Academic Sciences International Journal of Pharmacy and Pharmaceutical Sciences

ISSN- 0975-1491 Vol 4, Suppl 1, 2012

Research Article

DIFFERENCES IN SELF AND PRECEPTOR ASSESSMENT OF THE COMPETENCIES OF PHARMACY GRADUATES

*[1]THOMAS PARAIDATHATHU, [1]MOHAMMAD FAUZEE ABDUL HAMID, [1]JAMIA AZDINA JAMAL, [1]NORAZRINA AZMI & [2]SIEW SIANG CHUA

[1]Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 ,[2]Department of Pharmacy, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia. Email: thomas@pharmacy.ukm.my

Received: 1 Nov 2011, Revised and Accepted: 24 Dec 2011

ABSTRACT

Graduate competency is a measure of the success and effectiveness of an educational programme. This study examines the competencies of pharmacy graduates as assessed by themselves and by preceptors at the Ministry of Health. Face and content validated questionnaires were given to all graduating students of a batch and to all preceptors of these students when they worked as provisionally registered pharmacists. Comparison was done between responses for the same questions by both students and preceptors. Preceptor evaluation and student self-evaluation of those who graduated with cumulative Grade Point Average (cGPA) of ≥3.00 and those with cGPA of ≤2.99, as well as between genders were compared. On a Likert-like scale of 1-5, overall, the mean score was 3.56±0.52 and 4.10±0.75 given by preceptors and students, respectively. Students scored themselves significantly higher for all competencies. There were no significant differences in scores for all competencies given by the preceptors between male and female graduates, except for attitude, where the female graduates scored higher. However, there were significantly higher overall scores and scores for knowledge on packaging and disposal of medicines among graduates with cGPA≥3.00 as compared to those with cGPA≤2.99. The results indicate that in some instances there may be a difference of competencies in actual practice between those who graduated with a higher cGPA as compared with those with a lower cGPA. Competency and its perception are influenced by the knowledge, skill, communication and attitude of the person being assessed and thus perceptions will vary.

Keywords: Competencies, Professional practice, Preceptor, Self-assessment, Pharmacy student.

INTRODUCTION

Competency can be broadly defined as the ability of an individual to perform effectively in a job-relevant area. Competency encompasses the knowledge, skills, abilities, traits and behaviors that allow an individual to perform a task within a specific function or job[1].

University education has seen a shift from the assessment of the knowledge of facts and figures to include formative and summative assessment of specific abilities or competencies or desired outcomes. While possession of a body of knowledge is useful and students sometimes do not appear to possess the required knowledge[2], the ability to utilise the knowledge is more important. Professional bodies have also begun to emphasise competencies rather than just specification of curriculum content. In its current guidelines for the recognition of pharmacy degrees, the Pharmacy Board of Malaysia stipulates general requirements for a pharmacy degree curriculum, that leaves enough room for higher education providers to be innovative and creative but also includes certain competencies or abilities that a graduate of a pharmacy programme should possess[3]. Educational institutions offering pharmacy degrees are expected to deliver their programme such that the graduates would possess those competencies upon graduation. These are broadly categorised in the five areas of outpatient services, inpatient services, clinical pharmacy services, drug and poison information services, and inventory control and management.

Defining job competencies is useful in assisting individuals develop their competencies for that job. Competencies are often used as an alternative to outcomes assessments in health care education, referring to a student's or practitioner's ability to perform actions in a real life setting. The competency of Universiti Kebangsaan Malaysia (UKM) pharmacy graduates has never been formally assessed. With the amendment in the Registration of Pharmacists Act 1951 (Revised 1989)[4] and implementation on 2 September 2004[5], all pharmacy graduates are required to undergo compulsory service with the government of Malaysia. This compulsory service is divided into two parts: one year as a provisionally registered pharmacist (PRP) and three years as a fully registered pharmacist (FRP). The one year of service as a PRP, under the supervision of a preceptor, provided an excellent opportunity to assess preceptor perception of the competency of UKM pharmacy graduates. Thus, this study was conducted to assess perception of students, just prior to graduation, of their own competency as well as the perception of the preceptors of the competency of UKM graduates who were working with the Ministry of Health as PRPs. Differences between genders and students with different cGPAs were also evaluated.

METHODOLOGY

Two questionnaires were designed, one for self-assessment by the graduating students and another for assessment by preceptors. Each questionnaire contained sections, each of which contained questions about specific competencies. Information collected in the questionnaire included demographic data, outcome measures of competencies (level of competencies) and soft skills. The competencies that were evaluated were the five main pharmacy service areas: outpatient, inpatient, clinical pharmacy, drug and poison information, and inventory control and management. For comparison between self and preceptor perception, only responses to questions that were common to both questionnaires were used. Face and content validation of the questionnaires were carried out by two pharmacists cum academicians with more than 25 years experience.

Responses to the questionnaire were designed based on a Likert-like scale of 1 to 5: 5 for excellent, 4 for very good, 3 for good, 2 for poor, and 1 for very poor. If the competence in a certain section could not be assessed by the student or preceptor, then "not applicable or NA" would be chosen.

Year 4 pharmacy students completed the questionnaire just after their final examination. The questionnaires were distributed to all the 88 students in the 2005-2009 cohort and collected immediately after they were completed.

A list of 87 UKM graduates who obtained their Bachelor of Pharmacy degree in 2009 and were serving as PRPs was obtained from the Pharmaceutical Services Division, Ministry of Health. The face-validated questionnaires were mailed to the Chief Pharmacists/Directors of 28 institutions that is, the pharmacy departments of 24 government and 3 university hospitals as well as the National Pharmaceutical Control Bureau. The cover letter requested the Chief Pharmacist or the pharmacist supervising the

PRPs in each of the hospitals to make an assessment of the competencies demonstrated by pharmacy graduate(s) from UKM during their training as PRPs. Some hospitals/institutions had more than one UKM graduate working as a PRP and so a separate questionnaire was enclosed for each UKM graduate in a particular location. A self-addressed reply envelope, to be returned to the Faculty of Pharmacy, UKM, was mailed together with the questionnaire. Reminders by email or through telephone calls to pharmacists who did not respond within a month were made.

All data obtained was analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0. Nonparametric test for independent samples (Mann-Whitney U test) and Pearson's Correlation were used where appropriate to determine differences or correlation between various parameters.

RESULTS & DISCUSSION

Competency assessment of professionals is being increasingly practiced[6] and is probably driven by recognition that just theoretical knowledge is insufficient and also by an increasingly demanding population. Pharmacists are entrusted with the responsibility to help patients optimize the benefits of their medicines. To produce competent pharmacists in line with current societal health needs such as counseling patients regarding medicine use, selection of the most appropriate pharmacotherapy and rational use of medicines, institutions of higher learning that offer pharmacy programmes need to ensure that the pharmacy curriculum and delivery do not just produce graduates with knowledge but those who in addition are able to use the knowledge effectively.

A total of 88 (22 males and 66 females) students in the graduating class completed the self-assessment, while the preceptors assessed 78 (17 males and 61 females) PRPs only. This was because three preceptors did not return the evaluation forms for the remaining 9 graduates and one student did not graduate with the rest of the class.

The overall mean score of self-assessment by the students was 4.10±0.75 and the overall mean score given by the preceptors was 3.56±0.52. Table 1 compares the student and preceptor scores for competencies that were evaluated in both questionnaires. For all competencies that were assessed by students themselves and the preceptors, students graded their competencies significantly higher than the preceptors.

Table 1: Comparison between students' and preceptors' perception of selected competencies

Competency	Student (Self) Score	Preceptor Score	p value
Able to check and advise on drug storage, deterioration, expiry and mandatory recording	4.15±0.58	3.47±0.72	<0.01
Able to document enquiries and information given in a clear and systematic manner	4.16±0.73	3.44±0.65	<0.01
Able to recommend pharmacotherapy regimen and monitoring of patient progress	4.25±0.70	3.15±0.69	<0.01
Able to clerk cases	4.52±0.50	3.34±0.75	<0.01
Able to detect prescription errors or incomplete prescriptions	4.18±0.70	3.18±0.82	<0.01
Able to communicate with other healthcare professionals	4.17±0.67	3.15±0.78	<0.01
Able to communicate clearly, sensitively and effectively with patients, their caregivers and the general public	4.24±0.68	3.60±0.65	<0.01
Able to analyse and make decisions to solve problems involving ethical issues	4.15±0.64	3.17±0.65	<0.01
Able to recognise and respect the attitudes, actions and beliefs of others	4.60±0.56	3.42±0.59	<0.01
Able and ready to shoulder responsibility	4.08±0.77	3.35±0.68	<0.01
Able to work effectively in a team and collaborate with other healthcare professionals	4.39±0.60	3.66±0.66	<0.01

The results show that, overall, UKM graduates were assessed as having good competencies by the preceptors while the students themselves assessed their competencies as very good. A similar difference in perception between preceptors and students regarding student preparedness for advanced pharmacy practice experiences has been reported[7]. The difference between the two perceptions is probably because the students assessed their own competencies based on their theoretical knowledge before they started working. The survey was also done at the end of their academic programme and their confidence was probably boosted by a perceived increase in their competencies as they progressed through the years of study[8]. However, it is important to bear in mind that drug knowledge, while important, is only one aspect of professional pharmacy practice which requires an integration of knowledge and problem-solving skills. Our traditional methods of course assessment often evaluate knowledge only and not problem-solving skills.

Table 2 compares preceptor perception of the competencies of male and female UKM graduates, while Table 3 compares the self-assessment of scores of male and female graduates for competencies that showed a significant difference between genders.

Table 2: Comparison of preceptor perception of competencies of male and female UKM pharmacy graduates

Competency	Male (n=17)	Female (n=60)	p value
Able to check and advise on drug storage, deterioration, expiry and mandatory recording	3.20±0.77	3.55±0.69	0.05
Able to document enquiries and information given in a clear and systematic manner	3.13±0.52	3.53±0.66	0.15
Able to recommend pharmacotherapy regimen and monitoring of patient progress	3.00±0.37	3.20±0.75	0.10
Able to clerk cases	3.06±0.68	3.42±0.75	0.10
Able to detect prescription errors or incomplete prescriptions	3.00±0.82	3.23±0.82	0.35
Able to communicate with other healthcare professionals	2.88±0.50	3.23±0.82	0.09
Able to communicate clearly, sensitively and effectively with patients, their caregivers and the general public	3.35±0.61	3.67±0.65	0.09
Able to analyse and make decisions to solve problems involving ethical issues	3.18±0.64	3.16±0.76	0.93
Able to recognise and respect the attitudes, actions and beliefs of others	3.24±0.66	3.48±0.57	0.11
Able and ready to shoulder responsibility	3.35±0.70	3.52±0.65	0.48
Able to work effectively in a team and collaborate with other healthcare professionals	3.47±0.72	3.71±0.64	0.18
Able to maintain a proper attitude to work	3.24±0.66	3.85±0.66	0.01

Table 3: Comparison of self-perception of competencies of male and female UKM students

Competency	Male (n=22)	Female (n=66)	p value
Able to perform pharmaceutical calculations accurately	3.55±0.67	3.11±0.96	<0.05
Able to apply the principles of quality assurance in professional activities	4.23±0.92	3.63±0.91	<0.05
Able to identify business opportunities	4.23±0.97	3.73±0.87	<0.05
Able to design a business plan	3.91±1.15	3.45±0.81	<0.05
Able to analyse and make decisions to solve problems involving ethical issues	4.73±0.77	4.27±0.80	<0.05

There were no significant differences in the self-assessment scores of male and female students for all other competencies.

Although female graduates tended to get higher scores, there were no significant differences between the perception of competence of male and female UKM graduates by the preceptors except for attitude where the female graduates scored significantly higher. According to an estimate from the Malaysian Pharmaceutical Society (MPS), the percentage of female pharmacists was more than male pharmacists in Malaysia, with approximately 70% females and 30% males. This trend is also seen in the gender proportion of UKM graduates as the actual numbers of male and female students in the graduating class were 20 and 68, respectively. The implications of this change in gender distribution of pharmacists as compared to 30 years ago have not been studied as there are clearly differences in perception and leadership styles between males and females[9]. Interestingly, although the male students had a lower mean cumulative grade point average (cGPA) as compared to female students, the male students graded themselves higher in certain competencies. A number of these competencies are less "theoretical" and more practical, for example identify business opportunities, develop a business plan and analyse and make decisions and thus may indicate a bias for males to be more interested in practical and more "risky" applications of knowledge. Alternatively, it could also be because male students tend to overestimate their own abilities[10].

It is often stated that a graduate with good academic grades does not necessarily result in a good and productive employee. Table 4 and Table 5 compare the scores of students with cGPA of ≥3.00 and cGPA of ≤2.99 as assessed by preceptors or by self-assessment, respectively. Overall, when the mean score for all competencies were considered together, preceptors gave a significantly higher score for pharmacists who graduated with a cGPA of ≥3.00 as compared to a cGPA of ≤2.99 (Table 4). However, when individual competencies were considered, there were only significant differences in the two knowledge criteria.

Table 4: Comparison of preceptor perception of competencies of UKM pharmacy graduates with high (>3.00) and low (≤2.99) cGPAs

Competency	cGPA≥3.00 (n=41)	cGPA≤2.99 (n=36)	p value
Able to check and advise on drug storage, deterioration, expiry and mandatory recording	3.54±0.73	3.38±0.71	0.23
Able to document enquiries and information given in a clear and systematic manner	3.65±0.68	3.19±0.54	0.44
Able to recommend pharmacotherapy regimen and monitoring of patient progress	3.24±0.71	3.06±0.66	0.32
Able to clerk cases	3.45±0.69	3.24±0.74	0.42
Able to detect prescription errors or incomplete prescriptions	3.34±0.81	3.00±0.82	0.10
Able to communicate with other healthcare professionals	3.18±0.80	3.12±0.77	0.73
Able to communicate clearly, sensitively and effectively with patients, their caregivers and the general public	3.68±0.69	3.50±0.61	0.24
Able to analyse and make decisions to solve problems involving ethical issues	3.29±0.78	3.03±0.65	0.10
Able to recognise and respect the attitudes, actions and beliefs of others	3.37±0.49	3.50±0.70	0.43
Able and ready to shoulder responsibility	3.37±0.70	3.33±0.68	1.00
Able to work effectively in a team and collaborate with other healthcare professionals	3.63±0.66	3.69±0.68	0.71
Knowledge on prepacking and packing processes and labeling	3.76±0.63	3.41±0.71	0.03
Knowledge of drug disposal procedures	3.76±0.61	3.44±0.74	0.04
Mean of all competencies including communication skills	3.67±0.47	3.40±0.55	0.03

Students who graduated with a cGPA of ≥3.00 assessed their competencies similar to those with cGPA of ≤2.99 except for five competencies where the students with cGPA of ≥3.00 assessed their own competencies lower than those with cGPA of ≤2.99 (Table 5).

Table 5: Comparison of self perception of competencies of UKM students with high (>3.00) and low (≤2.99) cGPAs

Competency	cGPA≥3.00 (n=51)	cGPA≤2.99 (n=37)	p value
Able to perform pharmaceutical calculations accurately	3.86±0.71	4.29±0.76	0.039
Able to formulate and manufacture pharmaceutical products	3.06±0.94	3.44±0.84	0.041
Able to manage a pharmacy	3.52±0.81	3.86±0.86	0.031
Able to utilise and recognise the potential of ICT in pharmacy practice	3.82±0.98	4.31±1.04	0.036
Able to establish good rapport, interact with others and work effectively	4.42±0.73	4.76±0.80	0.024

Overall, preceptors graded graduates with cGPA of ≥3.00 with a higher score as compared to those with cGPA of ≤2.99. However, when individual competencies were considered, there was no significant difference in most of the competencies except in knowledge of prepacking procedures and drug disposal. This indicates that as the graduates begin working, the line between those who performed better academically and those who did not becomes less obvious, but in terms of knowledge, the academically better students still did better. It is a general observation that female pharmacy students perform better in the examinations and are more conscientious. However, again it was surprising to find that for all competencies for which there was a significant difference in perception between male and female students, the female students graded their abilities lower. This is probably either an indication of a lack of confidence or a more realistic assessment of their abilities because the preceptors did not assess the female graduates less than the male graduates in any of the competencies. This is not typical of pharmacy students only as it has also been observed among medical students. Female students had better self-evaluation skills although they also tended to underestimate their own abilities while male

students tended to overestimate their abilities[10]. It has also been shown that those who performed poorly in relatively objective tests tend to score themselves higher in self-assessment[11]. This frequent mismatch between traditional tests results and performance in actual work situations has resulted in the implementation of case-based examinations to assess the readiness of students for practice situations, so that students who may have problems later can be identified early[12, 13]. In addition to traditional written examinations, the use of Objective-Structured Pharmaceutical Examinations (OSPE) may be able to provide a more complete assessment of the examinees as they are assessed based on their response or actions in simulated situations. However, it should also be borne in mind that literacy and family background may also play a role in self-assessment abilities[14].

This study has the limitations of the subjective nature of the assessment. Although the option of "not able to evaluate" was given in the questionnaire, the preceptor may have also carried out the evaluation without really being in a position to effectively evaluate. There may also be preceptor recall bias as the graduate may not have spent the whole year with a particular preceptor.

CONCLUSION

Overall, preceptors felt that pharmacists who graduated from Universiti Kebangsaan Malaysia in 2009 and who were undergoing compulsory service as PRPs had a satisfactory level of competence. It was good also that the students felt confident of their own abilities. There was, however, a gap between the students' perceptions of their own competencies and the preceptor perception. Before using instruments that depend on self assessment, it may be necessary to provide some form of training as it has previously been shown that students training to be health professionals had only low to moderate self-assessment skills[15]. Longer placements in actual practice settings and more extensive use of OSPE will probably assist in obtaining a more realistic assessment of competencies. A survey of the perception of the graduates of their own competencies after the 1-year period of practice will be a useful follow-up study.

ACKNOWLEDGEMENT

The authors wish to thank Universiti Kebangsaan Malaysia for grant UKM-PTS-004-2009 to support this research project. The authors also acknowledge the assistance of Ms Noorazlina Ahmad Jamil in data analysis.

REFERENCES

1. Vathanophas, V. & Jintawee, T. Competency Requirements for Effective Job Performance in the Thai Public Sector. Contemporary Management Research 2007; 3(1): 45-70.
2. Satish Kumar, B.P., Santhosh, Y.L., Mohamed Gulzar, A & Naveen M.R. Survey on knowledge towards antibiotics among nursing students. Int J Pharm Pharm Sci. 2011; 3(2): 227-229.
3. Pharmacy Board of Malaysia. Standard and Criteria for Accreditation of Pharmacy Degrees 2007. Kuala Lumpur: Ministry of Health Malaysia.
4. Malaysia. 1989. Registration of Pharmacists Act 1951 (Revised 1989). (Act 371).
5. Pharmaceutical Services Division, Ministry of Health of Malaysia. Annual Report 2005. http://www.pharmacy.gov.my/index.cfm?&menuid=83&parentid=10. [29 June 2011].
6. Johnson, C.H. Competencies as an Evaluation Tool. Clinics in Podiatric Medicine and Surgery 2007; 24(1): 1-11.
7. Nycamp, D. & Miller, S.W. Pharmacy student and preceptor perceptions for the first advanced pharmacy practice experience. Currents in Pharmacy Teaching and Learning 2011; 3:9-16.
8. Ried, L.G., Brazeau, G.A., Kimberlin, C., Meldrum, M. & McKenzie, M. Students Perceptions of their Preparation to Provide Pharmaceutical Care. American Journal of Pharmaceutical Education 2002; 66: 347-356.
9. Stelter, N.Z. Gender Differences in Leadership: Current Social Issues and Future Organizational Implications. The Journal of Leadership Studies 2002; 8(4): 88-99.
10. Nabishah, M., Kee, C.K., Cheng, S.J., Lee, S.A., Syazwina, M., Kee, T.P., Norhayati, R., Mohd Nasri, A.B. Self-evaluation in Problem-based Learning. ASEAN Journal of Teaching and Learning in Higher Education 2011; 3(1):50-57.
11. Austin Z., Gregory, P.A.M. & Galli. M. "I just don't know what I'm supposed to know": Evaluating self-assessment skills of international pharmacy graduates in Canada. Research in Social and Administrative Pharmacy 2008; 4: 115-124.
12. Meszaros, K., Barnett, M.J., McDonald, K., Wehring, H., Evans, D.J., Sasaki-Hill, D., Glodsmith, P.C. & Knapp, K.K. Progress Examination for Assessing Students' Readiness for Advanced Pharmacy Practice Experiences. American Journal of Pharmaceutical Education 2009; 73(6) Article 109.
13. Culbertson, V.L. Pharmaceutical Care Plan Examinations to Identify Students at Risk for Poor Performance in Advanced Pharmacy Practice Experiences. American Journal of Pharmaceutical Education 2009; 72(5) Article 111.
14. Rajesh, V.A., Kannadasan T.A. & Anand Vijayakumar P.R.A. Influence of literacy, occupation and hereditary on cognitive functioning in diabetic individuals. Int J Pharm Pharm Sci. 2011; 3(4): 223-227.
15. Gordon, M.J. A Review of the Validity and Accuracy of Self-assessments in Health Professions Training. Acad. Med. 1991; 66(12): 762-769