

Reorganizing India's Pharmacy Education in Line with NEP-2020

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ABSTRACT: The Indian government's ambitious National Education Policy (NEP)-2020, which aims to modernize the country's whole educational system, is currently being implemented at all levels, including Indian higher education institutions. The policy, which was unveiled following extensive consultations and debates among distinguished academicians, lays a strong focus on fostering each person's creative potential. This approach's basic tenet is that education should not only concentrate on fostering cognitive skills, such as reading and numeracy, but also on higher-order cognitive abilities, such as problem-solving and critical thinking, as well as social, ethical, and emotional skills and attitudes. We talk about the Pharm D program's founding and the evolving nature of the field. This article contains information that may help further modify pharmacy education to meet desired learning objectives and may promote planning, discussion, and critical thinking.

Keywords: AICTE, Artificial intelligence, Community pharmacies, Novel drug development, PCI, Pharmacovigilance.

I. INTRODUCTION

India's pharmacy program is a multidisciplinary science discipline with a primary concentration on the study of pharmaceutical goods, or medications, for the purpose of treating and preventing a wide range of illnesses [1]. The academic pharmacy programs are exhaustive in nature and students after acquiring pharmacy degrees at various levels i.e. Diploma, UG, PG and PhD programs serve in the wide areas of the healthcare industry viz. Community pharmacies, retail pharmacy, drug manufacturing companies, pharmacovigilance, regulatory agencies, clinical trial processes, drug development in research laboratories, academic institutions etc [2]. Pharmacists are without a doubt recognized as essential members of the healthcare team. Nonetheless, it becomes vital to routinely update the academic programs' curriculum architecture in order to meet industrial expectations. In order to

streamline the academic content differences, the Pharmacy Council of India (PCI), the highest authority governing pharmacy education in India, established a uniform Syllabus and ordinance for UG and PG programs in 2014 [3]. Although it served the purpose to a great extent the contents are redundant as per the changing scenarios and skill enhancement of the students to prepare industry-ready professionals. Therefore, there is a pressing need to restructure the pharmacy curriculum following NEP-2020 to prepare technically proficient and ethically sound pharma professionals to cater for the needs of the dynamic pharmaceutical industry [4]. In India, there are two organizations that oversee pharmacy education: the Pharmacy Council of India (PCI), which was established by the Pharmacy Act of 1948, and the All India Council for Technical Education (AICTE), which was established by the AICTE Act of 1987. As was mentioned earlier, the PCI sets standards for the minimum level of education required to become a pharmacist. It is in charge of registering people and granting licenses to practice in an Indian state to those who fulfill the qualifying conditions (minimum D. Pharm). The state drug store committees are responsible for hiring drug specialists in their respective states, and enrollment decisions are made at a decentralized level. As a result, the Pharm. D program and the D. Pharm program are governed by the PCI. The qualifications can only be accepted for registration purposes if the PCI recognizes the BPharm program. The M. Pharm and other higher-level degree programs are outside the purview of the PCI [5-7].

II. RESTRUCTURE THE CURRICULUM

The discussions in the pharmacy sector are going on to restructure the curriculum framework at various levels, this article discusses some key points and their possible solutions which can be incorporated while framing the revised academic structure for pharmacy programs:



Multiple entry and exit : A crucial element of the NEP-2020 is that pharmacy students admitted to the program now do not have the option of various entry and exit points within the current framework [8]. As a solution, a four years UG program should be designed in such a way that the students entering in to the program should have entry and exit options after each year of successful completion. The students should be allowed to exit after one year leading to the award of certificate in pharmacy after additionally completing skill-based training of certain duration [9]. The two-year departure option should result in the issuance of a Pharmacy Diploma following the completion of required hospital or topic-specific training. The students will be qualified to register as pharmacists at this level. As a result, there will be no need for separate Diploma in Pharmacy programs [10]. This will be a major change in the pharmacy academia so shall need a well-placed mechanism for institutions running diploma in pharmacy programs for smooth transition. Further after three years if a student exits, it should lead to the award of a Advanced Diploma in Pharmacy subject to the mandatory industrial training [11]. The fourth year should be split into B. Pharm (Hons) and B. Pharm (research). The honours' part should have elective subjects like Community Pharmacy, Industrial Pharmacy, Retail Pharmacy, Marketing and management, Clinical Pharmacy, Regulatory Pharmacy and subjects which will improve the skills as per the interest of the student, the area in which they want to work in future [12]. The B. Pharm with Research should have research methodology, research ethics, research communications and a research project which will warm up the students for future research. In addition, the same program or a separate program can be named as "Integrated program in Pharmacy" of five years duration [13]. While first four years shall remain the same, in fifth year, the student shall have to do a research project of one year duration under a qualified supervisor. The completion of fifth year will lead to the award of master in pharmacy degree. The discipline chosen by the candidate in his/her project can be the area of specialization [14].

Multidisciplinary components: The pharmacy curriculum currently covers a limited number of multidisciplinary subjects; however, the breadth of multidisciplinary courses should be expanded to allow candidates to select courses that cover contemporary advancements such as data analysis,

robotics, mechatronics, artificial intelligence, advanced engineering tools for novel drug development, and robotics [15].

Language learning and communication skills: Pharmacy students come from low socioeconomic backgrounds and rural areas in several sections of the nation. Since many of them have only studied in their native tongues, they lack proficiency in the English used as the medium of instruction. Therefore, the introduction of other Indian languages additionally for the content delivery is the need of the hour [16]. Moreover, the exposure of English through structured courses for preparing reports, presentations, news and articles on the current issues of the pharmaceutical sector and other language-based activities will prepare the confident pharma professionals.

Practical and hands-on training: The pharmaceutical industry is a highly developed and dynamic field. In the sector, automation has taken over most manufacturing operations, and analytical methods are become more advanced. Furthermore, the entire pharmaceutical industry has undergone a transformation thanks to the adoption of computational approaches in manufacturing, research, and distribution chains. In contrast, the practical training imparted to the students at UG, PG level in academic institutions is obsolete. Moreover, the laboratory facilities in pharmacy institutions are not sufficient to produce competent professionals. In fact, the arrangement of all these facilities is also not financially viable for the academic institutions. Therefore, there is a need to take initiatives towards cluster institutions, collaborative projects and mandatorily tie up with the industry for the practical and hands-on training [17].

Problem solving and critical thinking: Candidates with the highest employment possibilities are those that possess critical thinking and problem-solving skills [18]. Thus, the revised curriculum framework should have important components on problem solving and critical thinking activities based on the case studies of the pharmaceutical sector. The students should be exposed to the problems of the real world [19-21].

Continuous assessment mode: The current system of exams and end-of-semester assessments takes up a lot of time during the academic program, which

could be better utilized if there were mechanisms in place for ongoing evaluation in the form of assignments, presentations, field research, open debates, etc. While certain components are now in place, they should be improved [22].

Social connect and filed visits: Future pharmacists must to be made aware of the actual health issues facing society. Include elements of field research such as gathering information on consumer behavior, the price of medications, the comparison of ethical and generic brands, and medication safety awareness campaigns [23-24].

III. CONCLUSION

India is regarded as the "Pharmacy" of the globe since it produces and distributes medications to people all over the world at the lowest possible cost. Furthermore, India is making quick progress in supplying the world with high-quality herbal items. However, even with their enormous potential and opportunity, pharma experts do not find work as quickly as they ought to. One of the main causes can be that recent pharmacy graduates lack the necessary skills to meet the demands of the market right now. Now is a fantastic time to update the pharmacy curriculum and close the gap.

It is common knowledge that pharmacy education produces "Pharmacists," a title that is still applied to all pharmacy graduates. A sizable portion of the populace still believes that they are the ones who should dispense medications in hospitals and at retail pharmacy counters. It is now time for pharmacy education to change and for graduates to be positioned in society as professionals. The particular skill set and competencies of a pharmacy graduate should be explicitly defined in the educational design. Accordingly, the pharmacists should be given titles as per their academic degrees and specialisations. There should be separate titles for Diploma in Pharmacy holders (as pharmacist) and Degree in Pharmacy holders (some appropriate title). Likewise, titles for those who possess masters qualification be called as, Clinical Pharmacist, Regulatory Pharmacist, Pharmacovigilance Pharmacist, Herbal Pharmacist or Pharmacognocist, Pharmacologist, Pharmacist (Drug delivery and development), Pharmacist (Product Development), Drug marketing Pharmacist and so on. This will define the roles of pharma professionals more clearly in the profession and the society.

Pharmacy education may benefit from the NEP-2020, an innovative step towards modernizing India's education system. A well-designed curriculum can bring India's pharmacy industry up to speed with that of developed nations.

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