curriculum. It is not known if the respondents have had previous EBM teachings in medical school, but the proponents surmise that EBM principles are discussed as part of the undergraduate curriculum as requirement for their research projects. Based on this premise, once the degree of medicine is earned, one is expected to know how to utilize EBM principles. However, not all medical school integrates the concept of EBM. The same is true when, Young interviewed 50 medical practitioners in Australia in 2002 and found that medical education in Australia does not prepare physicians for evidence-based medicine. Majority of the respondents deny knowledge of several EBM terms e.g. relative risk reduction, absolute risk reduction, etc.[8]

To determine the level of attitude towards EBM, a Likert scale of 1 to 7 was placed between two statements connoting a negative and a positive attitude. A mean score of 4 was given between the statements "workload is too great for me to keep up to date with all the new evidence and new evidence is so important that I make the time in my work schedule." A mean score of 5 were given between the statements "I resent having my clinical practice questioned and I welcome questions on my practice, evidence based practice is a waste of time and evidence based practice is fundamental to professional practice, I stick to tried and trusted methods rather than changing to anything new and my practice has changed because of evidence I have found." The over-all mean for attitudes towards EBM was 5.28 with the standard deviation of 0.59. This is below the agreed acceptable level by the proponents based on best assumption which is 5.6 and above or 80% of the highest possible score that a respondent can give. Considering each statement of this subscale, the results revealed that the statements "evidence based practice is a waste of time and evidence based practice is fundamental to professional practice" had the highest mean of 5.83 with a standard deviation of 1.64, and which in fact above the agreed acceptable level of attitudes toward EBM. Resident physicians viewed EBM as fundamental to professional practice based on these results. A very good attitude, considering that study after study showed the value of EBM and how its practice can translate into tangible patient outcomes. The study of Melnyk et al. in 2003 found that patient outcomes have improved by as much as 28% when medicine is practiced based on current evidence rather than traditional medical practices.6 The statements "I resent having my clinical practice questioned and I welcome questions on my practice" had a mean of 5.52 with a standard deviation of 1.35, was also among with the highest mean for this subscale. Also, a good attitude worthy of note since according to Aarons in 2004, that in EBM, invoking attitude paves the way to behavior change and it is thought that in order to effect change in the clinical practice, their attitudes towards EBM must also be evaluated and subsequently modified.[12]

For the subscale of practice of EBM, a mean of 5 were given to the statements formulated a clearly answerable question as the beginning of the process towards filling this gap, tracked down the relevant evidence once have formulated the question, integrated the evidence found with expertise, evaluated the outcomes of practice, shared this information with colleagues and formulated a clearly answerable question as the beginning of the process towards filling this gap. A mean of 4 was given to question if they critically appraised against set criteria, any literature that have been discovered. When all these six items combined, the mean for the practice of EBM was 4.98 with the standard deviation of 0.27. This is above the agreed acceptable level by the proponents based on best assumption of 3.5 and above or 50% of the highest possible score that a respondent can give. The proponents have agreed to set the acceptable level lower from the

other subscales due to the paucity of available resources to train resident physicians on the practice of EBM. The mean for all the subset statements were also above the set level. However, the statement critically appraised against set criteria any literature discovered had the lowest mean of 4.48 with a standard deviation of 1.39. This is vital to note since critical appraisal is fundamental in the practice of EBM. According to Rosswurm and Larrabee in 1999, medical practitioners need to search the literature, critically appraise research findings, and synthesize empirical and contextually relevant theoretical information to be applied in practice.[13] Sharing information with colleagues had the highest mean of 5.30 with a standard deviation of 1.25. This is important since in the study of Aarons in 2004, health care providers are found to be more at ease or have more peace of mind when they know that the information is obtained from their colleagues or other experts in the field rather than when the same information is obtained from articles or textbooks.[12] In general, the practice of EBM is above the acceptable level, however, the one that is vital to its practice, which is critical appraisal, has the lowest mean score.

Based on the results from this study, the resident physicians among various private training institutions in Davao City had an acceptable practice with a mean of 4.98 and standard deviation of 0.27, but not knowledge and attitudes towards Evidence-Based Medicine with a mean of 4.70 with a standard deviation of 0.32 and 5.28 with a standard deviation of 0.59 respectively. Since journal appraisal has become part of training in most of the departments, perhaps the resident physicians just practice EBM out of compliance for this requirement, even with inadequate knowledge and positive attitude about it. Doing a certain task out of compliance will not give a sustainable result. More so, in the field of medicine where lives of patients depend on the ability of the doctor to diagnose and manage properly. It is essential that resident physicians, being the front row in the delivery of medical services, possess an adequate knowledge coupled with a good attitude in order to practice EBM and be able to translate this into better patient outcome.

Conclusion

The results of this study demonstrated that the level of knowledge and skills on EBM among resident physicians in various private training institution in Davao City is higher as compared to what was observed in literature, though it is lower than the acceptable level set by the proponents based on best assumption. The level of attitude towards EBM is likewise lower and only the practice of EBM is above the set acceptable level. These only show that there is disparity among these three subscales in EBM. As resident physicians in training, who are frontliners in delivering health care services and soon have their own medical practice, it is imperative that things must be done to fill this gap.

Recommendations and Limitations

It is therefore proposed that with the findings of this study, different training departments in various private training institutions in Davao City will integrate principles of EBM and include activities related to such in their trainings. Since other institutions and other training departments already have EBM exercises, but the proponents of this study did not know how frequent the exercises are. Therefore, it is recommended to conduct regular EBM trainings and exercises, perhaps at least twice a month, to improve knowledge and attitudes towards EBM. To further improve knowledge on EBM, it is recommended to train trainors until the required competencies to teach and facilitate are acquired or developed and to include EBM in the medical curriculum with separate units and not just a single or a few sessions of discussions in a lecture format. It is also recommended to standardize references, create a self-instructional manuals and online mentoring to further improve knowledge, attitude and practice of EBM.

The respondents of this study were mostly from private institutions. Using the same instrument, it is recommended to survey resident physicians from government hospitals with accredited residency training programs. For future studies, it is recommended to explore attitude of residents

by using a two-phased mixed quantitative and qualitative method study design. The first phase deals with collection and analysis of quantitative data, and the latter part tries to explore the results extracted in the quantitative method whether the results are favorable or otherwise.

References

1. Evidence-Based Medicine Working Group. Evidence-Based Medicine: A New Approach to Teaching the Practice of Medicine, 1998, 1st ed., p. 2420, Ontario, Canada. Retrieved from https://www.cebma.org/wp-content/uploads/EBM-A-New- Approach-to-Teaching-the-Practice-of-Medicine.pdf
2. Sherriff K, Wallis M, Chaboyer W. Nurses' attitudes to and perceptions of knowledge and skills regarding evidence-based practice. Int J Nursing Practice 2007; 13(6): 363-9.
3. Ammouri A, Raddaha A, Dsouza P, Geethakrishnan R, Noronha J, Obeidat A, Shakman L. Evidence-based Practice: Knowledge, attitudes, practice and perceived barriers among nurses in Oman. SQU Med J 2014; 14(4): e538.
4. Coopey M, Nix MP & Clancy CM. Translating research into evidence-based nursing practice and evaluating effectiveness. J Nurs Care Qual 2006; 2: 195–202.
5. McKibbon A. Evidence-Based Practice. Bulletin of the Medical Library Association. 1998; 86(3): 396-7.
6. Melnyk BFineout-Overholt E. Evidence-based practice in nursing & healthcare. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins; 2011.
7. Graham D, Lee Y, Wu M. Rational Helicobacter pylori Therapy: Evidence-Based Medicine Rather Than Medicine-Based Evidence. Clin Gastroenterol Hepatol 2014; 12(2): 177-86.e3. http://dx.doi.org/10.1016/j.cgh.2013.05.028
8. Young J. General practitioners' self ratings of skills in evidence based medicine: validation study. BMJ 2002; 324 (7343): 950-1. http://dx.doi.org/10.1136/bmj.324.7343.950
9. McColl A, Smith H, White P, Field J. General practitioners' perceptions of the route to evidence based medicine: a questionnaire survey. BMJ 1998; 316 (7128): 361-5. http://dx.doi.org/10.1136/bmj.316.7128.361
10. Snell T., Belsey J. Evidence-based Health Care. Eurohealth. 2001; 12(4): 29-31.
11. Aguirre-Raya K, Castilla-Peón M, Barajas-Nava L, Torres-Rodríguez V, Muñoz- Hernández O, Garduño-Espinosa J. Self-perception and knowledge of evidence based medicine by physicians. BMC Medical Education. 2016;16(1).
12. Aarons GA. Mental Health Provider Attitudes Toward Adoption of Evidence- Based Practice: The Evidence-Based Practice Attitude Scale (EBPAS). Mental health services research. 2004;6(2):61-74.
13. Rosswurm M.A. Larrabee, J.H. A model for change to evidence-based practice. Image: Journal of Nursing Scholarship. 1999; 31(4): 317– 22.