

RESEARCH

Use of a Multisource Feedback Tool to Develop Pharmacists in a Postgraduate Training Program

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Submitted September 11, 2012; accepted October 19, 2012; published April 12, 2013.

Objectives. To evaluate use of a peer-assessment tool as a performance indicator for junior pharmacists in a formal postgraduate training program in London.

Methods. A 4-year retrospective analysis of data gathered using the pharmacy mini-PAT (peer-assessment tool) was undertaken. Assessments, including junior pharmacist self-evaluations, were conducted every 6 months. Overall performance and performance for clustered items were analyzed to determine changes. Assessments by healthcare professionals were then compared between professional groupings, which included pharmacists, physicians, and nurses.

Results. There was a significant improvement over time in both self-assessment scores and scores on assessments conducted by others using the mini-PAT. Junior pharmacists rated themselves significantly lower than did their assessors ($p < 0.001$); pharmacist assessors rated the performance of junior pharmacists significantly lower than did other healthcare professionals ($p < 0.001$). Validity, ease of use, and relevance of the pharmacy mini-PAT were demonstrated.

Conclusions. As part of a range of formative evaluations involving assessors from across various health professions, the mini-PAT is a valuable instrument for developing junior pharmacists. A cohort's mini-PAT result provides a snapshot of his/her performance that can be used to identify key areas requiring further training.

Keywords: multisource feedback, peer assessment, performance assessment, work-based assessment

INTRODUCTION

Achieving and demonstrating the standards of professional competence in ensuring the proper use of medications requires the integration of pharmaceutical knowledge, clinical skills, and attitudes developed through appropriate undergraduate, professional, and postgraduate training.^{1,2}

Traditional descriptions of assessment are based on a consistent set of theoretical beliefs and assumptions, typically consisting of written examinations that mainly test knowledge.³ The assumption that knowledge has a universal meaning that is identical for every individual results in assessments that simply monitor students' learning, separating those who know from those who do not

know. Consequently, a grading system is created that is based solely on "knowledge" in its particular context.⁴ In contrast, modern approaches to assessment treat knowledge as a broad term that is specific to the individual and as a way of facilitating learning through feedback.⁵ Although recent developments in the types and methods of assessment allow for a better understanding of the ability to practice safely (eg, objective structured clinical examinations [OSCEs]), most do not provide information relating to actual performance.

Multisource feedback is a method of assessing practitioner performance in the workplace so that experience is contextualized in order to consolidate strengths and overcome weaknesses.^{6,7} It was first used to assess practicing physicians' oral communication skills, teamwork, and problem-solving abilities from the perspective of others. Some educators suggest that receiving feedback mindfully contributes to learning, and extensive literature shows that such assessment can, with certain caveats, be

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practical, valid, and reliable.^{8,9} The peer-assessment tool (mini-PAT), which evolved from multisource feedback and collates the views of various healthcare professionals with the aim of facilitating personal development, offers a more well-rounded overview than is possible when only 1 source provides feedback.¹⁰⁻¹² First introduced for physicians in the early 1990s, mini-PAT was designed to provide trainees anonymous feedback from peers and colleagues.^{13,14} Feedback can be motivating for individuals as they develop in the workplace, particularly when accompanied by facilitated discussion exploring the trainees' feedback and concerns.^{8,9} Satisfaction is also greater if narrative comments are included and there is evidence that organizational benefits ensue as a result.^{9,15} However, feedback potentially can be threatening and, if poorly managed, can impede rather than encourage change.¹² Additionally, feedback that is disconfirming can lead to a deterioration in performance.¹⁶

Early postregistration pharmacist development in UK hospital practice has traditionally been coupled with a postgraduate academic award (typically a postgraduate diploma). Major reforms in southeast England have included a shift toward making greater use of work-based learning and workplace-based assessment. The University College London Postgraduate Diploma in General Pharmacy Practice (www.jpbsoutheast.org), which has been used to develop junior postregistration pharmacists across London since 2005, is a program that integrates workplace-based learning with academically based learning sets and includes academic involvement in work-based learning and assessment. The program is supported by a validated professional development framework that lists the key competencies expected of a junior pharmacist in the UK. Performance assessment tools, such as the pharmacy mini-PAT, provide evidence that certain competencies have been met.¹⁷

The pharmacy mini-PAT uses elements from the mini-PAT for medical graduates as well as associated competencies from the framework that are considered appropriate for assessment by a range of healthcare professionals. This structure allows nominated mini-PAT assessors to objectively comment on the performance of their junior pharmacist. The pharmacy mini-PAT consists of 15 specific competencies representing 3 domains within the framework: delivery of patient care, personal attributes, and problem-solving. These domains reflect the most appropriate activities observable by other healthcare professionals when working alongside the pharmacist in a clinical setting. Each assessor grades the trainee on each specific competency as (1) significantly below, (2) below, (3) borderline, (4) meets expectations, (5) above, or (6) significantly above the standard expected. At the

end of the pharmacy mini-PAT instrument, the assessor has the opportunity to provide free-text comments outlining any specific strengths as well as suggestions for improvement in relation to the individual trainee.¹ An example is presented in Appendix 1.

This study investigated the use of the pharmacy mini-PAT with junior pharmacists undertaking the University College London Postgraduate Diploma in General Pharmacy Practice between 2007 and 2010. In particular, this study explored the instrument's use as an indicator of performance over time and its potential to evaluate the relationships between assessors and trainees. Administration of the mini-PAT is described; however, because this was a retrospective study, it was beyond the scope of this investigation to evaluate the effectiveness of how the test was implemented.

METHODS

Junior pharmacists working within acute hospitals across London and linked to the postgraduate diploma program received a mini-PAT assessment every 6 months throughout the 3-year program. This process resulted in 5 assessment time points, given that the pharmacy mini-PAT is not conducted at the end of the program. Trainees were prompted by the university to nominate between 5 and 8 assessors with whom they had worked or by whom they had been supervised during the last 6 months to complete the mini-PAT electronically. The list of assessors was approved by both the junior pharmacist's work-based tutor (preceptor) and a member of the academic staff within the university's postgraduate program. To aid assessment by nonpharmacy staff members, explanatory information was provided for each behavior listed within the pharmacy mini-PAT. The junior pharmacist was also asked to complete a self-assessment at the same time. Feedback, which included the individual's self-assessment, the mean assessor rating for the individual, and the mean assessor ratings for all pharmacists in the cohort, was collated electronically and represented graphically to illustrate ratings for each competency. Assessors were also allowed an opportunity to provide free-text comments to further detail the trainee's strengths and weaknesses.

Pharmacy mini-PAT data collected electronically between 2007 and 2010 were analyzed retrospectively. A database was created using Statistical Package for the Social Sciences (SPSS), version 18.0 (PASW, Chicago, IL), and the data were "cleaned" to ensure accuracy. Assessor roles were coded according to profession and seniority. The main professional groups involved in the study were physicians, nurses, pharmacists, and pharmacy technicians (a key group of pharmacy support staff

members). The remainder (eg, physiotherapists and dietitians) were classified as “other.” A further subanalysis was undertaken to differentiate between assessments made by junior and senior medical staff members. Analyses were conducted using descriptive statistics and general linear models (GLM). For ease of interpretation, assessments other than self-assessments were referred to as team-based assessments. The time order of pharmacy mini-PATs for each trainee, gender, and hospital type (teaching and nonteaching) were also coded and entered into SPSS.

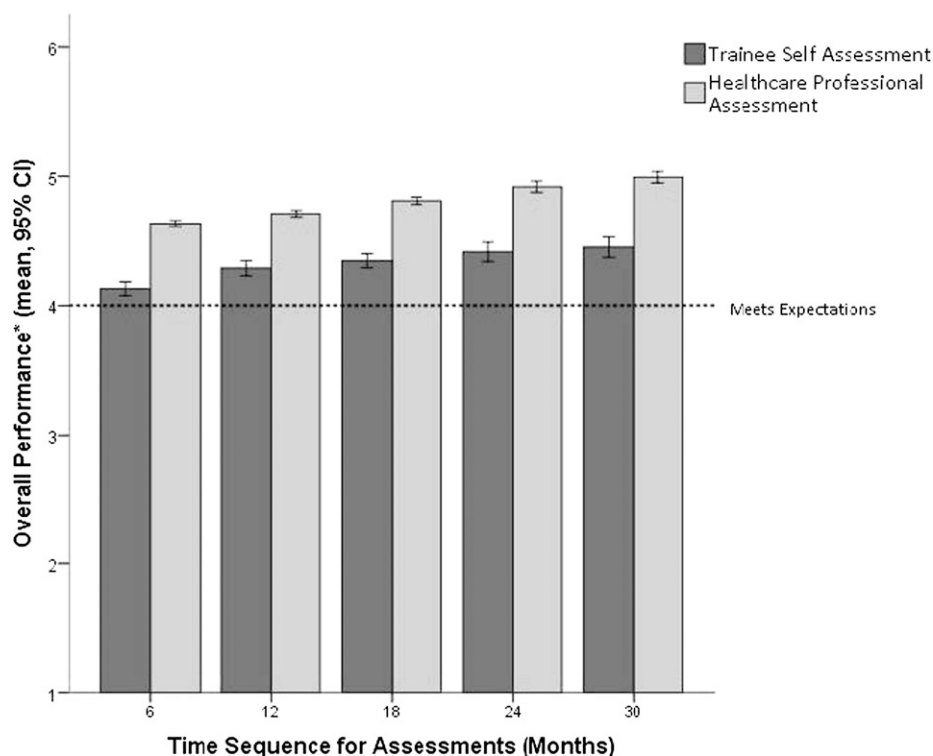
Data aggregation was then performed. Averages were created for the 3 main competency clusters: delivery of patient care (7 items), personal attributes (4 items), and problem solving (4 items). A global mean of all cluster ratings was also calculated. Data were examined for differences in the ratings by gender for both self-assessments and team-based assessments.

The internal validity of pharmacy mini-PAT items was then tested (by cluster) using Cronbach’s alpha, and self-assessments were tested separately from assessor ratings. Reported alpha values were 0.85 for self-assessment and 0.90 for team-based assessment, indicating that the items were appropriately nested within the specific clusters.

RESULTS

Five hundred seventy-eight trainees (76% female) were assessed using the pharmacy mini-PAT over a 4-year period within 66 NHS Hospital Trusts in London, 25 of which were designated as teaching hospitals. This process generated 9,625 individual assessments, of which 9,047 were team-based assessments (94%); the remainder were self-assessments. Almost 146,000 (out of a maximum of 154,000) individual ratings were generated, with only 5.2% of items marked by assessors as “unable to comment.” Of the 5.2% (n=8063) “unable to comment” responses, the delivery-of-patient-care cluster represented 75% (n=6,047), whereas the personal attributes items were almost always completed (“unable to comment” responses = 0.02%; n=161). The items on which most assessors were unable to comment were those relating to patient consultation (17%; n=1367).

There was an overall significant improvement in junior pharmacist performance over the length of the programs, as determined by the differences in mini-PAT mean values between the first set of measures at 6 months and the last team-based assessment at 30 months ($p<0.001$) (Figure 1). A similar result was seen when the performance of junior pharmacists was examined for the 3 clusters, regardless of assessor category.



*Scale axis 1=fails to meet expectations. 6=above expectations

Figure 1. Overall Performance of Junior Pharmacists.

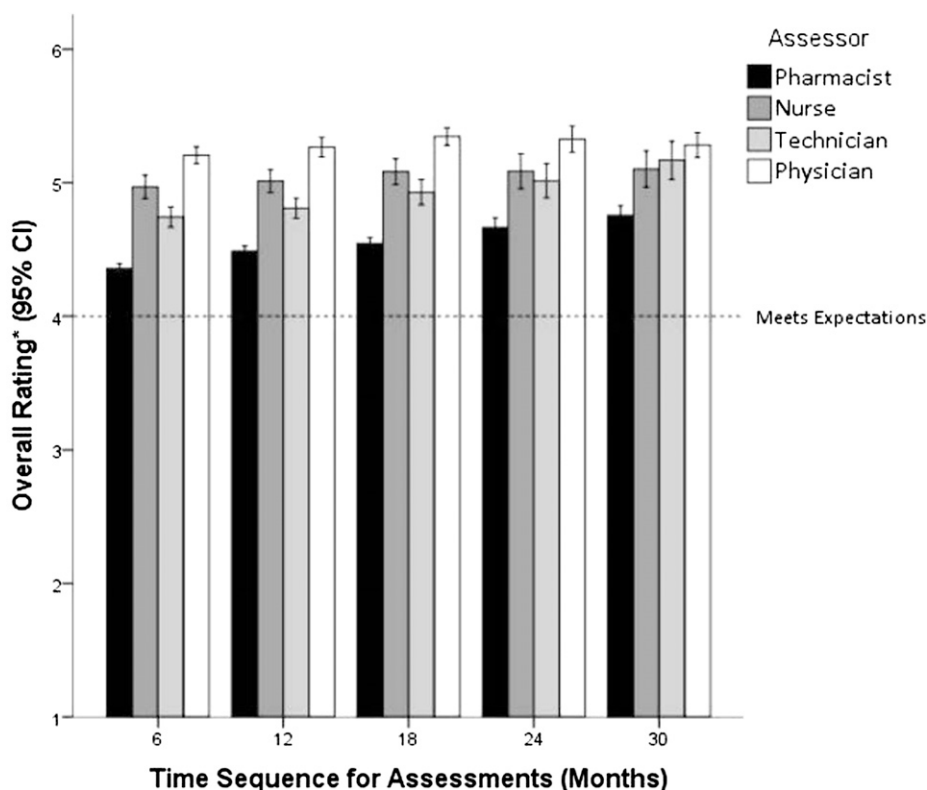
Overall, junior pharmacists tended to rate their performance significantly lower than did other independent assessors ($p < 0.001$). Of the 9,625 pharmacy mini-PAT assessments undertaken, only a small number (426; 4.4%) included a rating indicating lower-than-expected performance (ie, students performing below average). Fifteen percent of these were self-assessments. When the overall global mean scores generated for both self-assessment and team-based assessment were compared for this subgroup ($n = 426$), the self-assessments by junior pharmacists were significantly higher than were the team-based assessments ($p < 0.01$). There were no significant differences between both overall and cluster-specific assessments for male and female junior pharmacists or between those working in university hospitals compared with other types (Figure 2).

A comparison of junior pharmacists' self-assessments with team-based assessments at the individual-item level revealed that both groups' highest performance scores were for effective communication skills, professionalism, and teamwork, with mean scores of 4.5 to 5.0. Their lowest performance scores were for knowledge, selection of drug, and analyzing information, with mean scores of 4.0 to 4.6.

When the assessors' ratings were compared by professional grouping, differences were found in overall mini-PAT scores. Fellow pharmacy assessors tended to rate junior pharmacists significantly lower than did nurses, technicians, or doctors ($p < 0.001$) (Figure 3).

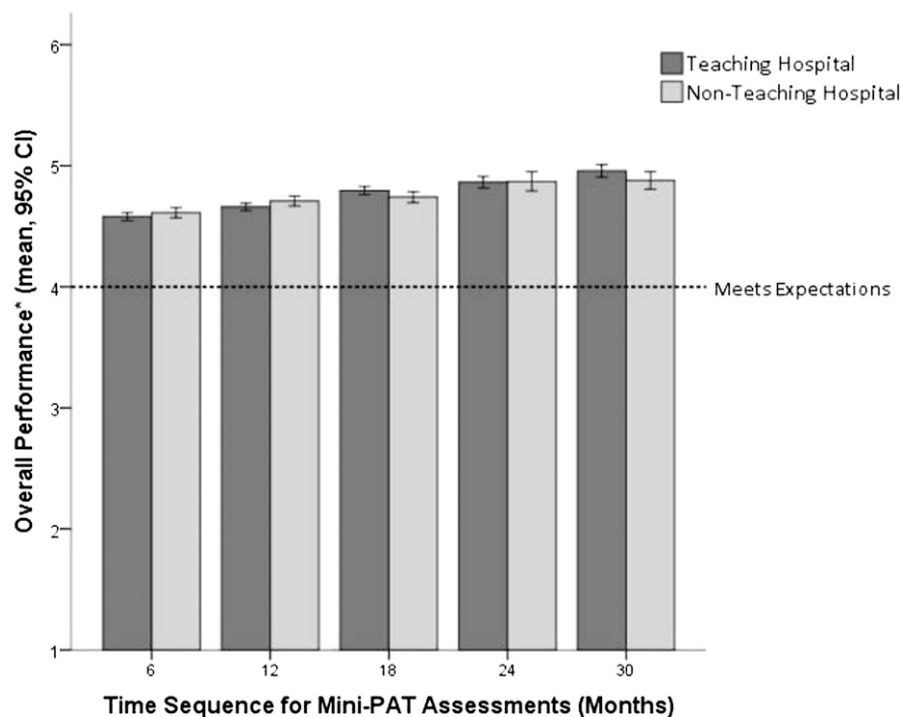
DISCUSSION

This study, which is the first to describe the use of multisource feedback for pharmacists in such a large cohort, confirms earlier preliminary work suggesting that the pharmacy mini-PAT is a valuable tool for developing junior pharmacists.¹ In this study, the pharmacy mini-PAT was successfully used to measure rated performance in over 500 junior pharmacists, involving almost 10,000 individual assessments completed by a range of health-care professionals over time. All ratings improved over time; however, because these findings represent an average of results, they may not apply to every junior pharmacist assessed. As expected, there were no differences in reported performance by gender or teaching hospital status. Although male pharmacists appeared to initially undervalue their performance, this trend diminished over successive assessments. Additional feedback from participants confirmed the value of the junior pharmacists'



*Scale axis 1=fails to meet expectations. 6=above expectations

Figure 2. Junior Pharmacist Performance Rating by Assessors, by Professional Group.



*Scale axis 1=fails to meet expectations, 6=above expectations

Figure 3. Junior Pharmacist Peer-Assessment Tool (Mini-PAT) Scores, by Teaching and Nonteaching Hospital Status.

free text comments in identifying the strengths and weaknesses in their practice.

Senior pharmacists assessed the junior pharmacists relatively more harshly compared with the other professional groups represented in this study. Junior physicians and nurses rated junior pharmacists more favorably than did their senior colleagues. These findings are not surprising, given the evidence that rating behavior varies significantly by staff group.¹⁸ Moreover, senior pharmacists are likely to have a more nuanced perspective regarding their expectations of a junior member of their own profession. As assessors, they may be more critical and prone to evaluate junior pharmacist performance according to the way in which they themselves practice. Pharmacists also rated more harshly than physicians, who use their own mini-PAT. Reasons for this difference may include that the physicians were not familiar with the pharmacy-specific competence standards they used to assess the junior pharmacists, despite having been provided with information intended to clarify the role of the assessor in the e-mail they received requesting completion of the mini-PAT. Although clinicians in professions other than pharmacy regularly make judgments about the ability of their juniors and are comfortable doing so, they are not likely to fully understand what might reasonably be expected of a junior

pharmacist.¹⁹ The self-ratings of junior pharmacists tended to be lower than the team-based ratings. This difference may represent a genuine lack of confidence or perhaps an unwillingness to assess themselves transparently in the event that their assessors' ratings were lower than their self-ratings, causing them to "lose face." Self-ratings improved with successive assessments but remained significantly lower than independent assessor ratings.

This study suggests that the pharmacy mini-PAT can provide the profession with formative data from an entire cohort that identify how junior pharmacists are performing against a set of key competencies drawn from across the program framework. This study also reveals that junior pharmacists performed best in the following competencies: effective communication skills, professionalism, and teamwork. These data could be triangulated with other assessments within the program to identify suggestions for how to develop the postgraduate program in general and junior pharmacists in particular in order to maximize their development. The mini-PAT demonstrated validity with Cronbach alpha results, indicating that questions were well grouped within each cluster. The number of items marked as "unable to comment" was also low, suggesting that the pharmacy mini-PAT was relevant and easy to use.

Limitations of this study are related to the assessment instrument. For instance, incorrect use of the pharmacy mini-PAT by assessors, such as rating a competency that the assessor did not know how to correctly interpret, may have occurred. Assessor nominations also may not be ideal if trainees failed to choose assessors objectively and instead selected those with whom they had good relationships. This limitation may be exacerbated if the junior pharmacist's educational supervisor did not scrutinize the assessor list prior to the assessment. There have been suggestions that unregulated self-selection of assessors should end.²¹ The interpretation of competency statements and what constitutes "expectations" are likely to vary among professions and grades without this leading to differences in ratings. In order to overcome these limitations, information was provided to help users to interpret individual competencies and educational supervisors were encouraged to scrutinize the assessor list. Finally, although it was beyond the scope of this study to evaluate implementation of the pharmacy mini-PAT, future evaluation of this system according to suggested published guidelines will be important. This study supports the work of others who have reported that the use of multisource feedback can form the basis for providing focused formative feedback for junior pharmacists.²⁰ Monitoring of progression is a key value of the pharmacy mini-PAT, which can help the profession identify global development needs across a cohort of practitioners.

CONCLUSION

This study, which is the largest to describe use of a pharmacy-specific mini-PAT in a cohort of pharmacists in a postgraduate work-based program, demonstrated ease of use and an ability to engage pharmacists, physicians, and nurses in monitoring performance over time. In particular, the mini-PAT was helpful in identifying those who were performing below expectations so that remedial action could be taken. Whereas this study used pharmacy mini-PAT as part of a range of assessments in a postgraduate program, the findings may have a broader application to measuring performance in a workplace setting, and the pharmacy mini-PAT could be used to support the accreditation and revalidation of pharmacists as an instrument to measure ability to work as part of a healthcare team.

ACKNOWLEDGMENTS

We thank the administrative staff at the Joint Programs Board, especially Mrs Verona Zloh, for extracting the mini-PAT results from the database. We are also grateful to Naoko Arakawa for assisting us with the literature search.

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Appendix 1. Pharmacy Peer-Assessment Tool (Mini-PAT) Example (1 cluster only)

University College London
Postgraduate Diploma in General Pharmacy Practice
Peer Assessment Tool

Name:

JPB Number:

Training Center and Site:

Note: The bar charts below illustrate the results of the mini-PAT. The charts have been split into the delivery of patient care competences and personal competences. Each competency listed has the student self-assessment score (left); mean score from the students' nominated assessors (middle); and groups' mean scores (right). A score of 4 represents *meets expectations* (ie, performs well and to the standard expected of a pharmacist with a similar level of experience).

