




Competencies required for General Practice Clinical Pharmacists providing the Scottish Pharmacotherapy Service: A modified eDelphi study

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Abstract

Due to work load pressures in primary care, increasing efforts are being made internationally to implement pharmacists working alongside general practitioners. While there is wide interest in the contributions pharmacists can make within primary care, there is limited research which explores the competencies pharmacists need to safely and effectively provide care in this arena. Therefore, a modified eDelphi study was conducted between July 2019 and January 2020 among pharmacists working in General Practice in Scotland in order to (a) generate a list of competencies required to undertake pharmacotherapy tasks within General Practice using content analysis; and (b) establish consensus regarding the importance of these competencies using a rating scale ranging from 1 (“not important”) to 10 (“very important”). A framework of competencies was developed, containing eight competency categories with a total of 31 individual competency items. Overall, study participants considered all eight competency categories as being important, with a mode of 10 and a median >8; agreement among participants was high, with the majority of individual competency items rated 8 or above by more than 75% of participants. There was, however, variation in responses with regards to specific tasks such as medicines reconciliation and medication compliance reviews. Findings indicate that the GP setting requires a broad set of competencies—covering areas including the use of IT systems; clinical knowledge; and communicating with patients and other healthcare professionals. This implies that further emphasis on clinical and consultation skills should be added to training programmes aimed at GP pharmacists; furthermore, ongoing support is also needed with regards to generic skills such as the use of IT systems, documentation, and general procedures and processes within primary care, some of which might need to be tailored to the specific practice context.

KEYWORDS

competencies, consensus, General Practice, modified eDelphi, pharmacist, Scotland

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What is known about this topic

- Pharmacists are being introduced into General Practice in order to alleviate pressure in primary care in several countries.
- There is wide interest in the contribution pharmacists can make, and increasing support by the UK government for pharmacists working alongside General Practitioners.

What this paper adds

- Pharmacists working in General Practice in Scotland require a wide range of competencies, including skills related to the use of IT systems and wider healthcare procedures.
- Training programmes should emphasise clinical and consultation skills, while also providing ongoing support with regards to more generic skills.
- The developed methodology can easily be adapted to accommodate other settings in order to gain an understanding of important competencies regardless of context.

1 | INTRODUCTION

Pressure within General Practice has been increasing globally in recent years (Avery, 2017; Bradley et al., 2018). A main contributor is the rise of multi-morbidity and polypharmacy in ageing populations, resulting in cases becoming more complex (Barnes et al., 2017; Maskrey et al., 2018; Stewart et al., 2020). Alongside this, there has been a shift in workload from secondary care to primary care, which may also increase pressure by causing additional workload for general practitioners (GPs). High levels of dissatisfaction among GPs—not least due to increasing workload—have had a negative impact on both recruitment and retention, with many GPs choosing to leave practice (Owen et al., 2019).

To help alleviate the pressure in primary care, efforts have been made to introduce pharmacists into General Practice, working together with GPs and other practice staff—for instance, in Australia and the Netherlands (Hazen, de Groot, de Bont, et al., 2018; Polasek et al., 2015). Research from Australia found a positive reception to this move, with GPs believing that pharmacists facilitate effective pharmacotherapy, despite earlier research highlighting a possible lack of GP support (Benson et al., 2019; Tan et al., 2014).

Pharmacists working within General Practice is not a new role within the UK (Bush et al., 2018); however, recently there has been increased funding and a drive to develop this role (Bradley et al., 2018; Stewart et al., 2020). Within the National Health Service (NHS) England, a pilot programme in 2015 saw the introduction of 1,000 pharmacists in practice-based roles (NHS England, n.d.; NHS England, 2015), while the Scottish Government funded the recruitment of 140 full-time equivalent General Practice Clinical Pharmacists (GPCPs) (Matheson et al., 2020). The GPCPs' role was operationalised in 2018 with the introduction of a national "Pharmacotherapy Service" within the General Medical Services Contract, which detailed a series of tasks GPCPs and other pharmacy staff should deliver (Scottish Government, 2017). The service comprises three levels of pharmacotherapy tasks: core tasks (e.g.

medicines reconciliation and medication safety reviews); advanced tasks (e.g. resolving high-risk medicines problems); and specialist tasks (e.g. specialist clinics). Core tasks may be carried out by pharmacists, or other qualified staff (e.g. pharmacy technicians) under supervision, while higher level tasks are carried out by pharmacists only. The pharmacotherapy service is being introduced over a 3-year period, with the goal of Scotland-wide implementation by April 2021 (Scottish Government, 2017).

While there is wide interest in the contributions pharmacists can make within primary care, there is limited research which explores the competencies pharmacists need to safely and effectively provide care in this arena. In Australia, a literature review was conducted in order to gain an understanding of the tasks, competencies and training needs of pharmacists within General Practice. The review highlighted areas such as medicines management, patient examination and screening, and chronic disease management, and was used to map specific training needs for pharmacists working in General Practice (Benson et al., 2019, 2020). In the Netherlands, research has highlighted the importance of educational support and continuous professional development in order to develop pharmacists' competencies within the role. This led to the development of a 15-month inter-professional training framework based on competencies identified by screening clinical pharmacy courses and frameworks, and focused on consultation skills, clinical reasoning, and inter-professional collaboration skills (Hazen, de Groot, de Bont, et al., 2018; Hazen, de Groot, de Gier, et al., 2018).

In Scotland, a competency-based educational resource—the Competency and Capability Framework (CCF)—was developed to support pharmacists working within General Practice (NHS Education for Scotland, 2016). However, the CCF was designed in 2016, prior to the operationalisation of the Pharmacotherapy Service, and competencies have not been validated. Independently identifying the competencies necessary for the delivery of the tasks associated with the Pharmacotherapy Service will help validate this resource going forward, as well as contribute to the evolving body of work concerned with pharmacists working in primary care.

1.1 | Aim

The aim of this study was to identify the competencies required for GPCPs in Scotland to deliver the Pharmacotherapy Service in General Practice, with the overarching goal of supporting the ongoing, Scotland-wide implementation of this service and informing further developments of the existing educational resource.

1.2 | Ethics approval

Ethical approval was granted by the Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde.

2 | METHODS

The study was split into two phases, as depicted in Figure 1. Each research activity conducted within each phase informed subsequent research activities in an iterative manner.

Phase 1 applied an eDelphi design and consisted of three steps: an initial participant selection questionnaire to identify an expert panel; followed by two eDelphi rounds. Each step involved on-line questionnaires designed and hosted on Qualtrics. The Delphi technique was chosen because it is a commonly used method for

gathering information and providing consensus, particularly in complex areas such as healthcare and education; however, to accommodate the busy schedules of participants, the original Delphi method was modified to exclude a third round (enabling panellist to review their initial responses). The sampling strategy was designed to recruit participants who were knowledgeable about the GP setting as well as the Pharmacotherapy Service, and were qualified to make valid judgements on the specific topics presented (Boulkedid et al., 2011; Holloway, 2012; Hsu & Sandford, 2007; Thangaratinam & Redman, 2005).

Phase 2 sought to validate the results of the eDelphi and used a paper-based questionnaire with a larger sample of participants. Details are presented in Table 1.

2.1 | Pharmacotherapy tasks

The Scottish “National Pharmacotherapy Service Specification (2018)” was defined by the Scottish Practice Pharmacy & Prescribing Advisors Association (Scottish Pharmacy Practice & Prescribing Advisors Association, 2018), and approved by the Scottish Government. The specification contained 14 pharmacotherapy tasks which involve pharmacists—either directly or in a supervisory role—across the three service levels, as presented in Table 2. Based on feedback during the piloting phase with regards to the time required to complete the first

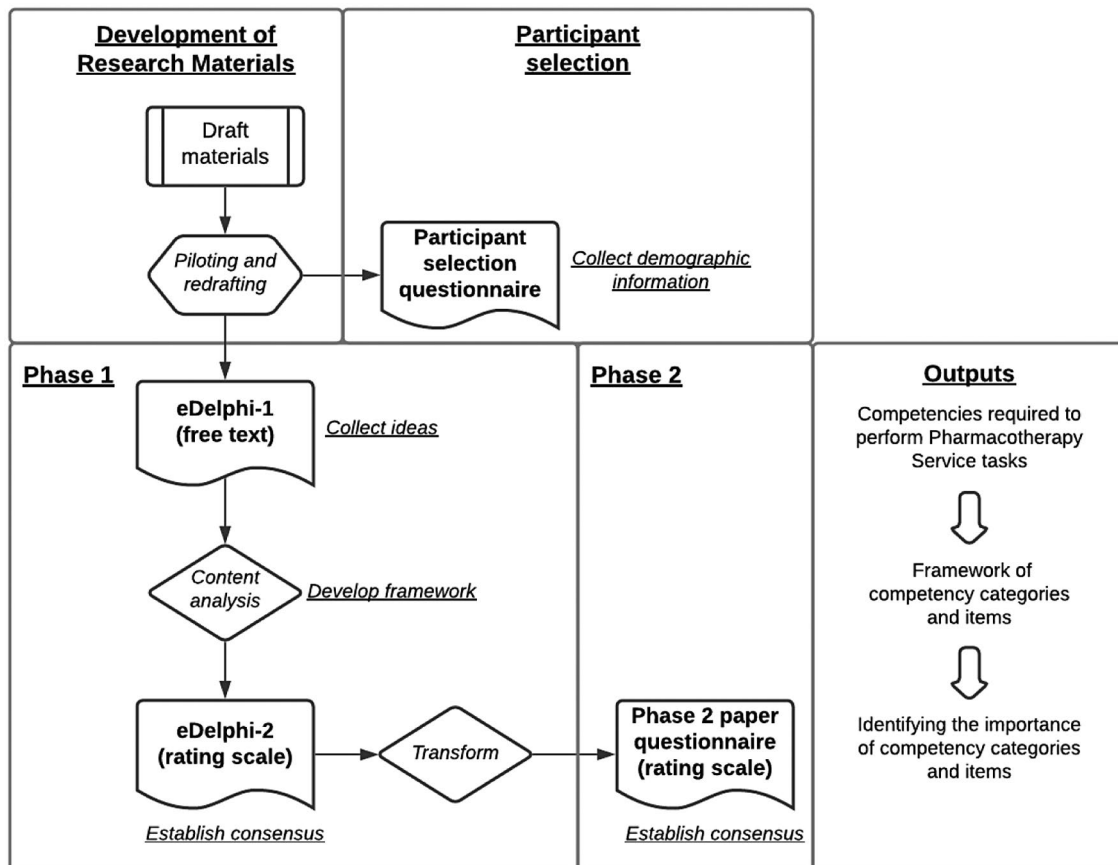


FIGURE 1 Process flowchart—research phases and related outputs

TABLE 1 eDelphi study and validation exercise methods

Method	Content	Purpose
Phase 1: eDelphi study		
Participant selection questionnaire	Demographics and experiences with conducting pharmacotherapy tasks	To identify eligible participants and select an expert panel
eDelphi-1: free text, collecting ideas	Competencies required to undertake the individual pharmacotherapy tasks	To generate an extensive list of competencies for each pharmacotherapy task
eDelphi-2: rating items ^a	Rating the importance of competencies in relation to pharmacotherapy tasks, with the ability to add any additional competencies if missing	To establish consensus regarding the importance of competencies
Phase 2: Validation exercise of eDelphi study results		
Validation: rating items ^a	Demographics Rating the importance of competencies in relation to pharmacotherapy tasks	To validate findings from Phase 1 using a larger sample

^aUsing a scale of 1–10; 1 = “not important at all” and 10 = “very important”.

Level	Pharmacotherapy tasks	Group 1	Group 2
Core tasks	Medicines reconciliation	X	
	Authorising/actioning acute prescribing requests	X	
	Authorising/actioning repeat prescribing requests		X
	Authorising/actioning Immediate Discharge Letters (IDLs)		X
	Medicine safety reviews/recalls	X	
	Monitoring high-risk medicines	X	
	Monitoring clinics		X
	Medication compliance reviews	X	
	Medication management advice and reviews (care homes)		X
	Formulary adherence		X
Advanced tasks	Medication review (more than 5 medicines)	X	
	Resolving high-risk medicines problems		X
Specialist tasks	Polypharmacy Reviews		X
	Specialist clinics	X	

TABLE 2 Pharmacotherapy tasks included in the study and group allocation of tasks in questionnaires

Note: The pharmacotherapy tasks represent aspects of the role intended to be performed by a General Practice Clinical Pharmacist, and are detailed in the Scottish “National Pharmacotherapy Service Specification (2018)”. Core tasks may be delivered by pharmacists, or pharmacotherapy assistants and/or pharmacy technicians with pharmacist supervision. Advanced tasks and specialist tasks usually relate to more complex issues, either patient or medication specific, which are completed only by senior or advanced clinical pharmacists who are fully autonomous practitioners requiring no supervision (Scottish Pharmacy Practice and Prescribing Advisors Association, 2018).

eDelphi, questionnaires for both Phase 1 and Phase 2 were split into two groups, each covering seven of the pharmacotherapy tasks.

2.2 | Preparation of materials

Three Phase 1 questionnaires—covering demographics (to enable participant selection based on GP practice experience); free-text

fields to collect ideas regarding competencies/required skills (eDelphi-1); and a rating scale to establish consensus with respect to the importance of competencies (eDelphi-2)—were developed incrementally between May and September 2019 (Table 1). The eDelphi-2 was designed based on the competencies identified from the eDelphi-1 results.

For Phase 2, minor layout changes were made to the participant selection questionnaire and eDelphi-2 in January 2020

to accommodate the change to a paper-based data collection method, while retaining the original format. Additionally, a comparison of eDelphi-1's competency items and the competencies covered within the 2016 CCF (NHS Education for Scotland, 2016) indicated that one relevant competency item (Understanding Code of Conduct) was present in the CCF which did not emerge from eDelphi-1 results; this was subsequently integrated into the validation exercise in order to provide a comprehensive list of relevant skills and competencies, taking into account the existing educational framework.

Questionnaires included a participant information sheet (PIS) and a Privacy Notice, and were configured so that participant consent was required in order to proceed. The PIS, consent form and Privacy Notice used for all data collection approaches were based on standard University of Strathclyde templates and adapted where appropriate for the purpose of this study. All materials were piloted by experienced pharmacists and revised based on feedback received prior to being disseminated to participants, and can be found in Appendices S1–S6.

2.3 | Recruitment of participants and dissemination of questionnaires

Three recruitment strategies were used for Phase 1: (a) NHS Education for Scotland (NES) provided email addresses of GPCPs who agreed to be contacted; (b) NHS Health Boards (regional organisations responsible for providing services to their local populations) identified potential participants, including GPs, GPCPs, and other healthcare professionals working as part of GP practice teams (e.g. practice nurses); and (c) the Scottish Practice Pharmacy & Prescribing Advisers Association nominated staff for participation. All those who completed the online participant selection questionnaire were allocated to one of two groups, ensuring that groups were balanced on experience with pharmacotherapy tasks, Health Board and years' experience (Table 2).

Participants received the link to one of the two versions of the eDelphi-1 questionnaires via email in July 2019. For the eDelphi-2 questionnaires, the groups were switched so that the opposite version of the questionnaire with different pharmacotherapy tasks was rated; links were sent in October 2019, regardless of whether participants had taken part in eDelphi-1. In both eDelphi-1 and eDelphi-2 questionnaires, the order of questions was randomised to ensure sufficient data were available with regards to all pharmacotherapy tasks.

Phase 2 was conducted during an event organised for GPCPs located in the North-East of Scotland in January 2020. Based on information provided on the participant selection questionnaire distributed upon arrival, participants were divided into two groups, using the same method as in Phase 1. During the afternoon session, participants received the validation exercise questionnaire which they were asked to complete and return by depositing them into a closed box prior to the end of the event. A planned second event for

GPCPs in the West of Scotland, scheduled for late March 2020, was unfortunately cancelled due to COVID-19 restrictions.

2.4 | Analysis of collected data

2.4.1 | Identification of competencies required to conduct the Pharmacotherapy Service (eDelphi-1)

Data collected from eDelphi-1 comprised free-text entries by participants regarding the competencies required to perform individual pharmacotherapy tasks. Completed questionnaires were imported into Microsoft Excel for analysis. The 14 pharmacotherapy tasks were divided between four researchers who independently undertook a content analysis for 3–4 of the pharmacotherapy tasks to identify (a) overall competency categories and (b) individual competency items. Content analysis is frequently used to facilitate the description and/or quantification of qualitative data (Elo & Kyngäs, 2008); participants' responses were grouped based on their content, and the four researchers met to discuss and identify commonalities between them to ensure trustworthiness of findings. The resulting framework was then applied deductively to the entirety of the dataset by one researcher, with approximately a quarter of the dataset independently validated.

2.4.2 | Importance of competencies required to conduct the Pharmacotherapy Service (eDelphi-2 and validation exercise)

The eDelphi-2 data and the validation exercise were analysed separately; however, they underwent the same analysis. Data collected from eDelphi-2 comprised ratings on a scale from 1 (*not important at all*) to 10 (*very important*) for individual competency items; these were entered into Microsoft Excel spreadsheets. For each identified competency category, the mode (most frequent score), median (mid-point of all scores) and level of agreement among participants with regards to importance (percentage of scores between 8 and 10) (Diamond et al., 2014; Maher et al., 2020) were calculated by aggregating the scores of all individual competency items within the respective category. To decipher relative importance, competency categories were ordered first by median, and then by level of agreement.

2.5 | Ethical considerations

Participants were informed that participation in this study was voluntary, and all data provided would be kept confidential; all participants consented to taking part. Electronic data were stored in a password-protected file on a secure University server. Paper-based materials were stored under lock-and-key on University premises, with only authorised researchers having access to these.

3 | FINDINGS

Twenty-six participants completed the initial participant selection questionnaire; since the response rate to this questionnaire was low and all respondents had GP practice experience, all were invited to participate in the study. Of the 26 invited participants, 10 completed the eDelphi-1 (with four complete and one partial response in group 1, and five complete responses in group 2) and 11 the eDelphi-2 (with seven responses in group 1, and four in group 2). The paper-based validation exercise was completed by 20 participants (10 in each group).

The majority of participants were female and independent prescribers. Age and experience within GP practice varied across the different questionnaires; details are presented in Table 3.

3.1 | Competencies required to conduct the Pharmacotherapy Service (eDelphi-1)

Based on content analysis of eDelphi-1 responses, a framework of competencies required to undertake the pharmacotherapy tasks was developed, containing eight competency categories with a total of 31 individual competency items (Table 4).

TABLE 3 Demographic information of participants across Phases 1 and 2

	eDelphi-1 (n = 10) ^a	eDelphi-2 (n = 11) ^a	Validation exercise (n = 20) ^b
Gender			
Male	0	2	5
Female	8	8	15
Age group			
25–34	4	2	6
35–44	2	4	8
45–54	2	4	2
55–64	0	0	4
Experience in GP practice (years)			
<5	5	2	13
5–10	1	3	2
10 or more	2	5	5
Regional spread ^c			
Health Boards represented (n)	4	5	8
Independent Prescriber qualification			
Yes	6	9	18

^aDemographics partially incomplete as not every participant provided an email address to link back to the participant selection questionnaire.

^bDemographics complete as demographics questionnaire handed out prior to the validation exercise.

^cIn total, there are 14 Health Boards in Scotland.

3.2 | Importance of competencies required to conduct the Pharmacotherapy Service (eDelphi-2 and validation exercise)

3.2.1 | Pharmacotherapy Service overall

Across the pharmacotherapy service, all eight competency categories were considered important, with a mode of 10 and a median >8. Agreement among participants was high with >75% of answers between 8 and 10 for approximately half of the categories, albeit with minor differences observed between eDelphi-2 and the validation exercise (Table 5). Results from both eDelphi-2 and the validation exercise are presented together to allow for comparison; results from the validation exercise were used to order the tasks (with eDelphi-2 results presented in brackets).

3.2.2 | By pharmacotherapy task

All competency categories were considered important for the advanced and specialist pharmacotherapy tasks, with modes and medians all ≥8; in contrast, modes and/or medians were below 8 for several competency categories across four of the core tasks (medicines reconciliation; medicines safety reviews/recalls; medication compliance reviews and formulary adherence). Levels of agreement were high across competency categories for most pharmacotherapy tasks, but was relatively low (with <60% of answers between 8 and 10) for a number of core tasks (medicines reconciliation; monitoring high-risk medicines; medication compliance reviews; medication safety reviews/recalls; immediate discharge letters; repeat prescribing requests and formulary adherence). Main results from the validation exercise are presented in Figure 2; see also Table A1 and Figure A1 in Appendix S7 for additional details, including results from eDelphi-2.

4 | DISCUSSION

To the best of our knowledge, this is the first study to use a bottom-up consensus method to determine the competencies required when working as a pharmacist in General Practice, drawing on the experiences of those working within the field. As such, it offers valuable insights into the variety of competencies necessary for pharmacists working in this setting.

Analyses of free-text responses received during eDelphi-1 and the subsequent ratings of the importance of competencies in both eDelphi-2 and the following validation exercise offered a range of interesting and, occasionally, rather unexpected findings. While most of the competency categories mentioned were to be expected—the ability to work as part of a multi-disciplinary team and communicate with patients, for instance—the emphasis on generic skills and IT skills was unexpected. The focus on pharmacological knowledge was also unanticipated, since all participants were fully trained and

TABLE 4 Competency categories and individual competency items as derived from eDelphi-1 content analysis

Competency categories (n = 8)	Individual competency items (n = 31)
1. General skills	<ol style="list-style-type: none"> 1. Ability to record patient information 2. Ability to understand patient information 3. Being comfortable speaking with patients 4. Ability to effectively manage workload 5. Knowledge of resources that may provide further information or guidance
2. IT skills	<ol style="list-style-type: none"> 1. Ability to use GP computer systems to access information 2. Ability to use GP computer systems to initiate tasks/procedures 3. Ability to use GP computer systems to update documentation
3. Legal & professional frameworks	<ol style="list-style-type: none"> 1. Understanding of local and national legal frameworks 2. Understanding Code of Conduct 3. Understanding of local and national formularies 4. Understanding of clinical guidelines
4. Procedural skills	<ol style="list-style-type: none"> 1. Ability to work in relation to practice protocols 2. Awareness of wider healthcare procedures 3. Ability to arrange follow-up 4. Ability to put new systems in place
5. Multi-disciplinary team communication skills	<ol style="list-style-type: none"> 1. Ability to communicate with others within the GP practice 2. Ability to communicate with other healthcare providers out with the GP practice 3. Ability to work effectively as part of a multi-disciplinary team
6. Consultation skills	<ol style="list-style-type: none"> 1. Ability to structure a consultation 2. Ability to take complete a history 3. Ability to provide patient-centred consultation 4. Ability to communicate outcome of task
7. Clinical knowledge	<ol style="list-style-type: none"> 1. Knowledge related to conditions being treated (medical knowledge) 2. Knowledge related to drugs being prescribed (pharmacological knowledge) 3. Knowledge related to the drug treatment itself 4. Knowledge related to potential interference with the effectiveness/safety of drugs
8. Clinical skills	<ol style="list-style-type: none"> 1. Ability to interpret clinical information 2. Ability to carry out clinical assessment 3. Ability to make clinical decisions 4. Ability to assess patient treatment

qualified pharmacists. It is, however, unclear whether this reflected the general requirements for pharmacological knowledge while practicing as a pharmacist, regardless of the work environment, or the need for specialised pharmacological knowledge above and beyond what has been acquired through an initial Pharmacy degree. It may be that the knowledge base acquired through undergraduate pharmacy studies is not sufficient for working in General Practice. The prominence of generic/IT skills within the developed framework highlights the importance of basic skills due to the complexity of healthcare systems. This supports previous research which found that working efficiently requires IT proficiency and pre-existing knowledge of wider systems, alongside cognitive, social and collaborative work processes (Berg, 1999; Holden et al., 2013).

Past research which highlighted necessary competencies and/or training programmes for pharmacists employed in General Practice internationally produced similar results. Benson, Lucas, Benrimoj, and Williams (2019), for instance, performed a literature review aimed at understanding competencies required for pharmacists working in General Practice. They suggested a list of important competencies comprising: medication management; patient examination and screening; chronic disease management; drug information and

education; collaboration and liaison; audit and quality assurance; and research. These competencies have been developed based on information stemming from five different countries (Australia, Brazil, Canada, UK and USA) and are comparable with those found in the eDelphi-1. Furthermore, the 15-month inter-professional workplace learning programme implemented for pharmacists working in General Practice in the Netherlands focuses strongly on areas such as clinical reasoning, consultation skills and inter-professional collaboration (Hazen, de Groot, de Gier, et al., 2018)—competencies also found to be important among GPCPs in Scotland. This suggests that there may be universal competencies for pharmacists working within General Practice regardless of geographical location. Potentially, it may be that context is less important than the tasks carried out and therefore—if pharmacotherapy tasks were to be delivered within other settings (e.g. Community Pharmacy) or different countries—the competencies identified would still be relevant.

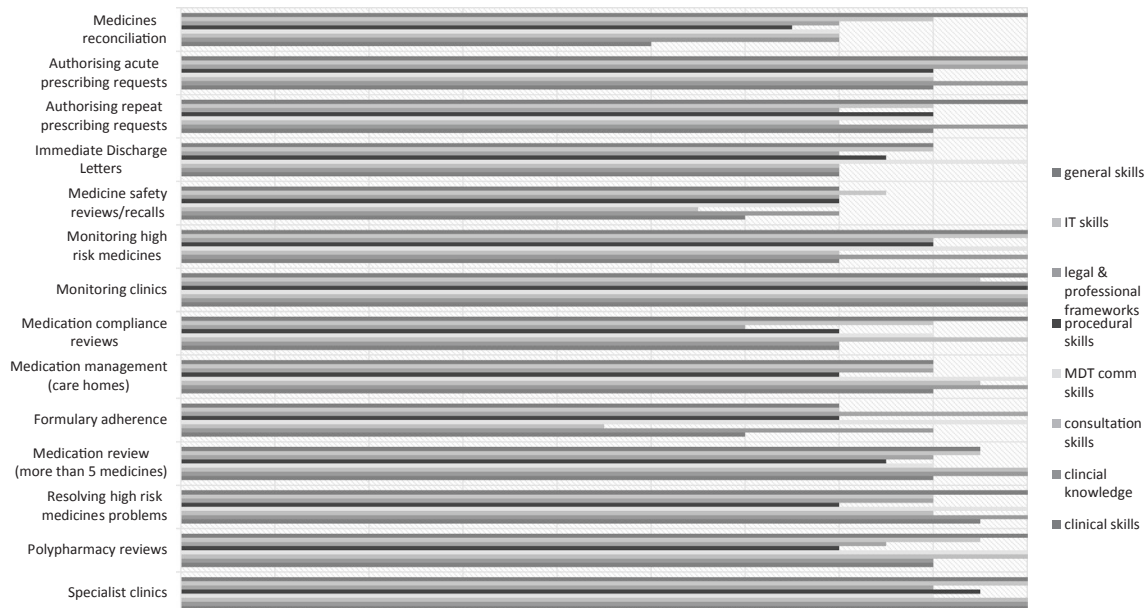
Although some variation in ratings has been observed, the overall impression is that all competency categories are important—albeit with differences between individual pharmacotherapy tasks. More advanced tasks such as polypharmacy reviews and specialist clinics, for example, may require a wider range of competencies; moreover,

TABLE 5 Rating of importance of the competency categories as derived from content analysis of eDelphi-1, across all Pharmacotherapy Service tasks—validation exercise ($n = 20$), eDelphi-2 ($n = 11$)

Competency category	Mode Validation exercise (eDelphi-2)	Median Validation exercise (eDelphi-2)	Level of agreement ^a Validation exercise (eDelphi-2)
General skills	10 (10)	10 (10)	84.7% (87.0%)
Multi-disciplinary team communication skills	10 (10)	10 (9)	83.6% (71.9%)
Clinical knowledge	10 (10)	9 (10)	85.0% (80.2%)
IT skills	10 (10)	9 (10)	82.4% (89.0%)
Legal & professional frameworks	10 (10)	9 (10)	74.6% (82.2%)
Consultation skills	10 (10)	9 (10)	73.4% (75.7%)
Clinical skills	10 (10)	9 (10)	71.8% (68.2%)
Procedural skills	10 (10)	8 (9)	70.9% (71.8%)

Note: Rating scale 1–10; 1 = “not important at all” and 10 = “very important”.

^aPer cent of ratings for competency items with a score of 8–10, aggregated by competency category.

**FIGURE 2** Rating of importance of competency categories by pharmacotherapy task—median (validation exercise, $n = 20$). Rating scale 1–10; 1 = “not important at all” and 10 = “very important”. IT, information technology; MDT, multi-disciplinary team

mastery of specific competencies might be more important when conducting these tasks as compared to core pharmacotherapy tasks, leading to overall higher ratings across competency categories. Additionally, low ratings relating to core tasks might also be influenced by pharmacists supervising tasks rather than conducting them, as these may be carried out by other qualified members of the team (e.g. a pharmacy technician). Pharmacotherapy tasks are not standardised and might therefore be operationalised differently in different GP practices or Health Boards; hence, GPCPs' experiences might diverge depending on context. This may partially explain some of the variation observed with regards to the relative importance of certain competency categories across the individual

pharmacotherapy tasks. This exemplifies the importance of continuous professional development within pharmacy practice (Driesen et al., 2007), particularly throughout individual pharmacist's career paths as their roles evolve within differing locations and contexts (Schindel et al., 2019).

This study is novel through its application of a bottom-up approach, which ensured that competencies identified were reflective of the true experiences of front-line practitioners and not derived solely from researchers' interpretation or strategists' input. Furthermore, participants had a variety of years' experience within GP settings which ensure that competencies required at different career stages were identified. Another major strength of this study

is its adaptive design, using both online as well as paper-based questionnaires in order to accommodate participants' circumstances. However, the size of the study population was quite small, and results might therefore not be reflective of the entire population of GPCPs working in Scotland; plans for a second cohort of participants in Phase 2 could unfortunately not take place due to COVID-19. Disappointingly, no GPs or nurses agreed to participate in the study and therefore responses were only available from pharmacists, indicating that certain aspects of working in GP practice might not have been captured.

Findings have been discussed with the funder (NHS Education for Scotland), and might be used to update and/or refine the existing educational resource (the CCF) and potentially inform forthcoming iterations of this framework. Future work will include repeating the validation exercise with a larger cohort of GPCPs to further refine interpretations of the importance of individual competencies for specific pharmacotherapy tasks; including additional details with regards to pharmacists' background (e.g. whether they previously worked in a hospital setting or community pharmacy) would be beneficial. It would also be interesting to adopt the same methodology within a different clinical setting; replicating this study in other countries would enable comparisons across different healthcare systems. This would foster our understanding of those competencies that are independent of geographical and/or cultural setting, and those competencies that are context specific.

5 | CONCLUSION

Based on input received from pharmacists currently working in General Practice, this setting requires a broad set of competencies—covering areas such as the use of IT systems; clinical knowledge and communicating with patients and other healthcare professionals. The applied methodology can easily be adapted to accommodate other settings to offer a universal method to gain an understanding of important competencies regardless of context.

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CONFLICT OF INTEREST

There are no conflicts of interest to declare.

AUTHOR CONTRIBUTIONS

Study concept and design: TM, RN. Data collection: TM, KP, NMW. Analysis and interpretation of data: TM, KP, NMW, MB, RN. Drafting of the manuscript: TM. Critical revision and editing of the manuscript: TM, KP, NMW, MB, RN. Obtained funding: MB, RN.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

- Avery, A. J. (2017). Pharmacists working in general practice: Can they help tackle the current workload crisis? *British Journal of General Practice*, 67, 390–391. <https://doi.org/10.3399/bjgp17X692201>
- Barnes, E., Ashraf, I., & Din, A. (2017). New roles for clinical pharmacists in general practice. *Prescriber*, 28, 26–29. <https://doi.org/10.1002/psb.1558>
- Benson, H., Lucas, C., Benrimoj, S. I., Kmet, W., & Williams, K. A. (2019). Pharmacists in general practice: Recommendations resulting from team-based collaborative care. *Australian Journal of Primary Health*, 24, 448–454. <https://doi.org/10.1071/PY18022>
- Benson, H., Lucas, C., Benrimoj, S. I., & Williams, K. A. (2019). The development of a role description and competency map for pharmacists in an interprofessional care setting. *International Journal of Clinical Pharmacy*, 41, 391–407. <https://doi.org/10.1007/s11096-019-00808-4>
- Benson, H., Lucas, C., & Williams, K. A. (2020). Establishing consensus for general practice pharmacist education: A Delphi study. *Currents in Pharmacy Teaching and Learning*, 12, 8–13. <https://doi.org/10.1016/j.cptl.2019.10.010>
- Berg, M. (1999). Patient care information systems and health care work: A sociotechnical approach. *International Journal of Medical Informatics*, 55, 87–101. [https://doi.org/10.1016/s1386-5056\(99\)00011-8](https://doi.org/10.1016/s1386-5056(99)00011-8)
- Boukdedid, R., Abdoul, H., Loustau, M., Sibony, O., & Alberti, C. (2011). Using and reporting the Delphi method for selecting healthcare quality indicators: A systematic review. *PLoS One*, 6, e20476. <https://doi.org/10.1371/journal.pone.0020476>
- Bradley, F., Seston, E., Mannall, C., & Cutts, C. (2018). Evolution of the general practice pharmacist's role in England: A longitudinal study. *British Journal of General Practice*, 68, e727–e734. <https://doi.org/10.3399/bjgp18X698849>
- Bush, J., Langley, C. A., Jenkins, D., Johal, J., & Huckerby, C. (2018). Clinical pharmacists in general practice: An initial evaluation of activity in one English primary care organisation. *International Journal of Pharmacy Practice*, 26, 501–506. <https://doi.org/10.1111/ijpp.12426>
- Diamond, I. R., Grant, R. C., Feldman, B. M., Pencharz, P. B., Ling, S. C., Moore, A. M., & Wales, P. W. (2014). Defining consensus: A systematic review recommends methodologic criteria for reporting of Delphi studies. *Journal of Clinical Epidemiology*, 67, 401–409. <https://doi.org/10.1016/j.jclinepi.2013.12.002>
- Driesen, A., Verbeke, K., Simoens, S., & Laekeman, G. (2007). International trends in lifelong learning for pharmacists. *American Journal of Pharmaceutical Education*, 71, 52. <https://doi.org/10.5688/aj710352>
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62, 107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Hazen, A. C., de Groot, E., de Bont, A. A., de Vocht, S., de Gier, J. J., Bouvy, M. L., de Wit, N. J., & Zwart, D. L. M. (2018). Learning through boundary crossing: Professional identity formation of pharmacists transitioning to general practice in the Netherlands. *Academic Medicine*, 93, 1531–1538. <https://doi.org/10.1097/ACM.0000000000002180>

- Hazen, A., de Groot, E., de Gier, H., Damoiseaux, R., Zwart, D., & Leendertse, A. (2018). Design of a 15-month interprofessional workplace learning program to expand the added value of clinical pharmacists in primary care. *Currents in Pharmacy Teaching and Learning*, 10, 618–626. <https://doi.org/10.1016/j.cptl.2018.01.006>
- Holden, R. J., Carayon, P., Gurses, A. P., Hoonakker, P., Schoofs Hundt, A., Ozok, A. A., & Rivera-Rodriguez, A. J. (2013). SEIPS 2.0: A human factors framework for studying and improving the work of health-care professionals and patients. *Ergonomics*, 56, 1669–1686. <https://doi.org/10.1080/00140139.2013.838643>
- Holloway, K. (2012). Doing the E-Delphi: Using online survey tools. *CIN*, 30, 347–350. <https://doi.org/10.1097/NXN.0b013e31825e8923>
- Hsu, C. C., & Sandford, B. A. (2007). The Delphi technique: Making sense of consensus. *Practical Assessment, Research & Evaluation*, 12, Article 10. <https://doi.org/10.7275/pdz9-th90>
- Maher, E., Nielsen, S., Summers, R., & Wood, P. (2020). Core competencies for Australian pharmacists when supplying prescribed opioids: A modified Delphi study. *International Journal of Clinical Pharmacy*. <https://doi.org/10.1007/s11096-020-01060-x>
- Maskrey, M., Johnson, C. F., Cormack, J., Ryan, M., & Macdonald, H. (2018). Releasing GP capacity with pharmacy prescribing support and New Ways of Working: A prospective observational cohort study. *British Journal of General Practice*, 68, e735–e742. <https://doi.org/10.3399/bjgp18X699137>
- Matheson, C., Reid, F., Stewart, F., & Williams, H. (2020). Development of an education and support framework for pharmacists working in GP practice. *International Journal of Pharmacy Practice*, 28, 191–199. <https://doi.org/10.1111/ijpp.12610>
- NHS (2016). General practice clinical pharmacist: Competency and Capability Framework Edinburgh. Education for Scotland.
- NHS England. (n.d.). Clinical pharmacists. Retrieved from <https://www.england.nhs.uk/gp/our-practice-teams/cp-gp/>
- NHS England. (2015). Clinical pharmacists in general practice pilot. Retrieved from <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/07/clinical-pharmacists-gp-pilot.pdf>
- Owen, K., Hopkins, T., Shortland, T., & Dale, J. (2019). GP retention in the UK: A worsening crisis. Findings from a cross-sectional survey. *British Medical Journal Open*, 9, Article e026048. <https://doi.org/10.1136/bmjopen-2018-026048>
- Polasek, T. M., Rowland, A., Wiese, M. D., & Sorich, M. J. (2015). Pharmacists in Australian general practice: An opportunity for expertise in precision medicine. *Therapeutic Advances in Drug Safety*, 6, 186–188. <https://doi.org/10.1177/2042098615599947>
- Schindel, T. J., Yuksel, N., Breault, R., Daniels, J., Varnhagen, S., & Hughes, C. A. (2019). Pharmacists' learning needs in the era of expanding scopes of practice: Evolving practices and changing needs. *Research in Social and Administrative Pharmacy*, 15, 448–458. <https://doi.org/10.1016/j.sapharm.2018.06.013>
- Scottish Government. (2017). The 2018 General Medical Services Contract in Scotland. Retrieved from <https://www.glasgowlmc.co.uk/download/contract%20and%20contractural%20issues/The-2018-General-Medical-Services-Contract-in-Scotland.pdf>
- Scottish Pharmacy Practice and Prescribing Advisors Association. (2018). National Pharmacotherapy Service Specification.
- Stewart, D., Maclure, K., Newham, R., Gibson-Smith, K., Bruce, R., Cunningham, S., Maclure, A., Fry, S., Mackerrow, J., & Bennie, M. (2020). A cross-sectional survey of the pharmacy workforce in general practice in Scotland. *Family Practice*, 37, 206–212. <https://doi.org/10.1093/fampra/cmz052>
- Tan, E. C., Stewart, K., Elliott, R. A., & George, J. (2014). Pharmacist services provided in general practice clinics: A systematic review and meta-analysis. *Research in Social and Administrative Pharmacy*, 10, 608–622. <https://doi.org/10.1016/j.sapharm.2013.08.006>
- Thangaratnam, S., & Redman, C. W. E. (2005). The Delphi technique. *The Obstetrician & Gynaecologist*, 7, 120–125. <https://doi.org/10.1576/toag.7.2.120.27071>

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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