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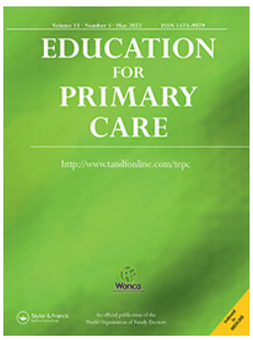

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EVALUATION AND INNOVATIONS

An innovative General Practice based Pharmacy Longitudinal Clerkship: using theory to characterise its development, implementation and initial evaluation

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ABSTRACT

Background: Longitudinal Integrated Clerkships exist in undergraduate medicine courses. A pilot Pharmacy Longitudinal Clerkship (pPLC) was funded to investigate delivery of this model of clinical education for student pharmacists.

Objective(s): To investigate the development, implementation and initial evaluation of a pPLC.

Methods: The 11-week pPLC was delivered to two students in two GP practices in Scotland. Mixed theory-based methods were used to gather information on the pPLC structures and processes required and qualitative semi-structured Theoretical Domains Framework (TDF) based interviews explored outcomes with key stakeholders. Informed written consent was obtained. Interviews were audio-recorded, transcribed verbatim and analysed thematically. University Ethics approval was granted.

Results: Data were generated on resources and processes required for a pPLC including funds budgeted for and actually spent on staffing, student travel/subsistence and student clinical 'Kit Bags', learning outcomes, curriculum and training timetable, GP Practice/University contracts. Interviews were completed with the two students, three linked GP clinical supervisors and two Regional Tutors involved. The seven themes were identified and mapped to seven TDF domains including: increased levels of student confidence, and increased student enthusiasm for a career in pharmacy, need for definition of the role of the Regional Tutor for the PLC and GP positivity towards the expected outcomes of clerkship model versus traditional placements.

Conclusion: Findings are limited by the small number of participants and settings, but evaluation was positive and the work garnered information on requirements for resources and processes. This will inform 'roll out' of the PLC.

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Clinical clerkship; pharmacy; interprofessional education; general practice; theoretical models; experiential learning

Introduction

The Scottish Government strategy *Achieving Excellence in Pharmaceutical Care*[1] highlighted difficulties in attracting pharmacists to remote and rural areas and committed to develop a pharmacy longitudinal clerkship (PLC) to help address these. In medicine, improving students' exposure to remote and rural working is one way of achieving recruitment and retention [2,3]. The medical Longitudinal Integrated Clerkship (LIC) is a model of clinical education in which students spend a longer period of time in practice [4–7].

There has been significant governmental support in the UK through funding for the development of clinical pharmacists in General Practice (GP) [8,9] and evidence for their integration to GP teams and benefits of the role [10,11]. However, currently in Scotland within the undergraduate Master of Pharmacy (MPharm) course experiential learning (EL) placements for student pharmacists (SPs) are generally short in duration, have limited focus on General Practice and there are few examples of published work of longitudinal placements in pharmacy[12].

It is therefore essential to ensure that SPs have opportunities to participate in extended EL programmes in GP. In view of this and the success of the Longitudinal Integrated Clerkship model in extending remote and rural undergraduate medical clinical education and in line with Scottish Government strategic commitments, a longitudinal clerkship for student pharmacists was funded to commence from November 2019. However, monies became available to fund two student pharmacists from November 2018 ahead of the official Pharmacy Longitudinal Clerkship commencement date, which enabled an early pilot investigation and evaluation to take place.

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The aim of this work was to carry out a theoretically underpinned initial pilot investigation of the development, implementation, and initial evaluation of the pharmacy longitudinal clerkship.

Methods

Donabedian's conceptual model for the systematic consideration of the development and implementation of the Pharmacy longitudinal clerkship was used[13]. The Theoretical Domains Framework (TDF) [14] was used to frame this initial evaluation.

Setting/participants

The Pharmacy longitudinal clerkship occurred collaboratively between staff across academia and practice. It was based in two GP practices in the NHS Highland area. Two students volunteered to participate. Staff included senior university academics, educationalists, and senior health board pharmacists, practising pharmacists and doctors who acted as GP clinical supervisors (GP CS) and Regional Tutors (RTs). The opportunity was promoted to the whole MPharm cohort towards the end of year 3 prior to the Pharmacy longitudinal clerkship taking place in the first half of year 4 (their final year).

Data collection

Development and implementation

The research team identified information needed in terms of structures and processes. This arose from the normal processes of educational development and involved theory, literature, peer review and team discussion. This pilot with two students was used as a context for the development and implementation.

Initial evaluation

All staff and student stakeholders involved were invited to take part either by face-to-face or telephone semi-structured interview after informed consent. A draft schedule for the semi-structured interview was developed from several sources; literature review, policy; and TDF. Credibility was enhanced through review of the draft by key expert researchers and practitioners. Piloting was impractical due to the small number of stakeholders involved.

The researchers were trained in semi-structured interviewing. Interview audio was recorded digitally, transcribed verbatim and then checked for accuracy by one of the research team prior to analysis.

Data analysis

All documents and data on structures and processes were collated and reported descriptively. For the qualitative interviews, the Framework Method was used[15], using TDF as a thematic guide.

Results

The Pharmacy longitudinal clerkship was extracurricular and scheduled when students would be undertaking a 6-week full-time research project. The two student participants agreed to allocate some of their research time to take part in the Pharmacy longitudinal clerkship.

Structures (resources) in the form of documentation included; a contract with NHS Education for Scotland (NES), a Service-Level Agreement between project partners and contracts with individual general practices.

Processes were designed to provide a clear understanding for all stakeholders of the steps and appropriate quality management arrangements. These included information on project structure, content and timetable within a PLC Student and Tutor Handbook

Costs

The total cost per student pharmacist for the duration of the 11-week placement was approximately £4300. This figure does not include the pharmacist regional tutor or GP regional tutor costs, which were kindly provided gratis for this pilot. This situation largely arose due to the fact that at the time of the pilot there was extra tutoring capacity and a willingness to provide 'goodwill' in support of this pilot from NHS Highland (Pharmacy Regional Tutor) and the University of Dundee (GP regional Tutor). This was therefore not costed in this pilot, but estimated timings of support were collected to inform the costing for any future Pharmacy longitudinal clerkship rollout developments. The breakdown of costs is outlined in Table 1.

Clinical equipment 'kit bag'

To facilitate clinical skill development, student pharmacists were given a 'kit bag', for the duration of the pPLC containing stethoscope, sphygmomanometer, pulse oximeter, ENT diagnostic set and thermometer.

Table 1. Cost per PLC student pharmacist, 2018–19.

Item	Cost	Comment
Student travel	£200–£400	Dependent on practice site
Student accommodation	£65 per week/ student	Hospital staff accommodation
GP Practice fee	£2640/practice	For 11 weeks training/ 6 sessions per week
Equipment – 'Kit Bag'	£500/bag	One-off cost Range of clinical assessment equipment
Pharmacist regional tutor time	Not costed	Approx. 2 days per week
Medical regional tutor time	Not costed	Approx. 1 session per week

Students were shown how to use the equipment during an induction week where they spent time in a Clinical Skills Centre. During the Pharmacy longitudinal clerkship the equipment was used under supervision and recorded in a clinical skill log book. This allowed students to be signed off by their GP Clinical Supervisor for specific activities once they demonstrated competence.

Student and tutor workbook

A workbook was produced to include salient information on the clerkship. It included sections on learning outcomes, curriculum, an outline timetable, details of planned tutorials and a clinical skill log book.

Learning outcomes

Being extracurricular, this pilot Pharmacy longitudinal clerkship study did not contribute to MPharm curriculum outcomes and was not summatively assessed. Broad learning outcomes were developed for the Pharmacy longitudinal clerkship and are shown in Box 1.

Box 1. PLC Learning Outcomes.

- Develop and demonstrate clinical examination and assessment skills
- Demonstrate appropriate decision-making skills
- Develop an understanding of the management of acute and long-term conditions in primary care, including pharmacological and non-pharmacological management
- Understand the range of medicines management processes in primary care

demonstrate effective interprofessional teamworking.

Curriculum

Students actively collaborated with the GP practice team to plan to meet defined areas of a curriculum as shown in Box 2.

Box 2. Curricular Content.

- Participate in consultations with doctors and the extended healthcare team, i.e. observing, consulting jointly or speaking to the patient prior to their appointment
- Practise skills in taking clinical histories and developing consultation skills such as identifying patient's ideas, concerns and expectations and providing advice
- Practise examination and clinical assessment skills for acute and long-term conditions (BP, pulse, temp, oxygen saturation, respiratory rate, urinalysis, peak flow, examination of the ears, throat and lymph nodes of the neck)
- Learn about the roles of the healthcare team and community partners
- Follow patient journeys, including to and from community pharmacy or hospital, e.g. acute admission
- Work with the practice pharmacist and repeat prescription administration team
- Learn about the medication management interface between primary care, the community and secondary care
- Participate in practice and multi-disciplinary team meetings.

Placement timetable

Both student pharmacists were placed in a separate practice for six sessions each week. The remaining four sessions were used for their research project, to attend weekly PLC tutorials and to provide self-study/reflection time. The GP practices chosen were accredited teaching practices and had experience of hosting medical longitudinal clerkship students.

The pharmacist Regional Tutor and a GP Regional Tutor were responsible for the initial placement of students, organisation of weekly tutorials and ongoing placement site and student pastoral support.

Activities were chosen to give an immersive experience and included time with the various services involved in delivery of primary care. This included attending a podiatry clinic, patient home visits with the district nursing teams, conducting medication reviews, shadowing advanced nurse and pharmacist practitioners, undertaking own patient consultations jointly with their GP CS. An example timetable and activities can be seen in Table 2.

Student pharmacists met with their GP Clinical Supervisors and separately with the regional pharmacist and regional medical tutors on a weekly basis. GP Clinical Supervisors were able to contact the Regional Tutor as necessary for advice/support.

Tutorials

Tutorials were topic focused and covered common presentations in cardiology, care of the elderly, pain management, diabetes, antimicrobial stewardship, dermatology and respiratory. They also provided an opportunity to share learning, reflection on student

Table 2. PLC example weekly activity timetable.

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning Session 09.00–11.30	Not in GP practice MPharm Project day	Advanced Practitioner Acute on-the-day (OTD) clinic	GP surgery Shadowing: DMARD monitoring, Docman®, special prescription requests, visits, medication review	Community nurse Shadowing: podiatry, physiotherapy, dietician, community pharmacy or nursing home visit or chronic disease clinic.	Tutorial HPERC teaching room
11.30–13.00		Home visits	Home visits	Practice pharmacist (e.g. repeat prescriptions)	Vaccination clinic or Child health clinic or secondary care or GP tutorial
Afternoon Session 13.30–16.00		Practice nurse Chronic disease clinic	No timetable activities Self-study/Reflection		

pharmacists' experiences and to consolidate learning. They were delivered by both medical and pharmacy professionals from primary and secondary care.

Initial evaluation findings

Table 3 outlines the themes identified with illustrative quotes from participants.

Realisation of rapid development of student knowledge and skills through PLC

Both students had an overwhelmingly positive experience and they particularly enjoyed the extended patient-facing nature of the pilot Pharmacy longitudinal clerkship, and enthused about how they recognised that it had enabled consolidation of current and rapid development of new knowledge and skills.

Greater student understanding of application to real life of knowledge and skills

The students also articulated that they felt that they had learned how to really apply the knowledge learnt in the classroom to 'real life' individual patients. They also commented that the breadth of their clinical skills had developed through the many opportunities offered. They indicated that they did not think they would get such opportunities out with the PLC.

Increased levels of student confidence

The students also reported increased levels of confidence in being able to apply knowledge learned within the MPharm.

Increased student understanding of scope and potential of pharmacists' role in GP setting/ increased student optimism for being a pharmacist

Spending a prolonged period in practice also seemed to help the students consolidate aspects of their professionalism and optimism for being a pharmacist

Positivity towards the expected outcomes of clerkship model versus traditional placements

The three GP Clinical Supervisors were positive about longitudinal clerkships and on their ability to enable the development of independent learning in students.

Benefits of the Pharmacy Longitudinal Clerkships were highlighted by the pharmacist Regional Tutors including the opportunity for students to apply their theoretical knowledge in clinical practice and the opportunity to develop over a period of time in their consultation skills, which would be difficult to achieve in an on-campus setting.

Concerns of taking student pharmacists/need for preparation to ensure good experiences

GP Clinical Supervisors and medical Regional Tutors articulated some of the themes around challenges encountered from being unaware of baseline knowledge and skills of student pharmacists. There was an opinion expressed that indicated a concern for availability of resource and capacity to adequately supervise the pharmacy student. Linked to this were issues of preparedness and what actions to take to be more prepared for taking student pharmacists.

Discussion

There is limited evidence around longitudinal clerkships for student pharmacists. Kerr et al. published on a longitudinal clerkship developed as an integral

Table 3. Mapping of TDF domains to Identified Themes.

TDF domain	Theme	Illustrative quote
Knowledge and skills	Realisation of rapid development of student knowledge and skills through PLC	*'. . . we do need more training for the observations, blood pressure and all those sorts of* [clinical assessment] *skills, if I was not on the clerkship, I would have known none of those' [Student Pharmacist 2]*
Social/professional role and identity	Increased student understanding of scope and potential of pharmacists' role in GP setting	*'. . . excited to start pre-reg and actually be a pharmacist'* [Student Pharmacist 1]
Beliefs about capabilities	Increased levels of student confidence	*'I feel like I've just become more and more confident'* [Student Pharmacist 1]
Beliefs about consequences	Positivity towards the expected outcomes of clerkship model versus traditional placements	*'I'm totally convinced and won over to the fact that, actually, longitudinal clerkships are an excellent way to learn self-directed learning' [GP Clin. Super. 2]* *'I'm absolutely totally sold on the longitudinal clerkship'*. [Medical Regional Tutor]
Environmental context and resources	Greater student understanding of application to real life of knowledge and skills	*'I did use my knowledge quite a lot and it does get you thinking 'cause they're real patients' [Student Pharmacist 1]*
	Need for preparation to ensure good experiences	*'We were not really quite sure . . . what clinical knowledge they would already have'. [GP Clin. Super. 1]*
Emotion	Concerns of taking student pharmacists	*'the biggest challenge was that we didn't actually know what the student pharmacists could and couldn't do'*. [Medical Regional Tutor] *'we were kind of envisaging a bit more of a kind of self-regulated learning . . . ' [GP Clin. Super. 1]* *'How is this going to impact on our resources and time to see patients?' [GP Clin. Super. 1]*

part of a five-year pharmacy degree in Ireland[8]. It provides little detail of the structure and processes of its development and implementation. Indeed, a narrative review indicates that there is little published on this[16]. This study addresses this by using the Donabedian model to consider structures, processes and outcomes for a LIC for student pharmacists.

Many of the 'tips' outlined by Ellaway et al. have been systematically considered[17]. The practice placement sites were chosen with care to ensure an appropriate teaching environment. There was also careful consideration of induction and exploration of students' expectations and individual development needs. A key part of planning for practice sites was setting up a 'Service Level Agreement' with each practice that outlined the expectations for the service and associate costs.

At the present time, this Pharmacy longitudinal clerkship remains out with the MPharm curriculum. Depending on funding, and further research with larger numbers of students and sites, there may be scope for expansion of Pharmacy longitudinal clerkships. The need to integrate Pharmacy longitudinal clerkships within the development of a new iteration of the Robert Gordon University MPharm course is planned. This is entirely compatible with the recently published standards for initial education and training of pharmacists with an aspiration that pharmacists will play a much greater role in providing clinical care to patients[18].

Strengths and limitations

All phases involved a collaborative multidisciplinary approach. The trustworthiness of the work was considered throughout[19]. Limitations of this pilot work include the fact that it involved a small number of participants (n = 2) and settings in each of the phases of the work (n = 2 GP practices). This may mean that some aspects may not be directly transferable to other settings or countries given the uniqueness of some aspects of the pilot.

Future developments

There is a need to consider organisation and preparation of staff and students including how best to integrate the Pharmacy longitudinal clerkship to the MPharm. The initial evaluation highlights the need to consider the adequacy of student clinical assessment skills. Longitudinal follow-up would help determine the success of the programme in enabling students to progress to advanced levels of clinical practice in remote and rural settings and to investigate the potential success of recruitment to remote and rural settings.

Conclusion

Overall, the outcomes of this pilot, although limited by the very small number of participants and settings, were positive in terms of student and tutor experience and information has been gathered on the requirement for resources and processes for future development.

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Ethical approval & research governance

The approval was granted by Robert Gordon University School of Pharmacy and Life Sciences ethics committee. Advice from the NHS Research Ethics Committees confirmed that NHS approval was not required

Disclosure statement

No potential conflict of interest was reported by the authors.

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Author contributions

Cunningham S: Conceptualisation; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Roles/Writing - original draft; Writing – review and editing. Innes C: Data curation; Formal analysis; Writing – review and editing. Rushworth G: Conceptualisation, Project administration, Writing – review and editing. Addison B: Project administration, Writing – review and editing. Wedekind Y: Project administration Writing – review and editing. Watson E: Conceptualisation, Writing – review and editing. Rudd I: Conceptualisation, Writing – review and editing. Power A: Conceptualisation, Resources, Writing – review and editing

References

[1] Scottish Government. Achieving excellence in pharmaceutical care a strategy for Scotland. Cited 2021 Feb 16. Available from: https://www.gov.scot/publications/achieving-excellence-pharmaceutical-care-strategy-scotland/

[2] Wilson NW, Couper ID, De Vries E, et al. A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas. Rural Remote Health. 2009;Apr-Jun;9(2):1060.

[3] O'Donoghue S, Mcgrath D, Cullen W. How do longitudinal clerkships in general practice/primary care impact on student experience and career intention? A cross-sectional study of student experience. Educ Prim Care. 2015 MAY;26(3):166–175.

[4] Norris TE, Schaad DC, Dewitt D, et al. Longitudinal integrated Clerkships for medical students: an innovation adopted by medical schools in Australia, Canada, South Africa, and the United States. Acad Med. 2009 JUL;84(7):902–907.

[5] Worley P, Couper I, Strasser R, et al. Consortium of Longitudinal Integrated Clerkships (CLIC) research collaborative. A typology of longitudinal integrated clerkships. Med Educ. 2016 Sep;50(9):922–932.

[6] McKeown A, Mollaney J, Ahuja N, et al. UK longitudinal integrated clerkships: where are we now? Educ Prim Care. 2019 Sep;30(5):270–274.

[7] Bartlett M, Dowell J, Graham F, et al. Dundee's Longitudinal Integrated Clerkship: drivers, implementation and early evaluation. Educ Prim Care. 2019 Mar;30(2):72–79.

[8] NHS England. Enhanced service specification general practice forward view (GPFV) clinical pharmacists in general practice phase 2 programme. cited 2019 Dec 9. Available from: https://www.england.nhs.uk/wp-content/uploads/2017/11/enhanced-service-clinical-pharmacists-gp.pdf

[9] Scottish Government. Primary care funding - allocation for pharmacists in GP practices 2017-18. cited 2019 May 20. Available from: http://www.sehd.scot.nhs.uk/pca/pca2017(p)04.pdf

[10] Stewart D, Maclure K, Newham R, et al. A cross-sectional survey of the pharmacy workforce in general practice in Scotland. Fam Pract. 2020 Mar 25;37(2):206–212.

[11] Savickas V, Foreman E, Ladva A, et al. Pharmacy services and role development in UK general practice: a cross-sectional survey. Int J Pharm Pract. 2020 Jul 5. DOI:10.1111/ijpp.12653.

[12] Kerr A, Boland F, Pawlikowska T, et al. Early longitudinal community pharmacy placements: connection, integration and engagement. Res Social Adm Pharm. 2020 Oct 10;S1551-7411(20):31118–31119.

[13] Donabedian A. The quality of care. How can it be assessed? JAMA. 1988 Sep 23-30;260(12):1743–1748.

[14] Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. Implementation Sci. 2012. 7:37. Accessed 2021 Feb 24.

[15] Gale NK, Heath G, Cameron E, et al. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Med Res Methodol. 2013 Sep 18;13(1):117.

[16] Brown ME, Anderson K, Finn GM. A narrative literature review considering the development and implementation of Longitudinal Integrated clerkships, including a practical guide for application. J Med Educ Curric Dev. 2019 May 27;6: 2382120519849409.
[17] Ellaway R, Graves L, Berry S, et al. Twelve tips for designing and running longitudinal integrated clerkships. Med Teach. 2013 Dec;35(12):989–995.
[18] General Pharmaceutical Council. 2020. New standards for initial education and training of pharmacists approved. cited 2020 Dec 21. Available from: https://www.pharmacyregulation.org/news/new-standards-initial-education-and-training-pharmacists-approved
[19] Lincoln YS, Guba EG. Naturalist inquiry. Newbury Park, CA: Sage Publications; 1985.