Survey on Undergraduate and Postgraduate Education for Clinical Pharmacology in the Departments of Pharmacy at University and College Hospitals

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The current situation and practice of undergraduate and postgraduate education regarding clinical pharmacology at university and college hospital were investigated using questionnaires which were sent to 80 departments of pharmacy in university and college hospitals. The questionnaires were returned by 40 departments of pharmacy (50%). The major findings were as follows:

1. Undergraduate clinical pharmacology education for medical students has been established at 27 out of 40 departments (67.5%), and the main persons responsible were the department of pharmacy staff members in 25 out of 27 university and college hospitals (93%).

2. Postgraduate education for medical doctors and pharmacists has been established at 9 out of 40 departments (22.5%), and the main persons responsible were also the department of pharmacy staff members in 7 out of 9 university and college hospitals (78%).

3. The course curriculum for clinical pharmacology tended to include: the prescription of drugs, pharmacokinetics, therapeutic drug monitoring, law and rules etc. in undergraduate programs, while it was seminars in postgraduate programs.

4. Difficult issues in both undergraduate and postgraduate programs for clinical pharmacology were lacks of staff and time for sufficient education, etc.

5. The most important factors for the future of clinical pharmacology education were sufficient equipment for the academic requirements and the establishment of a department of clinical pharmacology in the school of medicine etc.

These results show that undergraduate education for clinical pharmacology has not yet been universally established at the departments of pharmacy in university and college hospitals, especially postgraduate education was poor, and therefore further efforts are called for to improve clinical pharmacology education.

Key words — clinical pharmacology, education, department of pharmacy, university and college hospital
Introduction

Recently, the importance of clinical pharmacology in medical education for clinical practice has been recognized: for example pharmacokinetics in drug therapy, informed consent in clinical practice and clinical examination for drug effectiveness etc. Nevertheless, departments of clinical pharmacology are a little established in schools of medicine, universities and/or medical colleges\(^1\). Thus, in many cases, departments of pharmacy in university and college hospitals are known to participate in education for clinical pharmacology. However, a precise information upon actual participation of departments of pharmacy in education for clinical pharmacology has not been obtained till today, although only a few reports\(^2-3\) have been presented in regard to clinical pharmacology education at schools of medicine, universities and medical colleges but not at departments of pharmacy in university and college hospitals. This study was designed to clarify the present situation and practice of clinical pharmacology education at departments of pharmacy in university and college hospitals.

Methods

An investigation for clinical pharmacology education was performed using questionnaires, which were mailed in February, 1996 to 80 departments of pharmacy in university and college hospitals. Contents of questionnaires were as follows:

1. Is the education for clinical pharmacology established in your institute?
   (1) Yes
   (2) No
   (3) Prearrangement
2. Who is responsible for education in your institute?
   (1) In undergraduate course
   (2) In postgraduate course
3. What is the education curriculum in your institute?
   (1) In undergraduate course
   (2) In postgraduate course
4. What are the difficult issues facing the education?
5. What are needed for the future of clinical pharmacology education?
6. Others: please write any comments on clinical pharmacology education.

Results

Questionnaires were returned by 40 departments of pharmacy in university and college hospitals out of the 80 recipients (50%).

Undergraduate education for clinical pharmacology to medical students was established at 27 out of 40 departments of pharmacy (67.5%), not established at 11 out of 40 departments (27.5%) and prearranged at remaining 2 departments (5%) (Fig. 1 A). When these results were separated to

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those in public and private universities and/or colleges, undergraduate education was executed at 22 out of 27 departments of pharmacy in public university and college hospitals (81%), not executed at 3 departments (11.5%) and prearranged at 2 departments (7.5%) (Fig. 1 B). In private university and college hospitals, undergraduate education was executed at 5 out of 13 departments of pharmacy (38%) and not done at remaining 8 departments (62%) (Fig. 1 C).

Persons responsible for undergraduate education for clinical pharmacology to medical students at departments of pharmacy in university and college hospitals were as follows: only staffs of department of pharmacy in university and college hospital, 15 out of 27 departments of pharmacy (56%); only teachers of school of pharmacy in university and pharmaceutical college, 2 out of 27 departments (7%); staffs of department of pharmacy together with teachers of school of pharmacy, 9

Fig. 1. Establishment of Undergraduate Education for Clinical Pharmacology at 40 Departments of Pharmacy in University and College Hospitals.
A : sum of total (40) university and college hospitals
B : sum of 27 public university and college hospitals
C : sum of 13 private university and college hospitals
out of 27 (33%); staffs of department of pharmacy and others such as visiting lecturers (other than teachers of school of pharmacy), medical doctors and nurses, 1 out of 27 (4%) (Fig. 2A). When the data were separated to those in public and private universities and colleges, persons responsible for undergraduate education for clinical pharmacology to medical students at departments of phar-

Fig. 2. Persons Responsible for Undergraduate Education for Clinical Pharmacology at 27 Departments of Pharmacy in University and College Hospitals.
A : sum of total (27) university and college hospitals
B : sum of 22 public university and college hospitals
C : sum of 5 private university and college hospitals
Pharmacy in university and college hospitals were as shown in Fig. 2 B and C. Briefly, staffs of department of pharmacy participated at 21 out of 22 departments in public university and college hospitals (95%) and 4 out of 5 in private university and college hospitals (80%), respectively.

Postgraduate education for clinical pharmacology to medical doctors and pharmacists was established at 9 out of 40 departments of pharmacy in university and college hospitals (22.5%), and not established at 31 out of 40 (77.5%) (Fig. 3 A). This trend was similar with each other in both public and private university and college hospitals: education was established at 6 out of 27 public university and college hospitals (22%) and 3 out of 13 private ones (23%) (Fig. 3 B and C).

Fig. 3. Establishment of Postgraduate Education for Clinical Pharmacology at 40 Departments of Pharmacy in University and College Hospitals.

A : sum of total (40) university and college hospitals
B : sum of 27 public university and college hospitals
C : sum of 13 private university and college hospitals
Persons responsible for postgraduate education for clinical pharmacology to medical doctors and pharmacists were only staffs of department of pharmacy in 6 out of 9 university and college hospitals (67%), only teachers of school of pharmacy in 2 out of 9 (22%) and staffs of department of pharmacy together with teachers of school of pharmacy in 1 out of 9 university and college hospitals (11%) (Fig. 4 A). In public university and college hospitals, postgraduate education for clinical pharmacology was performed by only staffs of department of pharmacy at 5 out of 6 university and college hospitals (83%) and by staffs of department of pharmacy together with teachers of school of pharmacy at 1 out of 6 (17%). On the other hand, in private university and college hospitals, it was performed by only staffs of department of pharmacy at 1 out of 3 hospitals (33%) and by only teachers of school of pharmacy at 2 out of 3 (67%), respectively (Fig. 4 B and C).

Fig. 4. Persons Responsible for Postgraduate Education for Clinical Pharmacology at 9 Departments of Pharmacy in University and College Hospitals.
A: sum of total (9) university and college hospitals
B: sum of 6 public university and college hospitals
C: sum of 3 private university and college hospitals
The course curriculum for clinical pharmacology was prescription of drugs, pharmacokinetics, therapeutic drug monitoring, law and rules etc. in undergraduate education, while it was seminar in postgraduate education. This tendency of the course curriculum was not different between departments of pharmacy in public and private university and college hospitals.

Difficult issues in undergraduate and postgraduate education for clinical pharmacology were lacks of staff and time for education, difficult correspondences without medical license, insufficient educational circumstances, a lack of the educational course, no appointment of pharmacist to the staff for education and/or an insufficient recognition of medical doctor for clinical pharmacology (Fig. 5).

Needs for the future of clinical pharmacology education were a complete equipment of academic system, an establishment of department of clinical pharmacology in school of medicine, an appointment of pharmacist to the staff for education and/or an introduction of 6 years system to the educational course (Fig. 6).

**Discussion**

The response rate to the questionnaire, which may mean the degree of recognition or interest for clinical pharmacology, was 50% (40 out of the 80 recipients). This rate is judged to be not so high, but rather low, being a disappointing count. We cannot understand the reason for this low response rate, and don't feel like thinking that it is due to poor recognition and/or poor interest for clinical pharmacology. A questionnaire may be not adequate, we wonder.

Establishment of undergraduate education for clinical pharmacology was markedly more in public university and college hospitals (81%) than in private ones (38%). However, the rate of partici-
Fig. 6. Needs for the Future of Clinical Pharmacology Education.

pation of staffs of department of pharmacy in undergraduate education for clinical pharmacology did not show the marked difference between public university and college hospitals (95%) and private ones (80%). Therefore, especially in private university and college hospitals, it is likely that there may exist something systemic disturbances in progressing the undergraduate education for clinical pharmacology, though staffs of department of pharmacy have a forward will to participate in the undergraduate education.

Postgraduate education for clinical pharmacology was established at 22.5% (9 out of 40) of departments of pharmacy in university and college hospitals, and there was no difference of the rate of establishment between public university and college hospitals (22%) and private ones (23%). On the other hand, the rate of participation of staffs of department of pharmacy in postgraduate education for clinical pharmacology showed the marked difference: it reached 100% of 6 public university and college hospitals and 33% of 3 private ones. These results indicate that it might be difficult to establish the postgraduate education for clinical pharmacology and that, regretfully, the postgraduate education for clinical pharmacology may not become the center of interest, due to the reason why staffs of department of pharmacy are so busy for their duties.

The course curriculum for clinical pharmacology was reasonable in undergraduate education, although it included the curriculum for clinical pharmacy. However, the fact that the curriculum was the seminar alone in postgraduate education made us disappointing. Certainly, a full scale execution of the curriculum in postgraduate education for clinical pharmacology will need a lot of expense together with staffs, which are not sufficient now. Postgraduate education for clinical pharmacology as a continuing education has many problems to be resolved, and this is a subject in the future.

Main difficult issues in both undergraduate and postgraduate education for clinical pharmacology were lacks of staff and time for education, and main needs for the future of clinical pharmacology education were a complete equipment of academic system and an establishment of department of clinical pharmacology. The former and the latter seem to mean the same subject, and such a trend has been reported in our previous paper in which the situation and practice of undergraduate and postgraduate education for clinical pharmacology were surveyed upon teachers of basic pharmacol-
ogy, schools of medicine, universities and medical colleges with no department of clinical pharmacology. Judging from present contents of difficult issues and needs for the future, a figure of staffs of department of pharmacy in university and college hospitals making effort for clinical pharmacology education in spite of the hard press of business comes into our mind. However, results in the present study show that undergraduate education for clinical pharmacology was not established completely at departments of pharmacy in university and college hospitals, particularly postgraduate education was poor. Thus, we must make further effort for clinical pharmacology education such as an establishment of department of clinical pharmacology and/or a repletion of staffs and time for education basing on economic support.

In conclusion, undergraduate education for clinical pharmacology to medical students was established in about 80% of public university and college hospitals but in about 40% of private ones, indicating the existence of difference between public and private university and college hospitals. Main persons responsible for education were staffs of department of pharmacy in university and college hospitals, and teachers of school of pharmacy in universities and pharmaceutical colleges joined to this education. This situation was similar in public and private university and college hospitals. Postgraduate education to medical doctors and pharmacists was established in only about 20% of both public and private university and college hospitals. Thus, education for clinical pharmacology was not always established completely, meaning the necessary of the further effort.

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References