

RESEARCH ARTICLES

Pharmacy Student and Preceptor Perceptions of Preceptor Teaching Behaviors

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Objectives. To compare PharmD students' and preceptors' perceptions of preceptors' teaching behaviors.

Methods. A 47-item survey instrument was developed and distributed to students and preceptors for rating the frequency and adequacy of each teaching behavior as not done, done but inadequate, and well done and adequate.

Results. Seventy-seven (99%) students and 53 (55%) preceptors responded to the survey. Students were somewhat satisfied with their preceptors' teaching behaviors. In comparison, preceptors over-rated their own teaching behaviors as well done and adequate on 9 of 47 (19%; $p \leq 0.05$) items, with the majority being in the areas of providing feedback to students and evaluation.

Conclusion. Preceptors tended to overestimate the quality of their performance compared with students' evaluations. These findings suggest the need for a preceptor development program.

Keywords: teaching, perception, PharmD student, preceptor, assessment

INTRODUCTION

Following the adoption of pharmaceutical care (currently referred to as medication therapy management in the United States) as the primary mission for pharmacy practice, the doctor of pharmacy (PharmD) degree was adopted in the United States as the sole entry degree into the profession. The Faculty of Pharmaceutical Sciences at Naresuan University was the first of 14 colleges and schools in Thailand to switch to an all PharmD program (1999). While some faculties offer an optional PharmD degree, Naresuan University is now 1 of only 3 faculties that offer the PharmD degree for all students. At Naresuan University, throughout their final year, students gain experience in medication therapy management from 4 mandatory (medicine, ambulatory care, drug information, and community pharmacy) and 2 elective advanced pharmacy practice experience. These experiences focus on active learning, providing the student with structured practice opportunities, observation of preceptors, and case discussions. These practice-based experiences are designed in the problem-based learning model under the direction of the preceptor. At the completion of 6 advanced pharmacy practice experiences (APPE), students should have the necessary knowledge, skills, abilities, and attitudes to en-

able them to function effectively as members of an interdisciplinary healthcare team.

A study by Hill et al found that final-year pharmacy students' confidence in their drug knowledge and skills significantly increased after completing advanced pharmacy practice experiences.¹ Similarly, in 81.5% of the evaluations, medical students felt that there was at least moderate improvement in their ability to perform selected competencies during the medical practice experiences. By the end of the practice experience, 85.3% of students were confident in performing the competencies most or almost all of the time.² To achieve this goal, preceptors must assume the role of teacher, mentor, and evaluator by showing students how to apply knowledge learned in their didactic courses to daily practice and to share knowledge and skills with them. They also must assess the students' performance through systematic evaluations to continue to improve their strengths and correct their weaknesses. Although providing effective feedback to learners is an important aspect of clinical teaching, preceptors typically spend most of the time imparting clinical facts and pearls and devote less time to understanding the clinical thinking patterns and learning styles of students,³ possibly because most preceptors were trained to be practitioners rather than educators.

Previous studies have considered preceptorship from individual perspectives, such as that of students,⁴ teachers, or preceptors.⁵ The study by Kaviani et al highlighted

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the importance of formal preceptor preparation, which was shown to enhance teaching and learning opportunities for nursing students and personal and professional development of preceptors.⁶ For preceptors to take responsibility for improving their teaching skills, they must first develop a greater understanding of their current performance in relationship to professional expectations.⁷ Given these findings, final-year doctor of pharmacy students were asked to evaluate preceptors' skills in communication, pharmacy practice, teaching, and providing feedback and evaluation to students.

METHODS

In June 2006, a 47-item survey instrument was constructed to evaluate preceptors' teaching skills and behaviors. Several of the survey items were adapted from previously conducted surveys⁸⁻¹⁵ A pilot survey instrument was sent to students and preceptors who had completed their first advanced pharmacy practice experience and their feedback was used to revise the survey instrument. Naresuan University's investigational review board approval was obtained to conduct the survey.

The revised survey instruments were immediately distributed to 77 students and mailed to 53 preceptors who had participated in a second advanced pharmacy practice experience from May 1, 2006, to June 14, 2006. One follow-up telephone call was made to nonresponders. Survey participants were asked to rate the frequency and adequacy of each teaching skill or behavior on a scale of 1 to 3 on which 1 = not done, 2 = done but inadequate, and 3 = well done and adequate. Participation in the survey was voluntary and anonymous and no compensation was given. Students completed their survey instruments prior to receiving their advanced practice experience grade, which was assigned after the sixth practice experience. Preceptor and student responses were analyzed separately and differences between their perceptions of preceptor teaching skills and behaviors were evaluated. The percentage and median scores rated for each teaching behavior item were calculated and subjected to statistical analysis. The Mann-Whitney rank sum test was used because it allowed the researchers to compare differences between 2 independent samples. The level of significance was set a priori at 0.05. Survey data were analyzed using SPSS Version 11.5 (SPSS Inc, Chicago, IL).

RESULTS

Seventy-six students (99% response rate) and 29 (55% response rate) preceptors completed the survey. Most of preceptors had been assigned 1 to 2 students during the pharmacy practice experience.

The number of respondents that participated in individual advanced pharmacy practice experiences and the ratio of preceptors to students are shown in Table 1. The ratio of preceptors to student response rates were 0.7, 0.7, 0.5 and 0.5 in community pharmacy, elective, ambulatory care, and medicine practice experiences, respectively. However, the numbers of students and preceptors involved in each practice setting were too small, so differences of perceptions between students and preceptors in specific settings could not be compared.

The student assessment of preceptor teaching behaviors and preceptors' assessment of themselves are summarized in Table 2, 3, and 4. Most students rated their preceptors' teaching behaviors as well done and somewhat satisfied.

Compared to students' ratings, preceptors did not overrate their teaching behaviors in any of the 4 items in the area of preceptor communication skills (Table 2). However, they did overrate their teaching behaviors in comparison to the students' evaluations for well done and adequate teaching behaviors in 3 of 26 (12 %) items in the domain of skills in practice and teaching, and 6 of 17 (35 %) in the domain of feedback and evaluation, respectively ($p \leq 0.05$). In the domain of well done and adequate teaching behaviors, the items on which preceptors overrated themselves in comparison to student evaluations were in their ability to demonstrate sensitivity to patient needs; giving the student the opportunity to ask questions and discuss and exchange opinions; and remaining accessible to students when help was needed. In the domain of feedback and evaluation, preceptors thought that their behaviors were more adequate than did students in setting criteria for student performance; grading students based on performance and effort; observing student performance in a proper manner; giving students positive feedback for good work; responding positively to students' comments and suggestions about preceptor teaching; and inviting comments and/or criticism of preceptors' own ideas ($p \leq 0.05$).

Table 1. Students and Preceptors Divided by Types of Advanced Pharmacy Experience

| Advanced Pharmacy Practice Experiences | Students (%) (n = 76) | Preceptors (%) (n = 29) | Preceptor to Student Ratio |
|--|-----------------------|-------------------------|----------------------------|
| Ambulatory care | 13 (17.1) | 7 (24.1) | 0.5 |
| Clinical pharmacokinetic | 15 (19.7) | 4 (13.8) | 0.3 |
| Drug information service | 14 (18.4) | 4 (13.8) | 0.3 |
| Community pharmacy | 7 (9.2) | 5 (17.2) | 0.7 |
| Medicine | 4 (5.3) | 2 (6.9) | 0.5 |
| Elective | 6 (7.9) | 4 (13.8) | 0.7 |
| Unidentified | 17 (22.4) | 3 (10.3) | 0.2 |

Table 2. Median Scores and Percentage of Rated Teaching Behaviors as Perceived by Students and Preceptors in Preceptor Communication Skills Domain

| Teaching Behaviors | Median Score | | Well Done and Adequate Teaching Behaviors (%) | | Not Done (%) | |
|--|---------------|---------------|---|---------------|---------------|---------------|
| | S (n = 76) | P (n = 29) | S (n = 76) | P (n = 29) | S (n = 76) | P (n = 29) |
| Connecting all relevant clinical data into a big picture | 3 | 3 | 63.2 | 65.5 | 2.6 | 0 |
| Explaining the basis for their actions and decision-making in patient management | 3 | 3 | 61.8 | 69.0 | 2.6 | 3.4 |
| Presenting information in an organized way | 2 | 3 | 44.7 | 55.2 | 2.6 | 0 |
| Answering questions clearly and precisely | 3 | 3 | 60.5 | 58.6 | 0 | 0 |

P = preceptors; S = students

^ap < 0.05

In the area of preceptor skills in practice and teaching (Table 3), only 27.6 % of preceptors thought they captured their student's attention well while teaching, although the rest stated that they did not do this well enough. However, 41% of the students rated their preceptors' performance as well done and adequate on this item. All preceptors stated that they did well in giving their student(s) opportunities to ask, discuss, and exchange opinions, but only 70% of students indicated this was done well by their preceptor. Another discrepancy occurred between students' and preceptors' perceptions concerning evaluation and advising. While preceptors believed they evaluated and advised students of their progress in a timely and systemic manner, 14.5% of students stated their preceptors did not complete these teaching behaviors at all.

Seventeen behaviors were assessed in the area of feedback and evaluation of students. In the area of preceptor teaching (Table 4), about one third of students and preceptors thought preceptors asked students to evaluate the quality of preceptor teaching; however, 21.0% of students and 17.2 % of preceptors, respectively, said preceptors did not ask students to evaluate the quality of their teaching. Fourteen percent of preceptors indicated they never encouraged students to evaluate their preceptor's performance, while students gave more credit to their preceptors.

The teaching behavior items with which both students and preceptors agreed were that preceptors answered questions clearly and precisely; encouraged students to think independently when resolving problems; closely supervised students to help facilitate the learning experience; gave students the opportunity to ask, discuss, and exchange opinions; and discussed practical applications of knowledge and skills. Ratings on all 17 items can be seen in Table 4.

DISCUSSION

The overall results of this 47-item survey used to evaluate the core teaching principles in the area of

communication, practice, teaching, and feedback and evaluation showed general agreement between students and preceptors on 35 of the 47 behaviors evaluated. Students' and preceptors' opinions were significantly different on only 8 items, which were noted in the results above and will be discussed here. However, there are some limitations to the study that should be elucidated. First, quality and adequacy of preceptor teaching behaviors were assessed by subjective perceptions rather than objective measures. Second, preceptor recall bias may have occurred since some preceptors sent the survey instrument back a month after students finished the second APPEs. The response rate among preceptors was less than that among students, probably because students were required to complete the survey instrument in a classroom setting after completion of the APPE, while preceptors' participation in the survey was self-motivated and optional. Third, the items in the survey instrument did not include all possible behaviors, ie, there may be other behaviors that could have been included. Thus, study conclusions may not be applicable to other groups of preceptors and caution should be used in applying these findings to all preceptors.

Students were somewhat satisfied with their own teaching behaviors. Preceptors tended to overestimate their performance compared with student evaluations of their performance, although most of these differences in ratings did not reach statistical significance. Preceptors rated themselves significantly higher on 9 of 47 survey items compared with students' ratings of their preceptor. Most preceptors overrated themselves on their provision of evaluation and feedback to their students, especially on setting criteria, grading, observing, giving positive feedback, and responding positively to students' comments and suggestions. A small number of students and preceptors agreed that preceptors did not ask students to evaluate

Table 3. Median Scores and Percentage of Rated Teaching Behaviors as Perceived by Students and Preceptors in Preceptor Skills in Practice and Teaching Domain

| Teaching Behaviors | Median score | | Well Done and Adequate Teaching Behaviors (%) | | Not Done (%) | |
|--|--------------|----------|---|----------|--------------|----------|
| | S | P | S | P | S | P |
| | (n = 76) | (n = 29) | (n = 76) | (n = 29) | (n = 76) | (n = 29) |
| Possessing and demonstrating broad knowledge suitable for management of patients in the settings | 3 | 3 | 63.2 | 62.1 | 1.3 | 0 |
| Applying appropriate updated knowledge to individual patients | 3 | 3 | 68.4 | 69.0 | 1.3 | 0 |
| Having good relationship with patients | 3 | 3 | 68.4 | 79.3 | 7.9 | 0 |
| Showing enthusiasm in providing patient care | 3 | 3 | 69.7 | 79.3 | 2.6 | 0 |
| Demonstrating sensitivity to patient needs | 3 | 3 | 69.7 | 82.8* | 3.9 | 0 |
| Providing good care to patients | 3 | 3 | 69.7 | 62.1 | 5.3 | 0 |
| Applying updated information from related fields to individual patients | 3 | 3 | 71.0 | 69.0 | 1.3 | 0 |
| Assigning numbers of patients to take care of based on student capability | 3 | 3 | 67.1 | 51.7 | 2.6 | 0 |
| Encouraging students to raise questions for solving patient problems | 3 | 2 | 60.5 | 41.4 | 3.9 | 0 |
| Encouraging students to express their own feelings and opinions in relation to particular patients or problems | 3 | 3 | 53.9 | 55.2 | 5.3 | 0 |
| Providing a role model of essential attitudes and skills in practice | 3 | 3 | 64.5 | 72.4 | 1.3 | 0 |
| Being a good mentor | 3 | 3 | 56.6 | 51.7 | 1.3 | 0 |
| Emphasizing problem solving skills | 3 | 3 | 50.0 | 51.7 | 1.3 | 0 |
| Facilitating student participation in practice | 3 | 3 | 63.2 | 65.5 | 1.3 | 0 |
| Encouraging students to think independently for resolving problems | 3 | 3 | 64.5 | 55.2 | 0 | 0 |
| Using questions to stimulate student learning | 3 | 3 | 55.3 | 51.7 | 2.6 | 0 |
| Helping students in changing and improving practical skills | 3 | 3 | 63.2 | 62.1 | 1.3 | 0 |
| Capturing learner attentions while teaching | 2 | 2 | 40.8 | 27.6 | 9.2 | 0 |
| Demonstrating enthusiasm for teaching | 3 | 3 | 55.3 | 72.4 | 2.6 | 0 |
| Demonstrating sensitivity and supportiveness to the students | 3 | 3 | 59.21 | 72.4 | 2.6 | 0 |
| Using questions to stimulate recall of previous learning and collect them together | 2 | 3 | 44.7 | 65.5 | 1.3 | 0 |
| Closely supervising students to help facilitate the learning experience | 3 | 3 | 59.2 | 69.0 | 0 | 0 |
| Giving student opportunity to ask, discuss and exchange opinions | 3 | 3 | 69.7 | 100.0* | 0 | 0 |
| Spending sufficient time with students | 2 | 3 | 44.7 | 51.7 | 2.6 | 0 |
| Remaining accessible to students when help is needed | 3 | 3 | 56.6 | 89.7* | 1.32 | 0 |
| Discussing practical applications of knowledge and skills | 3 | 3 | 64.5 | 65.5 | 0 | 0 |

P = preceptors; S = students

*p < 0.05

the quality of their teaching, encourage students to evaluate their own performance, or discuss student strengths and limitations of practice. One problem that preceptors apparently had was capturing the student's attention when teaching.

Students appeared to be less satisfied with their preceptor's performance, especially in the area of preceptors providing feedback and evaluation. Perhaps students wanted to improve their performance to complete preceptors' objectives. However, students might not insist

Table 4. Median Scores and Percentage of Rated Teaching Behaviors as Perceived by Students and Preceptors in Preceptor Feedback and Evaluation Domain

| Teaching behaviors | Median Score | | Well Done and Adequate Teaching Behaviors (%) | | Not Done (%) | |
|---|--------------|------------|---|-------------------|--------------|----------------|
| | S (n = 76) | P (n = 29) | S (n = 76) | P (n = 29) | S (n = 76) | P (n = 29) |
| Setting practical responsibility for the students | 3 | 3 | 61.8 | 79.3 | 3.9 | 0 |
| Explaining goals and expectations of practice experience | 2 | 2 | 47.4 | 48.3 | 4.0 | 0 |
| Expecting students to set their own goals for practice experience | 3 | 2 | 48.7 | 44.8 | 4.0 | 3.4 |
| Setting appropriate and practical practice activities followed established goals and objectives | 2 | 3 | 46.0 | 62.1 | 1.32 | 0 |
| Setting goals and objectives based on students' expectations and levels of experience | 2 | 2 | 42.1 | 48.3 | 4.0 | 3.4 |
| Setting criteria for student performance | 2 | 3 | 34.2 | 65.5 ^a | 5.3 | 6.9 |
| Evaluating student attitude, knowledge, and skills appropriately | 3 | 3 | 56.6 | 58.6 | 2.6 | 3.4 |
| Evaluating and advising students of their progress timely and systemically | 2 | 2 | 42.1 | 44.8 | 14.5 | 0 ^a |
| Asking students to evaluate the quality of preceptor teaching | 2 | 2 | 30.3 | 34.5 | 21.0 | 17.3 |
| Evaluating students based on the objectives established at the beginning of the practice experience | 2 | 2 | 47.4 | 44.8 | 2.6 | 3.45 |
| Grading students based on performance and effort | 2 | 3 | 42.1 | 93.1 ^a | 2.6 | 0 |
| Observing student performance in proper manner | 2 | 3 | 46.1 | 75.9 ^a | 2.6 | 0 |
| Encouraging students to evaluate their own performance | 2 | 2 | 43.4 | 44.9 | 9.2 | 13.8 |
| Discussing student strengths and limitations of practice | 2 | 3 | 40.8 | 51.7 | 7.9 | 6.9 |
| Giving students positive feedback for good work | 2 | 3 | 35.5 | 82.8 ^a | 3.9 | 0 |
| Responding positively to students' comments and suggestions about preceptor teaching | 2 | 3 | 43.4 | 72.4 ^a | 5.26 | 0 |
| Inviting comments and/or criticism of preceptor own ideas | 2 | 3 | 46.0 | 82.8 ^a | 2.6 | 0 |

P = preceptors; S = students

^ap < 0.05

on getting feedback and evaluation when they did not have one. For learners to grow and improve their skills, they need to know what they are doing well, as well as where they need to improve. As clinical teachers, preceptors should provide ongoing feedback. Effective evaluation also helps a learner assess his or her strengths and weaknesses, identify strategies for improvement, and continue professional growth and development. Schultz and colleagues reported that 95.6% of 1,529 medical students and residents surveyed believed that feedback was important for learning.¹⁵ Learners ranked “gives constructive feedback” as second in importance and “gives timely feedback” as sixth out of 37 preferred preceptor behaviors.¹⁵ In a study of 82 internal medicine practice

experience students, Torre and colleagues reported that “high-quality feedback” was the learning activity most strongly associated with learners’ perceptions of high-quality teaching.¹⁶ In contrast, only 32.7% of third-year medical students rated that receiving feedback from the preceptor on their performance was a helpful curriculum component.² One observational study found that giving feedback was provided in only 9.4% of community-based preceptors for a family and community medicine practice experience.¹⁷ The feedback tended to be positive; however, 52% of ambulatory care preceptors did provide feedback as observed by medical students.¹⁸ In the final evaluation sessions, Huang et al found that preceptors often discussed the medical

students' skills and performances (75%), but the students were less frequently allowed to discuss the preceptor's performance (25%).¹⁷ This study also found that feedback was not often provided in most medical teaching encounters^{18,19} Dobbie et al recommended to give learner feedback, be clear about when, where, and how preceptor plan to give feedback, acknowledge potential gender differences in giving and receiving feedback, give feedback orally and/or in written format, and give privately negative or constructive feedback when required.²⁰ If preceptors provide feedback and evaluation, students are more likely to give them better evaluations and be more satisfied with the teaching process.

Our study found that preceptors were mostly rated lowest on their provision of feedback to students, while preceptors were rated higher on skills of communication, both in practice and while teaching. Educators have the responsibility to anticipate and lead change in pharmacy practice. Thus, student input is important to help colleges and schools identify areas in which preceptors need improvement and the level of emphasis of these skills to prepare preceptors being better teachers. The program needs to provide opportunities for preceptors to guide discussions, encourage students, model self-reflective behavior, value student self-assessment, and provide feedback on students' reflections. Studies have demonstrated that preceptor can learn to be effective teachers.^{21,22} After a set of three 90-minute faculty development seminars scheduled 1 week apart, giving feedback to learners by teachers in ambulatory setting was increased from 17% to 22% ($p = 0.09$), and feedback was more likely to be specific (9% vs. 15%; $p = 0.02$).¹⁹ After the workshops, preceptors reported that they were better at letting the students reach their own conclusion ($p = 0.001$) and at evaluating the learners ($p = 0.03$).¹⁹

CONCLUSION

This survey identified the perceptions of students and preceptors about 47 preceptor teaching behaviors in the areas of communications, practicing and teaching, and giving feedback and evaluation to students.

To improve the quality of experiential education, we must teach preceptors and create programs to guide them in their development and encourage their continual development. We must also make students aware of their right to get feedback and evaluation from preceptors since these are essential to students achieving curriculum goals.

This survey was a good start in identifying areas where preceptor development is needed and which

teaching behaviors should be continued and which need improvement. Furthermore, a formal preceptor development program is needed to resolve the teaching problems identified by this survey.

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