
GENERAL

**PERCEPTION OF ACADEMIC PHARMACISTS TOWARDS THEIR ROLE
IN HEALTHCARE SYSTEM OF A DEVELOPING COUNTRY, PAKISTAN:
A QUANTITATIVE SIGHT****SHENG LI^{1,#}, SAIRA AZHAR^{2,#,*}, GHULAM MURTAZA², MUHAMMAD HASSHAM HASSAN BIN
ASAD², SYED HAIDER SHAH³, SABIHA KARIM⁴ and CHENGHE SHI^{5,*}**¹Department of Plastic Surgery, Beijing Haidian Hospital, 100080, Beijing, China²Department of Pharmacy, COMSATS Institute of Information Technology, Abbottabad, Pakistan³Department of Statistics, University of Balochistan, Quetta, Pakistan⁴University College of Pharmacy, University of Punjab, Lahore, Pakistan⁵Department of Traditional Chinese Medicine, Peking University Third Hospital, 100190, Beijing, China

Abstract: To investigate perception of academic pharmacists towards their role in healthcare system of a developing country, Pakistan, was the aim of this study. The study participants consisted of academic pharmacists from the government and private universities of Pakistan. Study was conducted for a period of three months, from January to March 2011, in Pakistan. Academic pharmacists were informed regarding the aim, objective and nature of the study. Verbal consent was given and execution of the study took place. Main sections of the questionnaire were comprised of series of statements pertaining to pharmacist perception and experience with the pharmacists. During the period, of January to April, the total number of questionnaires received from different government and private universities was 113. The response rate based on the 205 academic pharmacists working in universities during the study period was 63.9%. A majority (93.9%) of the respondents were satisfied working as academic pharmacist, 68.7% expressed that their interest in research is the reason to embark carrier as an academic pharmacist. Only half (55.7%) of the respondents agreed about pharmacy curriculum standard in Pakistan, and their satisfaction towards curriculum is less, as after the implementation of Pharm. D. (Doctor of Pharmacy). In the country, the curriculum is still focusing more towards theoretical knowledge rather than practical. In this case significant difference was noted with respect to university ($p = 0.012$). Academic pharmacists do have concern about the pharmacy profession in Pakistan. They ascertain the key issues facing the profession and its educators. Recommendations have been made to improve the current pharmacy curricula in order that future pharmacists in Pakistan practice effectively with the collaboration of other healthcare professionals.

Keywords: academic pharmacist, perception, pharmacist role, pharmacy curriculum, face-lifting.

A pharmacist is the healthcare professional who has responsibility of ensuring the rational use of medicines. Pharmacists play a vital part in the delivery of healthcare world-wide. There is an increasing number of opportunities for pharmacists to assume a greater role in helping patients make better use of their medications and achieve optimal therapeutic outcomes in both the public and private sector (1). World Health Organization (WHO) and International Pharmaceutical Federation (FIP) recommended that the basic role of the pharmacist should cover seven major components: care-giver, decision-maker, communicator, leader, manager,

life-long-learner, and finally teacher. WHO also mandated that future pharmacists must possess specific knowledge, attitude, skill and behavior in order to support their roles (2).

Academic pharmacist, like in the other pharmacy fields is facing the acute man-power shortage (3, 4). In many countries, workforce shortage also applies to academia, hence, the capacity to scale up education may be limited (5). Effects made to improve the shortage of pharmacists and to some extent these effects have improved the situation slowly, but the situation in academia is still poor (6). One of the major factor which is commonly faced by

* Corresponding author: e-mail: drsairaazhar@gmail.com; chenghebysy@126.com; phone: 00923076724266; fax: 0092992383441

the developed and developing countries is the increasing enrollments of students within schools and colleges of pharmacy (7-9). Such expansion presents many concerns, including its effect on the quality of teaching, the number of available pharmacy-trained academic faculty members and the academic standard of applicants, which have not been matched by similar increases in resources, including staffing levels (10).

There are studies which focused on the pharmacy education in both developed and developing countries, but very few studies investigated the academic pharmacists' perceptions on their role in healthcare system. Although a few studies have been conducted in countries such as United States and Canada addressing this issue, it is very difficult to generalize these foreign studies into Pakistani context. Thus, the aim of this study was to investigate perception of academic pharmacists towards their role in healthcare system of Pakistan.

METHODOLOGY

The questionnaire was developed from the extensive review of literature and on the basis of the phase 1 of that study, that is, qualitative part. The questionnaire had four sections on demographic information, choice for career as an academic pharmacist, perception regarding current pharmacy curriculum and opinions about Pakistan Pharmacist Association PPA.

Section 3 of the questionnaire included a set of statements for which the respondents were asked to indicate the level of agreement using a 4-point Likert scale, whereby 1 = strongly disagreed, 2 = disagreed, 3 = agreed, 4 = strongly agreed. A four

Likert scale was used in order to avoid confusion with the 'neutral' responses.

Face and content validation of questionnaire

To assess validity of content, the preliminary version of the questionnaire consisting of 17 items was sent to the professionals at the School of Pharmacy, Universiti Sains Malaysia. These professionals were asked to assess the questionnaire by providing their overall opinions and by listing the questions in the order of relevance and importance. The questions of more relevance and importance were highlighted.

To assess face validity of the questionnaire, copies of the questionnaire were distributed among 20 participants. These participants were asked for their views on the significance, worth, and simplicity of each question and to identify as to which questions they would point out 'need to be removed' so as to make the questionnaire brief. In addition to this, the participants were also welcomed to suggest further comments on the questions whether they are understandable or not. Most of them suggested simplifying the questions. The reliability test was applied to all the variables comprising the knowledge domain. The reliability of the tool was estimated on the basis of Cronbach's Alpha ($\alpha = 0.617$).

Study participants and sample size

The study participants consisted of academic pharmacists from the government and private universities of Pakistan. The number of questionnaires received from the universities is given in Table 1.

Survey administration and time frame

The survey was conducted for a period of three months, from January to March 2011, in Pakistan. Academic pharmacists were informed regarding the aim, objective and nature of the study. Verbal consent was given and execution of the study took place.

Data collection

The questionnaires were collected from the academic pharmacists. Responses were exported to Statistical Package for Social Sciences (SPSS®) for Windows, version 15, to perform statistical analysis (11).

Data analysis

Non-parametric statistical test and appropriate descriptive statistics for demographic characteristics (mean and standard deviation for age) were performed using SPSS® for Windows, version 15. The

Table 1. Academic pharmacists from universities.

Universities	Number of questionnaires received
University 1	19
University 2	14
University 3	13
University 4	13
University 5	12
University 6	10
University 7	8
University 8	18
University 9	14
University 10	10

demographic information that was collected included: age, gender, type of university, years of experience and current post. Frequencies and descriptive statistic of each variable was reported and the mean and standard deviation were calculated for age. The

Fisher's exact test was used to test the significance of association between the independent variables (age, gender, type of university, and years of experience) and the dependent variables (respondents, perception regarding current pharmacy curriculum).

Table 2. Academic pharmacist from universities.

Universities	Number of academic pharmacists	Number of questionnaires received	Percentage of pharmacists responded (%)
University 1	21	19	90.4
University 2	26	14	53.8
University 3	25	13	52
University 4	15	13	86.6
University 5	15	12	80
University 6	17	10	58.8
University 7	13	8	61.5
University 8	23	18	78.2
University 9	18	14	77.7
University 10	32	10	31.25
Total	205	131	63.9

Table 3. Academic pharmacists' demographic characteristics.

Variables	Frequency	Percent
Age (mean \pm SD, 34.02 \pm 7.9)		
20-30	57	43.5
31-40	49	37.4
41-50	20	15.3
>50	5	3.8
Gender		
Male	83	63.4
Female	48	36.6
Type of university		
Public	81	61.8
Private	50	38.2
Years of experience		
1-10	110	84.0
11-20	19	14.5
21-30	2	1.5
Current post		
Demonstrator	18	13.7
Lecturer	75	57.3
Assistant professor	31	23.7
Associate professor	3	2.3
Professor	4	3.1

Fisher's exact test was used because it is considered to be more appropriate for skewed data, moreover, as rule of thumb, if 25% or more of the cells in the table have expected frequencies less than 5, or if any expected frequency is less than 1, then Fisher's exact p-value is computed. A p-value of 0.05 or less was considered to be statistically significant.

RESULTS AND DISCUSSION

Response rate

During the period, of January to April, the total number of questionnaires received from different government and private universities was 113. The response rate, based on the 205 academic pharmacists working in universities during the study period, was 63.9%. Response rate according to universities are shown in Table 2.

Part 1 - Demographic

Demographic characteristics of respondents from each university are shown in Table 3. The average age of the respondents was 34.02 years, standard deviation = 7.9. Among the respondents 63.4% were male, whereas 36.6% were female. A majority of 61.8% respondents were from public universities. With respect to years of teaching experience, 84.0% of the respondents had 1 to 10 years of experience. Among the academic pharmacists, 13.7% were demonstrators, 57.3% were lecturers, 23.7% were assistant professors, 2.3% were associate professors, and 3.1% were professors.

Part 2 - Choice of academic career

Respondents were asked about their choice to be academic pharmacists in Table 4. A majority (93.9%) of the pharmacists were satisfied with their work and 82.4% took academia as their first choice

career. Indicating the reasons for joining, 68.7% showed their interest in research, 74.8% showed interest for higher education. Only 27.5% of the pharmacists indicated the lack of opportunities in other sectors. A majority of the pharmacists, 88.5%, would go for academic pharmacy as a profession, if they were given another choice for career.

Part 3 - Perception regarding current pharmacy curriculum

Perceptions of academic pharmacists regarding pharmacy curriculum are shown in Table 5. Only 55.7% of the academic pharmacists agreed when they were asked about the pharmacy curriculum that it is up to the defined standard. The value was found to be of statistical significance ($p = 0.009$) with respect to type of university. With reference to the pharmacy curriculum which covers the clinical aspect of the pharmacy, 53.4% of the pharmacists accepted it and the value is of statistical significance ($p = 0.002$) with the type of university. When they were asked about their satisfaction with the pharmacy curriculum at undergraduate level, 61.8% of the respondents agreed. With respect to distribution of both theoretical and practical aspect, 48.1% of the pharmacists disagreed. Half of the pharmacists, 53.4%, agreed on the current introduction of 5 years Pharm. D. program in all the Pakistani pharmacy schools, which will help to develop better practitioners; with respect to gender, the p value was found to be statistically significant ($p = 0.044$).

Part 4 - View regarding Pakistan Pharmacist Association

Table 6 indicates the views about PPA. A majority (89.3%) of the academic pharmacists knows about the representative body of Pharmacists in Pakistan. Only 39.7% held the membership of

Table 4. Choice for career as academic pharmacist.

Items in questionnaire	Frequency	Percent
Are you satisfied working as an academic pharmacist?	123	93.9
Was joining as academic pharmacist is your first choice of carrier?	108	82.4
Interest in research	90	68.7
Interest for higher education	98	74.8
Lack of opportunities in other sectors	36	27.5
If you were given another carrier choice again, would you go for academic pharmacy as profession	116	88.5

Table 5. Perception regarding current pharmacy curriculum.

Items in questionnaire	Responses*				p-value**			
	SD (n, %)	D (n, %)	A (n, %)	DA (n, %)	Age	Gender	Type of university	Year of experience
1	7(5.3)	49(37.4)	73(55.7)	2(1.5)	0.060	0.291	0.009	0.494
2	12(9.2)	48(36.6)	70(53.4)	1(0.8)	0.922	0.609	0.002	0.958
3	5(3.8)	56(42.7)	67(51.1)	3(2.3)	0.134	0.555	0.023	0.483
4	5(3.8)	41(31.3)	81(61.8)	4(3.1)	0.100	0.081	0.715	0.357
5	3(2.3)	63(48.1)	60(45.8)	5(3.8)	0.382	0.321	0.508	0.245
6	7(5.3)	42(32.1)	70(53.4)	12(9.2)	0.172	0.044	0.148	0.459

*Reported responses were for all respondents; ** Fisher’s Exact test; 1 = Pharmacy curriculum is up to the define standard; 2 = Curriculum covers all the aspect of pharmacy practice; 3 = Curriculum also covers the clinical aspect of the pharmacy; 4 = Are you satisfied with the pharmacy curriculum at undergraduate level ? 5 = Are you satisfied with the distribution of both theoretical and practical aspect? 6 = Current introduction of 5 years Pharm. D. program in all the Pakistani pharmacy schools, will help to develop better practitioners.

Table 6. Views regarding Pakistan Pharmacists Association.

Items in questionnaire	Frequency	Percent
1	117	89.3
2	52	39.7
3	67	51.1
4	69	52.7

1 = Do you know about the representative body of Pharmacists in Pakistan (PPA)? 2 = Do you currently hold membership of the PPA? 3 = Have you ever participated in any event held by the PPA? = PPA is the representative body for pharmacist working for the interest of pharmacy profession.

PPA. More than a half of the academic pharmacists (52.7%) believed that PPA is one of the representative body of pharmacists working for the interest of pharmacy profession.

Academic pharmacy is facing man power shortage (3, 6) not only in developed countries but also in developing countries. In order to overcome the shortage, a number of efforts were made which, in turn, improved the situation better than before. Situation in Pakistan is not much different as compared to other parts of the world; pharmacy profession is facing acute storage in the country. In case of academia, only 5% of the pharmacists are working as academic pharmacists (12). The finding of the present study shows that the academic pharmacists working are highly satisfied with their career. The finding is consistent with the study in Lebanon (13), where the pharmacists are recruited as academic pharmacists and they never change their career; they are highly satisfied with respect to financial, psychological and physical aspects. Interest in higher education is one of the major reasons of joining as an academic pharmacist. In 2003, the doctor of phar-

macy (Pharm. D.) started in Pakistan and was focused on the clinical aspects of the pharmacy profession, and due to it the change in the curriculum appeared. The present study focused on the perception of academic pharmacists regarding curriculum; only half of the respondents agreed with the pharmacy curriculum. The findings are consistent with the letter which explains the issues raised with the start of Pharm. D. in Pakistan with respect to pharmacy curriculum in terms of lack of experienced academicians and practice based facilities (14, 15). With the distribution of theoretical and practical aspects of the curriculum, the pharmacists are not satisfied and this issue was highlighted in the review which discussed that the pharmacist’s role was yet to be recognized in Pakistan (16). One of the reasons for the pharmacists’ lack of recognition by other health professionals is the lack of practical exposure, as pharmacy institutions in Pakistan exist without an attached hospital where pharmacy students can acquire basic clinical knowledge and that was noticed in other developing countries too (17). In contrast, Arab countries like Kuwait, Saudi

Arabia and Jordan have already introduced clinical placements which are not only related to pharmacy but also to medical rotations (9, 18, 19). Academic pharmacists know about the PPA as one of the representing body of pharmacists in Pakistan. Unfortunately, only half of the respondents hold its membership. They believed that PPA is working for the interest of the pharmacists in the country.

One of the major limitations of the study is the winter vacation in the two provinces of the country during the time of data collection. Most of the academic pharmacists cannot be reached as they left for higher education abroad. Time and financial constraints are another contributing factors for low response rate.

CONCLUSION

The pharmacists play a critical role in improving the healthcare in the society, which can only be achieved by providing the adequate learning opportunities for the students, and which will be the future of practicing pharmacists. Based on the findings of the survey, there is a lack of practical exposure for the pharmacy students. There is a strong and uniform desire in both the public and private academia that the major emphasis should be placed on the improvement and amendments in terms of pharmacy curriculum. For the uplifting of pharmacy profession in Pakistan, support of government and pharmacy organization is very essential. Then, the pharmacy practice will be as advanced as it is in other parts of the world.

Acknowledgment

The authors thank the Beijing Haidian Hospital since this study was accomplished through the coop-

eration between Beijing Haidian Hospital and COMSATS Institute of Information Technology.

REFERENCES

1. Azhar S., Hassali M.A., Ibrahim M.I.: *Trop. J. Pharm. Res.* 9, 205 (2010).
2. WHO: *New tool to enhance role of pharmacists in health care*, 2006.
3. Carter O., Nathisuwan S., Stoddard G., Munger M.A.: *Ann. Pharmacother.* 37, 197 (2003).
4. Aysegul Y.: *Int. J. Nurs. Stud.* 42, 429 (2005).
5. Anderson C.: *Human Res. Health*, 7, 45 (2009).
6. Amie D.B.: *Curr. Pharm. Teach. Learn.* 1, 2 (2009).
7. Patry R.A., Eiland L.S.: *Am. J. Health System Pharm.* 64, 773 (2007).
8. Raehl C.L.: *Pharmacotherapy* 22, 445 (2002).
9. Al-Wazaify M.: *Am. J. Pharm. Educ.* 70, 18 (2006).
10. Taylor K.M.G., Bates I.P., Harding G.: *Pharm. Educ.* 4, 33 (2004).
11. Murtaza G., Rehman N.U., Khan S.A., Noor T., Bashir D. et al.: *Latin Am. J. Pharm.* 31, 958 (2012).
12. Ahsan N.: *Pakistan Drug Update* 6, p. 7 (2005).
13. Salameh P., Hamdan I.: *Res. Social Admin. Pharm.* 3, 336 (2007).
14. Jamshed S., Babar Z.U., Ibrahim M.I.M.: *Am. J. Pharm. Educ.* 73, 1 (2009).
15. Babar Z.U.D.: *Am. J. Pharm. Educ.* 69, 5 (2005).
16. Azhar S.: *Human Res. Health* 7, 54 (2009).
17. Kheir N.: *Am. J. Pharm. Educ.* 72, 133 (2009).
18. Awad A., Matowe L., Capps P.: *Pharm. World Sci.* 29, 557 (2007).
19. Chen L., Zhou Y., Zeng J., Yang P., Guo Y. et al.: *J. Craniofac. Surg.*, 5, 1731 (2013).

Received: 7. 01. 2014