



# JOURNAL OF PHARMACEUTICAL SCIENCE AND BIOSCIENTIFIC RESEARCH (JPSBR)

(An International Peer Reviewed Pharmaceutical Journal that Encourages Innovation and Creativities)

## Current Indian pharmacy practice: Need for up gradation

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### ABSTRACT:

**Background:** The beginning of pharmaceutical in India was initiated at the Banaras Hindu University (BHU) in 1932 by Professor M. L. Schroff. The pattern of educational in India is an industry and product oriented, unlike the situation of pharmacy in developed countries, where pharmacy graduates involve themselves in pharmacy practice in patient related community pharmacy. Indian health care system is not utilizing the service of Pharmacist yet it is the need of the hour. **Objective:** To evaluate the knowledge, practice and perception of pharmacy practice amongst practicing registered pharmacists of Gujarat. **Method:** A self-administered questionnaire comprising of 23 questions covering aspects like pharmaceutical formulation, therapeutics, clinical pharmacy, jurisprudence and patient education was prepared and validated. Registered pharmacist under Gujarat State Pharmacy Council from various cities of Gujarat were enrolled in the study. After explaining the intention of survey, questionnaire was filled by the respondents in presentia. **Result:** Out of 120 participants, 111 respondents completed the process, which lead to response rate of 92.5%. Participants with qualification of Diploma in pharmacy showed 77%, Bachelor and masters in pharmacy graduates showed 74% & 76% knowledge respectively and Ph.D professionals had 88% knowledge in the field of Pharmacy Practice. Doctor of Pharmacy (PharmD) qualified one participant had knowledge score of only 78%. It was also observed that the youngest age group and the oldest age group participants have given the highest amount of wrong answers as compared to other age groups of participants. **Conclusion:** Knowledge, Practice and perception of current Indian pharmacy practice need to be up gradated, regardless age and education background.

**KEY WORDS:** Pharmacy Practice; Clinical Pharmacist; Knowledge, Practice and Perception; Pharmacy Education; India.

### Article history:

Received 09 May 2016

Accepted 22 May 2016

Available online 01 July 2016

**Citation:** Shah J. V., Patel J. M., Barot R G., Patel G. M., Mansuri M. M., Deshpande S. S. Current Indian pharmacy practice: Need for up gradation. *J Pharm Sci Bioscientific Res.* 2016 6(4):577-583

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### INTRODUCTION:

The beginning of pharmaceutical in India was initiated at the Banaras Hindu University (BHU) in 1932 by Professor M. L. Schroff. From there it has been a long journey of almost 80 years for this profession in this country. The enactment of the Pharmacy Act 1948 established the statutory regulation of pharmacy institutions in India. The Pharmacy Council of India (PCI) was established in 1949 under "Ministry of Health" and the first education regulations (ER) framed in 1953, which were subsequently amended in 1972, 1981 and 1991.<sup>[1]</sup> It is many times stated "Safety is not a gadget but a state of mind" and "Safety first is safety always". These quotations also apply to safety of drugs that we use in day to day life to treat different ailments and illnesses.<sup>[1]</sup> Authorities to update reporting knowledge like ADR reporting form

availability, reporting centers, modes and benefits of reporting are must to be made mandatory to all community pharmacists.<sup>[1]</sup> The pattern of educational in India is an industry and product oriented. Unlike the situation of pharmacy in developed countries, where pharmacy graduates involve themselves in pharmacy practice in patient related community pharmacy: In India graduates want placements in pharmaceutical production and quality control, marketing and research and development section etc. Current scenario in India is only diploma holders can be called the practicing pharmacists as they engage in pharmacy practice. The newly introduced PharmD program is supposed to affect the current pharmacy practice in India. These involves the proper knowledge and skills of synthesis of drugs, preparation of various dosage forms, different quality control tests, drug interaction studies, pharmacokinetic and pharmacodynamic studies, identification, preservation, analysis and standardization of various drug products and medicines.<sup>[2]</sup>

Pharmacy has changed and continues to change even as health care delivery systems change around us. Pharmacy is the science concerned with therapeutic substances – their discovery, origin and nature, their development into medicines and their use in disease prevention and treatment. Pharmaceutical scientist work as supporting staff for the pharmacy such as clerks or cashiers who primarily answer telephones, handle money, stock shelves, and perform other clerical duties. They deal with customers and computer systems and generally help keep the system working properly.<sup>[3]</sup> It is desirable that pharmacists and pharmaceutical scientist working within various discipline of pharmacy should be recognized as the medicine expert as well as an expert in health promotion and disease prevention.

Problem-based learning should be an integral part of pharmacy education to produce qualified graduates for better service of community. Pharmacy education curriculum should be constantly revised and updated to meet tomorrow's challenges, with growing inter-linkages in the world, international standards must be maintained and the curriculum should include a section on global trends and best practices<sup>[3]</sup> which currently is missing. In addition, a knowledgeable and competent pharmacist can help the Indian Pharmaceutical Industry to move away from being a Generic titan to a R&D hub. In short, an educational revamp is required, which will not only benefit the patients, but also the nation as a whole.

The pharmacists obtain proper knowledge about the safety and efficacy of medicines and patient counseling during their studies, which unfortunately, is not currently the case in India.<sup>[3, 4, 5]</sup> Clinical pharmacy education programs have taken root in India. Much work will be needed to expand and improve these programs to bring the benefits of clinical pharmacy practice to the great swath of Indian society

Though medicines are now dispensed in the manufacturer's original pack wherever possible, additional labeling should include generic name and strength, dose and frequency, date of dispensing, name of patient, name and address of dispenser and pharmacy, and date after which the product in not to be used. To improve patient compliance, oral or written instructions should be provided by the pharmacist.<sup>[6, 7]</sup>

Hence, Indian health care system is not utilizing the service of Pharmacist as it is really required. The reasons for this are, domination of medical specialty due to over respect it is gaining from Indian community, lack of clinical knowledge among the Pharmacist. In context to which there is serious need of continuous education program is which needs to be continue to improve our health care setup. Thus, we have attempted assessment in current setting for the justification of such reasons in our study.

## MATERIALS AND METHOD

### Study design:

A cross sectional, observational, pilot survey was conducted on registered pharmacist under Gujarat State Pharmacy Council from various cities of Gujarat. After explaining the intention of survey, they were requested to fill out the self-administered questionnaire which was prepared and validated to know the knowledge, practice and perception (KPP) of pharmacy practice in presentia.

### Study questionnaire:

A self-administered questionnaire comprising of 23 questions covering aspects like pharmaceutical formulation, therapeutics, clinical pharmacy, jurisprudence and patient education was designed. This was validated by academic pharmacy professionals. All the 23 questions were having the response of three choices with one correct answer to calculate the

percentage of correct responses and incorrect responses for the given statement.

Study participants:

The questionnaire was distributed to 120 pharmacists randomly selected from the community setting of

Gujarat out of whom 111 responded and others were excluded from the study. The questionnaire was handed over to the interested participants and the time was allotted to fill the answers in presentia.

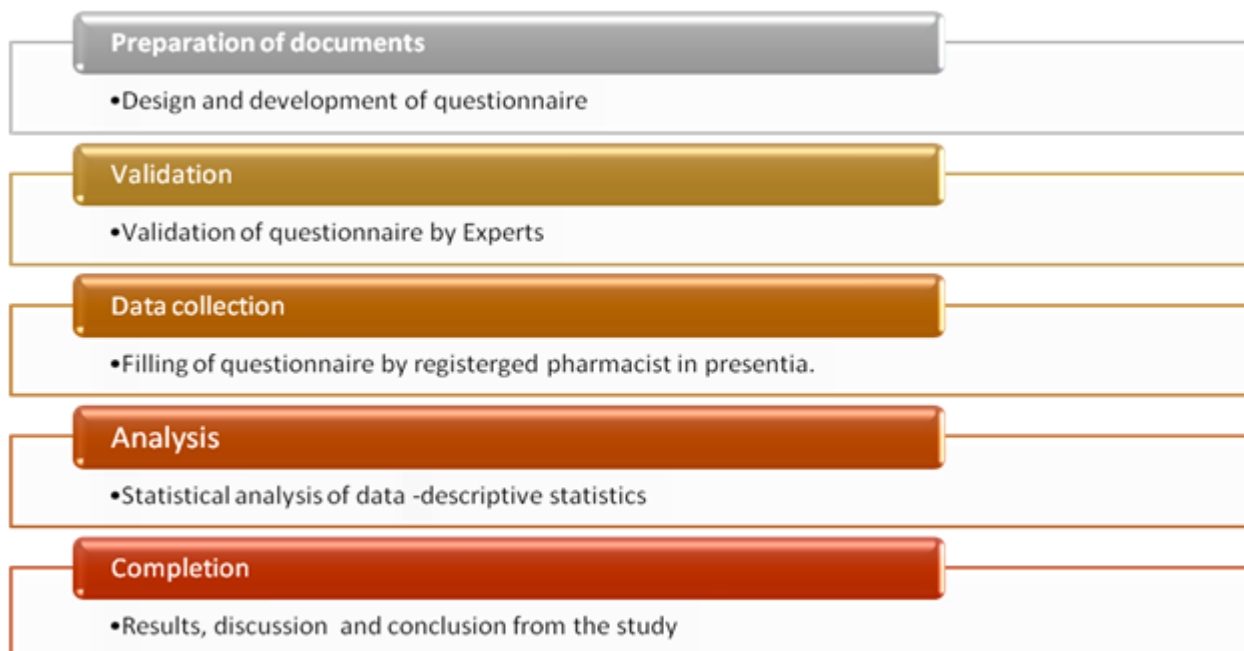


Figure 1: Study Methodology

**RESULT:**

**Table 1: KPP of Pharmacy Practice of RPh in Gujarat.**

Sr. No	Question	Correct Response	Number of participant who gave Correct Response
<b>Knowledge</b>			
1	The symbol Rx means	Take	66
2	An Ayurvedic practitioner, a Homeopathic practitioner, a Unani practitioner, a Naturopath, etc. are authorized to write a prescription for all allopathic medication.	No	95
3	In a prescription, Date is legally required.	Yes	109
4	Doctor's Reg. No. and signature is legally required in a prescription.	Yes	107
5	According to Drugs and Cosmetic Act, 1945 "Schedule H" contains the list of ____.	Prescription Only Drugs	106
6	As per Indian Pharmacopoeia, Store in a cool place is:	8° C - 25 ° C	85

7	As per Indian Pharmacopoeia, Store in a Cold Temperature means:	2° C - 8° C	99
8	Signature of pharmacist with date in prescription is required to dispense Scheduled X drugs.	Yes	92
9	For 5 year renewal of your Registered Pharmacist License, you must have attended _____.	CME / CPD	46
10	All Analgesic drugs possess antipyretic activity.	No	72
11	Tetracyclines should NOT be taken with _____.	Milk & Dairy Products	107
12	Doxycycline is contraindicated in _____ patients.	Pediatrics	38
13	Pediatric dose can be calculated on the basis of age by using _____ formula.	Young's Formula	64
14	Registered Pharmacist license can be processed from _____	State Pharmacy Council (SPC)	92
<b>Total Score %</b>			<b>1178/1554 (76%)</b>
<b>Practice</b>			
15	Generic substitution is allowed in prescription.	No	59
16	You require a separate working area in the community pharmacy for patient assessment and/or patient counselling.	Yes	101
17	Sildenafil Citrate can be prescribed by General Practitioner (M.B.B.S.)	No	60
18	Patient should be advised to store Insulin _____.	In Refrigerator	103
19	Patient with age of 6 years, which of the following is appropriate?	Syrup	92
20	Cost Minimization Analysis can be done only if :	Outcome of both drugs must be same	64
<b>Total Score %</b>			<b>479/666 (72 %)</b>
<b>Perception</b>			
21	Proper storage of formulations can extend the expiry date.	No	86
22	Vitamins are a health food, so overusing it will not cause negative effects to human body.	Disagree	94
23	Patient taking Aspirin and Clopidogrel comes at the pharmacy shop to buy a new Toothbrush, asking for a softer bristles, with complains of bleeding while brushing, what should the pharmacist do?	Ask to Visit Clinic	97
<b>Total Score %</b>			<b>277/333 (83 %)</b>

Table 1 shows the validated questionnaire and its correct answers with number of pharmacist who gave correct response. Participants have given superior score in perception on pharmacy practice (83%). Comparatively,

they have given less score in knowledge section (76%). In practice affiliated questions participants have given lowest score (72%). Which reflects that they require more focus on pharmacy practice knowledge and then the perception.

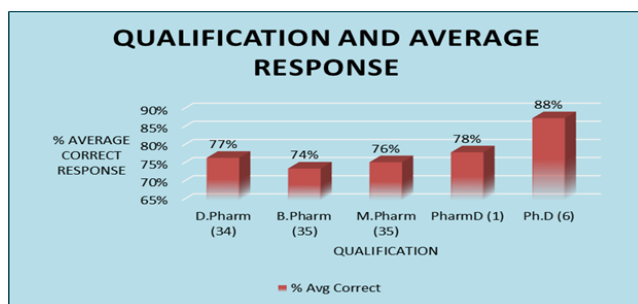


Figure 1: Intra-professional differences

Participants having different level of education does not have a major difference in the Knowledge, Practice and Perception (KPP) of pharmacy practice (Pearson correlation coefficient=0.099). Amongst intra-professional branches of pharmacy not much changes in KPP of pharmacy practice has been observed (Figure 2).

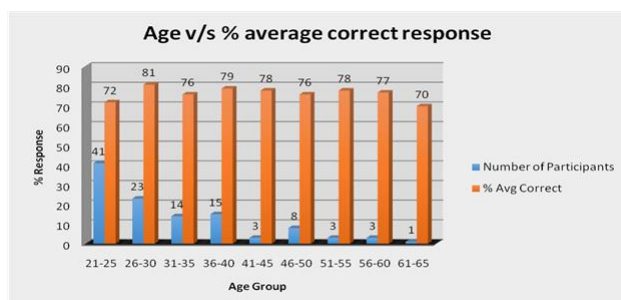


Figure 3: Age as a factor of Pharmacy Practice

Youngest and oldest age groups have given comparatively the highest amount of wrong answers. The poor correlation between age and correct response was observed (Pearson correlation coefficient=0.126). In addition to above these two age groups were registered but not practicing in the field, which may impact on KPP. This signifies that the currently working pharmacists are more clinically and practically competent as compared to other two groups (Figure 3).

**DISCUSSION:**

Since the era of pharmacy began in India in 1937, the numbers of institutions providing pharmacy education program are increasing gradually in India and now a large number of institutions in India are providing various kinds of educational programs in pharmacy such as diploma in pharmacy (D. Pharm), bachelor of pharmacy (B. Pharm), master of pharmacy (M. Pharm), master of science in pharmacy [MS(Pharm)], master of technology in pharmacy [MTech(Pharm)], doctor of pharmacy (PharmD) and doctor of philosophy in pharmacy (PhD). [2, 8]

There were only 11 universities and 26 colleges providing professional pharmacy education in India until early 1980s [2], but this number is far more as of 2016. As per PCI directory, there are total of 1064 recognized degree institutions providing various professional pharmacy degrees. Despite of having such a large number of institutions providing such a curriculum, the practice of pharmacy and the role of a pharmacist is yet to be defined in direct patient care. This is largely based on the fact that the educational pattern in India is an industry and product oriented. Only the diploma holders in pharmacy go for pharmacy practice in community and institutional pharmacies. [2]

This situation is also reflected in our study where we conducted a survey based only on Pharmacy practice point of view. The professionals currently practicing pharmacy having the qualification of D.Pharm, shows 77% knowledge in pharmacy practice. Bachelor and masters in pharmacy graduates showed 74 % & 76% knowledge respectively and Ph.D professionals had 88% knowledge in the field of Pharmacy Practice. PharmD qualified one participant had knowledge score of 78%. This shows the need of sharpening their skills and knowledge in pharmacy practice. (Figure 2) Regular up-gradation in different aspects of pharmacy practice such as therapeutics, clinical pharmacy, patient education and others is necessary. This is based on the fact that there is no emphasis on such area of pharmacy in our education system.

The Diploma in Pharmacy course was designed to serve the institutional and community pharmacists in India by training the students in such areas. [8] But the course work designed does not fulfill the required competencies in the actual field. [5, 8] The introduction of Pharm.D program in 2008 was designed to help the patient via clinical perspective. Their 5 years of academic and 1 year of internship training provides them the skills and knowledge in regards to work with Physicians and other members of health care team to provide the best quality of care to patients.

It shows from the Figure 2 of the result that the professional with different pharmacy curriculum has somewhat similar exposure to the area of pharmacy practice. The individual questions asked in the survey were solely based on the practice point of view involving the subject area of Formulation, Therapeutics, Clinical, Jurisprudence, Formulary, Pharmacopoeia and drug information roles and responsibilities of a pharmacist.

Their overall knowledge with respect to above stated subject areas covering the decision making and problem solving skills at the community level and practice level are similar even though they come from different level of educational curriculum. The knowledge and perception of pharmacists had major impact on the practice of pharmacy. Trained pharmacists would yield positive drive towards increase in good practice of pharmacy.<sup>[1]</sup> Study conducted by Sarcar M. et al. shows that majority of the pharmacists (86.8%) were willing to provide pharmaceutical care services and 78.9% considered these services as pharmacists' duty. Participants listed the major barriers to conduct pharmaceutical care practice as follows: "lack of knowledge of drugs and disease states; lack of technical knowledge of how to provide pharmaceutical care practice; lack of communication with physicians and stationary workload". Continuing education programs would be an important approach for improving pharmacists' knowledge of pharmaceutical care and clinical pharmacy principles and identifying the role of pharmacists in the management of different diseases.<sup>[9]</sup>

Data of this study shows poor correlation between age and correct response (Pearson correlation coefficient=0.126) because youngest and oldest age groups have given approximately the altitudinous value of wrong response. In addition to aloft these two age groups were registered but not practicing in the field, which may impact on KPP. This signifies that the currently working pharmacists are more clinically and practically competent as compared to other two groups which is similar to study conducted by Valdez C. et al. in Pharmacist current work experience is predictor factor of pharmaceutical knowledge.<sup>[10]</sup> Figure 3 reflects this scenario. Data shows that pharmacist need additional pharmacy practice.

Our study data shows that pharmacist between 26-60 years having more knowledge, Attitude and Practice level compared to the other age group. Study conducted by Wabe N.T. et al. in Ethiopia shows that pharmacist between ages of 31-50 years having more knowledge.<sup>[11]</sup> Another Study conducted in Tehran, Iran by Mehralian G. et al. shows that pharmacist between age group of 25-45 years having higher knowledge, Attitude and Practice level.<sup>[12]</sup>

In this world of specialization and globalization the pharmacy education in India is suffering from serious backdrops and flaws. There is an urgent need to initiate an academic exercise aimed at attaining revamping of

curriculum, keeping in pace with current and emerging trends in the field of pharmacy. Unfortunately all these years, enough emphasis was not laid on strengthening the components of Community Pharmacy, Hospital and Clinical pharmacy, while designing curriculum at diploma and degree levels of teaching. The curriculum followed by almost all universities in India are no were up to the world standards and students are still getting the 20-30 yrs older compounding practical exposure in labs during the graduation level. Introducing specializations at the graduation level will result in professional expertise and excellence. Revival of the pharmacy education in India is the need of the hour which in turn will pave the way for the up gradation of the pharmacy profession in the country.<sup>[13]</sup>

The knowledge of pharmacy students should be current and always updating of their knowledge is necessary. Who should be aware of what are the latest changes going in the field of pharmacy. The students should learn to evaluate themselves and try to improve their knowledge level on regular basis.<sup>[13]</sup> Describing flaws of Indian pharmacy education won't help, some solutions are also derived such as clinical and practical training should be given more importance and made a part of the curriculum.<sup>[14]</sup> Research oriented way of learning is always effective rather than mugging up theory portion of study.<sup>[15]</sup>

Indian pharmacy practice needs a lot of change and up-gradation for the betterment of not only the health-care system, but also for the individual member of health-care team to yield a proper outcome of the noble pharmacy profession at a community level. The gap overseen by us between the patient, physician and pharmacists can be resolved if we, as a pharma professionals upgrade ourselves and also the education system. As quoted by Aristotle: The roots of education are bitter, but the fruit is sweet, applies to all, including our profession.

#### **CONCLUSION:**

Knowledge, Practice and perception of current Indian pharmacy practice need to be up gradated, regardless age and education background. Due to constrain, study was limited to Gujarat with less number of participants. In future detailed analysis can be done with more number of participants at multicenter.

#### **Conflict of Interest:**

Authors of this article have no relationships to disclose.

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