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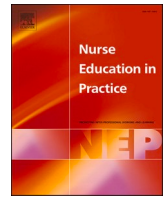
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## Clinical learning experiences of healthcare professional students in a student-led clinical learning environment (SLCLE) – A mixed methods evaluation

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### ABSTRACT

**Aim:** To evaluate healthcare professional (HCP) students clinical learning experiences' whilst undertaking placements in a student-led clinical learning environment (SLCLE) and any changes in self-reported ratings of confidence.

**Background:** The English NHS Long Term Workforce Plan (2023) highlights the need to expand domestic education of HCPs to meet workforce shortages. The demand for quality clinical placements to support the preparation of HCP students remains a challenge globally. A creative solution has been the development of student-led learning clinical environments in healthcare settings. SLCLEs provide high-quality learning experience, increase clinical placement capacity whilst maintaining patient care standards. A multisite NHS Trust adopted this model as evidence suggests HCP students will be better prepared on qualification to adopt registered practitioner professional responsibilities. This model has been integrated across three hospital sites within a large teaching hospital, providing care for a diverse population and designed to accommodate students from a range of HCP disciplines and higher educational institutions.

**Design:** A mixed methods convergent design.

**Methods:** An online survey was administered to SLCLE allocated nursing and allied health profession (AHP) undergraduate and graduate-entry first, second and third-year students (n=132). Face to face focus groups/individual interviews were undertaken with a purposive sample of student participants (n=80) to evaluate their experiences of clinical learning in SLCLEs. Survey data were analysed using descriptive statistics and paired t-tests, interviews using framework method.

**Results:** Undergraduate and graduate-entry students from four UK universities completed the survey (n=132), 103 students (78%) responded. Most were year 2 students (n=43/42%), pursuing nursing programmes (n=82/80%). Most considered the SLCLE met their expectations (n=76/74%), reported increased confidence post-placement (n=84/82%), felt supported by staff (n=80/78%), peers (n=93/90%) and clinical educators (n=93/90%). Self-reported confidence scores post-SLCLE were significantly higher than pre-SLCLE. On-line pre-placement information was infrequently accessed yet identified as an omission. Four themes were identified: (i) preconceptions and initial anxiety; (ii) empowerment, growth and a unique learning experience; (iii) collaborative inter-professional learning and support; and (iv) insights and anticipations.

**Conclusions:** The SLCLE allocation enhanced students' confidence and knowledge. Support from clinical educators, ward staff and doctors was perceived as invaluable for creating a positive learning culture. Peer support and opportunities to lead care delivery contributed to students' professional development. The format and method for providing pre-placement information needs review as do strategies for avoiding delays in completing assessment documentation. Overall, the SLCLE experience offers much potential as a nurturing and effective learning environment for HCP students.

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## 1. Introduction

The English NHS Long Term Workforce Plan (2023, p.7) recently highlighted the urgent need to “*significantly expand domestic education, training and recruitment to have more healthcare professionals working*” to meet the ever-increasing demands on the NHS. Like many western economies the UK has an aging population, health inequalities across our population, and changing disease burden which is exerting additional pressures on the healthcare system (Kivimäki et al., 2020). Despite a 25 % increase in the HCP workforce since 2010, output from training programmes and recruitment both national and internationally is not keeping up with the demand for trained staff (NHS England, 2023). The UK NHS is experiencing severe staff shortages (Buchan et al., 2019), exacerbated by the impacts of COVID-19, premature retirement, reduced recruitment of HCP students to, and high levels of attrition from pre-qualifying programmes (Buchan et al., 2020).

### 1.1. Background

To meet the national targets set out in the NHS Long Term Workforce Plan recruitment and retention to nursing, midwifery, and allied health professions (AHPs), numbers of students in training needs to increase placing further strain on placement capacity. Maximising the quality of clinical learning and educational support are significant factors in student experience and reducing attrition (HEE, 2018). The demand for quality clinical placements to support the preparation of HCP students is not unique to the UK and remains a constant challenge globally (Bøe and Debesay, 2021). Healthcare students spend a significant amount of time on clinical placements whilst studying, hence understanding their learning experiences and quality of training is an important factor to reducing attrition rates at universities and increase conversion rates from student to qualified professional (Rowland and Trueman, 2024). One creative solution has been the development of student-led learning clinical environments (SLCLE) in healthcare settings. These provide high-quality learning, increase placement capacity whilst maintaining patient care standards (Bøe and Debesay, 2021; Dyar et al., 2019; Kent et al., 2016; Schutte et al., 2015; Brewer and Stewart, 2013).

Student-led placement models involve students taking responsibility for patient care episodes (Simpson and Long, 2007), in clinical settings (Dyar et al., 2019). These units are also referred to as “student-run” or “student-assisted” clinics in the literature but all involve supervision by practice-based educators or clinical supervisors (Frøberg et al., 2018; Frakes et al., 2011) and reportedly promote inter-professional, problem-based learning (Ambrose et al., 2015; Frakes et al., 2014; Staun et al., 2010); hence offer real world preparation for roles on qualification. Evidence suggests that SLCLE develop vital skills, knowledge, and professional capabilities (Moore et al., 2018; Schutte et al., 2015) whilst boosting students’ confidence, competencies, inter-professional skills and leadership skills (Wilson et al., 2023).

Predicated on the assumption creation of a supportive clinical environment will enhance student confidence and achievement of placement learning outcomes (Holmsen, 2010), we designed a SLCLE model for roll out across our large metropolitan NHS Trust (Pearce et al., 2022). In the UK, registered clinicians’ complete regulator approved training programme to act as practice supervisors and assessors to HCP students to ensure safety of patients and students. Emphasis in the SLCLE is placed on a coaching approach to supervision and assessment. This is achieved through practice supervisors observing, encouraging, questioning, and giving real-time feedback to help learners reach their full potential (Faithfull-Byrne et al., 2017). Placement learning models such as Collaborative Learning in Practice (CLiP) entail allocating students to practice environments using a coaching method as opposed to traditional 1:1 mentoring technique to enhance the student placement learning experience through high quality supervision to enable attainment of competency and proficiency (Hill et al., 2020). Our model focuses on this coaching approach and in addition each SLCLE has a

clinical educator in addition to existing staff practice supervisors/assessors. The clinical educator takes responsibility for overall clinical and pastoral support, management of protected learning, and monitoring student health and well-being during the placements. Protected learning time is a critical component of the SLCLE and offers daily, clinically relevant teaching/skills sessions. The purpose being to foster excellence in education, leadership, and pastoral care (Hill et al., 2020; Dyar et al., 2019; Clarke et al., 2018). An evaluation of our pilot SLCLE found students valued learning in an environment where they felt safe, supported and part of a team, (Pearce et al., 2022). Understanding healthcare professional students’ experiences in student-led clinical learning environments is crucial for enhancing learning outcomes, improving preparedness for real-world practice, identifying educational gaps and promoting reflective practice. Moreover, clinical placement experiences play a crucial role in shaping graduates’ job decisions, making them essential for effective recruitment and workforce planning (Rowland and Trueman, 2024).

This project aims to:

1. Evaluate HCP students’ experiences of clinical learning gained from a SLCLE placement.
2. Determine HCP students’ self-reported confidence before and after a SLCLE placement.

## 2. Methods

### 2.1. Design

A mixed method convergent design was used for this evaluation (Fetters et al., 2013). The quantitative component facilitated the assessment of self-reported confidence levels before and after the placement, while the qualitative aspect explored insights into the nuanced experiences encountered during the clinical learning process. Data were collected between January and April 2023.

#### 2.1.1. Study setting

The study was carried out in a large metropolitan NHS Trust in the West Midlands serving a diverse population of around 1,144,900 (Census, 2021). The SLCLEs were located at three different hospital sites (see Table 1).

### 2.2. Sampling and participants

Over the study period, 132 students were allocated to the SLCLE. All were informed about the evaluation study face-to-face, provided with a participant information sheet (PIS) and 103 agreed to participate in the online survey. Twenty-nine students did not provide confirmation of consent/did not respond/had left as completed their placement. The universities offered a range of programmes leading to registration as HCPs including bachelor (BNurs, BSc), integrated (MNurs) and/or graduate entry masters (MSc). Students were recruited from all years and various disciplines: nursing, physiotherapy, occupational therapy and/or dietetics from all three SLCLE sites.

Eighty students participated in a focus group (ranging from 2 – 9 participants across twenty focus groups) or individual interview (n= 2).

**Table 1**  
Description of SLCLE.

SLCLE Site Description (with practice supervisor/ assessor and clinical educator)	No. of Bays	No. of Beds
Children’s Assessment Unit	2	8
Elderly care	4	16 (4 beds in each bay)
Elective Surgical Ward	2	11 (5 beds in Bay A and 6 beds in Bay B)

### 2.3. Data collection

#### 2.3.1. Quantitative method

An online anonymised 18-item survey was administered to students who agreed to participate. The questionnaire was developed based on literature around what students consider a 'good learning environment' (Pearce et al., 2022), aligned with evaluation objectives for validity. A pilot study with a purposive sample of 15 students revealed minor wording issues, but Cronbach's Alpha value was 0.92, indicating high reliability (Tavakol and Dennick, 2011). Four additional questions were added after consulting a clinical educator to address SLCLE specifics. The final 18-item survey was used for the evaluation. Students accessed survey via QR code on their mobile devices. Demographic information included course, year of placement, university and self-assessed confidence pre and post SLCLE (see Supplementary material 1 Figure 1). The survey included 14 Likert scale (1 = strongly disagree to 5 = strongly agree) relating to statements capturing experience of learning on a SLCLE (see Supplementary material 2 Appendix 1); four open questions evaluating their experience of the SLCLE.

#### 2.3.2. Focus group and individual interviews

A purposive maximum variation sampling technique was used to recruit 80 participants representing all year groups and course groups (nursing/AHPs) to evaluate in-depth student SLCLE experiences. SC an experienced qualitative researcher conducted focus groups and in-depth individual interviews using an interview topic guide (see Table 2). All interviews were audio recorded using an encrypted Dictaphone, and/or via Microsoft Teams and ranged in length between 15 – 50 minutes.

### 2.4. Data analysis

Quantitative data was analysed using Microsoft Excel to determine, descriptive statistics frequencies. A paired sample t-test was conducted to investigate whether there was a significant difference on self-reported confidence scores pre and post SLCLE placement. Statistical significance was set at an alpha value of  $p < 0.05$ .

The interview recordings were transcribed verbatim, anonymised, and analysed using framework method (Gale et al., 2013). This method involved developing thematic categories for data coding (Ritchie and Spencer, 1994). Researchers (SC, RP and TM) analysed transcripts and developed an analytical framework through coding workshops. The systematic approach included familiarisation, coding to develop a thematic framework, indexing entire dataset, charting data into matrix to compare cases and themes, and interpreting charted data to identify patterns and key findings (Gale et al., 2013). Data saturation was reached when no new data emerged, at information redundancy (Saunders et al., 2018).

### 2.5. Ethical considerations

The project was reviewed using the HRA Decision tool (<https://www.hra-decisiontools.org.uk>), defining it as a service evaluation, so no institutional ethical board approval was required. Local approvals were obtained through the Trust's clinical audit registration (CARMS-18100) and a "notice of no objection" was issued by the Trust's Research and Governance Department (reference RRK7587).

**Table 2**

Interview topic guide for student experiences of SLCLE.

Topic Guide for Focus Group and/or Individual interviews:	
■	Pre-placement expectations about Student-Led Clinical Learning Environment (SLCLE)
■	Perceptions and experiences towards learning in a SLCLE
■	Views about support and working collaboratively alongside student nurses, allied health care professionals, clinical staff and educators
■	Views on protected learning times provided in the SLCLE wards and learning outcomes achieved
■	Recommendations of what can be improved

Ethical principles were followed (Twycross and Shorten, 2014). Participants received an information sheet explaining the evaluation. Participation was voluntary, with written consent was obtained prior to surveys and interviews. Agreement for audio-recording was obtained from individual/focus group participants. Any participant identifiable data was anonymised.

### 3. Results

#### 3.1. Demographics

Out of 132 eligible students, 103 completed the online survey questionnaire generating a response rate of 78%. Students were recruited from four different UK universities: 28 (27%) from University A, 50 (49%) from University B, 12 (11%) from University C and 13 (13%) from University D. 82 (80%) were nursing students and 21 (20%) were allied health professionals (AHPs) on physiotherapy, occupational therapy, or dietetics placements. Most students were in their 2nd year of studies – 43 (42%) (see Table 3). The students completed a placement at one of the three SLCLE sites and the average length of placement was between 4 and 6 weeks.

Following allocation and prior to starting the placement all students were sent a link to the trust virtual learning environment (VLE) where information about the SLCLE model and specific placements is available. Just slightly more than a quarter of students accessed the SLCLE VLE resources (30/29%) and most (24/80%) found them extremely or somewhat useful.

Nearly three quarters (76/74%) of students felt the SLCLE placement had met their expectations.

**Table 3**

Demographic characteristics of respondents n = 103.

Student Characteristics:	n	%
<b>University</b>		
University A	28	27
University B	50	49
University C	12	11
University D	13	13
<b>Course Enrolled</b>		
Adult Nursing	48	47
Child Nursing	34	33
Physiotherapy	12	11
Occupational therapy	3	3
Dietetics	6	6
<b>Year of Studies</b>		
Year 1	27	26
Year 2	43	42
Year 3	33	32
<b>Type of Placement</b>		
Formative/Summative	94	91
Retrieval	1	1
Other	8	8
<b>Current SLCLE Placement</b>		
SLCLE Site 1	34	33
SLCLE Site 2	44	43
SLCLE Site 3	25	24

3.2. Confidence levels

Students were asked to rate how confident they felt pre and post SLCLE placement using the confidence continuum (Warren et al., 2021). Most (84/82 %) reported that their confidence had increased following SLCLE placement with similar increase post-allocation across all three SLCLE sites. Only twelve per cent (13/12%) students reported no change in confidence levels post SLCLE placement.

The study found that self-reported confidence scores post SLCLE (M = 7.56, SD = 1.48) were significantly higher than pre SLCLE (M = 4.78, SD = 2.46), a statistically significant mean difference of 2.78, 95 % CI [2.33, 3.24],  $t(102) = 12.1, p < .000$ . With 102 degrees of freedom, this combined analysis provides strong evidence that SLCLE has a statistically significant positive effect on students' confidence levels. The mean differences are all positive and significant, with very high t-values and p-values less than .001. Confidence intervals do not include zero, further confirming the significance of these results (see Table 4).

3.3. Levels of agreement on statements about SLCLE clinical placement

Most students felt well supported by staff and their peers during their SLCLE placement. Ninety per cent (90 %/93) felt supported by clinical educators and over three quarters (78 %/80) of students felt supported by SLCLE ward staff. Eighty-five per cent (85 %/88) of the students felt valued and part of the team environment whilst on placement. The protected learning sessions were valued, and most students (93 %/96) strongly agreed/agreed that these sessions developed their knowledge and skills. Although 62 % (n=64) of students strongly agreed/agreed that they were given opportunities to spend time on other clinical wards/departments to enhance SLCLE placement, 17 % (n=17) disagreed/strongly disagreed. Eighty eight percent (88 %/91) of students felt that their skills, knowledge, and confidence improved following completion of a SLCLE placement and 82 % (n=85) felt satisfied with the placement experience. See Table 5.

Four main themes emerged from qualitative data analysis. Participant quotes relevant to each theme are referenced throughout the text and detailed in Supplementary material 3, Table 6 (Q1-Q27).

i. Preconceptions and initial anxiety

Some students felt anxious about their SLCLE placements due

**Table 4**  
Paired sample t-test differences for pre and post SLCLE confidence levels across all SLCLE sites (confidence continuum scale ranged from 0 – 10 where 0 = not confident, mid-range increasing confidence and 10 = confident).

Measure	SLCLE Site 1	SLCLE Site 2	SLCLE Site 3	SLCLE Site 1, 2 & 3
<b>n</b>	34 (33%)	44 (43%)	25 (24%)	103 (100%)
<b>Pre-SLCLE confidence level</b>				
Mean	4.74	5.11	4.24	4.78
Median	5	5	4	5
SD	2.38	2.36	2.63	2.46
<b>Post-SLCLE confidence level</b>				
Mean	7.5	7.36	8	7.56
Median	7	7.5	8	7
SD	1.63	1.37	1.36	1.48
<b>Statistical Comparison</b>				
Mean Difference	2.76	2.25	3.76	2.78
95 % CI	[2.04, 3.48]	[1.53, 2.97]	[2.78, 4.73]	[2.33, 3.24]
t-value	7.77*	6.26*	7.94*	12.1*
df	33	43	24	102

Note: SD – standard deviation; CI = Confidence Interval; df = degrees of freedom.

\* Sig. (2-tailed) p-value <.001

**Table 5**  
SLCLE student placement learning and clinical experiences (n = 103).

	Strongly agree	Agree	Neither Agree nor disagree	Disagree	Strongly disagree
	n (%)	n (%)	n (%)	n (%)	n (%)
I received an induction and welcome at the SLCLE	64 (62)	25 (24)	4 (4)	10 (10)	0 (0)
I felt valued and part of a team on the SLCLE	49 (47)	39 (38)	13 (13)	1 (1)	1 (1)
I was happy with the shift patterns at the SLCLE	51 (50)	34 (33)	8 (8)	6 (6)	4 (4)
I felt supported by the staff on the SLCLE ward	40 (39)	40 (39)	16 (15)	7 (7)	0 (0)
I felt supported by the clinical educators	71 (69)	22 (21)	6 (6)	4 (4)	0 (0)
I felt supported by other students on the SLCLE	64 (62)	29 (28)	8 (8)	2 (2)	0 (0)
I had opportunities in learning from my peers and supervisors	53 (51)	41 (40)	5 (5)	3 (3)	1 (1)
I felt I could approach other SLCLE students or supervisor	62 (60)	36 (35)	3 (3)	2 (2)	0 (0)
The SLCLE placement was a good learning experience	62 (60)	28 (27)	9 (9)	3 (3)	1 (1)
The SLCLE offered protected learning time sessions that developed my knowledge and skills	80 (78)	16 (15)	6 (6)	1 (1)	0 (0)
I had the opportunity to complete my Practice Assessment Document and receive regular constructive feedback throughout my SLCLE placement	39 (38)	34 (33)	18 (17)	6 (6)	6 (6)
I was given opportunities to spend time in other departments/wards to enhance my SLCLE placement learning experience	32 (31)	32 (31)	22 (21)	13 (13)	4 (4)
The skills and knowledge gained from my SLCLE placements has improved my confidence	58 (56)	33 (32)	8 (8)	2 (2)	2 (2)
Overall, I feel satisfied with my SLCLE placement experience	50 (48)	35 (34)	12 (12)	4 (4)	2 (2)

to uncertainty and concerns about their responsibilities and support, while others were excited. Despite receiving information, about SLCLEs, many felt ‘*overwhelmed*’, ‘*thrown into deep end*’ and ‘*terrified*’. The term ‘student-led’ signified to some students that they might not receive support. Others were unsure of what to expect or what their role in SLCLE would entail particularly when they had little or no previous health care experience (first year, first placement students) which further intensified their nervousness. Some felt ‘*worried*’ they might not be ‘*listened to*’ (Q1 & Q2). Despite feeling nervous, some students also described feeling excited and looked forward to delivering care and being given the opportunity to manage their own patients (Q3). Positive feedback from past students helped ease anxiety for some.

Most failed to access the VLE resources that were provided to inform them about SLCLE placement, either due to unawareness or claimed not to have received the link or chose not to access them prior to the placement. One of the issues raised in the interviews was the lack of familiarity with different VLE platforms. The placement provider used Moodle© whereas other HEIs/NHS partners use different systems (Q4).

Students valued induction sessions led by clinical educators about support and information on SLCLE expectations. Students that reported not receiving these sessions wanted clear guidance on daily structure of SLCLE, ward processes and what patients or colleagues they would be working with. They suggested consistent welcome sessions for all students (Q5). Students recommended pre-placement information packs outlining roles and responsibilities of each year group, ward processes and learning opportunities to clarify expectations and reduce anxiety (Q6). Overall, students appreciated their SLCLE allocation especially once expectations were clear (Q7).

## ii. Empowerment, growth, and a unique learning experience

Nursing and AHP students found that SLCLE increased confidence and independence, fostered a sense of responsibility, enhanced their clinical skills and felt better prepared for their future health careers (Q8-Q9). Year 3 students, often in the role of nurse-in-charge, developed leadership skills by managing peers and overseeing ward processes (Q10).

Some 3rd year dietetic students felt SLCLE did not meet their placement needs, and said it was better suited for 1st/2nd year dietetic students. They perceived SLCLE as slowing their skill development. Another felt they needed exposure to profession specific role models to direct their learning (Q11).

Peer support and learning was valued, with students feeling comfortable asking peers questions rather than staff, despite the staff being perceived as approachable. Peer interaction created a sense of belonging, fostering a positive working environment making students feel part of a team, easing first-year nerves with support from older peers (Q12).

The imperative to teach first-and second year students left some third-year students feeling pressured hindering proficiency development. Suggestions included first-year students shadowing registered nurses initially to ease the teaching burden. Some felt that SLCLE was unsuitable for first year first placement students with no or little previous healthcare experience knowledge or experience (Q13).

Yet, others felt they could ‘*thrive in this kind of pressure*’ suggesting it was ‘*a great first placement*.’ First-year students reported boosted confidence levels, and some perceived their next ‘*traditional*’ placement as a ‘*step down*’ if not a SLCLE.

Daily protected learning times (PLT) were found beneficial for applying theoretical knowledge to real clinical situations (Q14). Some AHP students found them nurse-centric and suggested broader facilitation by various HCPs to meet diverse needs (Q15).

## iii. Collaborative inter-professional learning and support

A sense of belonging was expressed across SLCLE sites especially within multi-disciplinary teams. Students valued coaching approaches that enhanced their skills and knowledge (Q16). Students received significant support from ward staff and clinical educators, contributing to a positive experience. Students felt comfortable approaching ward staff for guidance (Q17). At SLCLE Site1, doctors were supportive. Students praised them for teaching clinical skills, which significantly enhanced their communication, clinical judgment, and decision-making abilities. Students felt empowered through the open communication with doctors and opportunities to be actively involved in patient care with them (Q18).

Despite the largely positive experiences some students encountered challenges during SLCLE placements. Negative responses from some staff members made them hesitant to seek help from them. The students reported avoiding those who were less comfortable with SLCLE (Q19).

In the UK students have an individual electronic practice assessment document (ePAD) which provides a comprehensive record of their development and performance in practice over the period of their programme. A challenge experienced by nursing students was related to the process for signing off students’ proficiencies (standards representing the skills, knowledge and attributes expected) on their ePAD (NMC, 2018). Some students flagged that their practice assessors were not always available when they were on placement leading to delays in completing their assessments (Q20).

Some staff members were hesitant to approve students’ proficiencies when they had not observed the student performing the specific skill. To address this, students printed paper copies, asking (any) member of staff to sign that they had observed the proficiency and a record for the student to present as evidence. Students voiced their concerns about the limited number of practice assessors available (Q21). Normally there are adequate nurses and practice assessors working alongside students on the same shifts available to provide feedback and authorise proficiencies. Students felt the current national workforce situation limited the availability of practice assessors and was identified as a problem by some students. To ameliorate the situation clinical educators stepped in, acting as practice assessors thereby ensuring student proficiencies were completed.

## iv. Insights and anticipations

Students emphasised the need for clearer role delineation by point in the programme. In the UK the NMC refer to the curriculum as parts with specific expectations rather than years of study. Irrespective of the length of programme leading to registration each nursing student must complete each part. So, for graduate entry students completing a two-year programme they complete part 1 and start part 2 during the first year of their studies (NMC, 2018). Students suggested defining capability boundaries within SLCLE model to enhance the coaching framework and overall learning experience (Q22).

Balancing support with independent learning was highlighted as crucial in nursing education. They acknowledged the significance of qualified nurses (RNs) being approachable and helpful when students required guidance, thereby ensuring safe and effective patient care. However, they also recognised the importance of nurses knowing when to ‘*step back*’ at appropriate times, allowing students to take on more responsibilities and develop their skills (Q23).

All students emphasised the importance of a comprehensive welcome pack including ward details, staff information and, patient population and clear guidelines on delegated clinical tasks. Training on ward processes like patient triage (only in SLCLE Site 1) and discharge was seen as essential for consistency among

students (Q24).

Staffing levels to support students on SLCLE wards was sometimes raised as a concern, noting a higher ratio of students to qualified staff compared to other clinical areas. This difference in qualified/student ratio made managing workloads challenging. This was most marked when there was greater patient throughput, or acuity, that made the volume of work required to deliver care greater (Q25).

Despite being supernumerary, students sometimes felt overwhelmed in busy SLCLE ward environments, where roles blurred between students and staff. Clear communication and efficient break management were identified as crucial. They recognised staggered breaks were essential for operational continuity and given the unique scope of SLCLE needed to accommodate workflow. Yet there appeared to be tension between the level of patient needs and associated work and student learning (Q26).

Effective communication, teamwork and mutual understanding were essential between the senior student 'nurse in charge' and peers. Students proposed using huddles; short, focused meetings designed to rapidly assess situations and communicate information to increase effective teamworking and safety (Aase et al., 2021). These meetings, led by the student in charge, would improve coordination, share patient information and clarify roles and expectations. While successful at one site (Site 3), logistical constraints limited huddle implementation at the other two sites (Q27).

#### 4. Discussion

This study evaluated healthcare students' perspectives and clinical learning experiences of undertaking a clinical placement on a SLCLE. Most found the SLCLE placement beneficial, experienced a sense of belonging, and received structured support from clinical educators, ward staff and doctors. Most students self-assessed an increase in confidence and knowledge after completing an SLCLE placement irrespective of study site. Some encountered challenges with timely completion of assessment documentation (ePADs). Students also voiced some uncertainty associated with roles and responsibilities particularly related to stage in programme. It is positive that students could voice these concerns as it suggests they have appreciation of the notion of working within their own competence, or proficiency, essential for future professional behaviour. Nevertheless, students seemed to want greater assurance that they were working within acceptable boundaries. The ePAD provides information about what proficiencies nursing students should achieve at various points in the programme and therefore provides de facto performance expectations (NMC, 2018). That said the student in charge may be unaware of individual students' profile and therefore be dependent on any delegation to be challenged by the junior student if beyond their capability. Navigating and negotiating delegation is evidently something that requires further consideration, possibly preparation and support.

Nursing and allied healthcare professional students valued the "hands on" and "autonomous" nature of SLCLEs. This contributed to a positive learning experience and enhanced confidence, independence, and sense of responsibility. They also reported improved proficiencies and interpersonal skills, which they believed made them better prepared for their future roles as qualified nurses and AHPs. Our findings align with other studies (Wynne and Cooper, 2023; Moseley et al., 2022; Heales et al., 2021; Huang et al., 2021; Bøe and Debesay, 2021; Hand et al., 2018; Christensen et al., 2013) that healthcare professional students, regardless of their course of study, derive valuable learning from a SLCLE placement (Wilson et al., 2023).

Prior to commencing their SLCLE placement, students experienced a mix of emotions. While some felt anxious and uncertain due to not knowing what to expect, others were excited about the opportunity to lead and manage patients. Although induction and welcome sessions

were appreciated, some students felt they did not receive enough SLCLE-related information. Pre-placement anxiety is relatively commonplace (Sharif and Masoumi, 2005) however, the unique features of the SLCLE model may have heightened these emotions. Students suggested pre-placement information packs outlining roles and responsibilities might help ameliorate some of these anxieties and uncertainties. Information however was provided, and our data indicates 71 % of students did not access the information provided through a VLE. This may indicate that the method used to provide information about SLCLE was not easily accessible and/or student friendly. Previous studies have shown that a good learning environment provides a positive welcoming experience thereby effectively reducing anxiety and enabling students to settle into the clinical placement more speedily (Ekstedt et al., 2019, Doyle et al., 2017). Although over time resilience is built from accumulating experiences over the duration of a clinical placement (Lopez et al., 2018), the first few days can be overwhelming (Holmsen, 2010) and this may be heightened in SLCLEs.

Students that assumed a leadership position gained valuable learning from managing others and overseeing ward processes. Peer support from the student team contributed to fostering a positive and conducive working environment. Likewise other studies have found significant benefits in terms of gaining leadership experience and skills, from managing others and engaging in peer teaching (Paparella-Pitzel et al., 2021; Chopra et al., 2020). Peer learning pairing first year with third-year students has been particularly beneficial (Markowski et al., 2021). In this evaluation the reciprocity through peer teaching with junior students supported and guided by senior students was valued. Our study suggests that SLCLEs offer a unique space for collaborative learning and mutual support irrespective of stages or healthcare profession. This peer support seemed to be crucial in helping allay anxieties of less experienced (Markowski et al., 2021). Although PLT was found to be largely beneficial (93 %\n=96), co-producing sessions with AHP students may help make sessions more relevant to the learning needs of all students irrespective of discipline.

Some senior students found the responsibility for teaching others limited their opportunities to achieve personal learning needs. They recognised that on registration there would be an expectation they would facilitate and support the learning of others and be expected to share their own learning nevertheless these responsibilities seemed particularly onerous when the ratio of junior to senior students were unbalanced. Modelling the number and experience of the student 'workforce' to ensure an optimum balanced learning environment is crucial with student-led models (Markowski et al., 2021; Hannon et al., 2012). Just as skill mix and effective rostering is important for delivering high quality care the same considerations need to be applied to SLCLEs. However, this can be challenging when multiple HEIs are involved with different allocation patterns.

Central to the creation of a conducive learning culture is effective interpersonal relationships between staff, the wider multidisciplinary team, and students (O'Mara et al., 2014; Chan, 2001). The students recognised SLCLEs provided a valuable opportunity for inter-professional learning, and this was well received; likewise, the coaching received from clinical educators, support from ward staff and nurses, and active involvement in patient care facilitated by doctors all contributed to enhancing the students' clinical and communication skills. Students recognised that the SLCLE had a support infrastructure in place designed to enable their learning. Particularly highlighting the contribution of clinical educators like other studies (Hill et al., 2020; Henderson and Tyler, 2011).

Some students did encounter challenges during SLCLE placements. This included exposure to negative attitudes from some staff members, delays in completing assessment documentation, and limited availability of practice assessors. These challenges however are not unique to student-led areas (O'Brien et al., 2019). Other studies have highlighted how students felt unsatisfied with clinical assessments and feedback during their clinical practice (Mbakaya et al., 2020; Baraz et al., 2015).

A recent national NHS staff survey (Survey Coordination Centre, 2023) revealed that only 27% of staff believed that staffing levels at their organisation were adequate to enable them to perform their jobs effectively; and reported levels of work-related stress are concerning (Waters, 2022). The UK NHS, like many other countries, is currently facing severe shortages including the need to increase the number of adult nurse training places by 65–80% by 2030/31 (Holden, 2023) to address existing staff shortages, and requirements of the NHS Long-Term Workforce Plan (2023).

More than half of healthcare professionals leaving the register within the first five years have done so earlier than planned, contributing to rising levels of early attrition (NMC Insights, 2023). Creating supportive clinical learning environments during pre-qualifying education supported by good role models may well do much to retain students and newly qualified professionals; SLCLEs may offer such an environment.

#### 4.1. Strengths

The findings of this study contribute to literature on student-led clinical learning experiences (SLCLEs) by providing insights into the effectiveness of SLCLEs using a mixed-method approach. This allows for a comprehensive understanding ensuring results are robust and reliable. In addition, the results can inform curriculum development, teaching strategies, and clinical placement policies to enhance student learning and preparation for future healthcare practice. Key strengths identified in SLCLEs, such as enhanced student experience, increase in student confidence levels, critical thinking skills, autonomy, sense of responsibility may contribute to students' future professional practice and career trajectories.

#### 4.2. Limitations

The study was conducted in one large NHS organisation that was at the time of the study experiencing acute workforce shortages coupled with repeated industrial action by various staff groups that has disrupted learning and service continuity. These factors may have had a detrimental effect on student experience.

#### 4.3. Implications

Student-led clinical learning environments offer a different model to enable HCP student learning. From our evaluation SLCLE placements are acceptable to students and reportedly increase confidence and competence.

Preparation of students to undertake a SLCLE placement is important. Expecting students to access online resources may not be successful and other modes of communicating pre-placement information need to be considered. As students adopt different roles some students particularly senior students who may act as 'nurse in charge' may need extra preparation and support to organise care, safely delegate and accommodate teaching others, whilst meeting personal learning needs and responsibilities for delivering care.

It is evident that SLCLEs require an adequate workforce to support learning, provide supervision, offer protected learning and be available for completing assessments. Further optimum ratios of students – skill-mix - based on experience and professions needs to be considered to ensure effective learning and minimise student anxieties and reduce delays in completing proficiency assessments and ensure disciplinary needs are met. Also, students may require additional preparation to navigate their scope of practice, boundaries, accountability, and delegation.

Overall, this evaluation provides valuable insights that will assist in refining the SLCLE model, however it does show promise as an approach to better-prepare healthcare professionals whilst ensuring delivery of safe person-centred patient care.

## 5. Conclusion

This evaluation of SLCLE placements demonstrated they have significant benefits for HCP students, fostering a sense of belonging, increasing confidence, and enabling the development of clinical knowledge and skills. Clinical educators, ward staff and doctors played a vital role in enhancing clinical learning. Role clarity and availability of practice assessors were particular stressors for students. While the study indicates several positive aspects of SLCLE placements, it is important to acknowledge that challenges exist, such as staff shortages and role clarity issues. Given workforce shortages and the imperative to exponentially increase high quality placement capacity, SLCLE may be a promising solution. However, this is contingent on having adequate skilled clinical educators and assessors in place to provide oversight and ensure safety, thus allowing the next generation workforce to be secure when learning. Continuous evaluation is vital to refine the model and fully assess its effectiveness in clinical education.

### Future work

- Investigate the experiences of healthcare professionals (staff) regarding the implementation, acceptability, and potential sustainability of SLCLEs.
- Examine the experiences and advantages that patients gain from participating in SLCLEs.
- Optimum skill-mix – volume and types of students, staff, and clinical educators to deliver safe effective care in a SLCLE.

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**Sunita Channa:** Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Teresa Melody:** Writing – review & editing, Formal analysis. **Ruth Pearce:** Writing – review & editing, Supervision, Resources, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Annie Topping:** Writing – review & editing, Visualization, Conceptualization. **Carol Willis:** Writing – review & editing, Conceptualization.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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### Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.nepr.2024.104035](https://doi.org/10.1016/j.nepr.2024.104035).

### References

- Aase, I., Tjøflåt, I., Hjorthaug Urstad, K., 2021. Using the 'huddle' to enhance interprofessional teamwork among nursing students through a podcast: a qualitative and exploratory pilot study. *BMC Nurs.* 20 (1), 235. <https://doi.org/10.1186/s12912-021-00747-4>.



- Ambrose, E., Baker, D., Mahal, I., Micflikier, A., Holmqvist, M., 2015. Interprofessional experiences at a student-run clinic: who participates and what do they learn? *J. Res. Inter. Pr. Educ.* 5 (2) <https://doi.org/10.22230/jripe.2015v5n2a19739>.
- Baraz, S., Memarian, R., Vanaki, Z., 2015. Learning challenges of nursing students in clinical environments: a qualitative study in Iran. *J. Educ. Health Promot* 4, 52.
- Bøe, S.V., Debesay, J., 2021. The Learning Environment of Student Nurses During Clinical Placement: A Qualitative Case Study of a Student-Dense Ward. *SAGE Open Nurs.* 7:23779608211052357. <https://doi.org/10.1177/23779608211052357>.
- Brewer, M.L., Stewart-Wynne, E.G., 2013. An Australian hospital-based student training ward delivering safe, client-centred care while developing students' interprofessional practice capabilities. *J. Inter. Care* 27 (6), 482–488. <https://doi.org/10.3109/13561820.2013.811639>.
- Buchan, B., Ball, J., Shembavnekar, N., Charlesworth, 2020. REAL Centre Workforce pressure points. Health Foundation, London <https://www.health.org.uk/publications/reports/building-the-nhs-nursing-workforce-in-england>. Accessed in June 2023.
- Buchan, J., Gershlick, B., Charlesworth, A., Secombe, I., 2019. Falling short: the NHS workforce challenge. HealthFoundation, London <https://www.health.org.uk/publications/reports/falling-short-the-nhsworkforce-challenge>. Accessed in June 2023.
- Chan, D.S.K., 2001. Combining qualitative and quantitative methods in assessing hospital learning environments. *Int. J. Nurs. Stud.* 38, 447–459.
- Chopra, N., Zhou, D.B., Fallar, R., Chadha, N., 2020. Impact of near-peer education in a student-run free ophthalmology clinic on medical student teaching skills. *J. Surg. Educ.* <https://doi.org/10.1016/j.jsurg.2020.05.012>.
- Christensen, D., Belgard, A., Craig, C., Stephens, M., 2013. Interest and perceptions of student-run health clinics: a survey at the Uniformed Services University of the Health Sciences. *Mil. Med* 78 (11), 1245–1249. <https://doi.org/10.7205/MILMED-D-13-0020328>.
- Clarke, D., Williamson, G., Kane, A., 2018. Could students' experiences of clinical placements be enhanced by implementing a Collaborative Learning in Practice (CLiP) model? *Nurse Educ. Pract.* 33, A3–A5.
- Doyle, K., Sainsbury, K., Cleary, S., Parkinson, L., Vindigni, D., McGrath, I., Cruickshank, M., 2017. Happy to help/happy to be here: identifying components of successful clinical placements for undergraduate nursing students. *Nurse Educ. Today* 49, 27–32.
- Dyar, A., Lachmann, H., Stenfors, T., Kiessling, A., 2019. The learning environment on a student ward: an observational study. *Perspect. Med. Educ.* 8 (5), 276–283. <https://doi.org/10.1007/s40037-019-00538-3>.
- Ekstedt, M., Lindblad, M., Löfmark, A., 2019. Nursing students' perception of the clinical learning environment and supervision in relation to two different supervision models - a comparative cross-sectional study. *BMC Nurs.* 30 (18), 49. <https://doi.org/10.1186/s12912-019-0375-6>.
- Faithfull-Byrne, A., Thompson, L., Schafer, K.W., et al., 2017. Clinical coaches in nursing and midwifery practice: facilitating point of care workplace learning and development. *Collegian* 24 (4), 403–410. <https://doi.org/10.1016/j.collegian.2016.06.001>.
- Fetters, M.D., Curry, L.A., Creswell, J.W., 2013. Achieving integration in mixed methods designs-principles and practices. *Health Serv. Res* 48 (6 Pt 2), 2134–2156. <https://doi.org/10.1111/1475-6773.12117>.
- Frakes, K.A., Brownie, S., Davies, L., Thomas, J., Miller, M.E., Tyack, Z., 2014. Experiences from an interprofessional student-assisted chronic disease clinic. *J. Interprof. Care* 28 (6), 573–575. <https://doi.org/10.3109/13561820.2014.917404>.
- Frakes, K.A., Tyack, Z., Miller, M., Davies, L., Swanston, A. and Brownie, S. (2011) The Capricornia Project: Developing and implementing an Interprofessional student-assisted allied health clinic. Brisbane, QLD: Clinical Education and Training (ClinEdQ) Queensland Health.
- Fröberg, Leanderson, M., Fläckman, C., Hedman-Lagerlöf, B., Björklund, K., Nilsson, G. H., et al., 2018. Experiences of a student-run clinic in primary care: a mixed method study with students, patients and supervisors. *Scand. J. Prim. Health Care* 36, 36–46.
- Gale, N.K., Heath, G., Cameron, E., et al., 2013. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med. Res. Methodol.* 13, 117.
- Hand, J., Koransky, A., Feinman, J., et al., 2018. Alumni perspectives on the role of medical school service-learning experiences in their professional development and practice. *J. Health Care Poor Under* 29 (4), 1386–1399. <https://doi.org/10.1353/hpu.2018010229>.
- Hannon, P., Hunt, C., Haleem, D., King, L., Day, L., Casals, P., 2012. Implementation of a dedicated education unit for baccalaureate students: Process and evaluation. *Int. J. Nurs. Educ.* 4 (2), 155–159.
- Heales, L.J., Bonato, K., Randall, S., Hinz, C., Job, S., Bochezanian, V., et al., 2021. Factors associated with student satisfaction within a regional student-led physiotherapy clinic: a retrospective qualitative study. *Aust. J. Clin. Educ.* 10 (1), 1–17. <https://doi.org/10.53300/001c.21424>.
- Health Education England, 2018. RePAIR: Reducing Pre-Registration Attrition and Improving Retention. Health Education England.
- Henderson, A., Tyler, S., 2011. Facilitating learning in clinical practice: evaluation of a trial of a supervisor of clinical education role. *Nurse Educ. Pract.* 11, 288–292.
- Hill, R., Woodward, M., Arthur, A., 2020. Collaborative Learning in Practice (CLiP): evaluation of a new approach to clinical learning. *Nurse Educ. Today* 85, 104295. <https://doi.org/10.1016/j.nedt.2019.104295>.
- Holden, J. (2023) The NHS Long Term Workforce Plan explained. The Kings Fund. <https://www.kingsfund.org.uk/publications/nhs-long-term-workforce-plan-explained>. Accessed on 08-11-23.
- Holmsen, T.L., 2010. Hva påvirker sykepleierstudentenes trygghet og læring i klinisk praksis? [what affects nursing students' confidence and learning in clinical practice?]. *V. ård i Nord.* 30 (1), 24–28. <https://doi.org/10.1177/010740831003000106>.
- Huang, K., Maleki, M., Regehr, G., McEwen, H., 2021. Examining the educational value of student-run clinics for health care students. *Acad. Med* 96 (7), 1021–1025. <https://doi.org/10.1097/acm.000000000000392256>.
- Kent, F., Martin, N., Keating, J.L., 2016. Interprofessional student-led clinics: An innovative approach to the support of older people in the community. *J. Interprof. Care* 30 (1), 123–128. <https://doi.org/10.3109/13561820.2015.1070133>.
- Kivimäki, M., Batty, D., Pentti, J., Shipley, M., Sipilä, N., Suominen, S., Oksanen, T., Stenholm, S., Virtanen, M., Marmot, M., Singh-Manoux, A., Brunner, E., Lindbohm, J., Ferrie, J., Vahtera, J., 2020. Association between socioeconomic status and the development of mental and physical health conditions in adulthood: a multi-cohort study. *Lancet Public Health* Volume 5 (Issue 3) (March).
- Lopez, V., Yobas, P., Chow, Y.L., Shorey, S., 2018. Does building resilience in undergraduate nursing students happen through clinical placements? A qualitative study. *Nurse Educ. Today* 67, 1–5.
- Markowski, M., Bower, H., Essex, R., Yearley, C., 2021. Peer learning and collaborative placement models in health care: a systematic review and qualitative synthesis of the literature. *J. Clin. Nurs.* 30 (11-12), 1519–1541. <https://doi.org/10.1111/jocn.15661> (Epub).
- Mbakaya, B.C., Kalembo, F.W., Zgambo, M., et al., 2020. Nursing and midwifery students' experiences and perception of their clinical learning environment in Malawi: a mixed method study. *BMC Nurs.* 19, 87. <https://doi.org/10.1186/s12912-020-00480-4>.
- Moore, K., Bacon, R., Beviitt, T., Bialocerkowski, A., Ciccone, N., Haworth, N., et al., 2018. Report: the university health clinic: definition, educational practices and outcomes. *Focus Health Prof. Educ.* 19, 1–13.
- Moseley, J., Hellawell, M., Graham, C., Briggs, A., 2022. Evaluation of a large group supervision model in a university student-led physiotherapy clinic. *Br. J. Health Care Manag* 28 (3), 61–67. <https://doi.org/10.12968/bjhc.2021.009812>.
- NHS England (May 2023). NHS workforce statistics – February 2023 (Including selected provisional statistics for March 2023). <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-workforce-statistics/february-2023>. Accessed on 07-07-2023.
- NHS England (2023) The NHS Long Term Workforce Plan. (<https://www.england.nhs.uk/wp-content/uploads/2023/06/nhs-long-term-workforce-plan-v1.1.pdf>). Accessed on 07-07-2023.
- NMC (2018) Future nurse; Standards of proficiency for registered nurses future-nurse-proficiencies.pdf (nmc.org.uk). Accessed on 24-10-2023.
- NMC Insights (2023). Spotlight on Nursing and Midwifery: Report 2023. spotlight-on-nursing-and-midwifery-report-2023.pdf (nmc.org.uk) Accessed on 08-11-23.
- O'Mara, L., McDonald, Gillespie, M., Brown, H., Miles, L., 2014. Challenging clinical learning environments: Experiences of undergraduate nursing students. *Nurse Educ. Pract.* Volume 14 (Issue 2), 208–213. March 2014.
- O'Brien, A.T., McNeil, K., Dawson, A., 2019. The student experience of clinical supervision across health disciplines - Perspectives and remedies to enhance clinical placement. *Nurse Educ. Pr.* 34, 48–55. <https://doi.org/10.1016/j.nepr.2018.11.006>.
- Paparella-Pitzel, S., Anderson, E.Z., Rothpletz-Puglia, P., Parrott, J.S., 2021. Exploring physical therapy students' experience of peer learning in a student-run clinic. *J. Educ. Health Promot* 10, 400. <https://doi.org/10.4103/jehp.jehp.188.21>.
- Pearce, R., Topping, A., Willis, C., 2022. Enhancing healthcare students' clinical placement experiences. *Nurs. Stand.* <https://doi.org/10.7748/ns.2022.e11887>.
- Population and Census (2021) 2021 Census. [https://www.birmingham.gov.uk/info/20057/about\\_birmingham/1294/population\\_and\\_census/5](https://www.birmingham.gov.uk/info/20057/about_birmingham/1294/population_and_census/5). Accessed on 10/10/2023.
- Ritchie, J., Spencer, L., 1994. Qualitative data analysis for applied policy research. In: Bryman, A., Burgess, R.G. (Eds.), *Analyzing Qualitative Data*. Routledge, London.
- Rowland, E., Trueman, H., 2024. Improving healthcare student experience of clinical placements. *BMJ Open Qual.* 13, e002504 <https://doi.org/10.1136/bmjopen-2023-002504>.
- Saunders, B., Sim, J., Kingstone, T., et al., 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual. Quant.* 52, 1893–1907. <https://doi.org/10.1007/s11135-017-0574-8>.
- Schutte, T., Tichelaar, J., Dekker, R.S., van Agtmael, M.A., de Vries, T.P.G.M., Richir, M. C., 2015. Learning in student-run clinics: a systematic review. *Med Educ.* 49, 249–263.
- Sharif, F., Masoumi, S., 2005. A qualitative study of nursing student experiences of clinical practice. *BMC Nurs.* 4, 6. <https://doi.org/10.1186/1472-6955-4-6>.
- Simpson, S.A., Long, J.A., 2007. Medical student-run health clinics: Important contributors to patient care and medical education. *J. Gen. Intern. Med.* 22, 352–356.
- Staun, M., Bergström, B., Wadensten, B., 2010. Evaluation of a PBL strategy in clinical supervision of nursing students: patient centred training in student-dedicated treatment rooms. *Nurse Educ. Today* 30, 631–637.
- Survey Coordination Centre (2023) NHS Staff Survey 2022: National results briefing. <https://www.nhsstaffsurveys.com/static/8c6442c8d92624a830e6656baf633c3f/NHS-Staff-Survey-2022-National-briefing.pdf>. Accessed on 01-11-2023.
- Tavakol, M., Dennick, R., 2011. Making sense of Cronbach's alpha. *Int. J. Med. Educ.* 27 (2), 53–55. <https://doi.org/10.5116/ijme.4dfb.8df4>.
- Twycross, A., Shorten, A., 2014. Service evaluation, audit and research: what is the difference? *Evid. -Based Nurs.* 17, 65–66.
- Warren, A., et al., 2021. Using online simulation experiences to increase student nurses' confidence. *Nurs. [Online]* 117 (5), 34–37.

Waters, A., 2022. NHS staff survey underlines need for national workforce strategy. *BMJ* 377, o871. <https://doi.org/10.1136/bmj.o871> pmid:35365492.

Wilson, O.W.A., Broman, P., Tokolahi, E., andersen, P., Brownie, S., 2023. Learning Outcomes from Participation in Student-Run Health Clinics: A Systematic Review.

Jan 19 *J. Multidiscip. Health* 16, 143–157. <https://doi.org/10.2147/JMDH.S385709>.

Wynne, D., Cooper, K., 2023. Students' perceptions of a UK physiotherapy student-led clinic. *Clin. Teach.*, e13603 <https://doi.org/10.1111/tct.13603>.