

Evidence - Based Practice among Community Pharmacists and Pharmacy Students in South India

Vijaya Bhaskar Erla¹, Niharika Veldurthi¹, Nikitha Preethi Neeruganti¹, Mohanraj Rathinavelu^{2*}

¹Resident Interns, VI Year PharmD, Department of Pharmacy Practice, Raghavendra Institute of Pharmaceutical Education and Research (RIPER) Autonomous, Anantapuramu, Andhra Pradesh, 515721, India,

²Associate Professor, Department of Pharmacy Practice, Raghavendra Institute of Pharmaceutical Education and Research (RIPER) Autonomous, Anantapuramu, Andhra Pradesh, 515721, India.

(Corresponding author: Mohanraj Rathinavelu^{*})

(Received: 08 December 2022; Revised: 02 February 2023; Accepted: 09 February 2023; Published: 13 February 2023)

(Published by Research Trend)

ABSTRACT: To enable the millennial graduating pharmacy students and current professional practitioners, to satisfy the 21st-century healthcare and pharmacotherapy need with clinical expertise and patient values based on research evidence and attain seven-star pharmacist's principle. The current study was designed to assess the knowledge, attitude, and perception regarding evidence-based pharmacy practice among pharmacy students and practitioners at community settings of south India, through a validated standardized 15 inventories self-administered questionnaire. The study observed a very good knowledge among pharmacy practice students and community pharmacists, but was lacking its perception, due to failure in establishing the relationship between quality professional development and continuous learning process. Implementation of novel approach from the start of teaching-learning process to realistic practice called evidence-based practice in profession of pharmacy, for which the research evidences are very limited and the practice is at still infancy in developing countries. To achieve the mission of pharmacy practice the study necessitates the implementation of quality teaching-learning, research, and practices in pharmacy through evidence-based practice by the statutory bodies, regulating agencies, and policymakers as a problem-solving tool; and also recommends the millennial students and practitioners as an obligation to improve their competencies and skills, to promote excellence in practice for the benefit of those served.

Keywords: Evidence based practice, pharmacy, practitioners, students, self-administered questionnaire.

INTRODUCTION

Pharmacy is a very dynamic profession and the role of the pharmacist is improving with the expansion of the scope of services and the introduction of new subspecialties over time. (Al-Quteimat & Amer 2016). Over the last 20 years, pharmacists' role has transformed from product orientation services into patient centered services in many parts of the world (Niquille *et.al* 2010). All of which are focused on optimizing the patient's therapeutic outcomes and improving their quality of life, which could be better achieved through the understanding and utilizing of evidence-based medicine in realistic practices. Evidence based medicine (EBM) was originally defined as the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research (Sackett *et.al.*, 1996).

Evidence-based practice (EBP) is the conscientious and judicious use of current best evidence in conjunction with clinical expertise and patient values to guide health care decisions" (Cook, 1998). Evidence based medicine (EBM) was established as a method for guiding health

care providers throughout the patient care process (Ilic & Forbes 2010).

The concept "evidence-based pharmaceutical care" has been mentioned as a term in 2008 (Gaebelein, 2023) and it has been defined in 2009 as "the responsible provision of evidence-based medication-related care for the purpose of achieving definite outcomes that improve patients' quality of life" (Aburuz, 2015).

EBM and EBP principles have been progressively introduced in medical curricula, mainly in the USA. Many studies have been conducted to evaluate medical students' awareness and their attitudes toward evidence-based medicine and practices (Aiyer *et.al* 2002, Alahdab *et.al* 2012, Swing, 2002).

However, effectiveness of evidence-based medicine teaching and practices, should be evaluated and assessed among pharmacy students as they are becoming members of future health care professionals particularly in developing and industrialized countries like India. Where, 20% population is not having access to essential medications and 30-40% medications available is not assuring quality delivery. Thus, evaluation and improvement of drug therapy outcomes including critical appraisal of drug and clinical service literature, and quality assessment and improvement techniques with special focus on patient and medication safety is the need of hour in rationale pharmacy practice through

a well-planned and established teaching-learning environment in developing and economic countries. In this context, due to a very dwarf research literature on evidence-based practice in pharmacy practice of India; the current study was designed to assess the level of evidence-based practices (EBP) implementation among Indian community pharmacists, and students in their daily clinical encounters with patients.

MATERIALS AND METHODS

Study design. The current electronic-mediated instrumentation survey of six months duration (December 2020-May 2021) was performed by using a standardized self-administered questionnaire in self-financing private pharmacy institutions, having PharmD (Doctor of Pharmacy) program (affiliated to JNT University Anantapur, Anantapuramu, Andhra Pradesh, India; and community pharmacies of Anantapur urban region.

Study criteria. The study was performed among PharmD (Doctor of Pharmacy) students (4th to 6th years) of self-financing private pharmacy institutions, affiliated to JNT University Anantapur, Anantapuramu, Andhra Pradesh, India; and pharmacy professionals practicing in community settings registered as pharmacists (as per PCI norms PPR 2015) in Anantapur city.

Sampling technique. The sampling method used was a proportionate stratified random sampling procedure using a confidence Interval of 95% and a 5% margin of error. Sample size is 536 (247 students and 289 community pharmacists) out of 4330 samples; of which 1900 are community pharmacists as per Drug Regulatory Office located in Anantapur Urban, and 2430 PharmD program students with a minimum of 90 per institutions (27 total institutions under JNT University Anantapur).

Study procedure. (a) Preparation of questionnaire (English/Telugu languages) and informed consent form, (b) Review of questionnaire by expert panel of core subject area checking for complexities and rationale, (c) Pilot study (needed clarification of inventories), (d) Assessing validity and internal reliability of a survey inventories, to make revision to be transdisciplinary (Cronbach's alpha value) and preparing the standardized questionnaire, and (e) The standardized questionnaire is administered to the study participants, by obtaining consent, followed by analysis and interpretations.

Preparation of questionnaire. An electronic mediated questionnaire was prepared using information and thorough review from the literature survey and factors used in the previous studies and it was validated primarily by experts in pharmacy practice for

complexity and novelty, and analytically through Cronbach's alpha value for its internal consistency, reliability and correlation. The Cronbach's alpha value observed were 0.887 in community pharmacists and 0.830 in pharmacy students, which all are acceptable for research purpose.

The evidence-based pharmacy practice KAP questionnaire thus prepared comprised of total 15 inventories, in which responses are categorized in 5-point Likert scale (strongly agree/agree/neutral/disagree/strongly disagree). Section A (Five inventories related to basic knowledge and information about EBP), Section B (Five inventories related to the attitude towards EBP), and Section C (Five inventories related to perception on EBP).

Data collection and analysis. The responses were collected online, through prior circulated questionnaire survey as google form link. In addition to the 15 inventories, the questionnaire also consists of demographic particulars to be filled by participants and consent form. The filled KAP questionnaire was analyzed as per the objectives of the study. The demography particulars included facts related to gender, organization name, description of profile (student and registered pharmacists), education qualification, years of experience, and designation, and the data obtained were entered in Microsoft excel spread sheet and further interpreted.

RESULTS AND DISCUSSION

Out of 536 participants sampled, 385 (71.83%) provided complete responses which included 235 (61.04%) students and 150 (38.96%) community pharmacists.

Characteristics of pharmacy students. The current study was performed among students of pharmacy practice program (PharmD) which is clinically oriented as prescribed by the pharmacy council of India (PCI). The reason behind the choice of 4th, 5th and 6th year; and 1st, 2nd and 3rd of PharmD and post baccalaureate program respectively is the curriculum outcome (clinical, humanistic and economic) based teaching-learning research and practices with focus on patient care.

The demography on the students participated in the current study observed a greater number of female (67.23%) in comparison to male, in which participation was highly found in students of 5th year program (46.8%) and one-fourth of PharmD 4th and 5th year students each and the relative distribution is shown in Table 1.

Table 1: Characteristics of student participants (n=235).

Program and Year	Gender distribution		Total
	Male	Female	
PharmD IV and PB 1 st Year	14 (23.33%)	46 (76.67%)	60 (25.53%)
PharmD V and PB 2 nd Year	41 (37.27%)	69 (62.73%)	110 (46.8%)
PharmD VI and PB 3 rd Year	22 (33.85%)	43 (66.15%)	65 (27.66%)
Total	77 (32.77%)	158 (67.23%)	235 (100%)

Responses of pharmacy students towards EBP KAP questionnaire. EBM has been included in undergraduate medical education for more than 20 years, and many EBM educational interventions for medical students have been published (Coomarasamy & Khan 2004). Today, most medical schools include EBM in their curricula, although its implementation is not standardized (Blanco *et al.*, 2014, Ellis *et al.*, 2000, Green, 1999, Meats *et al.*, 2009). Several studies have examined the knowledge, skills, behaviors and/or attitudes of physicians and medical students, as well as in other health professions, such as nursing and physical therapy (Bloch *et al.*, 1997; Maggio *et al.*, 2013; Flores-Mateo & Argimon 2007; Norman & Shannon 1998; Liabsuetrakul *et al.*, 2009).

Given the importance of EBM in informing decisions about medication use, EBM is critical to the practice of pharmacy (Vira *et al.*, 2019). In this context, due to a very dwarf research literature on evidence-based medicine and practice in pharmacy practice students of India; the current study is of first kind designed to assess the level of evidence-based practices (EBP) implementation among the Indian pharmacy practice students.

The current study observed that students are really unaware about the teaching-learning process and practice which involve EBM and EBP, and are not conscious about the outcome of EBP in patient-oriented pharmacy services due to a reduced practice and perception faculty members.

Reponses identifies students are less adaptive towards transmissive learning methods and uninformed about EBPC as the heart of pharmacy services; and the perception found were less due to pit falls in transforming learning to realistic practices. The relative distribution of pharmacy students KAP on EBP is shown in Table 2.

Characteristics of community pharmacists. The role of community pharmacists is considered the hallmark of pharmacy profession and practices, both in developing and developed countries. The patient too believes pharmacist as a pillar of care. The current study observed more number of male pharmacists 116 (77.33%) in comparison to female 34 (22.67%), with diploma in pharmacy (47.33%) has a highest educational qualification for practice of pharmacy profession results of which are presented in Table 3.

Table 2: Responses of Pharmacy students towards EBP KAP Questionnaire.

Inventories	Percentage distribution				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Knowledge					
EBP understanding is clear within you	30.6	55.7	10.6	2.55	0.42
EBP enhances professional practices	34.4	53.19	11	0	1.27
Efficacy of drug therapy increases through EBP in patient care	30.6	50.2	16.17	1.27	1.7
Teaching methodologies and skills, through EBP enhances graduate outcome	31.9	56.5	10.21	0.85	0.42
EBP potentiates research and its assessment	17.44	56.17	22.12	2.97	1.27
Attitude					
EBP has to culminated as standard practice in pharmacy profession	27.2	54.89	15.31	1.7	0.85
EBP affects positively the profession and practice	17.02	37.87	28.08	13.6	3.4
EBP to be appreciated in teaching-learning process	38.7	46.38	13.19	1.7	0
Art of work is affected through EBP	31.4	55.74	9.36	1.7	1.7
EBP is the need of the hour in patient-centred pharmaceutical care	29.3	54.46	9.78	4.25	2.12
Perception					
Role of EBP is discussed in/at my work	34.04	48	15.74	2.12	0
Practising profession through EBP make it simple and reliable	33.6	52.34	11.48	1.27	1.27
Enjoy teaching-learning process through EBP	40	50.2	8.51	0	1.27
Patient satisfaction increased through EBP in pharmaceutical care	35.74	52.34	10.63	0.42	0.85
Healthcare delivery through EBP integrates providers and consumers	20	61.7	16.59	1.7	0

Table 3: Characteristics of Community Pharmacists.

Educational qualification	Gender distribution		Total
	Male	Female	
Diploma in Pharmacy	65 (91.55%)	6 (8.45%)	71 (47.33%)
Degree in bachelor of pharmacy	43 (63.23%)	25 (36.76%)	68 (45.33%)
Doctor of pharmacy	8 (72.72%)	3 (27.27%)	11 (7.33%)
Total	116 (77.33%)	34 (22.67%)	150 (100%)

RESULTS AND DISCUSSION

Responses of community pharmacists towards EBP KAP questionnaire. Pharmacy profession is considered as epicentre in healthcare in satisfying disease and drug therapy needs of patients. Pharmacists bridge the gap between healthcare providers and patients by ensuring effective delivery of personalized treatment that improves and maintains quality of life, allowing for the achievement of targeted results. For this function to be more effective, pharmacy practice should be rational and realistic, which is referred to as evidence-based pharmaceutical care (EBPC) and practice.

However, many pharmacists in developing and middle-income countries are unfamiliar with good pharmacy practice and pharmacological treatment. Furthermore, there are numerous practical difficulties in putting this principle into effect. (Burkiewicz & Zgarrick 2005).

Despite the fact that hospital and community pharmacists have different obligations in terms of the

settings in which they practice, they both play a common role in promoting and achieving rational pharmacotherapy. Due to dwarf literature on good pharmacy practice in Indian community pharmacists, the current study was performed to investigate their experience towards evidenced-based pharmaceutical care.

In our study, we observed one-third pharmacist were clear in regard towards EBPC and the same believed it can enhance the professional practices, but were unaware regarding the potential of learning skill and research which was similar to research performed in Jordan (Abu Farha *et al.*, 2014). Due to lack in continuing education 92.7%, workload, limited access towards biomedical literatures; attitude of practicing pharmacy profession evidently is less adopted by our community pharmacists, observations are similar to other studies (Al-Jazairi & Alharbi 2017), profession results of which are presented in Table 4.

Table 4: Responses of community pharmacists towards EBP KAP questionnaire.

Inventories	Percentage distribution				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Knowledge					
EBP understanding is clear within you	29.3	58	12.6	0	0
EBP enhances professional practices	36	54.6	9.3	0	0
Efficacy of drug therapy increases through EBP in patient care	40	36.6	23.3	24.6	0
Teaching methodologies and skills, through EBP enhances graduate outcome	14	64	20	2	0
EBP potentiates research and its assessment	14	64.6	20	1.3	0
Attitude					
EBP has to culminated as standard practice in pharmacy profession	30	62	6	2	0
EBP affects positively the profession and practice	24.6	54.6	20.6	0	0
EBP to be appreciated in teaching-learning process	20	52.6	27.3	0	0
Art of work is affected through EBP	16	58	22	4	0
EBP is the need of the hour in patient-centred pharmaceutical care	32.6	46.6	18.6	2	0
Perception					
Role of EBP is discussed in/at my work	7.3	45.3	28.6	16.6	2
Practising profession through EBP make it simple and reliable	14.6	64.6	16.6	4	0
Enjoy teaching-learning process through EBP	7.3	54	35.3	3.3	0
Patient satisfaction increased through EBP in pharmaceutical care	34.6	50	15.3	0	0
Healthcare delivery through EBP integrates providers and consumers	9.3	56.6	32	2	0

CONCLUSION

In conclusion, our study recommends the statutory bodies, regulating agencies, and policymakers to introduce and sensitize pharmacy education pedagogy, research and practices through evidence-based medicine. This prepares the millennial pharmacists as pharmacotherapeutic specialists to assist clinical leaders in making rational decisions.

Erla *et al.*,

Biological Forum – An International Journal 15(2): 394-398(2023)

ABBREVIATIONS

EBM: Evidence-based Medicine
 EBP: Evidence-based Practice
 EBPC: Evidence-based Pharmaceutical Care
 IRB: Institutional Review Board
 JNTUA: Jawaharlal Nehru Technological University Anantapur
 KAP: Knowledge Attitude and Perception
 PCI: Pharmacy Council of India
 PharmD: Doctor of Pharmacy

PP: Pharmacy Practice
PPR: Pharmacy Practice Regulations
RIPER: Raghavendra Institute of Pharmaceutical Education and Research
USA: United States of America.

Acknowledgements. The authors would like to thank the management, staff members and students of RIPER Autonomous, Anantapuramu; chemist and druggist association and drug regulatory authority of Anantapuramu district, Andhra Pradesh, India for their constant support and guidance throughout the research study.

Conflict of Interest. None.

Author contributions. This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Ethical approval. The study protocol was approved by the RIPER institutional review board (IRB number: RIPER/IRB/PP/2020/010).

REFERENCES

- Abu Farha, R., Alefishat, E., Suyagh, M., Elayeh, E., & Mayyas, A. (2014). Evidence-based medicine use in pharmacy practice: a cross-sectional survey. *Journal of Evaluation in Clinical Practice*, 20(6), 786–792.
- Aburuz S. (2015). The case for evidence-based pharmaceutical care. *Research in Social & Administrative Pharmacy: RSAP*, 11(3), e146–e147.
- Aiyer, M., Hemmer, P., Meyer, L., Albritton, T. A., Levine, S., & Reddy, S. (2002). Evidence-based medicine in internal medicine clerkships: a national survey. *Southern medical journal*, 95(12), 1389–1395.
- Alahdab, F., Firwana, B., Hasan, R., Sonbol, M. B., Fares, M., Alnahhas, I., Sabouni, A., & Ferwana, M. (2012). Undergraduate medical students' perceptions, attitudes, and competencies in evidence-based medicine (EBM), and their understanding of EBM reality in Syria. *BMC research notes*, 5, 431.
- Al-Jazairi, A. S., & Alharbi, R. (2017). Assessment of evidence-based practice among hospital pharmacists in Saudi Arabia: attitude, awareness, and practice. *International journal of clinical pharmacy*, 39(4), 712–721.
- Al-Quteimat, O. M., & Amer, A. M. (2016). Evidence-based pharmaceutical care: The next chapter in pharmacy practice. *Saudi pharmaceutical journal : SPJ : the official publication of the Saudi Pharmaceutical Society*, 24(4), 447–451.
- Blanco, M. A., Capello, C. F., Dorsch, J. L., Perry, G., & Zanetti, M. L. (2014). A survey study of evidence-based medicine training in US and Canadian medical schools. *Journal of the Medical Library Association : JMLA*, 102(3), 160–168.
- Bloch, R. M., Swanson, M. S., & Hannis, M. D. (1997). An extended evidence-based medicine curriculum for medical students. *Academic medicine: journal of the Association of American Medical Colleges*, 72(5), 431–432.
- Burkiewicz, J. S., & Zgarrick, D. P. (2005). Evidence-based practice by pharmacists: utilization and barriers. *The Annals of pharmacotherapy*, 39(7-8), 1214–1219.
- Cook D. (1998). Evidence-based critical care medicine: a potential tool for change. *New horizons (Baltimore, Md.)*, 6(1), 20–25.
- Coomarasamy, A., & Khan, K. S. (2004). What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. *BMJ (Clinical research ed.)*, 329(7473), 1017.
- Dorsch, J. L., Aiyer, M. K., & Meyer, L. E. (2004). Impact of an evidence-based medicine curriculum on medical students' attitudes and skills. *Journal of the Medical Library Association: JMLA*, 92(4), 397–406.
- Ellis, P., Green, M., & Kernan, W. (2000). An evidence-based medicine curriculum for medical students: the art of asking focused clinical questions. *Academic medicine: journal of the Association of American Medical Colleges*, 75(5), 528.
- Flores-Mateo, G., & Argimon, J. M. (2007). Evidence based practice in postgraduate healthcare education: a systematic review. *BMC health services research*, 7, 119.
- Gaebelein, C. (n.d.). Contemporary Drug Information: An evidence-based approach.
- Green, M. L. (1999). Graduate medical education training in clinical epidemiology, critical appraisal, and evidence-based medicine: a critical review of curricula. *Academic medicine: journal of the Association of American Medical Colleges*, 74(6), 686–694.
- Ilic, D., & Forbes, K. (2010). Undergraduate medical student perceptions and use of Evidence Based Medicine: a qualitative study. *BMC medical education*, 10, 58.
- Liabsuetrakul, T., Suntharasaj, T., Tangtrakulwanich, B., Uakritdathikarn, T., & Pornsawat, P. (2009). Longitudinal analysis of integrating evidence-based medicine into a medical student curriculum. *Family medicine*, 41(8), 585–588.
- Maggio, L. A., Tannery, N. H., Chen, H. C., ten Cate, O., & O'Brien, B. (2013). Evidence-based medicine training in undergraduate medical education: a review and critique of the literature published 2006-2011. *Academic medicine: journal of the Association of American Medical Colleges*, 88(7), 1022–1028.
- Meats, E., Heneghan, C., Crilly, M., & Glasziou, P. (2009). Evidence-based medicine teaching in UK medical schools. *Medical teacher*, 31(4), 332–337.
- Niquille, A., Lattmann, C., & Bugnon, O. (2010). Medication reviews led by community pharmacists in Switzerland: a qualitative survey to evaluate barriers and facilitators. *Pharmacy practice*, 8(1), 35–42.
- Norman, G. R., & Shannon, S. I. (1998). Effectiveness of instruction in critical appraisal (evidence-based medicine) skills: a critical appraisal. *CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne*, 158(2), 177–181.
- Sackett, D., Rosenberg, W., Gray, J., Haynes, R., & Richardson, W. (1996, January 13). Evidence based medicine: What it is and what it isn't.
- Swing, S. R. (2002). Assessing the ACGME general competencies: general considerations and assessment methods. *Academic emergency medicine : official journal of the Society for Academic Emergency Medicine*, 9(11), 1278–1288.
- Vira, P., Nazer, L., Phung, O., & Jackevicius, C. A. (2019). A Longitudinal Evidence-Based Medicine Curriculum and Its Impact on the Attitudes and Perceptions of Student Pharmacists. *American journal of pharmaceutical education*, 83(1), 6510.

How to cite this article: Vijaya Bhaskar Erla, Niharika Veldurthi, Nikitha Preethi Neeruganti, Mohanraj Rathinavelu (2023). Evidence - Based Practice among Community Pharmacists and Pharmacy Students in South India. *Biological Forum – An International Journal*, 15(2): 394-398.