Competency-Based Proportionate Curriculum of Clinical Pharmacy of Pakistan.

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Abstract

A curriculum is designed to meet the current challenges. To achieve the goal, this curriculum needs to be reviewed and evaluated regularly. The main aim of this stydy is to highlight concern with the PharmD program curriculum,specifically the Clinical Pharmacy in Pakistan.

The curriculum of PharmD, more specifically the subject Clinical Pharmacy was exhaustively, reviewed keeping in view the guidelines of International Pharmaceutical Federation (IPF), American Clinical Pharmacist Associations (ACPA), World Health Organization (WHO), Core competencies for Clinical Pharmacist Australia, Miller concept of competency and Bloom's Taxonomy.

The deficiencies were highlighted, and various suggestions were made; the current curriculum compared with the standard guidelines in which 15 crucial steps have been taken to reach the current curriculum with developed countries, various models of standard guidelines used like Bloom Taxonomy, self-esteem model, competency model, Miller pyramid and lock and key competency model for Pharmacists have been developed.

Pharmacy is a patient-oriented profession, and a Pharmacist should be clinically smart and strong to face the modern challenges of clinical practice. It is possible only if the PharmD mostly Clinical Pharmacy curriculum of Pakistan needs to be revised in-line with guidelines of IPF, ACP, and WHO. Competency should be the core component of Pharmaceutical education,which is lacking in the current curriculum and incorporation will achieve competency.

Keywords

Pharmacy curriculum comparison; Clinical Pharmacy; developed countries standard; competency.

1. INTRODUCTION

According to Harden, a curriculum as "a sophisticated blend of educational strategies, course content, learning outcomes, educational

experiences, assessment, the educational environment and the individual students' learning style, personal timetable and program of work" (Harden R., 2001).The syllabus is part of the curriculum but, in some areas few authors considered it interchangeably or synonymously. According to Pratt and Barrow the word curriculum is derived from Latin "currere" means "to run". The competency-based curriculum should be from narrower to broader (Salari P *et al*., 2017; Su S-W, 2012), but the Australian competency for Pharmacists recommended a blueprint which contains 3 types of Pharmacists; general, focused and advance focused but the advanced and competent Pharmacist should be the expert of these three, and the practice of learning for the Pharmacists should be from broad to narrow and narrow to advance but in Pakistan Pharmacy curriculum only focused on broad term **(Fig. 1, 2)** (Competency A, 2011).

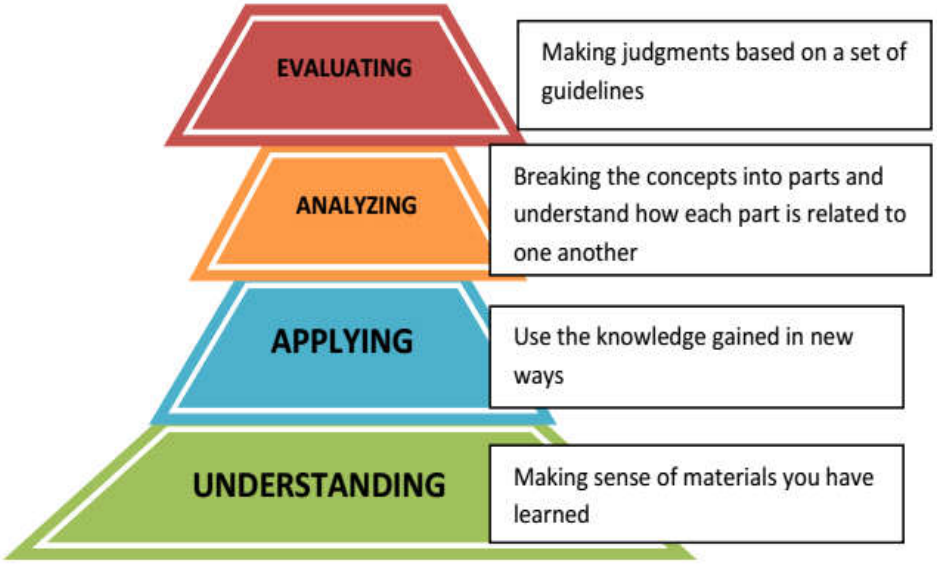

Fig. 1: Bloom Taxonomy(Competency A, 2010)

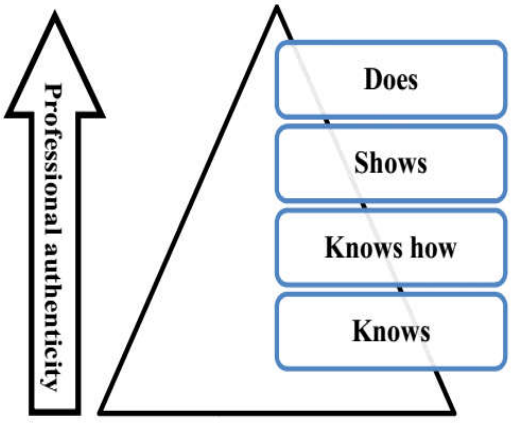

Fig. 2: Miller pyramid, a model of a competency(Competency A, 2010)

The standard way of learning for Pharmacists are required to learn the topics and implement on the patient as nowadays the Pharmacy profession has been modified from dispensing to Pharmaceutical care (AMJ, 2011), as in above curriculum definition. The teachers are expected to teach and the student learning, recommended in blueprints of standard learning procedures. Firstly, evaluation of the topic on guidelines, followed by analyzing; means the topic is divided into segments for deep and conceptual study, followed by application of acquired knowledge and understanding of the topic as shown in the Bloom Taxonomy **(Fig.1)** (Competency A, 2010; Su S-W, 2012).

The concept of Clinical Pharmacy was introduced in 1960 due to Thalidomide and Digoxin toxicities (Ramesh K, 2009). According to the American College of Clinical Pharmacy, it is the area of Pharmacy concerned with the science and practice of rational medication use.In unabridged words it is health science discipline in which the Pharmacists provides patient care, optimize patient medications therapy and disease prevention (ACoC, 2014; WHO, 2008). The advanced definition of Clinical Pharmacy is the combined agreement between the two health professionals, Physician and Pharmacist in which the role of Pharmacist is to prescribe medications (Amir M, 2013). The WHO documented that the Clinical Pharmacy is that Pharmacy branch that focused on practice for the patients and focused on Pharmacy that the educational practice of Pharmacy should be excellent (Bhagavathula, 2014; WHO, 2006).

In Pakistan, the Pharmacy program started at Punjab University in 1948 as a Bachelor of Pharmacy of three years duration, followed by University of Karachi and then Gomal University. The curriculum at that time mainly focused on the manufacturing of drugs.The Pharmacy Council of Pakistan (PCP) was established in 1967 as a regulator of pharmaceutical services and education. The Pharmacy program's duration was extended to 4 years around 1979, the focus of the study or curriculum was pharmaceutical technology. The patient-oriented pharmacy in advanced countries, most of the Universities in Pakistan agreed to convert their 4 years program into 5 years (PharmD) program. Thus, in March 2004, the Higher Education Commission (HEC) of Pakistan collaborated with PCP to develop five years curriculum for the PharmD. It was just a transition from B Pharm to Pharm D but the curriculum lacked the learning skills with knowledge for clinical pharmacist (Khan T, 2011). The PharmD program was adopted (2003-07) in most of the Universities of Pakistan. The curriculum was revised by HEC/PCP 2011/13 for some improvements. The same curriculum is still followed in all Universities offering PharmD program. Despite the passage of seven years the curriculum needs to be revised based on competency. Looking at the frequent revision of the PharmD curriculum and for highlighting the deficiencies provide a sound base for revision, which is also objective of our study.

The Pharmacists' practice is concerned with dispensing while the modern paradigm shift in this field is direct contact with the patients that need pharmaceutical care. The patient's practice is adopted in Clinical Pharmacy, which was first time introduced in European and United states that's why their curriculum is considered standard or core indicator because they know every parameter of Clinical Pharmacy practice (Alemayehu B *et al*; 2013).

2. MATERIALS AND METHOD

The curriculum of PharmD more specifically the subject Clinical Pharmacy was exhaustively reviewed keeping in view the guidelines of International Pharmaceutical Federation (IPF), American Clinical Pharmacist Associations (ACPA), World Health Organization (WHO), Core competencies for Clinical Pharmacist Australia, Miller concept of competency and Blooms Taxonomy. The following concerns were addressed:

1. Does the 2013 PharmD curriculum match the robust Definition of professionalism mentioned in the IPF document.

2. Does the current curriculum of Clinical Pharmacy of Pakistan meet international standards.

3. May the current PharmD curriculum prepare seven-star pharmacist.

4. Does the current PharmD curriculum produce clinicalcompetency in pharmacists.

5. Do the competency standards achieve.

6. Does students centered approach achieved.

3. RESULTS AND DISCUSSION

A good Clinical Pharmacy curriculum reflects accreditation with ACCP, Qatar with Canada (**Table 1)** (Bhagavathula, 2014; Kheir NaMF, 2011). In developed countries,the Clinical oriented subjects aremorein number which areessential for patients optimal therapeutic outcomes (**Table 1)** (Bhagavathula, 2014). The duration of the PharmD program in developed countries is 6 years in which 5 years are consumed in academics and a year is only spared for practice . In developed countries, desire criteria to run PharmD programs must possess a recognized hospital (**Table 1)** (Hussain A *et al*., 2017; Jamshed S *et-al*., 2007),admission criteria in developed countries are stringent (**Table 1)** (Hussain A *et al*., 2017). Professionalism and ethics are also in Australian core competency, which issuggested that agood curriculum covers ethics as a subject (**Table 1)** (Competency A, 2010; KU, 2016-2019a; KU, 2016-2019b; KU, 2017a; KU, 2017b; KU, 2017c; Salari P *et al*., 2017). Thepractical's in developed countries are almost equivalent in credit hours to that of theoryfurther detail is mentioned in (**Table 1) (**KU, 2016-2019a; KU, 2016-2019b; KU, 2017a).The Pharmacy curriculum is regularly up-dated or revised in developed countries annually like in Kansas (U.S.A)(**Table 1)**(KU, 2016-2019b; KU, 2017a). Clinical orientationin developed countries is on pinnacle and their curriculum is flexible and a comparison with Pakistan is presented in (**Table 1)**(Hussain A, 2007; Khan M, 2020; Khan M *et al*., 2020).A good Clinical Pharmacist should be altruistic; should be included in Pakistani curriculum to produce competitive and altruistic Pharmacists (Competency A, 2010; WHO; 2006).The comparison of Pakistan Clinical Pharmacy with other countries is presented in **Table 1** and **Fig 3.**

The concept of the seven-star pharmacist, introduced by "WHO" and adopted by FIP in 2000 in its policy statement on Good Pharmacy Education Practice, expects the pharmacist as a caregiver, communicator, decision-maker, teacher, life-long learner, leader, and manager (Khan M, 2020a; Khan M, 2020b; Khan M *et al*., 2020; WHO, 1997). A good Clinical Pharmacy curriculum reflects accreditation with ACCP like Qatar with Canada and Saudi Arabia with America (Amir M, 2013; KU, 2017b). Bhagavathula *et al.,* 2014 documented that in India Clinical oriented subjects are Pharmacotherapy, Clinical Pharmacy, Clinical

Research, Clinical toxicology, Pharmaco-economics, therapeutic drug monitoring and Pharmacoepidemiology, whereas Pakistani curriculum reflects Clinical Pharmacy, Pharmaceutics, Pharmacology and Therapeutics only (Bhagavathula *et al.*, 2014).

Table 1: Pharmacy curriculum comparison with other countries (scoring: N=15)

S.No	Points	Countries and their standards
1	Good Clinical Pharmacy reflects accreditation	Saudi Arabia:U.S.A Qatar: Canada Pakistan: none
2	Clinically oriented subjects in the curriculum	U.S.Aand India: excellent Pakistan: deficient
3	Pharmacy degree duration	China: 4 years Pakistan: 5 years U.S.A, India and Saudi Arabia: 6 years
4	Institution criteria for attached hospital	India and U.S.A:strict Pakistan: none
5	Admission criteria	U.S.A, India:very strict Pakistan: strict
6	Ethics	Iran and Kansas: ethics is a subject Pakistan: no subject
7	Practical work	Kansas: better Pakistan: weak
8	Curriculum up-dation	Kansas: Annually Pakistan: more than 8 years still not updated
9	Clinical orientation	U.S.A, Saudi Arabia, Australia and Qatar:more oriented Pakistan, China:less oriented

10	Altruistic approaches	International level: existed Pakistan: deficient
11	Clinical clerkship duration	U.S.A, India, Saudi Arabia: 1 year Pakistan:4 months
12	Professional building	Australia: excellent Pakistan: deficient
13	Competency	Australia: strong Pakistan: absent
14	Concept of self-esteem	Australia and U.S.A: existed Pakistan: absent (**Fig. 4**).
15	Lock and key competency key	Australia: followed Pakistan: absent
Total	15 points	

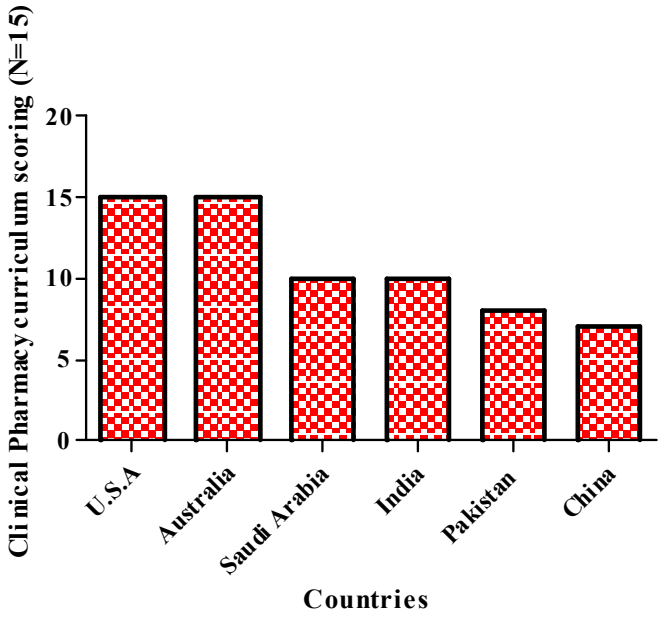

Fig. 3: Comparison of Pharmacy standard between Pakistan and developed countries

According to Hussain A *et al*., and Jamshed S *et al*., the duration of Pharmacy in developing countries is 6 years like in Saudi Arabia, U.S.A, India, Canada, Australia, while in Pakistan, it is 5 years (Hussain A *et al.*, 2017; Jamshed *et al.,* 2007). Hussain A *et al.*, articulated that the duration of course for PharmD in India is 6 years in which 5 years is consumed for academics and one year for practice asan internship in various medical units like, 6 months mandatory in generic medicines. The remained 6 years are divided into other departments like surgery, gynecology, skin, orthopedics, and pediatrics with a full ward round. It is also followed in Saudi Arabia. However, in Pakistan in the 4th and 5th professional year, the students are allowed for clerkship for 4-5 months duration in divided time (75 hours) in both years in 4th year according to HEC rules (Hussain A *et al.*, 2017). In India, institutions with the desire criteria to run PharmD programs must possess a recognized hospital by the Indian Medical Council with the availability of at least 300 beds. In Pakistan, there is no such criteria established (Hussain A *et al*., 2017; Jamshed S, 2007).

In India, admission criteria are stringent in which 30 students are enrolled and admission criteria arecompleting higher secondary exams in science subjects or equivalent in Pharmacy diploma holders are eligible for PharmD programs with full practical training in hospitals. On the other hand in Pakistan, the students are getting admission for the PharmD program after successful completion of an intermediate with biological science subjects only (Hussain A *et al.,* 2017).

Clinical orientation in the U.S.A Pharmacy curriculum is on pinnacle. India and Saudi Arabia are the best, but Pakistan and China Pharmacists are more oriented to the production due to a lack of flexibility in Clinical setup and curriculum (Hussain A *et al.*, 2017; Khan M *et al.*, 2020).

Several guidelines documented that the Professionalism and ethics in Australian core competency, the good curriculum reflects to have ethics is a subject like in curricula of Kansas and Iran has a subject thought for duration 9-10 years ago and nowadays as a single unit course for Pharmacists (Competency A, 2010; Salari P *et al.,* 2017). Medical ethics is not explained in PPC for this need as a single subject in a syllabus. It should be added in the subject Clinical Pharmacy on the name of medical ethics to produce competent professional Pharmacists on all aspects (Competency A,KU, 2016-2019a; KU, 2016-2019b; KU, 2017a; KU, 2017b; KU, 2017c; 2010; Salari P *et al.*, 2017).

The Pharmacy curriculum up-date or revise in Kansas annually for the requirements of newer knowledge day-by-day recent researches are coming to the new drugs introduced they must be included, while the Pakistan Pharmacy curriculum is still in 2013 condition with absence of competency based subjects (Khan M, 2020; KU, 2017a).

World Health Organization WHO insists on modification and a "Competency-based curriculum" for the Pharmacy field. They also mentioned in "The role of Pharmacist and their future curriculum development" that course content should be modified to meet the desirable standard. The ACCP also reports the need of change and implement Pharmaceutical education. The advancement step is also supported by the European Union and declared that "competent are those who assume responsibility" because

the competent person can bring the change in dispensing and patient care (Madiha C *et al*., 2014).

Comparing the current Pakistan curriculum with other countries shows that the U.S.A and Australia's Pharmacy competency is at the peak, followed by India, Saudi Arabia then Pakistan, & at last China in our study.

The competent Pharmacist should be self-esteem, self-aware, socially aware also have the potential of relationship management and self-management as recommended by Australian competency is shown in **(Fig. 4)** (Competency A, 2010; Salari P *et al*., 2017).

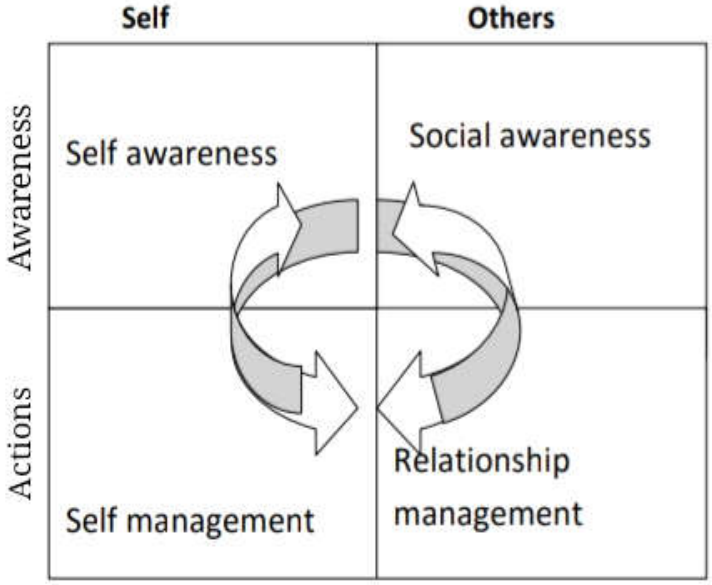

Fig. 4: The concept of self esteem

Similar concepts to our study utilized by Bhagvathula *et a*l., 2014, that Pakistani curriculum have countless deficiencies that are unable to fulfill the modern clinical challenges, in a similar way Khan T *et al*., 2011; Mehmood S *et al*., 2017, Jamshed S *et a*l., 2007, WHO, 1997 and many more had that one aim and objective to modify the current Pakistan curriculum tomeet the modern challenges and to produce competent Pharmacists(Jamshed S *et al*., 2007; Khan T *et al*., 2011; Mehmood S *et al*., 2017; Naser Z *et al*., 2012; WHO, 1997).

In objective number 5 of PPC mentioned that update the syllabi on the current proposal requirements, and needs; the needs and requirements are lacking in Pakistan Pharmacy curriculum, and these should be provided. According to objective number 15, to add clinically oriented demands for the PharmD degree, the changes are necessary (PPC, 2013).

The Australian core Competency Framework for Pharmacists 2010 documented that any newer points can be sent to the Pharmaceutical Society; similarly, Kansas updates the curriculum annually for up-dating it is also mentioned in the Pakistan 2013 Pharmacy curriculum (KU, 2016-2019a; KU, 2016-2019b; KU, 2017a; KU, 2017b; KU, 2017c;PPC, 2013).

Still now in 2021, it is still intact and no change has been made.

4. CONCLUSION

It is concluded that a curriculum needs to be updated regularly to meet international level, and to accommodate, future objectives and modifications,has flexibility and competency. In Pakistan current PharmD curriculum developed in 2013 which does not meet the requirements and lack facilities to handle different types of patients by the Pharmacists. The curriculum is more theoretical than practical and competency standard. Therefore, Pharmacists in Pakistan face enormous difficulties. Thus, our study has focused on the weaknesses of curriculum which need to be improved on competency-based thereby meeting and producing competitive Pharmacists, specifically in the field of Clinical Pharmacy focusing patient and clinically oriented as learning practiced interrelated other developed countries.

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Abbreviations

PharmD: Doctor of Pharmacy, PPC: Pakistan Pharmacy Curriculum, HEC: Higher Education Commission, WHO: World Health Organization, ACCP: American College of Clinical Pharmacy.

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