

Attitude, Skills and Barriers in Practice of Evidence Based Medicine

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Patient load, lack of time and treatment incentives are the major problems faced by healthcare professionals of being outdated and compromising quality of healthcare. Evidence based medicine has an enormous role to play in improving the present situation. Objective of study is to determine attitude, skills and barriers in practice of evidence based medicine among practitioners and pharmacy students. A cross sectional study was conducted. Institutional ethical committee permission, individual institute permission and consent from all the participants were obtained prior to the study. 323 students and 139 practitioner's responses were collected. 99.4 % of the pharmacy students and 94.2 % of practitioners were aware of evidence based medicine and had positive attitude towards evidence based medicine. The level of confidence for doing various tasks related to evidence based practice is varying widely among students. 56.3 % of pharmacy student's concurred lack of time, lack of skills and non-availability of resources were the major barriers in practice. 74.8 % practitioner's agreed that enhancing pharmacy student's knowledge in evidence based medicine will help to solve clinical queries in minimum time. Evidence based medicine practice among the pharmacy students and practitioners showed positive attitude towards evidence based medicine and supported skill development programs such as hands on training, workshops and seminars. Curriculum modifications in all healthcare professional's education according to the current needs are to be incorporated to enhance the patient care quality in this era of information explosion.

Key words: Education, evidence based medicine, evidence based practice, medical practitioners, pharmacy students

Globally, the quality and procedures of healthcare systems have changed significantly. For decades, medical practitioners and other healthcare professionals have known the gaps between the clinical practice and research findings and the implications were ineffective, costly, or even detrimental clinical decisions towards patient care^[1]. Improving efficiency, quality and effectiveness in health care is a daily challenge faced by every healthcare professional in their daily clinical practice^[2]. The evolution of Evidence Based Medicine (EBM) helped in reducing the existing gap between clinical practice and research findings. EBM is defined as the "conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients". Evidence Based Practice (EBP) involves the integration of clinical expertise, patient values and preferences with the current best available research evidence to optimize clinical decision

making. EBM and EBP are interlinked with each other^[3]. The current era is deluged with scientific information from various researches carried out globally, although research findings may be appropriate, useful, irrelevant or invalid to the current clinical practice. Among those, results from randomized controlled trials are also included. Medical practitioners and other healthcare professional's clinical decision will depend on individual experience only if they are not updated with recent research findings related in their area of practice. Availability of various medical information databases, smart phones and computer

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literacy has now increased the access to extensive amount of information. About 75 clinical trials and 11 systematic reviews are published on daily basis^[4]. Medical practitioners and other healthcare professionals require skills to search, distinguish and appraise the useful information from strong and weak sources and apply into daily clinical practice^[1]. The emerging role of pharmacists in delivering pharmaceutical care, as a part of the healthcare team, demands them to be up to date with the research findings in the field of medicine to make best possible clinical decisions. Among other healthcare professions, pharmacy professionals can play a significant role in pharmaceutical care by providing accurate and timely information regarding medication. The World Health Organization (WHO), International Pharmaceutical Federation (IPF) and the American Association of Colleges of Pharmacy (AACP) have drawn attention on the significance of EBM/EBP for enhanced pharmaceutical care. In this aspect, the knowledge, perception and practice of pharma professionals in EBM have to be determined^[5]. In Indian healthcare system, the role of clinical pharmacists are not established very much. Although the pharmacy discipline is recognized, in many developing countries, they are underutilized^[6]. Healthcare professionals are depending on drug and poison information centers, handled by pharmacology department of hospitals as well as final year pharmacy students (Pharm D interns and M Pharm-Pharmacy Practice students) of their attached pharmacy colleges, where clinical pharmacy program exist or they offer, for solving queries related to drugs in clinical practice^[7,8]. Therefore, skills and perception of entry level pharmacist and perception of medical practitioners regarding EBM needs to be determined. In India, EBM practice is varying widely among different clinical set ups. Insufficient information is available in regard to awareness, knowledge, perception and skills of pharma professionals and medical practitioners in the practice of EBM. The present study aims to assess the attitude, skills and barriers of pharmacy students and medical practitioners from India towards practice of EBM. This study was approved by Institutional Ethics Committee and conducted in compliance with National ethical guidelines for biomedical and health research involving human participants and Declaration of Helsinki. Data was collected from the student respondents after obtaining the individual institutes head permission and individual respondents consent. Data was collected from medical practitioners after obtaining permission from hospital/clinic and individual respondents consent.

The study is also registered in clinical trial registry of India (CTRI/2018/03/012374)^[9,10]. Two questionnaires were designed for conducting survey among pharmacy students and medical practitioners respectively. Student's questionnaire comprised of 13 questions with three sections in order to assess the perception of pharmacy students regarding practice of EBM, level of confidence for performing various tasks related to EBM and barriers in practice of EBM. Practitioner's questionnaire consists of 8 questions to assess the perception of medical practitioners regarding the practice of EBM and barriers in practice of EBM^[11]. Developed questionnaires validated by using Item Content Validity Index (ICVI) and Scale Content Validity Index (SCVI). Individual question content validity was determined by ICVI and whole questionnaire content validity was determined by SCVI. Content validity of the developed questionnaires was done to ensure the appropriateness, relevance and accuracy of the questionnaire. In both the questionnaires, all the questions had ICVI value of more than 0.78 and the whole questionnaire SCVI of more than 0.90, which is in the recommended level^[12]. The pre-testing of the questionnaire was done to assess the strengths and weaknesses regarding the clarity of each question, terminologies used and time required to complete the questionnaire. The questionnaire was administered to 10 students and 10 medical practitioners. The participants expressed no difficulty in answering and understanding the questionnaire^[11]. A cross sectional study was conducted using convenient sampling method. Study population for the student's survey was Pharm D interns (6th y Pharm D students) and Master of Pharmacy (M Pharm-Pharmacy Practice) students from All India Council for Technical Education (AICTE) and Pharmacy Council of India (PCI) approved institutes from India. Study population for the medical practitioner's survey was registered and practicing medical practitioners from different medical specialties. Participants whoever willing to participate in the study was enrolled to the study after obtaining informed consent. Participants who ever not provided their responses for every question in the survey other than demographic details were excluded from the study to avoid bias due to missing value in the study. For the calculation of sample size, a pilot study was conducted from an Indian healthcare institution. Total of 40 students (M Pharm (Pharmacy Practice) and Pharm D 6th y) and 40 medical practitioners (28 from various medical specialties and 12 residents) were included in the pilot study. There were no significant problems

faced during the pilot study and the study was found feasible. Estimation of proportion ($n = ((Z_{1-\alpha/2})^2 \cdot P(1-P))/d^2$ ($Z_{1-\alpha/2} = 1.96$ at 95 % confidence level and $d = 0.05$)) was the mathematical formula used for calculation of sample size. Based on the pilot study, p value for students was found to be 0.7 and practitioners was found to be 0.9. The estimated sample size was 323 students and 139 medical practitioners^[13-15]. Authors visited individual institutes and distributed questionnaires directly to the eligible participants for collecting student's survey. Similarly, authors visited several hospitals, primary health care centers, clinics, community health centers, nursing homes, private health care centers and outpatient clinics. Without affecting medical practitioner's professional duties and ethics, questionnaires were distributed. Online version of the same questionnaire was also circulated among students and practitioners respectively using Google forms. The responses were analyzed by using Statistical Package for the Social Sciences (SPSS) version 20 (IBM SPSS Statistics 20) and represented as frequency and percentage. The association between categorical variables was determined by chi-square test and binary logistic regression. p value of less than 0.05 was considered as significant. Total of 323 students and 139 medical practitioner's responses were collected. The response rate for online survey was 10.41 % (125 out of 1200) for pharmacy students and 24.57 % (86 out of 350) for practitioners. Among 323 student respondents, 318 provided demographic details. In that, 53 students were M Pharm (Pharmacy Practice), 43 Post Baccalaureate students (Pharm D PB interns) and 222 Pharm D interns. From the student respondents, 16 students had hospital pharmacy/community pharmacy experience of 1 y to 5 y. Medical practitioners from different medical specialties were responded to the survey. Specialties includes general medicine, dermatology, surgery, gynecology, psychiatry, otolaryngology, orthopedic, ophthalmology, pulmonary medicine, pediatrics, anesthesiology, nephrology, neurology, gastroenterology, oncology, cardiology, rheumatology, physical medicine and rehabilitation. Participated medical practitioners had experience from 1 y-40 y with minimum qualification. The average year of experience of the medical practitioners was 14.53 ± 10.90 y. Total of 99.38 % (n=321) students agreed that EBM/EBP is important for improving quality of patient care and 57.58 % (n=186) students agreed that they observed the practice of EBM in their clinical settings. From the respondents, 42.41 % (n=137) students agreed that they practice or suggested

EBM/EBP in their clinical settings. Majority, 98.45 % (n=318) students agreed that implementation of EBM/EBP will improve healthcare delivery. Among the responses, 98.45 % (n=318) agreed that development of new educational tools of EBM/EBP will be useful in curricular and clinical practice. From the respondents, 96.59 % (n=312) students agreed that on going training programs/seminars/workshops is required for effective use of EBM/EBP and 96.9 % (n=313) students agreed that development of a mobile application which provides easy access to reliable research evidences in short period of time will be useful in their daily practice. Total of 94.24 % (n=131) medical practitioners agreed that EBM/EBP is important for improving quality of patient care and 92.08 % (n=128) practitioners agreed that implementation of EBM/EBP will improve healthcare delivery. The association between experience and attitude towards EBM in the following aspects such as, EBM/EBP is important for improving quality of patient care ($p = 0.009$) and implementation of EBM/EBP will improve healthcare delivery ($p = 0.037$) were found to be statistically significant using Pearson chi-square test. Among that, 15.82 % (n=22) practitioners attended training programs/workshops/seminars related to EBM and 84.89 % (n=118) practitioners agreed that ongoing training programs/seminars/workshops is required for effective use of EBM/EBP in practice. From the respondents, 89.2 % (n=124) practitioners agreed that drug related information or decisions which are provided by healthcare professionals are not always evidence based. Out of respondents, 74.82 % (n=104) practitioners agreed that, if pharma graduates are trained in EBM/EBP, that will lead to enhance the quality of patient care by quick resolving of clinical queries related to drugs. The student's and practitioner's attitude towards EBM/EBP were compared using Fisher's exact test. There was a significant association between the study population and attitude towards EBM in the following aspects such as, EBM/EBP is important for improving quality of patient care ($p = 0.001$) and implementation of EBM/EBP will improve healthcare delivery ($p = 0.001$). Binary logistic regression was performed to confirm the significant associations and found to be non-significant respectively ($p = 0.833$ and $p = 0.348$). This indicates that the opinion of both study population is similar and agreed that EBM/EBP is required for improving healthcare quality. Level of confidence of students for doing different tasks related to EBM/EBP is given below in Table 1. Major barriers found in clinical practice from medical practitioners and student's perspectives were given

below in Table 2. Different barriers were experienced by respondents while clinical practice. No significant association was found between practitioner's experience and barriers to practice EBM ($p=0.088$) using Pearson chi-square test. Despite the rapid evolution in other disciplines accomplished, the performance remains impoverished when judged on variables of healthcare. One of the prevalent public health discourses in the context of global health in India is the scarcity of sufficient number of qualified and skilled practitioners and other healthcare professionals. The WHO has disseminated an acceptable ratio of doctor to population as 1:1000^[16]. In India, the current estimate is 7 doctors are available per 10 000 population (calculated in the beginning of 20th century) giving the ratio of 0.7:1000. This predication is established from the registration details of doctors and not considering the attrition factors such as emigration and retirement. But the actual availability of practicing doctors in India is 4.8 per 10 000, after adjusting the confounding factors of

retirement and emigration to other countries. In addition to the shortage of doctors, their allocation in rural and urban areas, insufficient number of qualified and skilled health care professionals worsens this situation^[17]. In this scenario, understanding how EBP considered and enforced across various healthcare professionals can detect EBP gaps and weaknesses, help to identify educational requirements and optimize necessary resources. In this survey, majority of practitioners and pharmacy students had positive attitude towards EBM, however skills for practicing various tasks related to EBM was lacking for pharmacy students. Studies conducted by Abu Farha *et al.*^[2] among pharmacists in Jordan, Ambulkar *et al.*^[18] among perioperative health care professionals in India, Lafuente-Lafuente *et al.*^[19] among physicians, pharmacists and nurses in France, Buabbas *et al.*^[5] among pharmacist in Kuwait, Bahmaid *et al.*^[20] among pharmacist in Saudi Arabia and Al-Jazairi *et al.*^[21] among pharmacist in Saudi Arabia supported the positive attitude of the study population

TABLE 1: CONFIDENCE LEVEL FOR EBM TASKS

Elements of EBP (students: 323)	Level of confidence				
	Not confident n (%)	Somewhat confident n (%)	Reasonably confident n (%)	Very confident n (%)	Extremely confident
Formulate a relevant and specific clinical question	10 (3.1)	72 (22.3)	172 (53.3)	54 (16.7)	15 (4.6)
Search scientific evidence	10 (3.1)	64 (19.8)	132 (40.8)	101 (31.3)	16 (5.0)
Evaluate available research evidence	13 (4.0)	111 (34.4)	122 (37.8)	64 (19.8)	13 (4.0)
Evaluate the clinical applicability of evidence	34 (10.5)	123 (38.1)	108 (33.4)	48 (14.9)	10 (3.1)
Implement/suggest these evidence in patient care	70 (21.7)	78 (24.1)	102 (31.6)	63 (19.5)	10 (3.1)

TABLE 2: BARRIERS IN PRACTICE OF EBM

Elements (Students: 323 and Practitioners: 139)	Student's responses n (%)	Practitioner's responses n (%)
Time consuming	8 (2.5)	26 (18.7)
Lack of training	70 (21.7)	36 (25.9)
Non availability of resources	14 (4.3)	30 (21.6)
Time consuming+Lack of training	28 (8.7)	4 (2.9)
Time consuming+Non availability of resources	5 (1.5)	4 (2.9)
Lack of training+Non availability of resources	16 (5.0)	3 (2.2)
Time consuming+Lack of training+Non availability of resources	182 (56.3)	34 (24.5)
No barrier	0	1 (0.7)
Others	0	1 (0.7)

towards EBM and lack of skill. Our study results were comparable to many other studies conducted in different healthcare specialty that have also shown that the general perception towards EBM is positive, belief that practice of EBM will improve patient care and lack of skills. Our findings can be generalized into wide population of healthcare professionals. The professionals having positive attitude towards EBM, still the practice of EBM in clinical practice is limited due to various barriers. Time consumption, lack of training and non-availability of resources were the major barriers in practicing EBM in our study population. Sadeghi-Bazargani *et al.*^[22] conducted a systematic review to identify barriers of EBM and found that lack of time, lack of resources, lack of knowledge, inadequate access, inadequate skills and financial barriers are the most prevalent barriers. Likewise Zwolsman *et al.*^[23] conducted a systematic review to identify barriers of EBM among general practitioners and observed that lack of sound evidence, contradictory evidence, lack of knowledge, lack of skills, lack of support from management or institution and time consumption were the potential barriers. Practitioners and pharmacy students agreed that seminars, workshops and hands on training are required to improve skills of EBM. We also found that educating pharmacy students in EBM will help practitioners to provide better patient care. Zwolsman *et al.*^[23] systematic review finding supports the requirement of training in EBP and 55.6 % general practitioners felt there is a lack of skills in various tasks related to EBM. Abu-Gharbieh *et al.*^[24] conducted a study among pharmacists to assess knowledge, proficiency and attitude in practicing EBM and concluded that practicing EBM is a professional need for future pharmacist and incorporating workshops, problem based learning and hands on experiences are essential for developing skills. Strengths and limitations of the study follows; survey questionnaires contained minimum number of questions and didn't include any jargons. Validation and pretesting of the questionnaires was performed. A pilot study was conducted to determine the sample size and feasibility of the study. Purpose, objective and instructions are clearly explained to the study population prior to the survey. Google forms and paper survey was also conducted. Online survey response rate was less; it may lead to non-response bias. Survey was conducted among only medical practitioners and pharmacy students. Although the beliefs and barriers faced by our study population was similar to other healthcare professionals and various study settings. This practice

of EBM among the pharmacy students and practitioners in India showed positive attitude towards EBM and supported skill development programs such as hands on training, workshops and seminars to enhance the patient care. Present challenge faced by Indian healthcare system is insufficient number of trained allied healthcare professionals, lack of knowledge and lack of training in EBM. Training of practice of EBM among pharmacy students will improve the clinical decision making by assisting practitioners by providing critically appraised up to date information. Future healthcare professionals should be adequately trained in EBM to reduce the burden on practitioners because of the scarcity in number. Curriculum modifications according to the present needs are to be incorporated in all healthcare's professional's education to enhance the quality of patient care.

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Conflict of interests:

The authors declared no conflict of interests.

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