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Career Oriented Education in Pharmacy Education: A Survey

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A mail survey was conducted to investigate the career orientation in final year B. Pharm. students in Karnataka State during August and September, 2002. The paper aims to investigate the corresponding opinions of students on

1. **Teaching and learning methodology**
2. **Evaluating systems**
3. **Seminars and tutorials**
4. **Selection for optional subjects**
5. **Industrial tours**
6. **Future career planning and**
7. **Current education training.**

These opinions were evaluated through 15 questions designed as dichotomous, consolidated questions designed on level of measurements. Thirty-two percent of institutions responded to the study. Almost all of the students were satisfied with existing classroom teaching methodology as they could freely interact to clear any doubts or questions. The qualities they expected from their lecturer, in rank-order, are: subject command, clarity in tone and excellent communication skills, commitment to work, pleasing manners and the encouragement and ability to conduct research. Seventy-one percent felt classroom size affects the learning process. Forty-one percent felt that a class size of 20–30 is adequate. Sixty-one percent expressed dissatisfaction with the current evaluation pattern and proposed a method that would take the cognisance of their overall performance. They also had optimistic views on seminars and tutorials. Only three students' (regarding selection for optional subjects) admitting to have made the mistake of selecting subjects not matching their inclinations. Fifty-nine percent felt that up to five industrial visits are adequate. Inclination towards career goals are 30% research and development, 16% marketing, 14% clinical pharmacist, 12% manufacturing floor, 10% academics, 9% Quality Control Department, 4% Hospital and Community Pharmacist and lastly, 2% entrepreneurs. A large number of students want to work outside India. In general, students are satisfied with the present coaching programme. The study concludes by making several suggestions on how institutions can help the students in achieving their career goals.

Keywords: Career; Pharmacy; Orientation; Student; Education

INTRODUCTION

Pharmacy is identified as one of the *professional* courses. The word "professional" implies a person who does a job that needs special training or skill, especially one that needs a high level of education (Hornby, 2000). Weaving students' inherent talents into the fabric of the pharmacy profession requires developing focused skills of the right kind, thereby creating a distinction between professional and regular art, commerce and science degree courses. But can these thousands of pharmacy students graduating each year really be classified as "professionals" in this proper sense? Do they have a clear vision of their career prospects and have they acquired professional aptitude and attitude toward their profession? Are they adequately equipped and well prepared to practice the services of their professional career? If so, how are they achieving this and where are their resources of knowledge and skills? Are they being trained at the institution? How and in what way are the institutions helping them in this direction? Do they have to hunt for other sources of knowledge and, if so, what are their other resources? The aim of this study was to explore these questions through a survey conducted in the form of a questionnaire involving final year B. Pharm. students of all pharmacy institutions, Karnataka in the months of August and September, 2002. This paper presents the findings of the study and proposes some measures by which students can be given proper guidance or counselling and gain awareness of their career prospects. This might enable them to enhance their professional skills

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and adeptness before the completion of their course at the university.

METHOD

Using a mail questionnaire method (Gupta, 1988) a set of five questionnaires were sent in August, 2002 to the principals of the 50 graduate-level institutions in Karnataka state (Indian Society for Technical Education, 1997–1998) with a request to return the answered questionnaire to the author within a fortnight from the date of receipt. It was also stipulated that any five of their final year B. Pharm. students answer the questionnaire. A reminder request was sent 2 weeks later to those institutions from which answered questionnaires were not received. Only the answered questionnaires received before 15 September, 2002 were considered for the study.

The Questionnaire

As the data had to be collected from different pharmacy colleges, the questionnaire was designed to obtain the data from the participants. The overall objective of the questionnaire was to find out if the current academic curriculum, teaching programme, evaluating system and academic atmosphere in the institution caters to the building of professional attitudes and clear career goals in pharmacy students. A copy of the questionnaire used in this study is given in Appendix A. A combination of dichotomous, descriptive and filter types of structural questions (William, 2002) were designed to investigate opinions on: classroom teaching and staff (question 1–4), the current evaluation system (question 5–6) and delivery of seminars and tutorials (question 7–8). Questions were then asked about how optional subjects were elected, if they were aware of its impact on their career and whether they chose them on their own or were influenced by others (question 9–11). Students were also asked about the uptake of the industrial visits (question 12), the area of the pharmacy profession in which they want their career and whether this career decision was made on their own or influenced by others (question 13–14). Finally, they were asked if they thought that their current academic coaching helps them to reach their career goals (question 15).

RESULTS

Response from the Institution for the Study

Out of the 50 pharmacy institutions that were invited to take part, only 16 institutions (32%) responded. With 5 students from each institution answering the questionnaires, 80 students participated in this study. The answered questionnaires were scrutinized for completeness, consistency and accuracy (Gupta, 1988). The answers to specific questions uncompleted were discarded. For the evaluation of level of measurements, the first rank was given maximum marks, one less for the second, and so on. The highest sum total was given the first rank and lower values the next ranking. Since the questionnaire is of a descriptive type (Twiname, 1995; Negi, 2002) no statistical methods were used in evaluating the results.

Teaching–Learning Methodology

All except one of the students were quite comfortable with classroom teaching methodology. They expressed that classroom teaching helps in understanding the subject with ease and improves their grasp of the subject. They felt that they could also freely interact with teachers to clear any doubts they may have. The qualities they expected from their lecturer, in decreasing order of rank are

1. Subject command
2. Clarity in tone and excellent communication skills
3. Commitment to work
4. Pleasing manners and encouragement and
5. Ability to conduct research.

Ten students further elaborated that the lecturer should posses the ability to motivate and inspire them, while three students strongly felt that teachers should be impartial.

Regarding the question on whether classroom size affects learning process, 71% believed it does affect the learning process. Forty-one percent felt that the adequate class size would be 20–30, 19% felt that the size should be 30–40 and 10% felt that class size should be below 20. Fifty-five percent expressed satisfaction for the traditional "chalk and talk" method, while the rest proposed improvements. Suggestions for incorporation of either OHP or a multimedia kit to be supplemented with traditional methods were made. Two students had the innovative idea of assigning project work related to their optional subject; this would give them first-hand experience in the intricacies of their chosen profession.

Evaluating System

Sixty-one percent expressed dissatisfaction over the current evaluation pattern of internal assessment (20% weight) and annual examination (80% weight) (Rajiv Gandhi University of Health Services, 1999a).

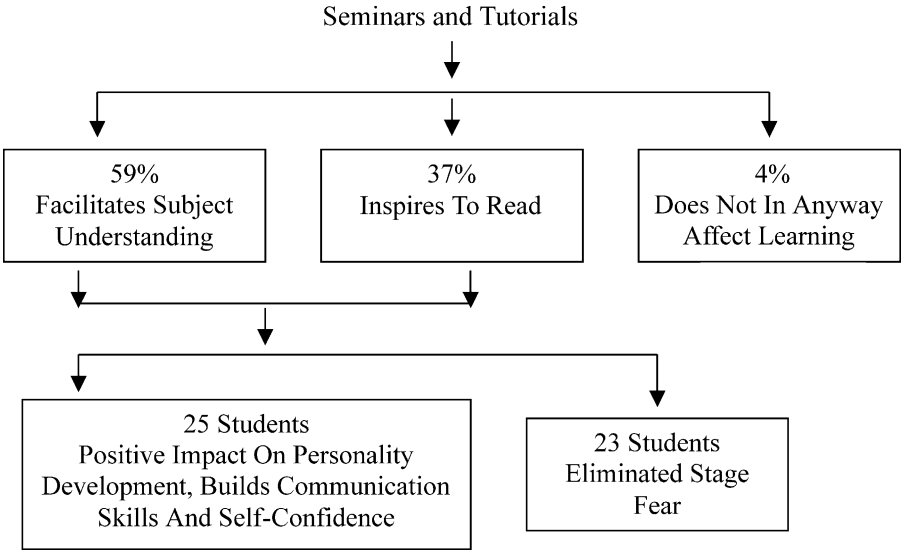

FIGURE 1 Student perceptions of seminars and tutorials.

They suggested a method for continuous monitoring of academic performance on a day-to-day basis, which would assess the skills required for practicals, written class tests, participation in group discussions, ability to deliver seminars, complete assignments and undertake project works. One student proposed the incorporation of a grade system (common in the United States) in place of the percentile score.

Seminars and Tutorials

From the survey, the details of student perceptions of seminars and tutorials are summarized in Fig. 1.

Basis for Selection of Optional Subjects

Eighty-six percent of consistent answers were obtained for question 9 relating to the choice of optional subjects. The various factors influencing students in forming their professional career aim are shown in Fig. 2. For question 10, although 85% agreed they had made a right choice for optional subjects, the remaining part of the answer to the questionnaire was inconsistent. Only three students' answers were consistent and hence analysed. Two students opted for Pharmaceutical Management and Marketing in combination with Clinical Pharmacy and Therapeutics, while one student went for Pharmaceutical Production Management with Hospital and Community Pharmacy. When answering the latter part of the question, it was found that two of these students opted for wrong subjects and their choice should have been different, but for both of them it was too late to make up for the mistake. When asked whether they could substantiate the difference between the subjects and only then opt for the elective subjects, 85% of students agreed that

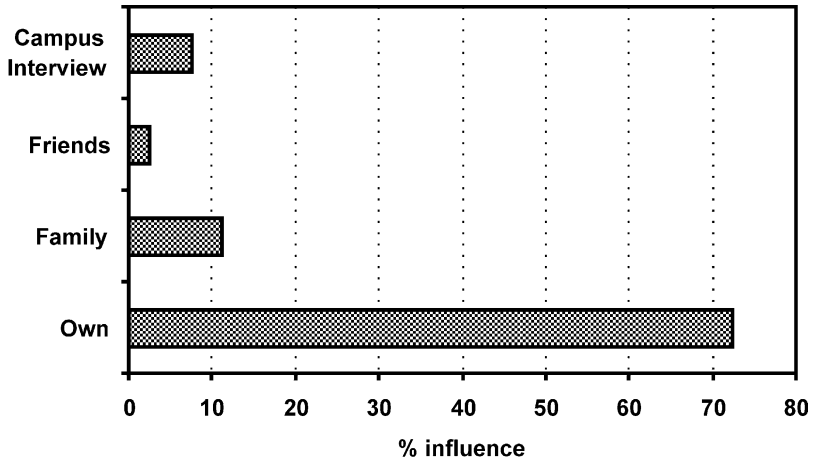

FIGURE 2 Factors influencing students in forming their professional career aim.

they were able to while the remaining 14% expressed that they could not.

Industrial Tour

Eighty-six percent of students said they had visited less than five pharmaceutical industries and the remaining students answered had visited less than ten. All agree that industrial visits are vital. No student visited more than ten industries. Only 76% of consistent answers were obtained for the other part of this question. Out of these, 59% felt that up to five industrial visits are adequate while 41% felt it should be between five and ten.

Future Career Plan

To learn about their inclination for career prospects in various fields of the pharmacy profession, question 13–15 were evaluated. In general, students marked their desire to opt for more than one career goal. Inclination towards various careers in pharmacy profession is shown in Fig. 3. The decreasing order of inclination is as follows: 30% for R&D, 16% for marketing, 14% for clinical pharmacist, 12% for manufacturing floor, 10% for academics, 9% for QC Department, 4% for Hospital and Community Pharmacist and 2% for entrepreneurs.

From the rank-order preference investigations to study the inclination of students for place of work, their ambitions are, firstly, to go abroad (149 points), secondly, to take a position in the government sector (141 points), thirdly, to become established in private sector (129 points) and lastly to work with public sector enterprises (89 points). Seventy-seven percent agree that they have taken this decision on their own, while 13% (by family decision), 2% (by peer group) and 8% want a job through campus interviews.

Current Education Training

Students are satisfied with the present coaching programme, which sufficiently trains them to achieve their career goal.

DISCUSSION

As the response rate was poor (32%), the data does not represent the true picture. Therefore, these findings cannot be generalized unless substantiated by further studies with a larger sample. However, answers to the questionnaire are not just answers; they are reflections of certain aspects of the whole process. This needs to be realized by the teaching community. It should also be remembered at the same time that each student would have perceived the questionnaire in different ways (depending on their level of perception) and answered accordingly.

Selection of Subjects

Final year B. Pharm. students were selected through the assumption that their professional level of awareness towards career prospects would be higher compared to other students during graduation. This study was conducted when the students were in mid-term of academic year, where they would be appearing for annual exams in 4–5 months of time, from where they would either take up professional career or go for higher studies. This time was felt most ideal for the study because the students would be in a position to relate their academic course to their career and also future prospects of coping with the professional demands.

FIGURE 3 Student's inclination (%) towards various careers in pharmacy profession.

Response from the Institution for the Study

Unfortunately, the poor response (32%) from the invited institutions is indicative of their stance and support for this kind of study. Support for this kind of study is needed in the interest of the students, to understand the issues that arose in the study and to discover in what ways the institutions can extend their co-operations and services for the benefit of the students.

Teaching and Learning Methodology

The art of learning and teaching is arduous both for students and the teachers and must be cultivated through discipline. This involves long, zealous, calm and preserving efforts at both ends. From the study, it is encouraging to notice that almost all the students have very positive feelings towards classroom teaching. However, no comments were made regarding self-study. An evaluation of the qualities which students look up to in teachers revealed that the first and foremost quality is the requirement of subject command. This indicates students who have a professional attitude toward their career (Katz, 1960), are focused on their goals (Kolasa, 1978) and who want accountability for their time spent in learning. They are serious about the lecture content and want it to be delivered in a clear tone. The investigations reveal students look for a friend, mentor and a motivator in the people who teach them. Motivation is a process of inspiration (Kast and Posenzweig, 1979). It steers action towards certain goals and committing a certain part of one's energies to reach them (Rao *et al.*, 1999). The immediate influences are on the direction, vigour and persistence of action. Again, it is very encouraging to note students lay their confidence in their teachers; they want a vigil kept on them to keep them oriented towards their professional goals, with a friendly and nurturing approach. To live up to the confidence and expectations of students is a challenge to the teaching community.

The size of the classroom affects the learning process in a number of ways. Firstly, individual attention may not be possible. Secondly, the voice may not be audible from the last bench and, finally, it may affect the extent of interaction between the teacher and the student. The students felt these aspects, suggesting that they are desirous of close interaction with their teacher during the lecture session. Also, it is found that the awareness for modern teaching–learning aids amongst students has increased. They ask for newer techniques (Kumar, 2000) such as:

1. Projected visual aids (OHP, slide projector, episcope and micro-projector, direct projector)
2. Audio aids (public address system and audio tape system)
3. Audiovisual aids (video tape system, tape-slide system and cine film, video-scope)
4. LCD panel and
5. Virtual reality, etc., to be used in routine teaching programme.

Evaluating System

Twenty percent weight is given for the internal assessment by the institution through conduct of sessional examinations and for the monitoring of day-to-day performance in practicals throughout the year (Rajiv Gandhi University of Health Sciences, 1999b). The Ordinance clearly states that three sessional examinations (evenly spaced) shall be conducted during the academic year and the average of the best two shall be computed out of a maximum of 20 marks. Regarding the practical valuations, marks shall be awarded out at a maximum of 10 to each of the practical exercises and an average of those shall be computed out of a maximum of 20 marks. During assessment, the following considerations should be taken in account: preparedness of the candidate, manipulative skills, results, knowledge of the experiment, viva voce pertaining to experiments only. The college shall maintain the sessional books of the student and the record of sessional award of the students. A strict code of conduct to the University Notification is also an idea the students proposed.

However, the students are not satisfied with the present evaluation system. This is a very sensitive issue as the current evaluation system considers only their proficiency for written examinations, skills to perform experiments and face viva, all insufficient and failing to evaluate overall performance. Hence, a strategy has to be worked out at university-level so that the students do not suffer if they are weak in any one aspect. The evaluating system should be such that their dormant faculties are given due cognisance and chance in an atmosphere that justifies their overall professional performance, one on which students feel the present evaluation system fails.

Seminars and Tutorials

All but three students feel that tutorials help them either to understand the subject better or to motivate them. This supports the object for which tutorials are presently included in the revised syllabus, by the Rajiv Gandhi University of Health Sciences (RGUHS), Karnataka (Rajiv Gandhi University of Health Sciences, 1999b) with a batch size restricted to 20. This concept of conducting tutorials as part of the syllabus does not exist in all the institutions affiliated

to different universities in India. Students believe that when they deliver seminars, it helps them in grooming their personality (Ruch, 1963; Rao *et al.*, 1999). Hence, conducting seminars should be encouraged.

Basis for Selection of Optional Subjects

All these 50 colleges in Karnataka state were affiliated to different universities, each with the same syllabus. This syllabus was streamlined by one university called RGUHS, Karnataka, which came into force in the 1996–97 academic year.

The first syllabus course (Rajiv Gandhi University of Health Sciences, 1996) did not have options for elective subjects, which was included for the academic batch 1997–98 onwards (Rajiv Gandhi University of Health Sciences, 1999a). This batch of students is the first cohort in this revised syllabus, which is given the choice to select optional subjects, having significant impact on their future career prospects. Hence, a study in this aspect was taken.

There are many advantages associated with the incorporation of elective subjects. These include the fact that subjects not so pertinent to students' careers are reduced while more weight is given to their career goal subject. Furthermore, subject importance is felt, interest is maintained and students gain prior knowledge and familiarity with the kind of work anticipated as a professional in the area of their work. However, there are potential disadvantages. For example, other subject knowledge is less; the importance of which may or may not be realized at a later stage. In addition, any mistake in choice of elective subjects could lead to serious repercussions in one's professional life; focusing on a single elective also means proficiency for only one, specific job. Hence job prospects in other disciplines would be reduced if one committing to a single elective were to later change one's mind.

The majority of the students expressed that their choice for elective optional subjects was entirely their own; they were able to explore the differences between many of the elective subjects and then make their choice. However, the answers to the questions 9–11 for this aspect were inconsistent. Only three students' answers to questions 9–11 were found consistent. All these three students admit that they made a wrong choice. This inconsistency in the answers shows that though the students could not make the right choice for electives, they still did not like to admit that they were falling short of proper information and guidance needed to do so. This could be indicating the mentality of students in wanting their ignorance to be covered. This is anathema to any learner; one's learning faculties begin to stagnate once one presumes to know everything. This requires tremendous amount of efforts on the side of teachers to communicate with the students in an easy-going and convincing way while causing no discomfort (Rao *et al.*, 1999). By doing so, the teacher is able to touch students' ego and pride so as to extricate the "cover-up" attitude. As a learner and student, one should never carry a low feeling simply because they do not know everything or feel shy of ignorance. They should know and value how a wrong decision only compels them to live without justice to themselves or to their profession. A right decision in the right direction in the area of interest will save them from all the possible maladies and frustration arising out of job dissatisfaction in their professional career.

Industrial Tour

To give the true picture of the theoretical aspects of the working atmosphere in industry, students of the final year are taken for the pharmaceutical industrial tours, as part of their curriculum. The RGUHS prescribes that the candidates studying in the final year of the course shall visit several pharmaceutical manufacturing houses as a supplement to their academic training and submit a report to the satisfaction of the Head of the Institution where they studied (Rajiv Gandhi University of Health Sciences, 1999b). From the studies, it is found that industrial visits of 6–7 pharmaceutical manufacturing units are adequate to stimulate them for the working situations and conditions relating to industrial pharmacy.

Future Career Plan

Analysis of question 13–15 are indicative that the majority of students have made their own independent decision as to which career they are going to adopt and where they want to work. From the study, it is found that the majority of them have the inclination for research and development (30%). Less than 5% want to opt for Hospital and Community Pharmacist. This could be due to a lack of awareness, the charm of marketing and production (in terms of money and travel), or associated challenges through this kind of work. From the rank-order preference studies for place of work it is understood that students want either good pay or job security by choosing to either go abroad or work in the government sector. More than 75% of students stated that decisions concerned with their career were their own. This shows that they are more conscious, responsible and have a clear career goal.

Current Education Training

All the students feel that the present coaching they undergo sufficiently trains them to achieve their

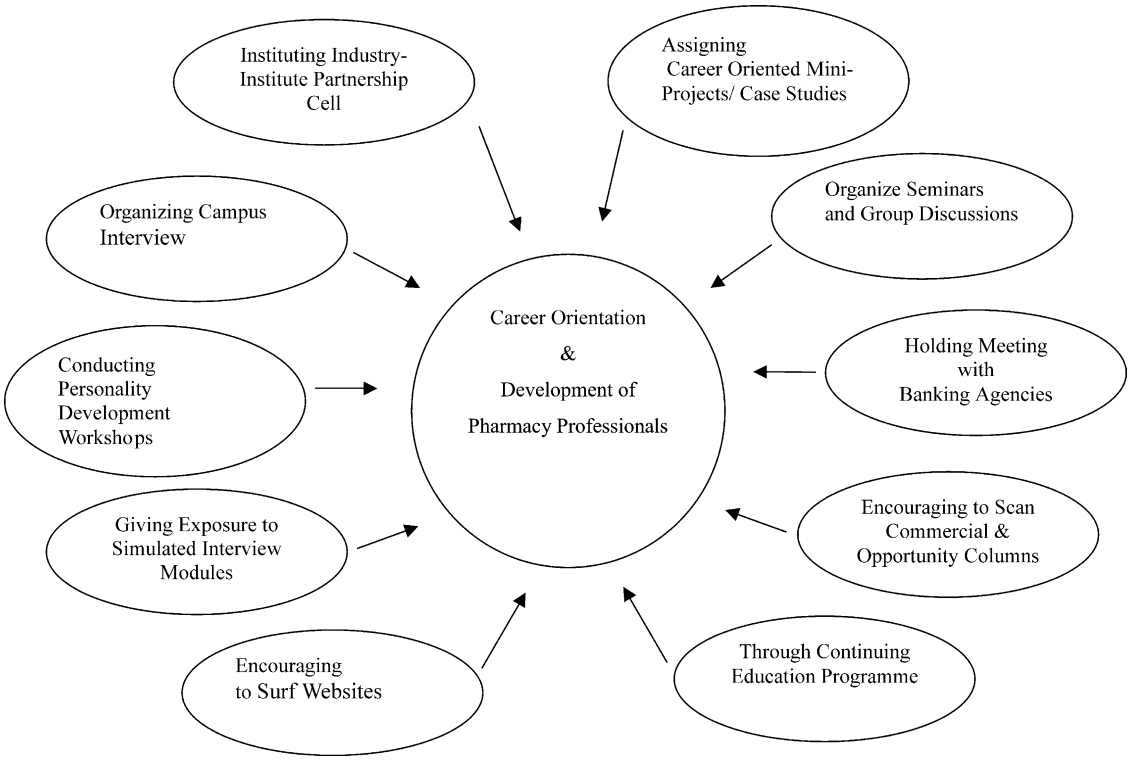

FIGURE 4 Proposed methods by which institutions can help students to form their professional career.

career goal. However, the institution can help students build their career plans by adding more ways to motivate students' interest for orientation to form their career goals. Some examples of this are shown in Figs. 3 and 4 and discussed in the section below.

How Institutions Can Help Students Form their Career Plans

1. *Instituting Industry-Institute Partnership Cell*: The All India Council for Technical Education (AICTE) provides grants for the creation of such cells with the intention that institutions will act as liaison centres between industries and various departments in the institutes to create and implement mutually-beneficial activities (AICTE, 2002). Support is also needed in generating funds from industry and other agencies for the development and maintenance of the cell.
2. *Campus Interviews*: Conducting campus interviews for students who are in the final year of the academic curriculum can be greatly beneficial to their career ambitions.
3. *Personality Development Workshops*: Organising workshops based on personality development will help students to develop an appealing personality. The term "personality" is derived from Latin word "per sonnare," which means "to speak through." Personality is an organized whole without which an individual would have no meaning. Personality is a pattern of stable states and characteristics that influences a person's behaviour toward goal achievement. Each person holds unique ways of protecting these states (Rao *et al.*, 1999)
4. *Exposure to Simulated Interview Modules*: Students should be exposed to simulated personal interview modules and group discussions through experts. This will help them discover the positive and negative sides of their personality and, accordingly, work with them to bring out their best while facing an interview for a job.
5. *Surfing websites*: Encouraging students to surf the relevant websites of various pharmaceutical industries on the Internet has the potential to be extremely beneficial. This will help them know the profile of the industries to which they may apply later. This prior knowledge of the industry will get them adequately prepared and will build confidence to face the process of interview.
6. *Career Oriented Mini-projects or Case Studies*: Assignments in the form of mini-projects or case studies related to elective subjects may be beneficial. This makes students aware of the type and kind of work demanding the anticipated commitment toward the professional work, opted as one's career goal.
7. *Seminars and Group Discussions*: These should be organised, as it will help students discover and analyse the area of their inherent

communicative weakness that may need to be improved upon.

8. *Meeting with Banking Agencies*: To develop the entrepreneurship awareness among the students, the institution should organize periodic meetings with banking agencies.
9. *Encourage to Scan Commercial and Opportunity Columns*: Students should be encouraged to read the science and technology or business articles in newspapers, magazines and journals. In particular, they should be asked to go through the opportunities column. This will make them aware of the type of jobs that are frequently advertised and will also help them to make the right choice for elective subjects.
10. *Continuing Education Programme*: There is a need to keep abreast with technological developments, to supplement and compliment new learning experiences and to engage in continuing education (CE) programmes for pharmacists throughout their careers in all fields of the profession. When the student becomes a part of teaching faculty, they have to stay with the advances in their specific field, for which modern communication tools like CD's digital video disks and internet facilities could be effectively used. CE is the support and development functions of manpower management, related to updating skills and with the acquisition of new skills.

CONCLUSION

From these studies, it is evident that students want professional commitment from their teachers, in a kind of relationship where their educators would support them as friends. Also, it is preferred that the class size be such that it encourages students to interact with their teachers. The students want to take up projects, upon which depends much attention from universities. From their inconsistent answers, it can be concluded that the majority of students lack career focus. And without this they cannot become true professionals who can fit into the career of pharmacist, whether it is clinical, hospital, industry, on the manufacturing floor, in R&D or in the marketing-side as medical representative. Therefore, the policy makers, administrators and teachers have to consider the situation seriously and take suitable steps to change this. The suggestions given in this paper are essentially student-oriented, though there can be other possibilities, as well.

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APPENDIX A: THE QUESTIONNAIRE

Students Attitude and Expectation from B. Pharm. – A Project

(Your response is very much essential and useful for completion of this work)

1. Do you like classroom teaching? Give reason.

   _____

2. What are the qualities you expect from your lecturer?
   (List the following in the order of your preference)

	Quality	Order of preference
a.	Commitment to work	( )
b.	Pleasing manners and encouragement	( )
c.	Command on the subject	( )
d.	Ability to carry out the research	( )
e.	Clear tone and excellent communication	( )
f.	_____	( )

   (Describe any other quality that appeals to you.

3. Does class strength affect your classroom concentration [Yes/No]
   If "YES", according to you, the ideal class strength is: (tick your response)

a.	Below 10	( )
b.	10-20	( )
c.	20-30	( )
d.	30-40	( )
e.	40-50	( )

4. Are you satisfied with traditional lecture approach? [Yes/No]
   If "NO", then you need (tick your response)

a.	Over Head Projector (OHP)	( )
b.	Multimedia Tool	( )
c.	Any other _____	(Specify)

5. What do you prefer?

a.	The current examination pattern of Internal Assessment through Sessional Examinations and Annual Examination.	( )
b.	Semester System of Continuous Assessment Pattern	( )

6. Do you think the conduct of examinati ons is the only way to assess your performance?
   [Yes/No].
   If "NO", what alternate way do you suggest to evaluate your performance?
   _____

7. What do you feel about tutorials? (Tick your response)

a.	It helps you to understand the subject better.	( )
b.	It inspires you to go through the books more.	( )
c.	It does not help you any way appreciably.	( )
b.	Any Other _____	(Specify)

8. Do you think the class seminars are really helpful for your improvement?
   [Yes/No].
   If "YES", how? _____

9. The choice of Elective Subjects was (Tick your response)

a.	On your own	( )
b.	By your classmates	( )
c.	By your seniors	( )
d.	By your family	( )

10. Do you feel you made a right choice in the elective subjects? [Yes/No]
If "YES", which subject you have opted for out of the following in

Elective I

a. Pharmaceutical Production Management ( )
b. Total Quality Management ( )
c. Pharmaceutical Management and Marketing ( )
d. Herbal Drug Technology ( )

Elective II

a. Hospital and Community Pharmacy ( )
b. Clinical Pharmacy and Therapeutics ( )

If "NO", then what should have been your choice? In **Elective I** which subject you should have opted for _____
in place of _____
and in **Elective II** which subject you should have opted for _____
_____ in place of
_____.

11. Were you able to substantiate the difference between the elective subjects and its importance in your career goal and only then picked the elective subjects.
[Yes/No]
If "NO", t hen what do you suggest should be done to help students picking the elective subjects. _____

12. How many Pharmaceutical Industries you have visited.
a. Less than 5 ( )
b. Less than 10 ( )
c. Above 10 ( )
What number you feel is adequate? ( )

What is your opinion regarding this?
a. Useful ( )
b. Not that much useful. ( )

13. What is your career aim? In which area you set your career goal (tick your response)
a. Manufacturing floor ( )
b. Quality Control Department ( )
c. Research and Development ( )
d. Academics ( )
e. Marketing ( )
f. Entrepreneur ( )
g. Hospital and Community Pharmacist ( )
h. Clinical Pharmacist ( )

Where would you like to work? What is your choice? (in order of preference)
a. Government Sector ( )
b. Public Sector ( )
c. Private Sector ( )
d. Jobs Abroad ( )

14. How do you form your Career aim? (tick your response)
a. On your own ( )
b. By our family ( )
c. By your friends ( )
b. By campus interview ( )

15. Do you feel that current academic coaching helps you to reach your Career goal?
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