

Pharmacoeconomic Education in U.S. Schools of Pharmacy

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The purpose of this paper was to survey U.S. schools of pharmacy to determine the extent of pharmacoeconomic education offered during the 1996-97 academic year. A survey was sent to all 79 U.S. schools of pharmacy in June 1997 using a combination of survey techniques (electronic-mail, facsimiles, and phone calls). A 100 percent response rate was achieved within two months. Of the 79 schools, 64 (81 percent) offered pharmacoeconomic education at some level during the 1996-97 academic year. Sixty-three (80 percent) schools offered pharmacoeconomic education at the BS and/or PharmD level. Of the 55 schools of pharmacy that offer MS and/or PhD degrees, 36 (65 percent) offered pharmacoeconomic education at this level. In addition six respondents reported that their school would begin to offer pharmacoeconomics before the year 2000, and four reported their school planned to increase the number of hours of pharmacoeconomics education in the near future. The results of this survey indicate that pharmacoeconomic education in U.S. schools of pharmacy is on the rise.

INTRODUCTION

A number of professional organizations are seizing the opportunity to provide training programs in pharmacoeconomics and outcomes assessment for pharmacists. For example, the American College of Clinical Pharmacy has a program titled, "Pharmacoeconomics and Outcomes - Applications for Patient Care" consisting of three home study modules which can be supplemented with optional live workshops(1). The fourth module is a practicum where the learner can apply the material from the first three modules by conducting an outcomes assessment in his or her setting. As well, the American Society of Health-System Pharmacists initiated their "Competitive Edge: Advanced Training in Conducting and Using Outcome Studies" in the Fall of 1997. Their four-month program involves intensive home study, two extensive workshops, and a wrap-up session where participants present their final outcomes project(2).

The need for these types of practitioner training programs was heralded in late 1994 at invitational conferences sponsored by ASHP - "Applying Patient Outcomes and Pharmacoeconomics in Patient Care"(3) and APhA - "Patient Outcomes of Pharmaceutical Interventions: A Scientific Foundation for the Future"(4). As well, both conferences explored the education and training needs for developing research skills in pharmaceutical outcomes research. At the APhA conference, a framework for graduate program requirements and a suggested core curriculum was developed based, in part, on a 1993 conference, "The Role of Colleges of Pharmacy in Meeting the Pharmacoeconomic Needs of the Pharmaceutical Industry"(5). As of July 1994,

there were 92 individuals enrolled in graduate pharmacoeconomic education and training programs at 18 U.S. Colleges of Pharmacy and program development efforts were on-going at several other institutions(6).

As early as 1991, Draugalis and Jones-Grizzle asserted that it was necessary to include pharmacoeconomic topics in the professional curricula via incorporation of the subject matter into a number of already established courses(7). Juergens, *et al.* determined the curricular coverage of statistical and analytical techniques including economic evaluation methods; where in 1992, approximately one-fifth of BS programs and one-third of PharmD programs taught principles of economic evaluation in required courses(8). Kolassa followed with a call for a basic course in pharmaceutical economics as a curricular requirement with the rationale being that pharmacists, especially those in administrative or managerial positions, must possess these skills in order to make appropriate recommendations and decisions in carrying out their job responsibilities(9).

The citations above suggest there is a high demand for individuals with pharmacoeconomic education and training, and that schools of pharmacy were planning to expand their programs to help fulfill this need. An updated survey of pharmacoeconomic education provided at the undergraduate and graduate level was needed to assess the trends. The purpose of this research was to assess and summarize pharmacoeconomic education offered in U.S. schools of pharmacy for the 1996-1997 school year.

METHODS

Sampling and Survey Methods

The American Association of Colleges of Pharmacy (AACP) was contacted, and a current list of electronic-mail addresses for Dean's offices of U.S. Schools of Pharmacy was forwarded to the authors via the Internet. If an e-mail address was not listed in this AACP data, a facsimile (FAX)

¹Preliminary survey information on U.S. Schools of Pharmacy and information from an international survey of Schools of Pharmacy is in press: "Rascati, K.L., Draugalis, J.R., and Conner, T.M., "Chapter 6: Pharmacoeconomic Education in Schools of Pharmacy", *Pharmacoeconomics and Outcome Assessment: A Global Issue*, (edit. Salek, S.) Euromed Communications Ltd, (1998).

of the survey was sent to a faculty member at the school who was listed as teaching either Social and Administrative Sciences (SAdS) or Pharmacy Practice (PhPr) in the 1996-97 AACP roster (10). If no response was received within two weeks, an e-mail survey was sent to another faculty member (other than the Dean's office) or a phone call was placed to a faculty member or to the Dean's office.

Surveys were first sent electronically on June 16, 1997 and the follow-ups continued for two months until a 100 percent response rate was achieved. Because the results are descriptive in nature, no statistical tests were conducted.

Survey Questions

A definition of pharmacoeconomics was provided at the beginning of the survey. The definition chosen for this survey was "Pharmacoeconomics identifies, measures, and compares the costs and consequences of pharmaceutical products and services"(11). The survey consisted of four main questions: (i) Does your school of pharmacy provide pharmacoeconomic education? (ii) How many clock hours are devoted to pharmacoeconomic education? (iii) Is this education part of the required or elective curriculum? and (iv) How many students receive this education per year? Examples of calculating 'clock hours' were given as: "If your school offers two lectures that are 90 minutes each, your response would be three clock hours. If your school offers a class that meets three hours a week for 15 weeks, your response would be 45 clock hours." Lastly, respondents were asked to provide any additional comments in the space provided at the end of the survey.

The surveys asked respondents to answer these four main questions for three levels of students: (i) Bachelor of Science (BS) students; (ii) Doctor of Pharmacy (PharmD) students; and (iii) Graduate-level (Masters of Science [MS] or Doctor of Philosophy [PhD]) students.

RESULTS

At the time of the survey, there were 79 accredited schools of pharmacy in the U.S. and 55 of these schools offered MS and/or PhD degrees in addition to professional degrees. As mentioned in the methods section, responses were received from all 79 schools.

Question 1: Does your school of pharmacy provide pharmacoeconomic education?

Of the 79 schools of pharmacy, 64 (81 percent) indicated that pharmacoeconomic education was offered at some level. To assist categorization, the BS and PharmD levels will be referred to as the "professional level" of education, while the MS and PhD levels will be referred to as the "graduate level" of education. Sixty-three respondents (80 percent) indicated that pharmacoeconomic education was offered at their school at the professional level: six to BS students only, 35 to PharmD students only and 22 to both BS and PharmD students. Thirty-six respondents (65 percent of those that offered graduate-level education) indicated that pharmacoeconomic education was offered at the graduate level at their school. All but one of the schools that offered pharmacoeconomic education at the graduate level also offered it at the professional level.

Schools were counted as having pharmacoeconomic education if the courses were available during the 1996-1997 academic year. Of the 15 respondents who indicated that their school did not currently offer pharmacoeconomic

education, six reported that there were plans to add it to the curriculum (two in 1997, one in 1998, two in 1999, and one did not specify when).

Question 2: How many clock hours are devoted to pharmacoeconomic education?

There was a wide range of answers for this question, and the distribution of responses was not normally distributed. Therefore the range, mean, standard deviation (SD) and median will be presented for each level of education.

For schools that offered pharmacoeconomic education for BS students (N=28), the numbers of clock hours spent on pharmacoeconomic education ranged from two to 60 hours, with a mean of 15 hours (SD = 16) and a median of eight hours. For schools with pharmacoeconomic education for PharmD students (N=57), the numbers of clock hours spent on pharmacoeconomic education ranged from two to 160 hours, with a mean of 24 hours (SD = 25) and a median of 16 hours. For schools with pharmacoeconomic education at the graduate level (N=36), the clock hours ranged from 15 to 140, with a mean of 49 (SD = 29) and a median of 45 hours.

Question 3: Is this education part of the required or elective curriculum?

For the BS level, respondents from 22 schools indicated that pharmacoeconomic education was contained in required courses while six reported it was contained in elective courses. At the PharmD level, respondents from 48 schools indicated that pharmacoeconomic education was contained in required courses, four in elective courses, and five indicated it was contained in both required and elective courses.

At the graduate level, respondents from 23 schools indicated that pharmacoeconomic education was contained in required courses, 11 in elective courses, and two indicated it was contained in both required and elective courses. Some respondents reported having difficulty choosing whether pharmacoeconomic at the graduate level was offered through a required or elective course. The confusion arose because although pharmacoeconomic education may not be required for every graduate student in the program, it was required for those graduate students who "tracked-in" or specialized in a pharmacoeconomic-related area.

Question 4: How many students receive this education per year?

Similar to the results of Question 2, the number of students receiving pharmacoeconomic education at each school had a wide range of responses and was not normally distributed. Therefore ranges, means, standard deviations, and medians will be presented for each analysis.

According to respondent estimates, for those schools that provided pharmacoeconomic education at the BS level, the average number of BS students receiving pharmacoeconomic education per year ranged from two to 180, with a mean of 81 (SD = 47), and a median of 90 students. Estimates of the number of PharmD students per school receiving pharmacoeconomic education per year ranged from eight to 190, with a mean of 66 (SD = 41) and a median of 65 students. For schools offering pharmacoeconomic education at the graduate level, a range of one to ten graduate students per year received this education, with a mean of five (SD = 3) and a median of five students for each school.

Additional Comments

Respondents were asked to record any additional comments in the space provided at the end of the survey. Respondents from 21 schools provided comments (some respondents provided more than one comment). As previously stated, respondents from six schools that did not offer pharmacoeconomic education in the 1996-97 academic year reported that the addition of pharmacoeconomic education is planned for the near future. Four respondents from schools with pharmacoeconomic education at some level reported that in the near future, more time would be devoted to pharmacoeconomic education and/or it would be added for another level of students. One respondent added that his school was in the process of recruiting a faculty member to teach pharmacoeconomics. Three respondents indicated that they would like to use the results of the survey to justify an increase in the number of hours devoted to pharmacoeconomic education.

Three respondents reported that pharmacoeconomic education was combined with other topics such as epidemiology, research design, health economics, and one mentioned that in the future it will be incorporated into a therapeutics course. Because of this overlap, some respondents stated that it was difficult to estimate the number of "clock hours". One respondent added that the graduate students at his school take most of the coursework relevant to pharmacoeconomics outside of the School of Pharmacy. One respondent reported that his school provided post-doctoral training (*i.e.*, fellowships) in pharmacoeconomics, but there were no questions about this level of pharmacoeconomic education on the survey.

LIMITATIONS

Results should be interpreted with caution due to some limitations. Although a 100 percent response rate was achieved, there may have been some variation in the responses depending on which faculty member completed the survey. In most cases, the Dean's office forwarded the survey to the faculty member responsible for providing pharmacoeconomic education. Because follow-up surveys were sent to different faculty members, it was possible to receive responses from different faculty members at the same school. This occurred for two schools. In both cases, the estimates were similar but did not match exactly. In both cases, responses from the faculty member responsible for teaching the pharmacoeconomic course were used in the analyses. As might have been expected, the schools that required multiple follow-up surveys were less likely to offer pharmacoeconomic education than those who replied to the initial survey.

Some respondents indicated difficulty estimating the number of clock hours of pharmacoeconomic education, some reported pharmacoeconomic education was interrelated with other topics and taught by other disciplines, and some respondents were not sure whether the graduate courses at their school should be classified as an elective or required part of pharmacoeconomic education. Lastly, although all PharmD level students were classified as professional students, some of the PharmD programs may be offered at the graduate student level.

DISCUSSION AND CONCLUSIONS

Over 80 percent of the U.S. schools of pharmacy offer pharmacoeconomic education at some level and it is most often contained in required courses. Another eight percent plan to offer pharmaceutical education in the near future. As the level of education increases (BS ; PharmD; Graduate) the average number of hours devoted to pharmacoeconomic education increases.

Direct comparisons of these results with previous studies in the U.S. is difficult, because each survey asked similar, but different, questions. For example, this survey asked about pharmacoeconomic education "offered" to professional and graduate pharmacy students in elective and required course, while Juergens *et al.* (8) asked about specific analytical techniques in professional programs, and Gregor and Draugalis(6) assessed the number of institutions and specific enrollment numbers for programs that "emphasized" pharmacoeconomics.

Although direct comparisons cannot be made, it appears as if there has been a growth in the number of schools offering education in pharmacoeconomics. It also seems that this trend will continue to grow based on the respondents that indicated their school will add a pharmacoeconomics course or increase the amount of time spent on pharmacoeconomics in the near future.

Future research could be aimed at assessing what specific pharmacoeconomic topics are covered, how this information is integrated with other coursework, and the extent to which students are using this education in their rotations and internships.

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