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Insights into post-longitudinal integrated clerkship experience

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Insights into Post-Longitudinal Integrated Clerkship Experience: *medical students' perceptions of transition and learning*

Abstract

Background: Longitudinal Integrated Clerkships (LIC) positively influence recruitment of medical graduates to underserved settings, and provide pedagogical advantages to students. University of Dundee has an optional LIC in the 4th year of the 5-year long course, which a small number of students pursue every year. Following the LIC year in Scottish primary care, students join the main cohort in the tertiary hospitals for the final year of their course which follows a traditional rotational clerkship (TRC) model. This qualitative study explored the students' perceptions of learning and transitioning into a TRC after a LIC experience, with a focus on student approaches to optimise learning in TRC.

Methods: A purposive sample of five post-LIC learners shared their lived experiences through written and audio diaries over a period of 1-2 months of TRC. The issues narrated in diaries were followed-up in individual semi-structured interviews with each of the participants. Transcripts were analysed using thematic analysis.

Result: Data from 12 audio and 9 written diaries, and 5 interviews led to identification of five interwoven themes: 1. Passive learning and loss of active role in TRC; 2. Appreciating the organised structure in TRC; 3. Adapting smoothly in TRC despite a challenging initial transition 4. Pragmatic self-directed learning abilities helpful in transition; 5. Optimistic outlook towards negative experiences.

Conclusions: The present study identified key features that enabled or hindered learning in the traditional model after a LIC year. It suggests that the LIC exposure prepared students optimally for learning in TRC, and for LIC-to-TRC transition.

Introduction

The goal of undergraduate medical education is to prepare students as effective members of the healthcare profession. Medical schools across the globe introduce new approaches to curriculum design, aiming to advance student learning, and simultaneously develop an effective healthcare workforce equipped to meet societal needs. Longitudinal Integrated Clerkships (LIC) is one such curricular initiative developed to positively influence the recruitment of medical graduates to underserved settings [1]. They often involve extended placements in the primary care setting, supporting medical students as they learn by contributing to patient care while living in the communities. The community placements are typically more than 6 months, with a focus on “continuity” in the context of patient care as well as educational supervision [2]. These are a contrast to the traditional model of clinical education which comprises a succession of shorter discipline-specific rotations, often in a tertiary teaching hospital. Both LICs and traditional rotational clerkships (TRC) are effective places of clinical and workplace learning although with major differences in the learning environment [3].

Most LICs worldwide take place in the penultimate year of the medical course which implies that learners would undergo transition experiences at the start of the LIC programme and also on return from LIC to the traditional model owing to the differences in the educational environment [4]. Transition has been described in medical literature as “a dynamic process in which the individual moves from one set of circumstances to another” [5, p.52]. Transitions in educational context can be exciting or worrying simultaneously, frequently involving challenges that create learning opportunities along with support requirements [6]. Literature on transitions in medical education has predominantly focussed on preclinical to clinical transitions or on student to practitioner transitions. There are few reports on the transition experience of students at the start of a LIC programme; these indicate students feeling confused and anxious owing to a lack of structured learning programme [7,8]. The existing literature illuminating student experience of transitioning into a traditional setup after a LIC is even more scant. Konkin and Suddards [9] have explored the experiences of students who entered an urban TRC following a year-long rural LIC, where participants reflected on the loss of “authentic doctor-like role” and similar facilitatory learning affordances. Their study had the advantage of capturing the perceptions of learners who had experienced both the clerkship models successively but was limited in reporting the approaches adopted by students to maximise learning in the TRC environment to compensate for the loss of enabling LIC affordances. A better understanding of this transition from the learners’ perspective should inform support requirements and aid curriculum planners.

The adaptation processes utilised by the LIC alumni in the TRC environment should uncover assumptions about necessary learner agencies.

There are longstanding LICs in over 40 institutions in Australia, the United States, Canada and South Africa; but owing to significant differences in demographics, the geographies, student profiles and structure of health systems, the LIC scenario in the UK context is still in its infancy [10]. University of Dundee (UoD) introduced an optional Dundee-LIC (DLIC) programme in 2016, encouraged by the frequently cited pedagogical advantages of worldwide LICs, and the UK General Practice (GP) recruitment crisis [11]. DLIC is offered as an elective strand to 4th year medical students, which is the penultimate year of the 5-year long undergraduate programme. The students join the main cohort for the final year of their course, which is a traditional clerkship model. The authors described the UoD undergraduate medical programme in detail in a previous publication on community attributes of DLIC placements [12]. Evidently, the 4th year DLIC and the traditional 5th year contrast with regards to a number of attributes including educational environment and learning relationships. Table 1 illustrates the multiple contrasting domains that students inhabit during a LIC and a TRC as informed by existing literature on worldwide LICs. This is also applicable to undergraduate medical clerkship models at UoD.

Table 1: Comparison of LIC and TRC educational climate (as informed by existing medical education literature) LIC, longitudinal integrated clerkship; TRC, traditional rotational clerkship; CoP, communities of practice

Domains inhabited by learners	LIC attributes (from literature)	TRC attributes (from literature)
Geographical	Frequently rural [13]	Mostly urban [13]
Physical learning environment	Stable, familiar, homogenous [13,14]	Diverse, rapidly changing, heterogenous [13,14]
Preferred learner attributes	Autonomous, self-directed [14]	Not defined

Learning opportunities	Unstructured, unplanned, Need seeking out [13]	Structured, pre-determined, well-signposted [1,13]
Clinical Disciplines	Several, integrated [13]	Usually speciality-specific blocks [14]
Patient contact	Long-term, holistic [1,13,14]	Short, fragmentary [1,9,13]
Learning relationships (Clinical teams + supervisor)	Long-term, personal relationships [1,2,13-15]	Transient, fleeting associations [1,13]
Hierarchy	Absent [2,9]	Present [9]
Role in CoP	Active and legitimate, team-member [1-3,13,14,16,17]	Passive, Student-observer [3,9,13,16,17]
Feedback	Personalised, authentic [13,18,19]	Generic, variable [1,19]
Interprofessional learning	Authentic, organic [2,14,19]	Artificial, forced

Post-LIC learners possibly experience unique transitions as they continue their learning into the final year of their course after the DLIC year. As DLIC is a new and optional curricular venture, and few students have chosen to pursue it, our institution has limited information and understanding of LIC-related transitions. Researching student perceptions to gain insights into their experiences is useful to understand student support needs, and inform curriculum coordinators of the same. It also serves to avoid educational pitfalls and optimise learning during both the phases. This paper presents the key themes emerging from the LIC alumni's perceptions of transitioning into a TRC after a year-long rural LIC, with a focus on approaches adopted by learners to optimise learning in TRC.

Methods

Our research context is the DLIC programme, which is the UK's first comprehensive LIC (Cluster-C) according to the typology by Worley et al. [4]. The undergraduate MBChB programme at UoD is a 5-year course, with the DLIC strand offered in the 4th year on an optional basis. The DLIC placements are hosted in primary care practices over the entire duration of academic 4th year with no discipline-based rotations [20]. After the LIC year, students re-join the mainstream for the final year of medical school which involves a series of clinical rotations taking place in tertiary teaching hospitals. Informed by social constructivist paradigm, a qualitative study was designed to explore the experience of medical students who had elected the DLIC strand in the 4th year of their undergraduate course and were undergoing their final year hospital rotations thereafter. This design suited our aim, which was to reveal deep insights into the post-LIC learning and transitioning experience of students, and to understand the learner agencies involved during change and integration [21]. The transition of LIC alumni into the traditional model involved a succession of clinical rotations, and it was important that the study captured this ongoing process longitudinally. Qualitative research has the potential to distinguish constructive or formative struggle that advances learning, from deconstructive struggle that distracts from or impedes learning [5]. Longitudinal data collection could illuminate student reaction and adaptation during periods of change and stress, allowing an in-depth exploration of post-LIC experience.

There were eight DLIC alumni in a cohort of 160 in the academic year 2018-19. The low number of students who had experienced both the clerkship models was expected given that DLIC is a new curricular venture and offered on an optional basis. After the approval by the UoD school ethical committee (SMED REC Number: 148/18), the eight DLIC alumni were sent an invitation to participate in the study through the medical school office to avoid possible coercion as the principal researcher is also a tutor in Dundee School of Medicine. Figure 1 illustrates the sampling, participant recruitment and the longitudinal data collection process in a flowchart to aid understanding.

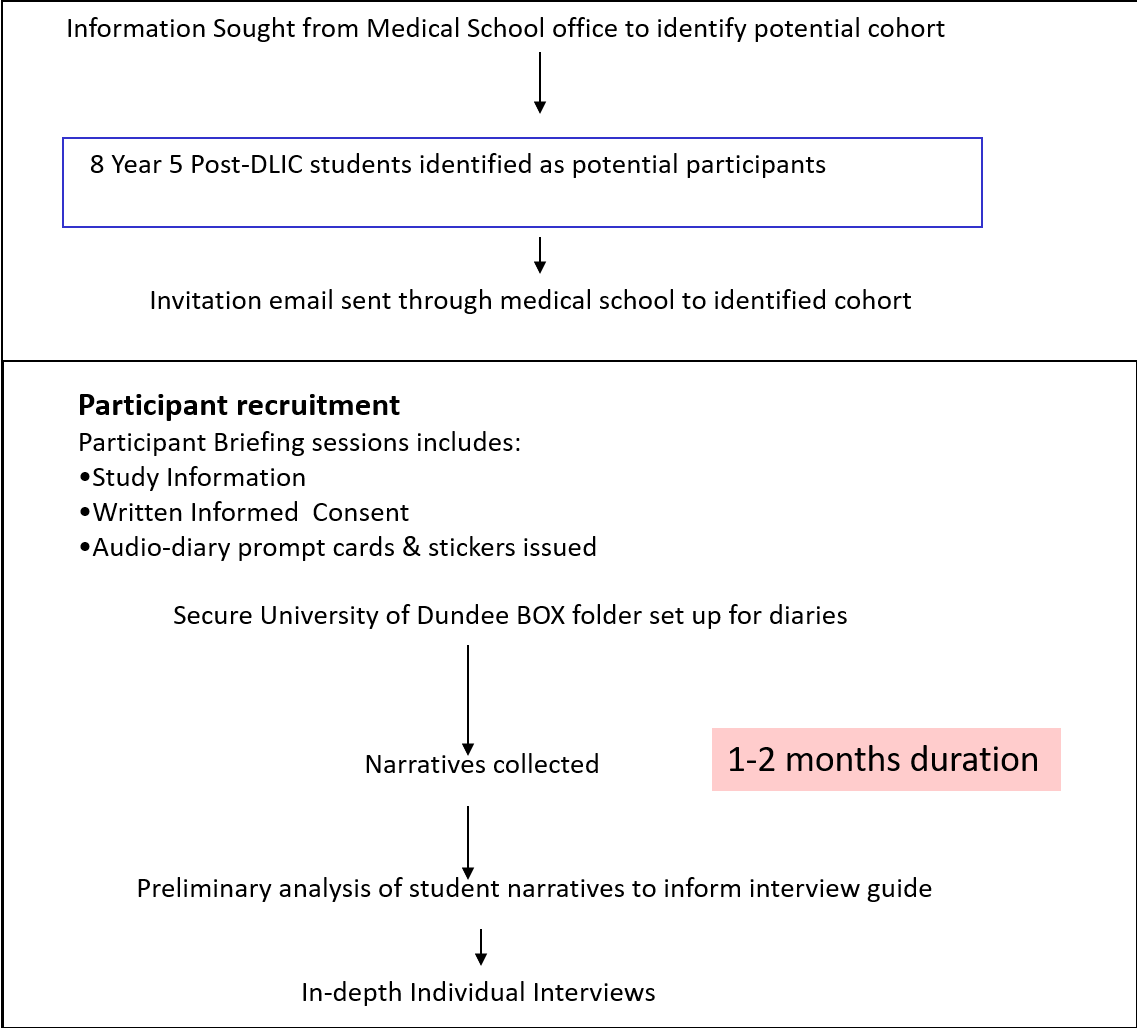


Figure 1: Data collection process followed. DLIC, Dundee longitudinal integrated clerkship; Dundee BOX is a secure online storage for University staff and students

Student perceptions of their post-LIC experience were gathered longitudinally through written and audio-diaries to capture a vivid picture of everyday experience including any struggle and coping strategies adopted by the learners. This was an attempt to overcome reliance on retrospective accounts and increase immediacy and accuracy of data received [22]. Along with being a convenient and time-efficient process for participants, longitudinal narratives especially audio-diaries are known to provide access to unfiltered student thoughts, since cognitive processing is minimised in comparison to some of the other methods used in qualitative research [23,24]. Students diary for a self-identified period varying for 1-2 months, depending on their timetables and convenience and uploaded diaries on to a secure online UoD repository. The issues narrated in diaries were followed-up in individual semi-structured interviews with

each of the participants. A preliminary analysis of the diaries, aided in developing an individual schedule for each participant with questions that explored (i) the transition experiences, (ii) the differences between the two clerkship experiences with respect to learning environment, community attributes, feedback and learner engagement, (iii) barriers encountered and support requirements from the medical school, (iv) specific issues narrated in the diaries from the individual participant requiring further exploration/clarification and (v) consensual validation of emerging findings with subsequent participants. This consolidated data from diaries and ensured that the researchers' interpretations were accurate representations of student experiences.

Voluntary informed consent from each participant included permission for audio-recording and transcribing, and a reassurance that the diaries and interview data would be de-identified. The audio-diary and interview recordings were manually transcribed, and the transcripts from both the sources were thematically analysed [25]. Collecting perceptions multiple times from the same student allowed the development of ideas and detection of changes in the subject's thoughts with the passage of weeks, and also generated a wealth of data despite a small sample size [26]. Triangulation of data from longitudinal narratives and interviews consolidated the understanding of post-LIC phenomena. Results presented below seek to do justice to the study subjects' experiences through the collection of elaborate exemplars to demonstrate patterns existing in student transcripts.

Results

Five of the eight post-DLIC students expressed interest to participate in the study, and share their experience of undertaking the two clerkships successively. An earlier publication by the authors [12] describes the demographic characteristics of the 5 study subjects who contributed data for the research, and the details of the diaries (number and length of written and audio-diaries). UoD online repository received a total of 21 diaries - 12 audio and 9 written. The findings are presented as following themes supported by specific extracts from LIC alumni's transcripts. Participants' voice is kept dominant by furnishing long chunks of coded transcripts to preserve the natural context and make the LIC alumni's experience clearer to the readers.

Passive learning and loss of active role in TRC

Students reflected that learning in TRC predominantly involved shadowing a senior doctor or healthcare professional. A lot of hospital clinical experience was “observing”, which was in contrast to the active role that students enjoyed during DLIC. The diary entries during TRC resonated with their descriptions of frustration - “*felt like a fly on the wall*” or “*feel like I was just going backwards to just an observer*”. The student here described the passive learning environment as demotivating and “tiring”.

M1-I 13,3-22: *“One of the most tiring things to do..something you have to do a lot in medical school, is to pay attention, and listen and engage when you are not actually doing anything...sitting in the back of a clinic for 2 hours and remaining engaged when you are not actually saying any words. You know its quite difficult. [...] So, difference with the LIC is you have to be actively thinking, and to say conversely less tiring.[...] getting up to go in the morning was easier in the LIC. Because you are getting up to do something which is more enjoyable or engaging. Where as in the standard programme, you are going to have a day of this..often just sitting and observing”.*

LIC learners described their attempts to participate in the ongoing clinical activities in TRC and their disappointments at not being included in patient care.

F1-I 19, 2-10: *“I was quite annoyed, can’t remember the exact situation but I came one morning and said “Are there any jobs to do?” This is my medical assistantship, and one of the FY said “we are actually quite busy this morning, why don’t you come back tomorrow?” and I was like “No, if you are busy, that means there are jobs..yesterday you sent me home because there were no jobs!”*

Students reported their struggle to maintain enthusiasm in TRC since they did not encounter the same degree of interest and investment from the clinical teams; something that they had gotten used to during DLIC.

M2-I 4,31-33: *“There wasn’t much for students to do..we were kind of..standing around a lot..trying to..sort of..maybe this job is for me..but then stressed up to ..to that point..when you just couldn’t be bothered. Ya..it was just a bit Bizarre!”*

Appreciating the organised sessions and timetables in TRC

According to several students' diary and interview scripts, it appeared that they liked having the medical school organise their timetable. They appeared relieved when the additional task of managing the time and learning activities was removed, and found the structured activities like tutorials useful. It was also felt that having a prescribed student guide gave them confidence that various learning outcomes had been met and they had not missed anything.

F2-N2 1,28-32: *"I suppose one of the nice things about coming into 5th year in some ways was not having to think about how to organise my time in quite the same way and taking less responsibility. In some ways it was actually quite a nice break having a timetable. And being told this is where you are expected to be and when".*

They reportedly enjoyed tutorials; an example of prescribed teaching sessions organised by the medical school.

M1-N2 1,28-29: *"Something I was surprised about coming back from LIC, how much I enjoyed the tutorials".*

Adapting smoothly in TRC despite a challenging initial transition

Students appeared keen to continue their learning journeys as they started the final year of their medical undergraduate course after the penultimate LIC year. However, they perceived significant differences between the two clerkship models with regards to the clinical learning environment. Students described the initial transition as, *"quite challenging"*, *"bit of an adjustment"*, *"suddenly being anonymous again"* and *"sort of jolts you at first"*. One student equated it to a transition from school to university.

M1-I 2,19-23: *"I suppose in some ways its similar to a transition between school and university [...] suddenly you were into a big environment..where there are also lots of other students and less focus on you".*

Students frequently reported feeling “anonymous”, “supernumerary”, “unwanted” and “like a spare-part” in the longitudinal diaries as well as in the end of the year interviews.

M1-N3 1,4-20: *“Being supernumerary, and almost clearly supernumerary, I think presents challenges [..], you are there for a short time and that you are JUST A medical student rather than a part of the team”.*

However, on inquiry regarding the need for any specific support from the medical school to aid transition from LIC into TRC, students did not suggest any measures.

F2-I 18,16-21: *“I don’t feel like I needed anything particularly to help me ..sort of transition back into 5th year [..] I think most of us settled in just fine. There wasn’t a particular problem”.*

Pragmatic and self-directed learning abilities helpful in transition

Students expressed confidence in achieving the learning outcomes for the block through a range of methods. They did not appear to be rigid regarding specific instructions and the student accounts suggested their preference towards a flexible approach. Post-LIC learners reported comfort with following a non-homogenous path, aligned to their interests and available opportunities.

M2- I 11,15-25: *“I know some people who get very stressed if there is one box potentially that they haven’t ticked [..] I think there is a bit of flexibility allowed..like everyone is going to have a slightly different path through medical school.[..] you are going to have things that you are more interested in. Which I think is Okay.[..] you can learn your own way..dont have to do things that are there in the manual”.*

All of the study subjects reported that LIC positively prepared them to take ownership of their learning through seeking and organising learning experiences. Student accounts revealed how it made them adept at making the most of available educational opportunities. Along with being confident self-directed learners, they felt the need to be “quick on their feet” to identify learning opportunities in TRC. Actively directing their learning and taking initiatives during the LIC year helped in building their confidence and made them less inhibited. This was perceived as a useful skill for learning in TRC as well.

F1- N2 1,25-27: *“I think DLIC positively prepared me to be able to get the most from my elective as I was more able to manage my own timetable and sought out teaching opportunities”.*

F3-I 18,14-24: *“I think I have become more..assertive [...] you know the confidence to say to somebody----- can I come to watch you when you do that. And not just wait for them to say -----do you want to come and watch while I put this line?”*

Optimistic outlook towards negative experiences

Student diaries provided insight into the reaction and approach adopted by learners towards some of the not so positive experiences during TRC. A student narrated their experience of working in a dysfunctional team in the hospital, which they explained was a contrast to what they were exposed to during the LIC year. They valued the experience as a learning opportunity and preparation for future practice.

M2- N3 1,6-22: *“I also found that the atmosphere in the department [TRC] was quite negative. Several members of staff were clearly overworked and some were not handling the stress levels in a very constructive way. [...] I also had a strained relationship with the FY1, which was unusual. On previous placements, and especially in Highland, the FYs had always been very understanding and accommodating of students. [...] A positive from this block though was being able to work in a fairly dysfunctional team, and pass the block without any issues as this may be the case in an FY placement and I will have to work around it to the best of my ability”.*

Another student expressed her ability to take a “No” and not feeling disheartened at a less student-friendly experience. They shared their experience of how being refused did not make them uncomfortable and they maintained their optimism towards workplace learning.

F3-I 14,13-36: *“I guess I have been turned away, when somebody is too busy..I guess it’s fair enough. I don’t want to put them any extra pressure [..] It is something you just have to take [..] You can seek other opportunities..thats fine..I would rather know that”*

Discussion

The present study researched medical students’ perceptions of the LIC to TRC transition experience and the adaptation strategies utilised by LIC alumni to optimise learning in a traditional model. The study findings support previous reports of a relatively passive role assigned to students in clinical teams within the TRC context. Medical students have earlier regarded themselves as “knowledge leeches” in the hospital as opposed to legitimate members of healthcare teams in community placements [16]. This resonates with the prominent “supernumerary” feeling in TRC that the LIC alumni in our study frequently bemoaned. They had enjoyed the positive attention and enthusiasm towards learning amongst supervisors, peers and all members of the team during LIC, which they missed in TRC. Loss of these affordances for practice-based learning is associated with less meaningful involvement in patient care. The current study confirms previous literature on worldwide LICs, which report the presence of hierarchy in the hospital clinical environment and a prominent “anonymous feel” for students [3,9,19]. This is understood as leading to reduced contact with physician teachers in the hospital setting and constraining students’ learning. In addition, the longitudinal diaries in the present study highlight repeated attempts by the participants to seek opportunities to get involved in clinical learning during the traditional 5th year. There were however, indications of frustrations at not being included as a team-member or feeling “like a spare-part”. Interestingly, the study participants persistently used their DLIC experiences as a frame of reference when queried regarding TRC attributes and described learning as comparatively more arduous than in LIC. Interpreting this in the light of earlier theoretically informed studies, the lack of trusting relationships with hospital supervisors due to relatively shorter placements may be a critical factor hindering successful learning [27].

The majority of the participants appreciated the organised teaching sessions and structured timetables as enablers of effective learning in TRC. It could be hypothesised that the timetabled learning environment in a relatively stressful TRC is welcomed after significant self-directing efforts in the LIC year. This finding does not appear in the existing published literature. However, expressions of anxiety and doubts during LIC, due to an unstructured format and feeling inadequate to self-organise learning opportunities are frequent [7,8]. There are similar observations in problem-based learning (PBL) curricula, with students feeling anxious due to the self-directedness and autonomy in learning expected of them [28]. This has possible implications for curriculum developers to consider a meaningful balance of flexibility and structure, self-directed and directed learning during the workplace-based learning elements.

LIC alumni appeared to adapt smoothly into TRCs declining any support from the medical school despite describing the transition as a challenging one. They considered a flexible pragmatic approach and self-directed learning skills (developed during DLIC) to be useful in TRC. A flexible approach to learning has been deemed necessary although not sufficient in clinical clerkships [29]. LIC environments afford more “informal learning spaces” that require greater individual agency and self-directed learning which are educational outcomes in their own right [2,17]. An optimistic outlook towards adverse experiences was demonstrated by post-LIC students which could be instrumental in optimising learning in TRC. Growth of such productive personal epistemologies possibly owing to LIC participation seemed to ease transition experiences as well as maximised learning for students. Bandura [30] suggested that an individual can engage positively despite constraining circumstances owing to agentic skills such as adaptability and optimism. Self-directed learning, flexibility and resilience are considered interdependent agentic capacities which are known to enable learning in any clinical environment [31] Is it possible that students valuing the experience of observing a dysfunctional team as a learning opportunity and preparation for future practice is due to the LIC exposure building learner agency? Notably they had failed to perceive such adversities as learning opportunities in shorter (15 weeks) community placements [16]; this supports the argument that developing agentic capabilities demands time and resilience which is perhaps afforded by extended placements such as DLIC in the present study.

Participant accounts suggested that they not only survived the TRC environment but thrived in it despite the difference between LIC and TRC. Their quick adaptation after the initial negative reaction at the start of TRC encouraged the authors to conceptualise the findings in relation to existing transition theories and resilience frameworks despite this being a modest study.

Jindal-Snape and Rienties [32] emphasise the importance of resilience for doctors to navigate transitions effectively. Resilience, a dynamic and contextual attribute, is enhanced due to continuity of relationships in a stable setting, described as a “safe haven” in the Flinders model of student resilience in a LIC curriculum [33]. The stressful impact of medical education transitions has been attributed to uncertainty regarding role and expectations in the new environment [5]. LICs have been known to foster a comfort with uncertainty owing to transdisciplinary integrated learning and continuity with supervisors and clinical teams [34]. This uncertainty tolerance could be instrumental in building a degree of resilience required for workplace transitions. Furthermore, self-regulated learning, another attribute fostered during LICs is also considered a key learner characteristic, aiding students to thrive during transitions [35]. However, these projections are presented with the caveat of this being a small-scale study, using student volunteers from a single institutional cohort.

A significant strength of the study is that it managed to gain rich insights into the lived experience of students who undertook both the clerkship models sequentially, experiencing unique transitions. Student perceptions were captured over a period of real time giving an authentic montage of student life in TRC as opposed to a single snapshot view attained through a one-time encounter with study participants. Triangulation in time ensured validation of issues arising in diaries to be confirmed with each of the five subjects, enhancing the trustworthiness of findings. A limitation, however, is that the research operated on the assumption that DLIC and the Dundee final year are prototypes of LICs and TRCs, respectively. It is worth noting that individual LICs can be diverse with respect to geographical locations, practice team and supervisor attributes. The individual clinical blocks in the traditional model can also differ in several aspects, limiting transferability. The researchers took care to focus on dominant patterns emerging from student narratives and did not attempt to make LIC alumni's lived experience more rational or consistent than it really was, as is evidenced in the extensive student quotations provided. We acknowledge that given the small number of self-selected study participants, we cannot justify the results with strong claims, and therefore recommend larger-scale studies with bigger cohorts. Future research could focus on longer-term follow up of the LIC cohort to study future transitions such as student-to-junior doctor and trainee-to-specialist roles to explore the contribution of LICs towards workplace transitions. It would also be useful to compare the LIC and non-LIC cohort with respect to transitions and selected resilience frameworks using validated tools to allow upscaling and modelling.

Conclusion

The present study has rendered valuable insights into learner experiences after a LIC and identified key attributes that enable or hinder learning in the traditional model. This qualitative study supports previous claims from the literature related to LIC affordances and reassures that a rural LIC prepared student for learning in an urban traditional clerkship. It adds to our understanding of student transition experiences, suggesting that the LIC exposure afforded the development of specific agentic skills required for optimal workplace transitions.

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Disclosure statement

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References:

1. Hudson JN, Poncelet AN, Weston KM et al. Longitudinal integrated clerkship. *Medical Teacher*. 2017 Jan 2;39(1):7-13.
2. Roberts C, Daly M, Held F, et al. Social learning in a longitudinal integrated clerkship. *Adv Health Sci Educ*. 2017; 22(4):1011–29.
3. Hauer KE, Hirsh D, Ma I, Hansen L, Ogur B, Poncelet AN, Alexander EK, O'Brien BC. The role of role: learning in longitudinal integrated and traditional block clerkships. *Medical education*. 2012 Jul;46(7):698-710.
4. Worley P, Couper I, Strasser R, et al. On behalf of the CLIC Research Collaborative. A typology of longitudinal integrated clerkships. *Med Educ*. 2016; 50(9): 922–932

5. Teunissen PW, Westerman M. Opportunity or threat: the ambiguity of the consequences of transitions in medical education. *Medical education*. 2011 Jan;45(1):51-9.
6. Jindal-Snape D. *AZ of Transitions*. Macmillan International Higher Education; 2016.
7. Dubé TV, Schinke RJ, Strasser R et al. Transition processes through a longitudinal integrated clerkship: a qualitative study of medical students' experiences. *Medical education*. 2015 Oct;49(10):1028-37.
8. Von Pressentin KB, Waggie F, Conradie H. Towards tailored teaching: using participatory action research to enhance the learning experience of Longitudinal Integrated Clerkship students in a South African rural district hospital. *BMC medical education*. 2016 Dec 1;16(1):82.
9. Konkin DJ, Suddards C. Students' experiences of role, relationships and learning in two clerkship models. *Medical Education*. 2017 May;51(5):490-7.
10. Harding A. 'A rose by any other name; longitudinal (integrated) placements in the UK and Europe. *Education for Primary Care*. 2019 Sep 3;30(5):317-8.
11. McKeown A, Mollaney J, Ahuja N et al. UK longitudinal integrated clerkships: where are we now? *Education for Primary Care*. 2019 Sep 3;30(5):270-4.
12. Gupta S, Howden S. Medical students' perceptions of "Community" in a Longitudinal Integrated Clerkship. *Education for Primary Care*. Available online at <https://www.tandfonline.com/eprint/E6XAUMUZDN59B86QEZMI/full?target=10.1080/14739879.2020.1850211>
13. Hirsh D, Walters L, Poncelet AN. Better learning, better doctors, better delivery system: Possibilities from a case study of longitudinal integrated clerkships. *Medical teacher*. 2012 Jul 1;34(7):548-54.

14. Walters L, Greenhill J, Richards J, Ward H, Campbell N, Ash J, Schuwirth LW. Outcomes of longitudinal integrated clinical placements for students, clinicians and society. *Medical education*. 2012 Nov;46(11):1028-41.
15. Bates J, Konkin J, Suddards C, Dobson S, Pratt D. Student perceptions of assessment and feedback in longitudinal integrated clerkships. *Medical education*. 2013 Apr;47(4):362-74.
16. Bartlett M, Rees E, McKinley RK. Knowledge Leech to part of the team: students' learning in rural communities of practice. *Educ Prim Care*. 2018; 29(1):5–10.
17. Caygill R, Peardon M, Waite C et al. Comparing a longitudinal integrated clerkship with traditional hospital-based rotations in a rural setting. *Medical teacher*. 2017 May 4;39(5):520-6.
18. Poncelet A, Bokser S, Calton B, Hauer KE, Kirsch H, Jones T, Lai CJ, Mazotti L, Shore W, Teherani A, Tong L. Development of a longitudinal integrated clerkship at an academic medical center. *Medical education online*. 2011 Jan 1;16(1):5939.
19. Witney M, Isaac V, Playford D et al. Block versus longitudinal integrated clerkships: students' views of rural clinical supervision. *Medical education*. 2018 Jul;52(7):716-24.
20. Bartlett M, Dowell J, Graham F et al. Dundee's longitudinal integrated clerkship: drivers, implementation and early evaluation. *Education for Primary Care*. 2019;30(2):72-9.
21. Bryman A. *Social research methods*. Oxford university press; 2016.
22. Monrouxe LV. Negotiating professional identities: dominant and contesting narratives in medical students' longitudinal audio diaries. *Current Narratives*. 2009;1(1):41-59.

23. Williamson I, Leeming D, Lyttle S et al. 'It should be the most natural thing in the world': exploring first-time mothers' breastfeeding difficulties in the UK using audio-diaries and interviews. *Maternal & child nutrition*. 2012 Oct;8(4):434-47.
24. Crozier SE, Cassell CM. Methodological considerations in the use of audio diaries in work psychology: Adding to the qualitative toolkit. *Journal of occupational and organizational psychology*. 2016 Jun;89(2):396-419.
25. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative research in psychology*. 2006 Jan 1;3(2):77-101.
26. McGrath J, Coles A. *Your education research project companion*. Routledge; 2013 Nov 4.
27. Van der Zwet J, Zwietering PJ, Teunissen PW et al. Workplace learning from a socio-cultural perspective: creating developmental space during the general practice clerkship. *Advances in Health Sciences Education*. 2011 Aug 1;16(3):359-73.
28. Rees CE. The problem with outcomes-based curricula in medical education: insights from educational theory. *Medical education*. 2004 Jun;38(6):593-8.
29. Balmer DF, Richards BF, Varpio L. How students experience and navigate transitions in undergraduate medical education: an application of Bourdieu's theoretical model. *Advances in Health Sciences Education*. 2015 Oct 1;20(4):1073-85.
30. Bandura A. Toward a psychology of human agency. *Perspectives on psychological science*. 2006 Jun;1(2):164-80.
31. Richards J, Sweet LP, Billett S. Preparing medical students as agentic learners through enhancing student engagement in clinical education. *Asia-Pacific Journal of Cooperative Education*. 2013; 14(4): 251-263.

32. Jindal-Snape D, & Rienties B. Understanding multiple and multi-dimensional transitions of international higher education students: setting the scene. In: Multi-dimensional transitions of international students to higher education. Routledge; 2016. p.21-38.
33. Greenhill J, Fielke KR, Richards JN, Walker LJ, Walters LK. Towards an understanding of medical student resilience in longitudinal integrated clerkships. BMC Medical Education. 2015 Dec;15(1):1-9.
34. Gupta S, Howden S. Comment on 'Learning to become a primary care professional: insights from threshold concept theory'. Education for primary care: 2019 Sep;30(5):325. doi:10.1080/14739879.2019.1666305.
35. Atherley AE, Hambleton IR, Unwin N, George C, Lashley PM, Taylor CG. Exploring the transition of undergraduate medical students into a clinical clerkship using organizational socialization theory. Perspectives on Medical Education. 2016 Apr 1;5(2):78-87.