How to Cite:
Deshmukh, P., & Paliwal, S. (2022). Quality management aspects of pharmacy colleges in India: Strategies for a better academic prospectives. *International Journal of Health Sciences*, *6*(S5), 8362–8378. https://doi.org/10.53730/ijhs.v6nS5.11752

Quality management aspects of pharmacy colleges in India: Strategies for a better academic prospectives

Dr. Pooja Deshmukh
Research Guide, Institute of Management and Research, MGM University, Aurangabad, Maharashtra, India.
Email: pooja.deshmukh@mgmiom.org

Sushil Paliwal
Research Scholar, Institute of Management and Research, MGM University, Aurangabad, Maharashtra, India.
Email: sushil21775@gmail.com

***Abstract*---**In the past two decades, pharmaceutical study in India has changed dramatically. The Portuguese established India's earliest pharmacy college in Goa in 1842, and it was the first of its kind in Asia. It was founded in 1932 by Professor Mahadev Lal Schroff (considered the father of Pharmacy Education system in India) at Banaras Hindu University. Since then, the landscape has shifted dramatically, with the number of pharmacy schools springing up all across the nation in response to the growing need. In the past, pharmacy education in India was heavily influenced by the pharmaceutical business and its products. Graduate pharmacists in developing countries choose employment in the pharmaceutical sector, which contrasts with the position in affluent countries. It takes just two years and three months of pharmacy schooling in India to get the right to work as a pharmacist. A large portion of pharmacy practise is conducted by these diploma-trained pharmacists. There hasn't been much focus on the pharmaceutical practise curriculum. More Indian colleges and universities are beginning to provide pharmacy degrees at all levels, including a doctor of pharmacy degree that is focused on practise rather than theory. In 2008, several private colleges and universities began providing a Pharm. However, only a limited amount of research has been done on India's present state of pharmacy education. Described in this article is pharmacy education in India, as well as significant problems in pharmacy practise, such as curriculum inadequacies. The emergence of the Pharm. D programme is addressed as part of the profession's evolution. This paper's content may help spark debate, critical

thinking, and strategic planning, all of which are important for improving pharmacy education.

Keywords---Quality Management, Pharmacy practices, India Scenario.

1. Introduction

Professor M. L. Schroff started pharmaceutical education in India in 1932 at the Banaras Hindu University (BHU). It's been almost 80 years since then for this profession in the United States. After the Pharmacy Act of 1948 was passed, pharmacy schools in India were regulated by law. ER was originally established in 1953 by the "Ministry of Health" and were later modified in 1972, 1981, and 1991 by the "Pharmacy Council of India" (PCI). As a result of this, pharmacy education has grown up in a way that is completely apart from the rest of the world's growth. Pharmacists in India must meet certain educational and experience requirements before they may practise as pharmacists in the country. There was little recognition of the importance of pharmacists in society since their jobs paid less than those in industry (Kulkarni SK; 2011). Hence, pharmacy education was transferred from PCI to the All India Council of Technical Education (AICTE) under the "Ministry of Human Resource Development". In India, the pharmaceutical profession and education are currently regulated by PCI and AICTE, respectively. For years, none of these organisations has bothered to establish an ongoing system to keep pace with changes in the area of education. To summarise, pharmacy education has evolved in a confused manner, much like a wandering nomad. Pharma industry development has had a major effect on pharmacy education, which is why pharmacy programmes like "Bachelor and Master in Pharmacy" have evolved throughout time (Dave JB; 2011).

Also, as a result of less emphasis on research and innovation in medical education in India, the country generated more medical graduates with clinical sense gained through experience rather than more analytically inclined physicians. The combination of medical, pharmaceutical, nursing, engineering, and fundamental scientific ideas has never been possible due to roadblocks at the entrance point. Because of this, medical education developed in isolation, without interaction with other fields of study, such as pharmaceutical science. This is true for pharmacy school training as well. It's possible that this is why pharmacy schools don't participate in the healthcare system (Lalla J.K.; 1999).

In order to better fulfil the demands of the 21st century, worldwide institutions are now striving towards excellence in research and capacity development. Consequently, we must assess the state of pharmacy training in India. The pharmacy profession is undergoing fast change all around the globe, and we can no longer remain passive bystanders. The only way we can stay competitive and serve as a guiding light for other countries is if we take an active approach. As a result, we must determine the long-term goals of pharmacy education and then re-design our curriculum to achieve those objectives.The growth of technical education in India over the last decade has been astounding (Dandiya PC; 2011).

On the other hand, interest in and total admissions to pharmacy's undergraduate programme (B. Pharmacy) have dropped dramatically during the past three school years. This decrease may be linked to changes in the pharmaceutical industry's tendencies, which have shifted from manufacturing to research and marketing. Knowledge's role in enhancing students' employability has become critical in today's job market. Other aspects of the pharmacy profession, such as curriculum development and the development of knowledge-based personnel for society's benefit, should be given equal emphasis. Because of this, the people that come out of this system of education lack the professionalism and rationality needed to solve problems. It is thus necessary to give the system a push in order to guarantee its resurrection so that it can better fulfil 21st century requirements (Jishnu V; 2011).

Located in South Asia, India is a developing country with 28 states and 7 union territories. It is a sovereign, secular republic. There are around 1.2 billion people in India, making it the world's second most populated nation. In 1937, Banaras Hindu University introduced a three-year bachelor's of pharmacy (B. Pharm) programme to begin formal pharmacy education in India leading to a degree. Students were trained as experts in pharmaceutical quality control and standardisation through a programme that included pharmacological chemistry, analytical chemistry, and pharmacy, (Singh H; 1994) but did not prepare them for careers in pharmacy practise. There were just three pharmacy schools in India until 1947 when the country got its independence (Kaul R; 2009). Punjab University opened its pharmacy department in 1944, while L.M. College in Ahmedabad opened its doors in 1947.

2. Pharmacy Profession in India

More than a million pharmacists work in India, with around 55% working in community pharmacies, 20% in hospitals, and 10% in industry and regulatory organisations. A three-year, industry-oriented Bachelor of Pharmacy programme was introduced in 1937, and formal pharmacy education resulting to a degree was introduced in India's academics in 1937. The following pharmacy programmes are available in India now to fulfil the differing requirements of the profession at various levels: Pharm.), Bachelor of Pharmacy (B.Pharm.), Master of Pharmacy (M. pharm.), Pharm. D. with practical experience (Pharm. D.), and Pharm. D. with a focus on pharmacy philosophy (Ph.D.).

It takes at least two years and three months of pharmacy study and practical training to work as a pharmacist in India. In India, diploma-trained pharmacists now account for the majority of all pharmacists. Around 20,000 D. Pharm, 30,000 B. Pharm, 6,000 M.Pharm, and 700 Pharm. D students graduate each year in the United States.Pharmacy graduates per year In order to regulate pharmacy education and pharmacy practise in India, the Pharmacy Council of India (PCI) was set up as a statutory organisation in 1949. PCI is continually striving to improve and upgrade the curriculum in order to create competent workers who can fulfil the increasing needs of the industry and society (Desale P; 2013).

Dr. A.P.J. Abdul Kalam, India's former president, announced the Pharma Vision 2020 Charter in 2003 during the 55th Indian Pharmaceutical Congress in

Chennai. As part of Vision 2020, pharmacists and other healthcare professionals will be held to the highest standard of ethics by upholding their public image, educating the community and government about critical professional issues, and supporting pharmaceutical research and education in all their forms. A new road plan for Pharma Vision 2020 was unveiled by the Indian Pharmaceutical Association, this time with the backing of the pharmacy profession's top executives during the 58th Indian Pharmaceutical Congress in Mumbai in December 2006. Pharma Vision 2020 was the focus of the country's following Congresses (Mohanta GP; 2001).

3. Educational Programs

A variety of pharmacy degree programs are offered in India: diploma in pharmacy (Pharm. D), Bachelor of Pharmacy (B.Pharm), Master of Pharmacist, Master of Science, and Master of Technology in Pharmacy (M. Tech)), as well as Ph. D. in Pharmacy (Pharm. D). In India, a range of pharmacy degree programmes are available: (PhD). For D. Pharm, B. Pharm, and Ph. D. programmes, a minimum of 12 years of college-level scientific coursework is required. In order to graduate with a Doctor of Pharmacy degree, students must complete at least two years of didactic study, following by 500 hours of practicum training either in a hospital or community environment. University departments or colleges associated with universities provide the B. Pharm degree, which takes four years to complete. It takes 2 years to obtain an M. Pharm degree for a student who already has a B.

Pharm degree, and the second year is dedicated to research leading to a dissertation in any pharmaceutical field, such as pharmaceuticals, pharmacology or pharmaceutical chemical science. Industrial pharmacy, quality assurance, and pharmaceutical biotechnology all have M. Pharm programmes now available. For Jagadguru Sri Shivaratreeswara (JSS) College of pharmacy in Mysore and Ooty, the M. Pharm programme in pharmacy practise was established to teach the graduate pharmacist to offer clinical-oriented services (Lal LS; 2005). The six NIPERs in India provide MS (Pharm), M. Tech (Pharm), and higher-level degrees in pharmaceutical research and education. It was the goal of the NIPERs when they were formed to provide the very best in pharmacy and pharmacy-related training. Students who have earned an M.Pharm degree in any field may pursue a PhD by putting in an extra three years of labour and study. The full-time duration of the Pharm. D curriculum is six years. The post-baccalaureate Pharm. D. curriculum lasts three years. in order to produce pharmacists who have received thorough training at practise settings and can offer pharmaceutical care to patients, the Pharm. D programme was established in 2008 (Basak SC; 2010).

4. Pharmacy Colleges in India

In India, there are now around 2659 pharmacy schools. In 1937, the Banaras Hindu University in India offered a three-year bachelor of pharmacy (B. Pharm) degree programme, which started the official degree education programme in pharmacy. Back then, graduates were trained for careers in pharmaceutical industries rather than community pharmacies via courses in pharmaceutical chemistry, pharmacy, and analytical chemistry. However, in 1860, Madras Medical College also began offering a pharmacy class as a means of instructing

new medical degree or diploma candidates, as well as those who had already earned an apothecary or hospital assistant grade, rather than for the purpose of creating pharmacists. However, in the 1870s, a class at Madras Medical College called "chemists and druggists" was established to train future specialists. In other words, it was India's first pharmacy school. Prior to India's independence, the Punjab University (1944) and the L.M. College of Pharmacy (1947) were the only two schools in the country to provide baccalaureate and master's degree programmes in pharmacy. Banaras Hindu University also offered a pharmacy degree programme in 1947. (Singh H; 1998). the first 10 pharmacy colleges/universities offering pharmacy degree programs in India are listed below1 in table 1.

Table 1. First 10 Pharmacy Colleges/Universities Offering Degree Programs in India

Colleges/Universities	Category	Current Degrees Offered
Department of Pharmaceutical Engineering, Institute of Technology, Banaras Hindu University, Varanasi	Central University	BPharm, MPharm, PhD
University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh	State University	BPharm, MPharm, PhD
L. M. College of Pharmacy, Ahmedabad	Private College	BPharm, MPharm, PhD
Department of Pharmacy, Madras Medical College, Chennai	Medical College	BPharm, MPharm
Birla Institute of Science and Technology, Pilani	Private University	BPharm, MPharm, PhD
College of Pharmaceutical Sciences, Andhra University, Visakhapatnam	State University	BPharm, MPharm, PhD
Department of Pharmaceutical Sciences, Dr. H.S. Gour University, Sagaur	Central University	BPharm, MPharm, PhD
Department of Pharmaceutical Sciences, Nagpur University, Nagpur	State University	BPharm, MPharm, PhD
Pharmaceutical Department, University Institute of Chemical Technology, Mumbai University, Mumbai	State University	BPharmSci, MPharmSci, PhD (Tech)
Department of Pharmaceutical Technology, Jadavpur University, Kolkata	State University	BPharm, MPharm, PhD

5. Regulation Bodies of Pharmacy Education

There's no denying that the distance between pharmacy school and actual pharmacy practise is wide right now. Predominantly, pharmacy education is provided in schools that are far removed from actual practise. Physicochemical research, analysis, and pharmaceutical production elements are still at the core of pharmacy education. Many people believe that doctors are more qualified to fill the role of pharmacists than pharmacists themselves. There are inadequate dispensing services. It's totally out of date and obsolete in today's industrial environment in India's two-year pharmacy diploma degree. A combination of clinical and industrial topics makes up the constituent parts of this study. As long as there are clinical topics, PCI enters the picture, and AICTE enters due to

the industrial focus of pharmacy curricula. This is how pharmacy, as a young science, has evolved during the past century (Seth PD; 1999).

In India, hospitals and businesses sprang up in droves throughout the 1940s and 1950s. As a result, a large number of pharmacists and pharmaceutical chemists were needed. As a result, pharmacy education has evolved to meet the needs of both business and the hospital. Compounders and/or D. Pharm. courses for hospitals and medical stores, as well as B. Pharm. courses for industry, were established as short-term alternatives. Proof of this may be seen in the fact that, in the past several decades, there have been very few jobs for D. Pharm. holders in industry, and very few jobs for B. Pharm. holders in hospitals or medical supply stores. While pharmacy education in the West is patient-focused and holds pharmacists accountable for Healthcare Management, pharmacy education in India is industry-focused. Nearly 55% of the employments are available in the manufacturing business, while 30% are in the education industry. Only 3% of people work in healthcare. The healthcare system must undergo radical transformations, such as passing legislation for the appointment of pharmacists in every Primary Health Centre and public hospital (Kulkarni SK; 2009).

To effectively regulate the drug distribution system, state narcotics control agencies should have more employees. It's clearly obvious that clinical and industrial topics in pharmacy syllabuses must be separated and improved in the current day. But it hasn't been finished yet, which is why the atmosphere is so tense right now and there is so much political infighting among government officials. As the D. Pharmacy course has already been abolished, the current Pharm. curriculum may be split into two main courses like B. Pharm. (Clinical) and B. Pharm. (Industrial). Such a plan will boost pharmacy graduates' self-confidence and competitiveness among health care professionals and technocrats, as well as allow for some specialisation even during the undergraduate years. The clinical course may be overseen by PCI, while the industrial course can be overseen by AICTE if two B. Pharm courses are established as described above (The Pharmacy Act; 1948).

There are a variety of options available to private college administrators. When it comes to running both courses, an institution has no choice except to accept both master's degrees. It's possible for failing D. Pharm. schools to transition to B. Pharm (Clinical) and stay open for business. The reason why professional pharmacy in the United States has grown so slowly is due to the erroneous assumption that profession and vocation are interchangeable terms. In India, this notion has kept pharmacy professors entirely focused on industrial pharmacy, at the expense of genuine - community pharmacy. This emphasis on Industrial Pharmacy after national independence was justified, but it's now too late to make changes to make it relevant in today's world. There are half a million "qualified" pharmacists in our current system, but there are very few "trained" experts (PCI Website). To put it another way, there is no longer a "claimed" need in society, and no one is available to fill it. This scenario is so self-perpetuating that it creates significant economic disincentives in Indian retail pharmacy practise to stay current with one's knowledge and operate professionally. The seriousness of the issue becomes apparent when considering petitions filed in High Courts calling for the repeal of the Pharmacy Act on the grounds that pharmacists,

according to the petitioners, serve no purpose other than to sell medicines. Even the most passionate pharmacists eventually become little more than merchants since there is practically no training or motivation to professionalise. Ineffective legislative execution has resulted in a cancerous growth of retail pharmacy stores, putting the profession in danger. When a retail pharmacist can help the patient by giving him with knowledge on drug use and helping him get better results than the patient would get from using drugs uninformed, he is relevant to society (The National Portal; 2009).

6. Growth of Pharmacy Education

Publicly financed higher education (including pharmacy schools) grew slowly before to the mid-1980s, but that has changed dramatically since. Up until the early 1980s, pharmacy education was available at the bachelor's and master's degree levels only at 11 universities and 26 institutions. In addition, every Indian state had at least one government institution that offered the D. Pharmacy School. Due to significant pharmaceutical industrialisation, privatisation, and economic development in India, pharmacy education has developed faster than anyplace else in the world since the late 1980s. More than 52,000 students were accepted into B-level programmes at 854 schools in 2007.

More than 34,000 students were trained in the D. Pharm degree programme and 583 institutions. Pharm programme of study. Private colleges and universities, on the other hand, account for the majority of these institutions. In the 1980s, the private sector accepted approximately 10% of all pharmacy students. Today, the private sector admits 91% of all pharmacy students. Even though there are a great deal of D. B. and Pharm. Every year, a large number of students complete a Pharm. D. The number of graduates varies greatly from state to state. States like Tamilnadu, Karnataka, Andhra Pradesh, Maharashtra, and Gujarat have a significant number of privately financed colleges (UKIERI Website). About 2,960 D are educated at Tamilnadu's 45 colleges and institutions. 2590 B. and Pharm. yearly number of pharmacy grads (within a total state population of about 64 million).

7. Admission Criteria

It is important to note that the requirements for entering pharmacy schools differ from state to state as well as from private and public institutions. The criteria for admission differ from programme to programme as well. An informal application procedure is common among privately financed schools. In India, there is no centralised database that shows the total number of people who have applied to both private and state universities.

7.1 D.Pharm Program

After 12 years of education, students in India's upper secondary schools must pass a final test known as the higher secondary examination. Any government college's first-year D. Pharm programme admission is based on grades from the high school diploma test. Private colleges, on the other hand, have their own admissions processes that adhere to the PCI's rules on higher education.

Students who have been unable to secure a spot in their first choice degree programme may choose to pursue the D. Pharm programme as a second or third option. The Pharmacy Act's education rules set the D. Pharm curriculum's parameters. Currently enacted educational policies date all the way back to 1991. (ER91). Every school district in the nation uses the same curriculum. The pharmacy council of India's attempts to upgrade the registration requirement from D. Pharm to B. Pharm in the 1990s failed owing to a lack of agreement (Singh H; 2009).

7.2 B.Pharm Program

Applicants are admitted to the first year of the B. Pharm programme straight from high school either on their high school grades or on a merit list rank derived from results on an admission test given by the state or a specific institution. Most public universities require students to take an entrance test as part of the application process. Students applying to Banaras Hindu University's first-year B. Pharm programme must first pass the JEE exam, which is administered by the Indian Institutes of Technology (IIT). The IITs are a consortium of 13 autonomous engineering and technology-oriented public universities in India that the government of India has declared to be institutes of national importance Most of the 40 seats available in BHU's B. Pharm programme remain unfilled as chosen candidates choose to pursue the more lucrative bachelor of technology (B. Tech) degree. The procedure for compiling a merit list of candidates also varies. Some governments and institutions put a high value on entrance test results, using them as the only criteria for admission.

There are a few private institutions and at least one Indian state (Tamilnadu) that no longer need admission exams and instead accept marks from the high school diploma test. Many government organisations choose their employees based on a mix of grades and results on admission exams. For admission to first-year B. Pharm and bachelor of engineering programmes, students prepare for the merit list rank or conduct entrance examinations jointly in all states except Tamilnadu and Karnataka, where it is integrated with the medical degree programme. Typically, those who don't make the cut end up in a B. Pharm programme. There were more than 35,000 students that passed the West Bengal state entrance test in 2008. The top 25,000 students on the list all picked engineering as their field of study, while the rest went into B. Pharm degrees at private colleges and universities (wbjeeb.in). It was reported in 2008 that schools were finding it challenging to fill pharmacy programme positions with qualified applicants.

7.3 M.Pharm Program

The B. Pharm or an entrance exam or both are required for admission to an M.Pharm

The M.Pharm programme is now in high demand, with fewer spots available than there are students who want to apply. A good score on the Graduate Aptitude Test for Engineering (GATE) is an essential criterion for receiving government scholarship money while pursuing an M.Pharm. Programme. Admission to the first year of the M.Pharm programme does not need these criteria to be met. Many

public universities, on the other hand, require applicants to the M.Pharm degree to have both a strong academic background and a high GATE score.

7.4 Pharm.D Program

The completion of the high school diploma or the D. Pharm degree programme is required for admission to a Pharm. D degree programme. Students who pass the physics, chemistry, and biology or mathematics portion of their high school diploma are eligible to apply to the Pharm. D programme. Degree holders in pharmacy may enter the doctoral programme in pharmacy in fourth year (MGR University Website).

8. Total Quality Management in Pharmacy Education

By incorporating TQM concepts into pharmacy education in India, the country's pharmacy sector will grow. Despite being created by an American, the idea of Total Quality Management (TQM) was effectively adopted in Japan during the country's post-World War II reconstruction. TQM may be used in the classroom. TQM, according to many educators, may help guide required educational change. Due to education being a fast-moving commodity on the market, the undertaker stands to gain financially from its sale. When it comes to providing services to others or improving one's own performance, TQM is a concept that focuses on excellence and continual progress. The following are the TQM principles most relevant to educational reform: Relationship that is mutually beneficial: On the basis of this concept, a business must prioritise its "suppliers" and their "customers". To put it another way, cooperation and teamwork are critical. Synergy is the idea that combining the skills and knowledge of several people improves output and quality. Teachers and students working together in a classroom are like the front-line employees in business. Student skills, interests, and character are developed as a result of their effective collaboration.

Continuous improvement and self-evaluation

As part of the process of continuous improvement, TQM promotes self-evaluation. This concept is also compatible with emphasizing kids' unique talents, learning styles, and intelligence kinds. A process-based system: The practise of seeing the organisation as a system and doing work inside it as a continuous one. Qualitatively, working on the system means finding and fixing any flaws that are causing its members to struggle.

Leadership

In contrast to the upper level, which offers a fundamental method of working and employs qualified personnel, the lower level is directly connected to students via lecturers who carry out many of the system's most critical tasks. Teachers in schools are responsible for creating an environment in which pupils may reach their full potential (Desale P; 2013).

8. Quality issues

The Pharmacy Council of India (PCI), founded under the Pharmaceutical Act of 1948, and the All India Council for Technical Education (AICTE), created under the AICTE Act of 1987, oversees pharmacy education in India. Earlier, it was stated that the PCI regulates the minimum level of education needed to become a pharmacist. It is in charge of registering and granting a licence to practitioners who meet the required qualifying requirements (minimum D. Pharm). State pharmacy councils are in charge of certifying pharmacists in their states, and registration is decentralised. As a result, the PCI oversees the D. Pharm and Pharm. D programmes. Prior to PCI recognising the B. Pharm program's credentials, they must be accepted for registration purposes alone. More advanced degree programmes are beyond the scope of the PCI's authority (AICTE Website).

The AICTE regulates pharmacy education at all levels, save for Pharm. D., and all programmes must be authorised by it before they can be offered. In technical education, such as pharmacy, the AICTE is mainly in charge of planning, establishing, and maintaining norms and standards. In addition to the Pharmacy Act, the 1940 Medicines and Cosmetics Act governs pharmacy practise by stipulating the production, distribution, and sale of drugs. Clinical pharmacy practise is now unregulated and uncontrolled by any regulatory authority. Quality assurance of pharmacy programmes (D. Pharm, B. Pharm, and M. Pharm) is also the responsibility of the AICTE via accreditation by the AICTE's National Board of Accreditation (NBA). In spite of this, just 8% of pharmacy programmes have received accreditation. Few schools have sought for accreditation on their own since it is a difficult and time-consuming procedure. Voluntary accreditation seems to be pointless for all parties involved. There is no requirement for continuing education in the United States, unlike in other nations. Additionally, there are no requirements of competency or quality of service for licenced pharmacists. The distinction between pharmacists who are working and those who aren't is a non-issue (CDSCO Website).

8.1 Flaws in the present system

1) Entry of unqualified and non-meritorious students into the course.
2) Non focused and unspecialized way of learning.
3) Out dated curriculum and educational regulations.
4) Lack of industrial and clinical exposure (Seth PD; 1999).
5) Unskilled ways of practical and lab training in the institutes.
6) Research output from Indian educational labs rarely lead to commercialization and revenue generation.
7) Given the market needs for trained man power, teaching takes total priority over research in our universities.
8) Institutional base of research in India is extremely narrow serious research is limited to a few ‘elite’ institutes (Shaji J, 2007).

9. How to improve the situation?

An environment where students may develop their inner talents and characteristics should be provided by every university. There should be a system in place that gives every kid the freedom to think for him and to fully utilise his abilities. Only logical methods of thinking and doing can develop professionalism. Any element of education should encourage students to contribute their thoughts and recommendations, but creative research should be a particular emphasis. Most of our pupils aren't motivated since their instructors or college don't offer them an initial push. Students must also be taught how to better express themselves and have a more engaging personality (Kokate CK, 1999).

When it comes to education, a strong focus should be placed on exposure to industry and hands-on experience. More emphasis should be placed on clinical and practical training, and it should be integrated into the curriculum. Studying with a wider focus on research, yields better results than memorising facts and figures. A pharmacy student's knowledge should be up to date at all times, and this requires regular updating. To be effective, he has to be up to date on all of the newest developments in pharmacy. A student must learn to assess his or her own performance and strive to continually improve. The significance of commitment and awareness, two key TQM components, is brought to the fore here (TQM). Every member of an organisation should know exactly what he or she is responsible for and be dedicated to doing the job to the best of their abilities. Here, the focus is mostly on educational reforms that need to be implemented (Shantanu K; 2004) (Bindusha, H. C., 2022).

9.1 Self-evaluation charts

TQM emphasises the need of self-evaluation. The education business is one that values its customers. Every student should be able to assess his or her own performance in order to continually improve. They need to be well-versed on their own strengths and weaknesses. Self-evaluation charts (SEC) are statistical data that every student prepares in the form of a graph or flow chart that shows his development in educational areas. It appears to be a simple concept, but it's really a very useful one. All institutions should make SEC preparation mandatory beginning with graduation. The instructor should analyse the graph on a regular basis in front of the students, and debates should be held and recommendations for improvement made (Amsterdam; 2011).

Applications of SEC's

- A student gets the opportunity to evaluate himself.
- It is an indication of a student's progress in academics or related activities.
- It is also helpful to faculty members to analyse the progress of a student in academics.

E.g.: Recording of marks for a student in a particular session in seminars, assignments etc.

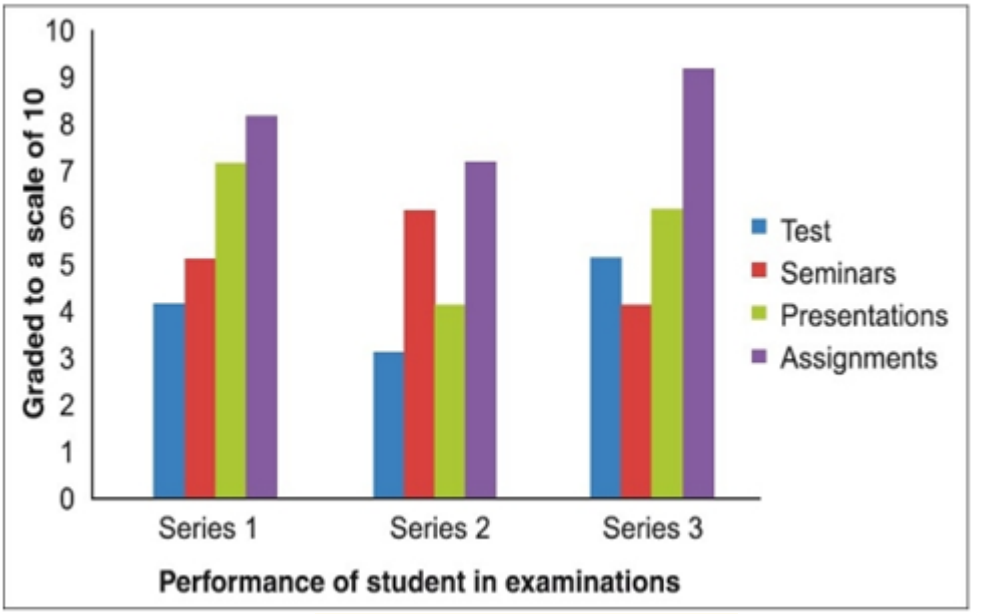


Fig: 1 Model for a self-evaluation chart

9.2 Seminars and presentations as powerful tools in quality education

Using seminars and presentations to improve the quality of an institution's education has shown to be very beneficial. Having the ability to speak and provide a workshop on a subject is critical for students. Seminars should focus on hot subjects that have just recently been discovered via study. Workshops should be made a requirement for all students starting at the high school level, and they should be used to evaluate their progress.

Benefits

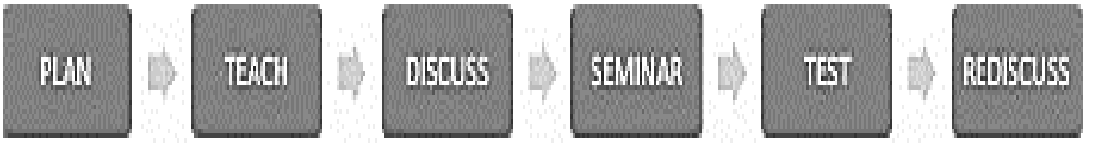
- It improves the understanding of the subject.
- Researching attitudes of the students are developed.
- Improves presentation, listening and reading skills of the students.
- Inculcates professionalism.
- Overview of subjects in an easy and comfortable way.
- Interesting way of learning.
- Information sharing becomes easier and the subject becomes more digestable to the students (The Netherlands; 2011).

9.3 A transformation from mastery learning to smart learning

In traditional classrooms, teachers follow this sequence:

The TQM alternative is:

TQM is another option, although it too has disadvantages. The suggested replacement focuses only on the instructor, with no mention of the student at all. In addition, the stage check is perplexing due to the lack of a method for checking the pupils. TQM-based student-centred mastery planning is what we're presenting.



Discussions allow the learner to clarify his or her doubts and get a better understanding of the topic. Instead of lecturing, students are given the chance to choose their own method of learning. Students who have mastered the subject may provide a hand to others who are still learning. Smart learning comes out on top as a superior option (Istambul; 2009) (Nga, D. T. H., 2022).

9.4 Counselling and community service centres

A school should provide a stress-free environment for students to study and develop their intellectual talents. However, in many organisations, the situation is reversed. Students are stressed because of excessive workloads and poor time management, and academic life has become a misery for them. Here we'll talk about the value of counselling and the advantages it provides to college students. A counselling centre for students' academic and personal issues should be available at every university. The counselling centre should use the services of certain well-known experts in the area, and college lecturers and older students should help run it.

Benefits of counselling centre

- Gives the students an opportunity to share their problems.
- They can get solutions for their queries in academics and their personal life.
- It can improve the confidence of the students.
- Mental strengthening provides the stress free atmosphere for the student.
- An overall improvement in the student intellects especially in academics.
- Creating some smart professionals in the institution (Hadi HP; 2009).

9.5 Professional discrimination due to lack of clinical exposure

Throughout the globe, pharmacy has developed from a purely academic field to a therapeutic one. It has shifted from being a profession focused on products to one focused on patients. To meet the health challenges of the twenty-first century, the World Health Organization (WHO) developed a worldwide framework for global health policy in 1997-98. Pharmacology's clinical pharmacy department is one of

its most important divisions. The current curriculum covers all academic elements of a topic, yet there is minimal practical experience. This is the primary cause for pharmacists becoming devalued and marginalised in the United States. Our practical experience in the medical sector may be further enhanced by include research studies in the graduation level clinical pharmacy topic, which will help us be acknowledged as a profession of paramount significance in India's health-care system (Mithal BM; 1995). Studying real-life case studies in hospitals helps students better understand what goes on in a healthcare system and how theory varies from practise in clinical settings. In practise, treatment methods vary greatly from what we learn in school, therefore it's crucial for a clinical pharmacist to be well-versed in them. Curricula should be revised so that students may get experience working in clinics rather than just memorising theory (TQM; 2010).

9.6 Quality teacher

Teachers have a significant impact on pupils' academic careers. They're in charge of assisting the pupils in sharpening their academic and learning abilities. William Glasser's book, The Quality School Teacher, is heavily focused on the idea of a quality teacher who follows TQM concepts in the classroom. The idea is to make use of additional instructional methods that are compatible with the human brain. The instructor must be able to meet the individual requirements of each student while also pushing each one to the limits of his or her potential. In order to be a competent academician, one must keep up-to-date with new developments in pharmacy and be aware of them. To this aim, we recommend that all professors participate in frequent and mandatory seminars in industry and clinical settings. In return, they'd be exposed to the most recent developments in pharmacy, knowledge they could then pass on to their pupils, making the effort worthwhile. To establish a welcoming and highly effective learning environment, educators must always seek to improve the methods they educate and guide their students (UKIERI Website).

10. Employment

In order to prepare students for careers as organizational and community pharmacists, the D. Pharm programme was created and developed. D. Pharm pharmacists may work in a hospital or community pharmacy (public or private) (mostly private). There is a clear preference for government hospitals and pharmacies among diploma-trained pharmacists. The pharmaceutical sector may potentially be interested in hiring them. According to the Bureau of Labor Statistics (BLS), pharmacists make less money working for the government than other health care professions with comparable qualifications (such as nurses or diagnostic technologists or radiographers). Pharmacy practitioners, like other nontechnical workers, have been put in the lowest pay band and structure under India's recently approved sixth pay commission recommendations. 22 There is no doubt that the overwhelming majority of pharmacists with a B. Pharm degree are looking for jobs in the booming pharmaceutical industry, where services are clearly defined and industrial pharmacists are highly compensated. They may also be appointed by the state or federal government to drug regulatory authorities or quality control labs. Holders of an M. Pharm degree in any field,

including clinical pharmacy, may work in any of the jobs listed above. Investigation, formulations innovation, and clinical trials are all popular career paths for M. Pharm graduates joining the pharmaceutical business today. These people may also work in academia, usually as scientists or faculty members. As India's pharmaceutical sector expands, so does the need for pharmacists. Pharmacists who have earned a PhD are more likely to find employment in pharmaceutical research and development or academia (WHO India; 2010, Deshmukh P; 2017).

11. Summary

When it comes to pharmacy training in India, students are taught that it is an industry- and product-oriented profession with an emphasis on the fundamental sciences at both the B. Pharm and MPH levels. The number of schools providing pharmacy programmes at different levels has grown substantially during the last decade in pharmacy education. There are still very few choices for students in India who want to pursue a university degree in pharmacy. Pharmacists who have earned a B. Pharm or M. Pharm degree are usually looking for work outside of pharmacy. This group of pharmacists prefers employment in the pharmaceutical sector in areas such as manufacturing, regulatory affairs, management, and/or quality assurance and marketing. Graduate and postgraduate students choose to work in community or institutional pharmacy just a tiny percentage of the time. There are diploma holders (D. Pharm holders) in India who work as community or institutional pharmacists and are considered practising pharmacists in the global sense. An M. Pharm. in pharmacy practise programme established in the 1990s fails to provide postgraduates with job prospects in the practise areas. The establishment of the Pharm. D programme in India is the most significant development presently impacting pharmacy practise. Nearly 1400 people signed up for 47 institutions (mainly private sector) scattered over a limited region of India (South India). Because of this, there may be a shortage of D. Pharm-trained pharmacists who are willing to serve in India's pharmacy workforce if the sharp rise in needed study time from 2 years to a 6-year Pharm. D continues. A pharmacy workforce survey, an assessment of pharmacy education programmes, and a comparison of those roles with those that have been approved globally are all required to show that India's pharmacists are in high demand. It is also necessary, at this point, to create and implement pharmacy degree programs—possibly one for industry and another for practise.

References

1. All India Council for Technical Education. http://www.aicteindia.org/. Accessed April 14, 2010.
2. Basak SC, Sathyanarayana D. Pharmacy education in India. American journal of pharmaceutical education. 2010 May 1; 74(4).
3. Bindusha, H. C., & Tare, H. (2022). Challenges faced by the Indian Pharmaceutical Companies in protecting various forms of Intellectual Property Rights. *International Journal of Health Sciences*, *6*(S6).https://doi.org/10.53730/ijhs.v6nS6.10968
4. Dandiya PC. Pharmaceutical education in India: An introspection for better future. Pharma Times. 2011; 43(3):19.

5. Dave JB. Does bright future await pharmacy students? Pharma Times. 2011; 43(3):1.
6. Desale P. An overview about pharmacy education in India. Indian Journal of Research in Pharmacy and Biotechnology. 2013 May 1; 1(3):329.
7. Desale P. An overview about pharmacy education in India. Indian Journal of Research in Pharmacy and Biotechnology. 2013 May 1; 1(3):329.
8. DeshmukhDP. Corporate social responsibility and education sector: Issues and remedies. International Journal of Management. 2017;8(1):137-44.
9. *FIP statement of policy Quality assurance of pharmacy education. Proceedings of FIP Council.* Istanbul. Hague. The Netherlands: FIP; 2009. Sep 8, [cited 2011 Feb]. International Pharmaceutical Federation.
10. Hadi Mohammad Pour, Yeshodhara K. Total quality management (TQM) in education perception of secondary school teachers [Internet] [cited 2011 February: about 10 screens].
11. Human resources for pharmacy sector in India. 2007. http://www.whoindia.org/LinkFiles/Human_Resources_human_resources_for_pharmacy_sector.pdf. Accessed April 14, 2010.
12. Jishnu, V., Gilhotra, R. M., & Mishra, D. N. (2011). Pharmacy education in India: Strategies for a better future. *Journal of Young Pharmacists*, *3*(4), 334-342.
13. Kaul R. History of modern pharmacy in India: a review of the work of Professor Harkishan Singh. Pharmacy in History. 2009 Jan 1; 51(1):34-42.
14. Kokate CK. Pharmaceutical Education in India Vision 2010. *Indian J Pharm Edu.* 1999;77:33
15. Kulkarni SK. Creating an innovation ecosystem in pharmaceutical sciences: Adopting today education for tomorrow. Pharma Times. 2011; 43:14-5.
16. Kulkarni, S. K. (2009). D. Pharm or Pharm D: A Professional chirality.
17. Lal LS, Rao PG. Clinical pharmacy education in India. American journal of health-system pharmacy. 2005 Jul 15; 62(14):1510-1.
18. Lalla, J. K. (1999). Pharmacy education-Challenges ahead: My perception. *Indian J Pharm Educ*, *33*, 24.
19. Mithal BM. Status of pharmaceutical education in India: Retrospect and prospect. *Indian J Pharm Educ.* 1995; 19:22.
20. Mohanta GP, Manna PK, Valliappan K, Manavalan R. Achieving good pharmacy practice in community pharmacies in India. American journal of health-system pharmacy. 2001 May 1; 58(9):809-10.
21. Nga, D. T. H., Chau, N. H., & Tinh, T. T. (2022). Medical students' attitudes and believes on the roles of probability and statistics in doing scientific research, a case study in Vietnam. *International Journal of Health Sciences*, *6*(S1), 334–342. https://doi.org/10.53730/ijhs.v6nS1.4774
22. Pharmacy Council of India. http://www.pci.nic.in/. Accessed April 14, 2010.
23. Quality education of technical education in India. http://www.ukieri.org/docs/chennai-conference-march2008/Quality-Assuranceof-technical-Education-in%20India-Prasad-Krishna.pps. Accessed April 14, 2010
24. Quality education of technical education in India. http://www.ukieri.org/docs/chennai-conference-march2008/Quality-Assuranceof-technical-Education-in%20India-Prasad-Krishna.pps. Accessed April 14, 2010.
25. Seth PD. Pharma Education in the new millennium. *Indian J Pharm Educ.* 1999; 33:93.

26. Seth, P. D. (1999). A responsible pharmacist of the 21st century in India through education and service. *Pharma Times*, *31*, 30.
27. Shaji J, Chadawar V. Pharmacy education: its challenges. [2007 Oct 10, cited 2010 Dec 19, about 10 screens]; *Pharminfo.net.* 5(5)
28. Shantanu K. Pharmacy Education: Current problems and suggested solutions. *Indian J Pharm Educ.* 2004; 38:154.
29. Singh H. History of pharmacy in India and related aspects. Vallabh Prakashan; 1994.
30. Singh H. Pharmaceutical education and pharmacy practice: A historical perspective. Pharma Times. 2009; 41(2):16-18.
31. Singh, H. (1998). *Pharmaceutical Education* (Vol. 2). Vallabh Prakashan.
32. The Drugs and Cosmetics Act 1940 and Rules there under 1945, Ministry of Health and Family Welfare, Government of India. http://www.cdsco.nic.in/html/Drugs&CosmeticAct.pdf. Accessed April 14, 2010.
33. The National Portal of India, New Delhi 2009. Know India-States and Union Territories. http://india.gov.in/knowindia/state_uts.php. Accessed April 14, 2010.
34. The Netherlands: FIP; [cited 2011 Feb]. International Pharmaceutical Federation (FIP). Hague.
35. The Pharmacy Act, 1948. Government of India, Ministry of Law, Justice and Company Affairs. http://www.pci.nic.in/contents.htm. Accessed April 14, 2010.
36. The Tamilnadu Dr. M.G.R. Medical University, B. Pharm Regulations and Syllabus from 2004-2005 onwards. Available at: http://www.tnmmu.ac.in/pdf/bpharmrs0405.pdf. Accessed April 14, 2010.
37. Total Quality Management. Chapter 5. [Cited 2010 Dec 21]. pp. 138–67.
38. West Bengal Joint Entrance Board. Opening and closing rank. http://wbjeeb.in/download/ope%20closing.doc08.htm. Accessed April 14, 2010.
39. *[homepage on the Internet]* Amsterdam. The Netherlands: IEA Inc.; c2007. [Cited 2011 April 20]. International Association for the Evaluation of Educational Achievement.