Improvement in Pharmacist's Performance Facilitated by an Adapted Competency-Based General Level Framework

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ABSTRACT

Background: The General Level Framework (GLF) is a tool for evaluating pharmacists' performance, providing tailored feedback and training, and guiding professional development.
Aim: To ascertain the changes in pharmacists' workplace performance over time using the GLF and to describe pharmacists' views on the baseline evaluation process.
Method: The UK GLF was mapped against Australian pharmacy competency standards and practice guidelines. 61 of the 92 competencies from the Queensland Health version of the GLF representing core professional activities of Australian pharmacists were analysed. Trained evaluators used the adapted GLF to observe pharmacists from 18 Queensland public hospitals in their workplace (baseline and repeat) and rate the frequency with which competencies were completed to a defined standard. The evaluators then provided pharmacists with tailored feedback, encouraged self-problem solving, and identified and addressed their training needs. Pharmacists' views of the baseline evaluation process was assessed using a 7-point rating scale.
Results: 66 pharmacists from 18 Queensland hospitals underwent the evaluation. At baseline, pharmacists had a median of 3 (1 to 10) years hospital experience. A median of 14 (5 to 22) months lapsed between baseline and repeat observations. Of the 61 competencies analysed, 35 (57%) competencies showed a significant improvement from baseline to repeat observations (p ≤ 0.05). Competencies that improved significantly from baseline included: aspects of medication history taking; medication management; identification, documentation and resolution of drug-related problems; appraisal of therapeutic options; and communication with doctors and nurses. For 9 (15%) competencies, pharmacists were already performing at the maximum level (median score 4) at baseline and no change was recorded between observations. No competency demonstrated a decrease in performance between observations. When the mean scores with 95% confidence intervals for the clusters of competencies were compared over time all the mean scores except for discharge facilitation and medicines information/patient education/liaison showed a significant improvement. 52 pharmacists provided feedback on the baseline evaluation process and the majority found it a useful professional development tool. They considered the evaluation process fair and constructive but taxing.
Conclusion: The GLF tool assisted with the identification of pharmacists' training needs, which are integral to their professional development.

INTRODUCTION

Pharmacists are essential members of the multi-disciplinary team and contribute significantly to the quality use of medicines.[1-3] Pharmacists require knowledge, skill and ability to consistently perform to agreed standards in the workplace. Pharmacists also need to demonstrate that they can deliver pharmaceutical care; prevent, identify and mitigate drug-related problems; and display professionalism as outlined in professional competency and practice standards.[3-5] The Society of Hospital Pharmacists of Australia (SHPA), Pharmacy Guild of Australia and Pharmaceutical Society of Australia have developed competency standards that outline the fundamental competencies for the provision of quality pharmacy services.[4-6]

Pharmaceutical reforms require that the institutions that have implemented the Schedule of Pharmaceutical Benefits adopt the Australian Pharmaceutical Advisory Council's Guiding principles to achieve quality use of medicines.[3] These principles outline activities that pharmacists need to undertake, such as taking medication histories, developing medication action plans, and ensuring medication liaison on transfer between care settings.[3] In addition, the Australian Health Ministers Advisory Council decreed that every patient should receive a pharmaceutical review of their medicines during their hospital stay. The Australian Council for Safety and Quality in Healthcare recommends clinical pharmacy services as a key evidence-based strategy for improving medication safety.[7]

Despite the existence of competency and practice standards, and ministerial communiquès, there are inconsistencies in the practice of clinical pharmacy. These inconsistencies in the practice of clinical pharmacy have been demonstrated in the UK pharmacy setting and coincide with anecdotal experience in Australia.[8] Only 50% of Australian pharmacists at registration, could demonstrate that they were competent in half of the 13 objective structured clinical examinations.[9] George Miller, father of medical education, introduced a framework (Miller's Pyramid) for assessing clinical competence.[10] On the bottom level of the pyramid is 'knowledge' (knows), then 'competence' (knows how), 'performance' (shows how) and 'action' (does). Miller proposed that basic clinical skills (shows how) can be measured in an examination, but the professionalism and motivation

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required to continuously apply these skills in the workplace (does) must be observed during actual patient care. Underlying this distinction is the assumption that evaluating actual practice better reflects routine performance than assessing under test conditions. This raises the question of how standards, principles and competencies can be translated into consistent practice.[11]

General Level Framework

The UK Competency Development and Evaluation Group used the Whiddett and Hollyforde model to develop the General Level Framework (GLF).[12] The GLF is a tool for evaluating pharmacists performance, providing tailored feedback and training, and guiding professional development. The GLF was validated in the UK as a formative tool to facilitate the evaluation of ward-based competencies of junior pharmacists.[8,13,14] Antoniou et al.[15] demonstrated that when the GLF was used for self-assessment followed by recurrent peer observations with descriptive feedback, guidance on performance and agreement of training needs, pharmacists' performance was accelerated and sustained compared to a similar process using passive observations without self-assessment or feedback.

The GLF defines the pharmaceutical care activities that competent general level pharmacists should perform. The GLF comprises individual competencies grouped into three clusters: delivery of patient care, problem solving and professional development. For example, the patient history taking competency sits within the delivery of patient care cluster and is further broken into individual competencies, e.g. identification of drug-related problems, accurate use of guidelines/references.

The GLF also facilitates self and peer evaluation and facilitates the provision of feedback. Feedback is effective when it comprises descriptive and narrative comments, quantitative data from credible sources, framed constructively and accompanied by good mentoring and follow-up.[16] The GLF also incorporates the Johari Window model, a tool for improving self-awareness, and mutual understanding between individuals within a group.[17]

The GLF can identify gaps in knowledge, skills and attitudes, and guide professional development. The GLF provides documented support for pharmacist's performance appraisal and development, and can complement departmental performance review systems. Collective GLF data can also assist pharmacy managers identify priorities for departmental education and training programs and review service delivery and development.

Queensland

In 2006, in consultation with a group of 70 senior pharmacists, doctors and nurses, and in collaboration with the UK Competency Development and Evaluation Group, the UK GLF was adapted by Queensland Health to meet Australian standards. The GLF was piloted within Queensland Health public hospitals and after feedback, was implemented across Queensland in 2007. Initially, pharmacists undertook a baseline evaluation regardless of experience, and an annual GLF was recommended for pharmacists in non-advanced training positions. Many pharmacy departments in Queensland use the GLF at the start of each new rotation as a means of identifying training needs and formulating goals. This study aimed to ascertain the changes in pharmacists' workplace performance over time using the GLF and to describe pharmacists' views on the baseline evaluation process.

METHOD
Process

Trained evaluators used the adapted GLF to observe pharmacists from 18 Queensland public hospitals in their workplace and rate the frequency with which competencies were completed to a defined standard. The evaluators underwent a standardised training process (workshop and minimum of two observed GLFs by trained facilitators) before conducting their own GLFs. A manual was developed for the evaluators and pharmacists to assist with process standardisation. The validity, reliability and sensitivity of the evaluation process has been assessed by Goldsmith et al.[11] and the Practitioner Development Team, Medication Services Queensland and found to have acceptable inter-rater reliability.

Pharmacists' Evaluation

Pharmacists underwent baseline and repeat evaluations and were provided tailored feedback.[14] The evaluators rated pharmacists according to the frequency with which each competency was observed: consistently (85 to 100% of the time; score = 4), usually (51 to 84% of the time; score = 3), sometimes (25 to 50% of the time; score = 2) or rarely (0 to 24% of the time; score = 1). Sixty-one of the 92 competencies from the Queensland Health version of the GLF representing core professional activities of Australian pharmacists were analysed. Competencies that were not relevant or appropriate to the workplace or were not observed were coded 'unable to comment'. The evaluators observed pharmacists in the workplace and provided feedback on observed performance on the day of the evaluation and developed a plan to address deficits in performance, knowledge or behaviour.

Feedback from Pharmacists

Pharmacists provided feedback on their baseline evaluations using a 7-point rating scale. The rating scale consisted of statements relating to the overall evaluation, e.g. whether they felt it evaluated their knowledge, skills and attitudes and whether it was a true reflection of their performance. Pharmacists gave permission for their de-identified results and feedback to be provided to the Practitioner Development Team, Medication Services Queensland. Data were stored in password secure databases and hard copies secured in locked cabinets.

Data Analysis

The scale of change in individual performances in individual competencies between baseline and repeat scores were analysed using the Wilcoxon paired signed-rank test. Data were presented as median scores with ranges for individual competencies. Summary measures of items within competency clusters were created by the summation of all scores for items within the competency cluster. The mean scores with 95% confidence intervals of the summated clusters of competencies were compared over time using the paired t-test. A p value of ≤ 0.05 was accepted as significant. Pharmacists' feedback of the evaluation process was assessed by mean scores with 95% confidence intervals. Pharmacists' evaluations were analysed using the Statistical Package for the Social Sciences (version 18).

RESULTS

Sixty-six pharmacists from 18 hospitals underwent baseline and repeat observations. The majority (85%) of pharmacists were female. Pharmacists undertook a self-assessment prior to peer review (results not reported). At baseline, pharmacists had a median of three (1 to 10) years hospital experience. A median of 14 (5 to 22) months lapsed between baseline and repeat observations (Table 1).

Table 1. General Level Framework evaluation

Outcomes	Results (n = 66)
Same hospital for baseline and repeat evaluation	58 (88%)
Same evaluator for baseline and repeat evaluation	24 (36%)
Attended pharmacist up-skilling workshop after baseline General Level Framework	22 (33%)
Attended SHPA clinical seminar after baseline General Level Framework	11 (17%)

Of the 61 competencies analysed, 35 (57%) competencies showed a significant improvement from baseline to repeat observations ($p \leq 0.05$). Competencies that improved significantly from baseline included: aspects of medication history taking; medication management; identification, documentation and resolution of drug-related problems; appraisal of therapeutic options; and communication with doctors and nurses. For 9 (15%) competencies, pharmacists were already performing at the maximum level (median score 4) at baseline and no change was recorded between observations. No competency demonstrated a decrease in performance between observations. When the mean scores with 95% confidence intervals for the clusters of competencies were compared over time all the mean scores except for discharge facilitation and medicines information/patient education/liaison showed a significant improvement (Figure 1).

Competency Clusters
Delivery of Patient Care
The performance of 58% (25/43) of the patient care competencies improved, including 43% (6/14) of the patient history taking competencies (Table 2). Although the median score for some competencies, e.g. providing a clear introduction to the consultation process did not change there was a trend in the minimum score from 'rarely' to 'usually'. In the current medication management competencies, all of the drug interaction competencies improved and 90% (9/10) of the monitoring and documenting current drug therapy competencies also improved.

For 12% (5/43) of the patient care competencies, pharmacists were already performing at the maximum level (median score 4) at baseline and no change was recorded between observations. Four of these competencies were from the discharge facilitation process where a ceiling effect has been demonstrated and this would account for the lack of change over time (Table 2, Figure 1).
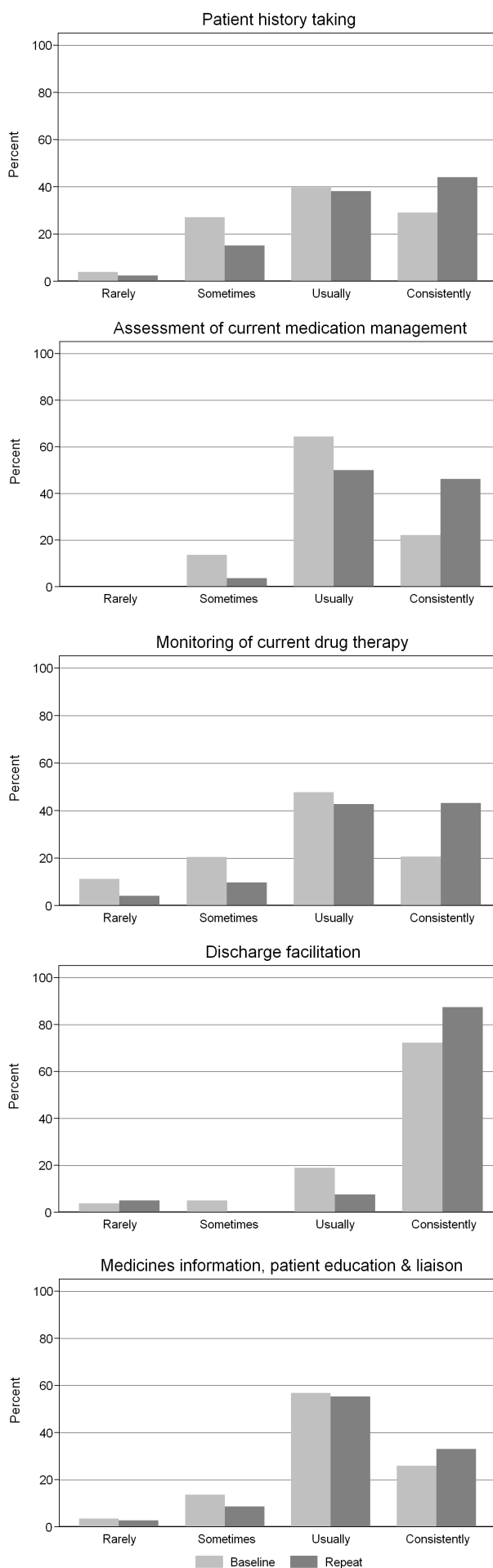

Figure 1. Delivery of patient care competencies evaluated.

Table 2. Patient care competencies evaluated

Competency	Baseline Number	Baseline Median (range)	Repeat Number	Repeat Median (range)	Exact sig
Patient History Taking					
-Opening the consultation - introduction	59	4 (1-4)	48	4 (3-4)	0.06
-Opening the consultation - setting an agenda	58	3 (1-4)	46	4 (2-4)	0.004
-Uses appropriate questions	54	3 (2-4)	46	4 (2-4)	0.196
-Patient consent obtained	23	3 (2-4)	23	4 (2-4)	0.41
-Allergy/adverse drug reactions review	63	3 (2-4)	54	4 (2-4)	0.03
-Medication history taking	64	3 (1-4)	53	4 (1-4)	<0.001
-Confirmation of medication history	41	3 (1-4)	36	4 (1-4)	0.02
-Relevant patient background identified	63	3 (2-4)	63	3 (2-4)	0.08
-Patient's understanding of illness	48	2 (1-4)	47	3 (1-4)	0.004
-Patient's experience of medication use	46	2 (1-4)	48	3 (1-4)	0.05
-Patient's understanding of treatment	50	2 (1-4)	46	3 (1-4)	0.12
-Adherence assessment	39	2 (1-4)	40	3 (1-4)	0.24
-Patient's medication management	50	3 (1-4)	49	3 (1-4)	0.001
-Medication history reconciliation	57	3 (1-4)	55	3 (1-4)	0.3
Assessment of Current Medication Management					
-Identifies drug interactions	44	3 (2-4)	45	3 (2-4)	0.02
-Prioritises drug interactions	41	3 (2-4)	40	3 (2-4)	0.01
-Appropriate action is taken	41	3 (2-4)	38	4 (2-4)	0.03
-Identifies drug-patient interactions	43	3 (1-4)	50	3 (2-4)	0.01
-Prioritises drug-patient interactions	39	3 (1-4)	48	3 (1-4)	0.02
-Appropriate action is taken	39	3 (1-4)	46	4 (1-4)	0.01
-Identifies drug-disease interactions	47	3 (2-4)	54	3 (2-4)	0.02
-Prioritises drug-disease interactions	42	3 (2-4)	50	4 (2-4)	0.002
-Appropriate action is taken	43	3 (2-4)	47	4 (2-4)	0.01
Monitoring of Current Drug Therapy					
-Identification of drug-related problems	65	3 (2-4)	64	3 (2-4)	<0.001
-Prioritisation of medication-related problems	60	3 (2-4)	60	3 (2-4)	0.002
-Accurate use of guidelines/references	46	3 (1-4)	49	3 (2-4)	0.24
-Appropriate consultation or referral	60	3 (2-4)	58	4 (2-4)	0.004
-Drug-related problems appropriately resolved	64	3 (2-4)	57	4 (2-4)	0.001
-Outcomes of contributions appropriately assessed	37	3 (1-4)	35	3 (1-4)	0.002
-Documentation of medication related problems	52	2 (1-4)	51	3 (1-4)	<0.001
-Documentation of medication action plan	51	2 (1-4)	52	3 (1-4)	<0.001
-Signs for clinical pharmaceutical review	54	3 (1-4)	60	4 (1-4)	0.01
-Documentation of clinical interventions	44	2 (1-4)	47	3 (1-4)	0.01
Discharge Facilitation					
-Discharge medication checked against inpatient medication chart	31	4 (1-4)	33	4 (1-4)	1
-Discharge medication checked against admission medication history	25	4 (1-4)	33	4 (1-4)	0.29
-Patients own drugs are checked against discharge medication	23	4 (1-4)	31	4 (1-4)	0.58
-Patient is supplied with instructions about continuity of supply	19	3 (2-4)	24	3 (2-4)	0.32
-Provision of discharge medication record	36	4 (2-4)	34	4 (1-4)	0.1
-Liaison with community healthcare providers	17	3 (2-4)	19	3 (2-4)	0.16
Medicines Information, Patient Education and Liaison					
-Need for information identified	52	3 (1-4)	45	3 (1-4)	0.56
-Accurate information retrieved	22	4 (1-4)	32	3 (1-4)	0.32
-Provision of oral/written information	38	3 (1-4)	42	3 (1-4)	0.41
-Facilitating informed use of medicines	38	3 (1-4)	35	3 (2-4)	0.02

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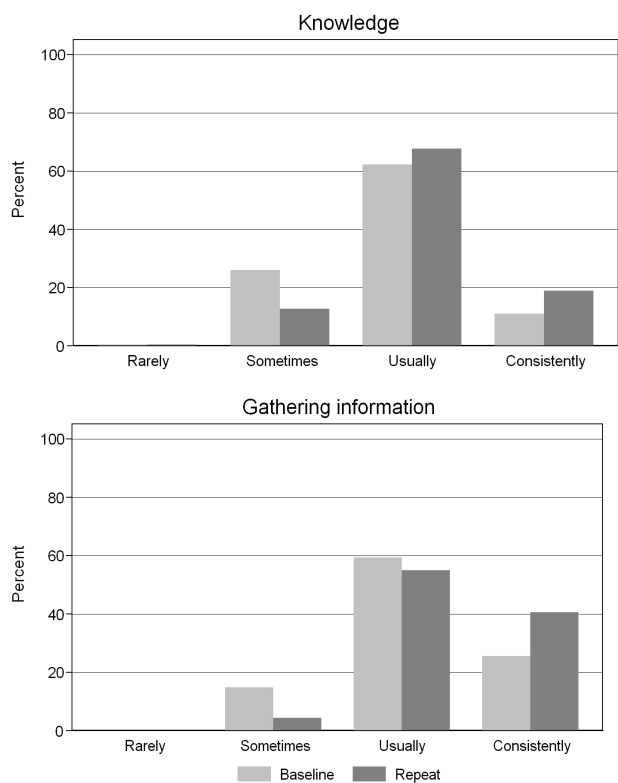Journal of Pharmacy Practice and Research Volume 40, No. 2, 2010.

Figure 2. Problem solving competencies evaluated.

Problem Solving
The performance of 67% (6/9) of the problem solving competencies (knowledge base, gathering and analysing information, appraisal of therapeutic options) improved (Table 3). All of the mean scores for the problem-solving competencies demonstrated a significant improvement (Figure 2).

Professional Development
The performance of 56% (5/9) of the professional development competencies (communication with doctors and nurses, continuing professional development, professional qualities) improved. For 44% (4/9) of the professional development competencies, pharmacists were already performing at the maximum level (median score 4) at baseline and no change was recorded between observations. Three of these competencies were associated with professional qualities. All of the mean scores for the professional development competencies demonstrated a significant improvement (Figure 3).

Feedback from Pharmacists
Fifty-two (n = 66) pharmacists provided feedback on the baseline evaluation process. They considered the evaluation process fair and constructive (mean scores > 4). Although the process was perceived as taxing, the majority of pharmacists found it a useful professional developmental tool (Figure 4).

Table 3. Problem solving and professional development competencies

| Competency	Baseline Number	Baseline Median (range)	Repeat Number	Repeat Median (range)	Exact significance
Problem Solving					
Knowledge					
-Knowledge of pathophysiology	51	3 (2-4)	56	3 (2-4)	0.005
-Able to discuss how drugs work	59	3 (2-4)	57	3 (2-4)	0.03
-Able to describe major side effects of drugs	60	3 (2-4)	59	3 (2-4)	0.04
-Able to describe mechanisms of interactions	44	3 (1-4)	45	3 (1-4)	0.17
Gathering information					
-Accesses information from appropriate sources	58	3 (2-4)	63	4 (2-4)	0.13
-Able to abstract key points from information	56	3 (2-4)	59	3 (2-4)	0.04
-Able to evaluate information	54	3 (2-4)	54	3 (2-4)	0.05
-Appraises therapeutic options	52	3 (2-4)	51	3 (2-4)	0.003
-Demonstrates clear decision making	59	3 (2-4)	60	3 (2-4)	<0.001
Professional Development					
Communication					
-Communication is clear, precise and appropriate	57	4 (2-4)	53	4 (2-4)	0.28
-Involves patient in medication management	47	3 (1-4)	49	3 (1-4)	0.004
-Appropriate communication with prescribers	54	3 (2-4)	53	4 (2-4)	0.01
-Appropriate communication with nursing staff	53	4 (2-4)	55	4 (2-4)	0.01
Professional qualities					
-Demonstrates confidence	59	3 (2-4)	62	3 (2-4)	<0.001
-Recognition of limitations	63	4 (3-4)	63	4 (3-4)	0.22
-Responsibility for own actions	66	4 (3-4)	65	4 (3-4)	0.78
-Responsibility for patient care	65	4 (2-4)	66	4 (3-4)	0.41
Continuing professional development					
-Continuing professional development	50	2 (2-4)	48	3 (2-4)	0.04
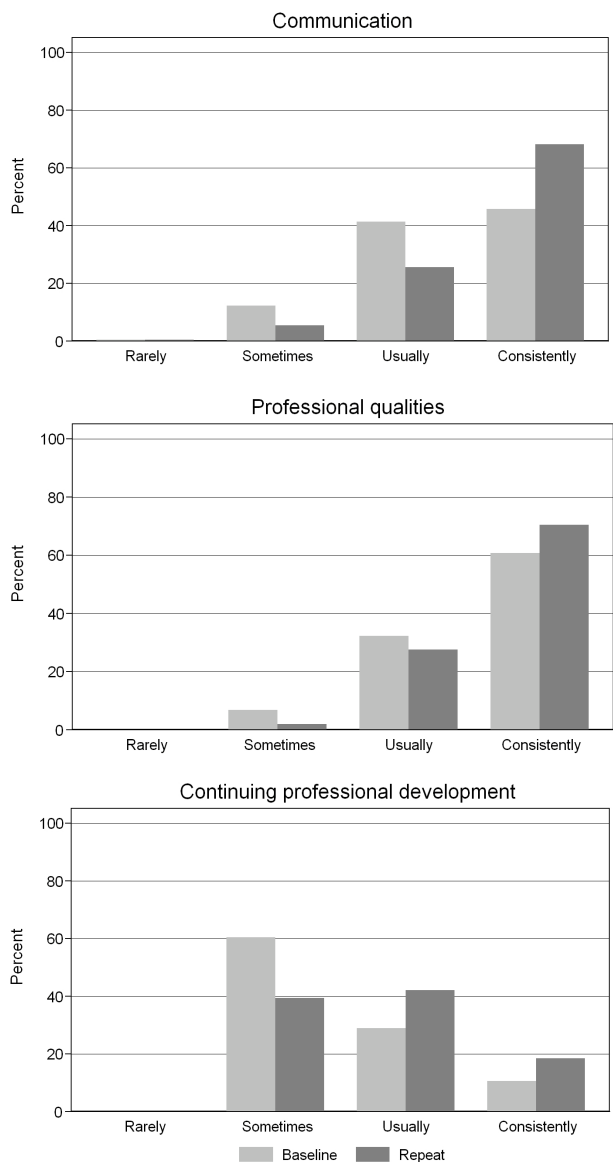
Figure 3. Professional development competencies evaluated.

DISCUSSION

Our study demonstrated improvements in at least half of the competencies that were evaluated and none of the remaining competencies demonstrated a decrease in performance between evaluations. The competencies that significantly improved, such as aspects of medication history taking; assessment of medication management; identification, documentation and resolution of drug-related problems; appraisal of therapeutic options; and communication with doctors and nurses, demonstrated improvements in pharmacists' professional skills and confidence. Similar findings were reported by Antoniou et al.[15] who in a large controlled study evaluated the GLF in junior hospital pharmacists with repeat observations at 3, 6 and 12 months. Our study adopted a similar approach to Antoniou et al.'s intervention arm where the competency framework was used for feedback and to guide practice development. Antoniou et al.[15] demonstrated an accelerated performance in 24 of the 25 patient-related competencies at 6 months, which was sustained at 12 months in the intervention arm of the study.

For the majority of competencies where pharmacists were already performing at the maximum level at baseline and on repeat evaluation were from the discharge facilitation and professional qualities competencies. These competencies reflect the basic skills and attributes that pharmacists would have mastered early in their careers. Traditionally, pharmacists' assessments have tended to focus on the ability to carry out a task, however, the real challenge lies in the evaluation of pharmacists in the workplace.[10,18] The Cambridge Model, extends and refines Miller's Pyramid for assessing clinical competence by focusing on performance as a product of competence as well as the influence of the individual (e.g. health, relationships), and the influence of the system (e.g. facilities).[19] The GLF has incorporated concepts of the Cambridge Model to facilitate the process for improving pharmacists' performance over time.
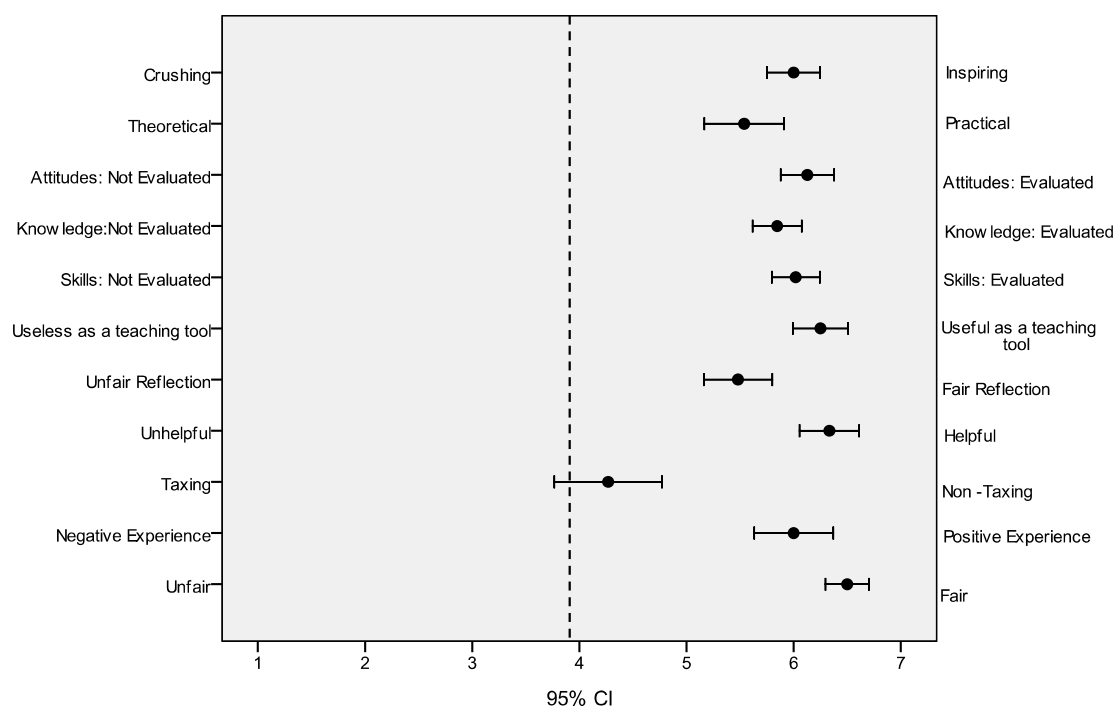

Figure 4. Pharmacists' views on the baseline evaluation process (mean and 95% confidence intervals) (n = 52).

Patient History Taking

The performance of 43% of the patient history taking competencies improved. Accurate admission medication histories and adverse drug management are key clinical pharmacy services and have been positively linked with improved health outcomes.[20,21] Competencies that did not significantly improve are behaviours associated with a deeper understanding of the medication-related consultation, such as obtaining relevant information on the patient's health, patient understanding of their illness and treatment as well as medicine adherence. The extent to which these competencies are undertaken may be reflective of the pharmacist's level of experience. These competencies are fundamental to identifying patients' medication taking behaviour and issues relating to patients' beliefs about the necessity of their medicines, which is a predictor of adherence.[22]

Problem Solving

The performance of 67% of the problem solving competencies improved. Pharmacists consistently demonstrated an improvement in the majority of these competencies indicating that they had undergone up-skilling. The process of up-skilling improves pharmacists' professional skills and self confidence, which can assist with the provision of reliable patient care. Inadequate knowledge or competence can result in the use of inappropriate medications.[23] Pharmacists need to have the skills to provide appropriate clinical pharmacy services, which have been shown to improve patient outcomes and reduce length of stay and readmission.[24]

Professional Development

The performance of 56% of the professional development competencies improved. Some competencies did not improve possibly because pharmacists had reached a ceiling as these competencies were rated at the maximum score for both baseline and repeat evaluation. Similarly, Antoniou et al.[15] demonstrated a significant improvement in the performance of 31 of the 33 problem solving and personal development competencies.[15]

Feedback and Training

One of the key aspects of the GLF is to provide tailored feedback and define individual training needs. Feedback is essential to the learning process because without constructive feedback it would be difficult for practitioners to engage in practice change and enhance their skills.[25]

As part of the feedback session for their baseline GLF evaluations, pharmacists were encouraged to participate in local case-based discussions and mentoring programs, attend centralised up-skilling programs offered by Medication Services Queensland as well as workshops offered by SHPA; approximately one-third of pharmacists attended a workshop after their baseline evaluation. These programs may have contributed to the improved performance demonstrated in the repeat GLF evaluations.

Pharmacy Department Benefits

In Queensland Health, the GLF may be included as documentary support for pharmacists' performance appraisal and development. An Australian survey of hospital pharmacy workforce recruitment and retention in an area health service reported that a primary motivator for job satisfaction was professional development and staff support.[26] Thirty-one per cent of pharmacists indicated that they would leave within two years if these key requirements were not met by the department.[26]

Collective data from GLFs can also facilitate work practice changes. The Cambridge model takes into consideration the influences of the system as well as the individual to assess performance.[19] The Queensland Health system supports performance of the pharmacist through the use of statewide tools such the medication action plan which facilitates the documentation of medication-related problems. The medication action plan was implemented statewide after the baseline GLF visits and in our study the repeat visits showed improvements in the documentation of medication-related problems and medication action plans.

Pharmaceutical reforms linked to enhanced or extended clinical pharmacy services, pharmaceutical review initiatives and introduction of the Pharmaceutical Benefits Scheme in Australia's public hospitals have resulted in an increase demand for hospital pharmacists.[27] Positions for hospital pharmacists increased by 25% from 2005 to 2007 and a further 11% increase was forecasted for the next two years.[27] In our study, at least one-third of hospital pharmacy positions in the 18 hospitals visited were filled by junior pharmacists. The Garling report recommended that standard guidelines should be developed to involve pharmacists in patient care at the earliest opportunity.[28] With the expanding role of clinical pharmacists within hospitals it is important to optimise their performance. Our study has shown that the GLF can assist with this process and the majority of pharmacists found it useful as a professional developmental tool.

Limitations

Only 88% of pharmacists worked at the same hospital for the two visits by evaluators. As this study was conducted in the actual workplace with a transient population, it reflects the 'real' scenario of pharmacists' work environment. Two-thirds of pharmacists did not have the same evaluator for the two visits but the evaluators did undergo standardised training. A repeat evaluation by a different evaluator may also make the finding more robust by reducing preconceptions that may bias evaluation. Inter-rater reliability are possible limitations of the observations of actual workplace performance but earlier work has documented acceptable inter-rater reliability.[11] Although the majority of pharmacists found the GLF a positive experience, it is not known if all of them shared this opinion as qualitative feedback was not provided by 21% of pharmacists.

CONCLUSION

This study demonstrated that the GLF tool assisted with the identification of pharmacists' training needs, which are integral to their professional development.

Competing interests: None declared

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