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Student experiences in a novel interprofessional neurodevelopmental clinic: a qualitative study

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Abstract

Background Student-led clinics can provide low-cost speciality care and practical interprofessional education (IPE) opportunities. In Australia, there are currently limited speciality services available that provide neurodevelopmental assessments that consider fetal alcohol spectrum disorder (FASD) as one possible outcome. The aim of the current study was to understand student experiences in a novel interprofessional student-led clinic for children and adolescents with suspected or confirmed prenatal alcohol exposure.

Method Seventeen allied health university students (11 occupational therapy; 6 psychology) participated in individual semi-structured interviews following completion of a 10-week clinic placement. Reflexive thematic analysis was undertaken using NVivo12.

Results Four main themes were generated: (1) Interprofessional practice a key for students' development as future healthcare professionals; (2) Meaningful relationships and students' belief they made a difference; (3) Novel challenges tested students' capabilities on placement; and (4) Supervisor attitude and approach to learning supported student development.

Conclusions The current study demonstrated that the interprofessional student-led neurodevelopmental clinic provided a valuable IPE opportunity for students.

Keywords Neurodevelopmental, Fetal alcohol spectrum disorder, Interprofessional practice, Interprofessional education, Student-led clinic

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Introduction

Student-led clinics are models of healthcare delivery in which students, under the guidance of supervising staff, take primary responsibility for the logistical and operational management of a clinic that is capable of prescribing disease-specific treatment to patients [1]. Student-led clinics provide an invaluable link between students, universities, healthcare professionals, and communities. They allow more time for assessments and treatments, in-depth health teaching, holistic and integrated care, and low-cost support to vulnerable populations [2]. Studies regarding the patients' experience of attending student-led clinics generally indicate an overall satisfaction and positive experience [3–5]. For example, patients have been found to appreciate low clinic fees, access to speciality care, the "team" (i.e., collaborative) approach taken by the clinic, and even perceived the students as more active listeners compared to staff members [6]. A recent study also documented similar positive experiences of caregivers attending a student-led neurodevelopmental clinic [7].

In addition to patients, students and educators also benefit significantly from the operation of student-led clinics [8]. Although student-led clinics can be implemented in uniprofessional settings, many are undertaken in an interprofessional (IP) format utilising an interprofessional education framework [9]. Interprofessional education (IPE) is a critical approach for preparing students to enter the health workforce, where teamwork and collaboration are important competencies needed to support complex and diverse patients [10]. IPE involves students from two or more professions working together to learn with, from, and about each other in order to develop the knowledge base, skills, attitudes, and values that facilitates enhanced health outcomes [11–13]. By working together toward a common goal, IPE can help health students become clinicians who are collaborative, patient-focussed, and holistic in their approach [14].

There is an increasing body of evidence for the positive effect of IPE both on students' education and in the healthcare system. The practical IPE opportunities that student-led clinics provide have been found to improve students' self-awareness of biased assumptions, recognition of the need for systemic interventions, individualising of assessment procedures and treatment, and comfort working in IP teams [15]. Similarly, student-directed clinic placement experiences can lead to greater perceptions of self-worth, satisfaction, pride in the process of clinic development, altruism, leadership skills, and administrative competence [16, 17]. As a result, student-led clinics are becoming an important tool for IPE, whilst also combating shortages in the health workforce, help vulnerable populations access otherwise difficult to acquire services, and supplement services provided by under-resourced public clinics. Given that restricted access to healthcare is associated with poorer general health status and worse physical health, student-led health services are one emerging option to lessen the burden on public health systems and enable increased access to services for the community [2]. In Australia, universities are utilising student-led clinics as a popular strategy to simultaneously address the shortage of student healthcare placements, and limited capacity of our healthcare systems [18].

One vulnerable population in Australia who can currently find it difficult to access public services are individuals with fetal alcohol spectrum disorder (FASD), a neurodevelopmental condition that arises from prenatal alcohol exposure. Alcohol is a teratogen that can impact the development of all the organs and systems of the body. As a result, individuals with FASD can experience a range of physical e.g., cognitive, neurological, behavioural, and learning challenges [e.g., 19–21]. There are currently no accurate estimates of the prevalence of FASD in the general Australian population [22]. A systematic review and meta-analysis by Lange et al. [23] estimates that the global prevalence of FASD among young people in the general population to be approximately 7.7 per 1,000 population. FASD has lifelong implications for individuals and families; however, developmental outcomes and life course trajectories of young children can be optimized when individual and family needs are identified early and met with family-centred early intervention services [24–28]. Access to developmental services and having FASD diagnosed prior to age six have been identified as particularly helpful in improving long-term outcomes [26].

In Australia, the process of assessing for FASD is guided by the Australian Guide to the Diagnosis of FASD [29], which recommends a comprehensive interprofessional assessment. While FASD-related services are now more readily available in Australia, the demand continues to exceed capacity, and the waitlists for existing services remain extensive [22]. Furthermore, best practice assessment processes are labour intensive, resulting in high costs for public health facilities, which are already under-resourced [22, 30]. Therefore, the establishment of a student-led clinic that could provide assessments that can consider FASD as one possible outcome could have benefits on multiple levels: (1) for children and families in increasing accessibility of FASD-related services; (2) supplementing the services available in the community; and (3) providing students with a unique opportunity to develop both their IP skills and have exposure to a more complex client presentation than may not be typical during other university-based placements.

Whilst there is variability in presentations, children with prenatal alcohol exposure/FASD may also present

with a range of additional complex or adverse life experiences. For example, children with FASD are at increased risk of being involved with the out-of-home care and/or the youth justice system [31, 32]; experiencing neglect and trauma [33]; and may have parents who are experiencing ongoing mental health and/or alcohol or other drug use challenges. More complex populations may be well-suited to student-led clinics, as research has found that within allied health, adult learning methodologies utilising both standardised patients and progressively challenging client cases can have a positive effect on clinical readiness [34, 35]. This is finding is particularly relevant as previous literature [e.g., 27, 28, 36, 37] has suggested that new allied health graduates can have limited clinical reasoning skills and ability to transfer knowledge into practice, thus impacting the extent to which their work is client-centred. Therefore, providing students with a supported opportunity to have exposure to more challenging paediatric presentations may enable students to be better prepared for external placements and their future practice as health professionals [34, 35].

The current study aimed to understand the experiences of allied health students who completed a placement at a newly established IP, student-led neurodevelopmental clinic for children and adolescents with suspected or confirmed prenatal alcohol exposure. To the authors' knowledge, this is the first IP student-led clinic developed in Australia to provide neurodevelopmental assessments that can consider FASD as one possible diagnostic outcome.

Method

Research design

The current study utilised a qualitative descriptive design [38] informed by constructivist learning theory [39–41]. Qualitative descriptive design is used in healthcare and service delivery research to better understand participant lived experience [42]. The topic is approached from the perspective of those who are situated in the context, where the researchers are seen as the instrument of research and are positioned within the context of the phenomena of interest [43]. Qualitative descriptive designs include purposeful sampling, semi-structured interviews, qualitative data analysis, and a straight description of the data [43]. Data collected are qualitatively examined for any similarities and differences, categories, patterns, and themes, and are then described and interpreted to provide an account of the experience-as-lived [43].

The theoretical underpinnings of constructivist learning theory as described by Heath et al. [39] stipulate that: (1) learners bring unique knowledge, experience, and beliefs to a learning situation; (2) knowledge is constructed uniquely and individually through a variety of tools, resources, experiences, and contexts; (3) learning is both an active and reflective process; (4) learning is a developmental process of accommodation, assimilation, or rejection in the context of mental frameworks or schemas; (5) social interaction facilitates learning through reflection, collaboration, negotiation, and shared meaning; and (6) learning occurs in the mind. The theoretical underpinnings of constructivism align well with both the philosophy of qualitative descriptive design, and an IPE framework . Qualitative descriptive design and constructivism both represent the view that reality exists within various contexts [44, 45], while IPE is underpinned by the idea that meaningful learning is intertwined with meaningful experiences that connect the learner with their professional world [11].

Research setting

The IP neurodevelopmental clinic was established in 2019 through collaboration between The University of Queensland and Children's Health Queensland, and served as an IPE opportunity for allied health student trainees. The objective of the clinic was to provide services to children and adolescents referred with concerns regarding behaviour and/or development, in the context of suspected or confirmed prenatal alcohol exposure. The clinic was undertaken as a 10-week placement block for students completing undergraduate studies in Occupational Therapy (OT) and postgraduate studies in Psychology at The University of Queensland, Australia. Week 1 of the placement was student orientation, Weeks 2–4 were client assessment, Weeks 5–6 scoring, diagnostic formulation (including IP case discussions) and commencement of report writing, Week 7 client feedback sessions, and Weeks 8–10 completion of reports. During the client assessment weeks, students were provided with 1 hour of group supervision in the morning and approximately 2 hours of group supervision in the afternoon. Additional individual and discipline specific supervision sessions were provided on an as required basis, depending on student needs.

The clinic offered four assessment blocks per year. The number of students for each assessment block was dependent on student availability (e.g., from two students to four students per discipline). The students were supervised by onsite university staff (i.e., a registered Clinical Psychologist (NR) and Occupational Therapist (MM), as well as a Consultant Paediatrician (KL). Two Paediatric Registrars were involved during the assessment blocks of 2019, but due to limited availability were not involved during 2020. The clinic assessment process followed the Australian Guide for the Diagnosis of FASD (Bower & Elliott, 2016), but also included a unique strengths-based and family-centred approach, which was co-designed with parents/caregivers and health service staff [46].

Participants and sampling

Students who undertook a placement at the IP neurodevelopmental clinic between November 2019 to September 2020 were invited to participate in a semi-structured interview upon the completion of their placement block. The interviews occurred either face-to-face or via phone, depending on preferred availability, within one month of completion of the placement. The sample included a total of 17 female students; 11 Occupational Therapy undergraduate students, either completing their 3rd or 4th year of studies, and six master's level Psychology students (provisional psychologists), completing their first year of post-graduate studies, which was the total number of students who completed placements at the clinic during the period of data collection. There were no male students at the time the research was undertaken. None of the students had previous experience working with children or adolescents with prenatal alcohol exposure or FASD.

Data collection

Data collection was undertaken by authors NH and RM using a semi-structured interview schedule (see Supplemental File 1 for the interview questions). Interviews commenced with broad questions (i.e., *could you tell me about your experiences of being involved in the clinic?*) and included topics regarding students' experiences with clients, clinic structure, learning and interprofessional practice, placement challenges, and recommendations for future improvements. Interviews were arranged at participants' convenience. Eight interviews were completed via phone, and nine were face-to-face. Interviews lasted from 15 to 45 min. All interviews were audio-recorded and transcribed verbatim.

Data analysis

Transcripts of the interviews were analysed by KG and discussed with NR throughout the analysis. Reflexive thematic analysis (reflexive TA) [47] was used, which was consistent with the epistemological stance taken in this study and the theoretical underpinnings of qualitative descriptive design. A key component of reflexive TA is the view that subjectivity can be a valuable and a helpful resource, rather than problematic. Although reflexive research treats knowledge as situated and shaped, reflexive TA requires the researcher to be transparent about their beliefs, assumptions, and other factors they could bring to the research, in order to take responsibility for their own situatedness [47]. As authors were aware that researchers and participants would impact one another, and that the researcher's subjectivity would contribute to the analysis and interpretation of the data, reflexive TA was the most suitable choice compared to similar approaches (e.g., "codebook TA" or "coder reliability TA"). Reflexive TA allowed for an inductively developed analysis that captured both semantic and latent interpretations of student voices. Meaning was located from conscious (explicit) and unconscious processes (e.g., implicit beliefs, assumptions, ideas that are identified through the reflexive process and critically interrogated) related to FASD, transformation, learning, and clinical practice in the context of constructivist learning theory. Braun and Clarke's [48] six-phase procedure guided the analysis of transcripts utilising the aforementioned principles of reflexive TA in the context of a qualitative descriptive approach. This included (1) reading and re-reading transcripts, including rough notetaking to facilitate familiarity with the data and spark initial inspirations; (2) generation of initial codes using NVivo12 Pro Qualitative Data Analysis Software (released in March 2018; [49]) to highlight re-appearing concepts and interesting points occurring within the data. Codebooks or pre-conceptualised themes were not utilised; coding was an active, flexible, and organic process; (3) conceptualising the initial codes into broader themes. During this stage it became apparent that emotion was a feature of student accounts recalling their experiences working collaboratively with populations for which they had pre-existing assumptions, or no experience at all; (4) reviewing, modifying, and developing themes for rich and multi-dimensional expressions of student experiences. This often included archiving themes, merging themes, deleting themes, and allowing time for new perspectives to develop regarding existing themes; (5) refining, defining, and naming themes to develop complexity, and to be concise, distinctive, and easily understandable; and (6) reporting and dissemination of the data collected, addressing each theme in turn. The concept of information power [50], an alternative to data saturation, was utilised. Information power indicates that the more information the sample holds, relevant for the actual study, the lower the number of participants needed [50]. The current study included aims specific to students who attended the clinic, was grounded in constructivist learning theory, and contains robust and highly relevant interview dialogue. Based on these considerations, and the fact that the analytic approach was a cross-case analysis rather than exploratory, the current sample of 17 was likely to generate sufficient information power and specificity of participants' experiences/knowledge.

Ethical considerations

Ethical approval was obtained from Children's Health Queensland Ethics Committee (HREC/18/QCHQ/46,648) and the University of Queensland Ethics Committee (2,019,000,170). Written and verbal consent to participate and permission to audio-record the interviews was obtained and re-confirmed prior to commencement of each interview. Participants were provided

with a summary of the project, purpose of the interview, and were advised that the main researcher (KG) was completing the research as a requirement of her masters thesis. Interviews were completed after students had completed their placements and the project information provided was clear that participation in the interviews was voluntary and given the placement was already complete, had no potential to influence the outcomes of their placement. Participants were also informed that their transcripts would be anonymised by removing all identifying information and assigning a code to identify transcripts, so that none of the clinic staff or supervisors would be able to identify the students. Participant transcripts were stored in password protected files on the University research storage system; audio-recordings were erased following transcription.

Researcher characteristics

Data were analysed by KG, a female provisional psychologist completing her Master of Psychology (Counselling) Degree. Prior to the project, the researcher had approximately six months of practical experience administering neuropsychological assessments to children and adolescents, including assessing for FASD. The researcher had undertaken a clinical placement at the neurodevelopmental clinic with 11 of the 17 participants during the data collection period. Therefore, all data collection, including recruitment of participants and student semi-structured interviews were undertaken and transcribed by two independent researchers (NH and RM), both female research assistants. Transcribed interviews were de-identified before data were analysed to protect the students' confidentiality. Neither NH nor RM had pre-existing relationships with the participants.

Results

Four main themes were generated from the reflexive thematic analysis of student experiences: (1) IP a key for students' development as future healthcare professionals; (2) meaningful relationships and students' belief they made a difference; (3) novel challenges tested students' capabilities on placement; and (4) supervisor attitude and approach to learning supported student development. Table 1 provides an overview of these four themes, including associated sub-themes and example quotations.

IP a key for students' development as future healthcare professionals

The first theme described how students found the clinic placement contributed to their development as a health professionals. Specifically, through concepts of collaborative thinking and acting, shared knowledge, knowledge exchange, immersive learning, and reflection. For example, student accounts indicated the value of working within an IP team and reported increased knowledge of different discipline skills and roles. OT and psychology students reported that their knowledge had improved regarding their partner's role in assessment and treatment, and increased role clarity regarding the similarities and differences between an OT and psychologist. As students navigated these dynamics within their IP team during placement, they described how exposure to different strategies and schools of thought utilised by each profession allowed for transformation of their practice and a reduction of hierarchies.

An important facet of this theme included the practical and immersive learning. By direct placement in an unfamiliar environment, students were able to quickly learn a range of assessments, refine their report writing skills, increase their knowledge of FASD, and develop the clinical skills to support children with complex needs. Students desecribed this as being comparable to "real-word" practice, and reflections of their experience indicated perceived improvements in communication, self-management, and professionalism upon placement completion. The essence of this theme is encapsulated by students as a unique learning experience that allowed them to move closer to the practitioner they envisioned themselves as in the future. Ultimately, a product of the interaction between new perspectives available, and their own critical reflections on what they knew, and what had been previously taught to them.

Meaningful relationships and students' belief they made a difference

The second theme focused on the nature of relationships between students and clients, and the learning that transpired for students as a result. A latent finding from this theme related to the value of the therapeutic relationship to cultivate person-centred outcomes, and the potential for quality therapeutic interactions to neutralise the often impersonal or highly rigid approach to standardised assessments in clinical settings. The relationships children developed with students were seen as motivating factors for children, even when standardised assessments were challenging to complete. The feedback process following completion of assessment was perceived as helpful for both children and caregivers, due to the collaborative, person-centred, and strengths-based approach. This contributed to student's belief that their efforts made a difference for the child and family. Additionally, the relationships developed at the clinic were not one-sided; students identified the interpersonal value of their therapeutic interactions with the children and young people, as well as the opportunity to learn from families' lived experiences.

Table 1 Themes (bolded), subthemes and quotations

Themes and subthemes	Example Quotations
IP a key for students' development as future healthcare professionals	"I have actually really enjoyed my experience with this clinic overall, looking back on it, it was very challenging I'll admit, but overall, it's been a really good experience for me to learn a lot and I've also acquired a lot of skills that I know I'll carry forward with my future clinics" (P12).
Working in an IP team facilitated knowledge exchange and collaboration between students	"That was a really good experience, because it really opened my eyes in terms of working collaboratively with a psychologist. I never thought that an OT could do that. So that was really good" (P16).
Doing and learning: improved assessment and report writing skills	"I have learnt a lot about [assessments] and the experience has been really great. Because I haven't actually had the chance to do many standardised assessments throughout my course so that was really good and just learning the importance of like being prepared and knowing the assessment really well beforehand" (P3).
Placement as a simulation of "real-world practice"	"[The clinic] helped me to really develop my professionalism and even my communication skills… in the environment there, it really builds on how you would communicate in a real-life job as an OT" (P16).
Exposure to unique populations and development of FASD-related knowledge and skills	"As this is a FASD clinic I know now quite comprehensively all about the effects of pre-natal alcohol exposure and the underlying mechanisms of a child's presentation, like you can say that they've got impairments and 'this and that' but before…that didn't really mean much to me. But now I understand more about the development of the brain in terms of neuropsychology… I have more understanding around that and looking at neurodevelopmental disorders from that perspective" (P9).
Meaningful relationships and students' belief they made a difference	"The caregiver said that they were really happy with the services that we provided and all the findings…how we worked with them the entire time, it was a really collaborative way of doing it all. They really enjoyed it all, because it was relationship building, which was really good for both of us" (P12).
Student-client interactions impactful, therapeutic, and memorable	"It was really good. Both my psychology student and I built a really good rapport with the client and also the caregiver as well. We felt comfortable with them, which was good. I feel like we did make a bit of an impact with them as well which was really nice" (P14).
Collaborative and strengths-based feedback made unique by each student	"The actual feedback session was really good because we had the caregiver with us. And that was the most talkative I had seen the child…it was a wrapping up session about strengths and struggles and I think they really enjoyed seeing that and the way we presented it was really client centred" (P12).
Caregiver reaction to FASD diagnosis was relief, validation, and closure	"She [the caregiver] was appreciative of the fact that actually, no, he does have a lot of things that he has challenges with…I think she appreciated being validated that it wasn't just her seeing it" (P10).
Novel challenges tested students' capabilities on placement	"…he [the child being assessed] had a lot of anxiety about testing, so I think my first day he ran out of the room… because he got so upset about not getting things correct" (P5).
Working with children's complex needs meant adaptation and flexibility	"The behaviour was part of it, but also just the challenges that they [the children being assessed] experience, like cognitive function…working out where the best level of challenge is for them because their chronological age is not the age they are functioning at. Working out what level you need to prompt at and what level you need to be providing instructions at and what age you need to target activities, conversations, interest to get them engaged" (P10).
Intensive assessment process for FASD different to other placements	"…A lot of the assessments that were in the FASD clinic I haven't even heard about them, so hadn't even learnt about them in our courses…I really had to look at the manual, but it distracted me from looking at my client" (P16).
Challenges with writing reports, learning professional processes, organising time	"…I think probably for me, because these kids have been quite complex we probably need to go into a lot more detail for certain areas…so I think that's probably added to the time management difficulties and information hunting and all of that" (P7).
Supervisor attitude and approach to learning supported student development	"It's always been delivered with an objective for you to be able to do the best thing for the client as well as you to be able to develop as a professional as well, so I think it's been a really warm and supportive place" (P11). "I felt supported and that I also felt like I had enough independence to like test my skills and develop new skills" (P3).

An additional latent finding included caregiver reactions to receiving a diagnosis of FASD in the feedback sessions, where this had occurred. Students found that caregivers expressed either a sense of relief, validation, or closure following the assessment process. Caregivers described how they felt validated from the assessment as their concerns were substantiated by a team of health professionals, and thus experienced relief. Through the process of the assessment, carers were able to learn more about the capacity of the children/adolescents in their care. Students perceived that clients appreciated having their concerns addressed through a comprehensive assessment process, and that this provided students with more self-confidence in the clinic. An analytic finding within this theme was the receptive way in which caregivers responded to students most likely contributed to their level of gratification, thus helping students further build the therapeutic relationship and better meet each family's needs. An important analytic finding within this theme was the role of person-centred practice. Students perceived that time spent getting to know each child helped them to tailor their practice, improving the quality of the services they provided for the child and caregiver.

Novel challenges tested students' capabilities on placement

The next theme generated was encapsulated by the nature of challenges experienced on placement. First, students reported that the children and young people attending the clinic often had complex needs. For example, this could include histories of trauma, neglect, mental health concerns, out-of-home care, and difficulties or exclusions from school. Students noted that this could be confronting at times and that for many students this was the first time they had worked with children and young people with these types of complex presentations. Behavioural, neurocognitive, and emotional challenges that children presented with were reported to interfere with administration of standardised assessment; students noted the need for adaptability in their practice.

All students reported that the intensive assessment process was a challenging aspect of the placement, due to the number of assessments administered and the comprehensive nature of each assessment. It was described that the structure of placement days could be challenging, as several formal assessments, functional activities, observations, or parent/carer/teacher interviews were required to be scheduled. This was reported to result in some pressure to be time-efficient to ensure that time with the client was maximised.

Furthermore, many students reported challenges in learning each standardised assessment, due to time restraints. OT students reported minimal knowledge of standardised assessment prior to placement and were not familiar with the interpretation and scoring of standardised tests. Students also noted that report writing was a significant challenge. Some students stated that additional placement days would be beneficial to minimise time spent writing reports during non-placement hours. Additionally, some students indicated that clearer instructions as to report writing procedures and more report-related supervision would be of benefit.

Supervisor attitude and approach to learning supported student development

While students described challenges in the placement, they also communicated that they were satisfied with the level of support received during their placement. They described that the onsite supervisors were readily available, that the structure of each day (i.e., meeting prior to client contact and at the end of the day) was beneficial to immediately discuss any issues that had arisen during the session or concerns, and having supervisors observe their interactions with clients was also helpful. It was reported that supervisors provided students with independence and flexibility to explore assessments, acknowledged their pre-existing skills and competence, and treated them as professionals. Students reported feeling able to ask questions without apprehension and overall were comfortable within the environment. Lastly, it was indicated that students benefited from the orientation prior to client contact, and that access to an IP supervisory team was helpful.

Discussion

Student-led IP clinics can provide meaningful clinical experiences for trainees while also increasing access to services for vulnerable populations. This study sought to understand the experiences of students who had undertaken a placement in a newly established student-led interprofessional neurodevelopmental clinic. The qualitative analysis identified four major themes in the student narratives, (1) IP a key for students' development as future healthcare professionals; (2) meaningful relationships and students' belief they made a difference; (3) novel challenges tested students' capabilities on placement; and (4) supervisor attitude and approach to learning supported student development.

The first theme indicated that students reported positive learning experiences, which influenced their development as healthcare professionals. Students emphasised how IP practice improved their teamwork, collaboration, inter-disciplinary communication, and provided them with a holistic understanding of the client's presenting needs. Students also reported increased knowledge of FASD, development of targeted clinical skills, increased confidence in treating FASD, and recognition regarding the importance of educating the community and advocating for biopsychosocial approaches to child developmental outcomes.

Previous research supports this finding, as student-led clinics have been found to improve understanding of psychosocial models of health, social awareness and knowledge of social determinants of health, students' sense of responsibility for patient care, their communication, clinical skills, and acquisition of knowledge not covered in the formal curriculum [9, 18, 51–53]. The current study adds to this literature by showing that a student-led clinic providing FASD-informed care produces similar benefits of which highlight the need for experiential learning, exposure to diverse populations, and for student placements to include IP services for integrative person-centred care. Research indicates that adult learning methodologies for allied health students may be more effective at enhancing clinical readiness and competence when focused on experiential problem-solving processes that are applicable to practical experiences [34, 35]. For example, Knecht-Sabres et al. [35] found an improvement in OT student's relationships with patients, confidence, clinical reasoning, and appreciation of holistic integrative care following their participation in experiential learning (i.e., placement/clinical internship) as part of their

studies. The student narratives described within theme one of the current study are similar in nature, centring around students' reflections of their skill development over the course of placement. One interpretation of these findings is that allied health students who are immersed in learning material that is oriented to life, requires problem-solving, and provides exposure to a range of unique situations, may be better equiped to independently face the challenges of clinical practice in today's ever-evolving health care environment The learning processes described within theme one, in the context of Knecht-Sabres et al.'s research [35] may provide helpful insight into what factors help adults learn, and the effective acquisition of clinical competencies within allied health education.

The second theme indicated that students perceived caregivers found the assessment process helpful, based on the verbal feedback that caregivers provided. Although many children/adolescents had challenges completing standardised assessments, students perceived that children/adolescents enjoyed spending time with the staff and students. Research indicates that service-users of student-led clinics generally report high levels of satisfaction and the perception that their needs are well-attended to and thoroughly addressed [e.g., 3, 4, 54]. The person-centred, strengths-based approach of the clinic was perceived as helpful to tailor activities to the child's needs and contributed to the perceived positive client experiences. Notably, recent research investigating the client experiences of attending the clinic found that clients reported an overall positive experience following attendance [7]. Clients described welcoming and reassuring interactions and specific aspects of the assessment process as helpful, including strengths-based practice and IP assessment, the feedback session, informative resources following feedback, and comprehensive reports [7]. In addition, previous studies [55, 56] regarding the lived experiences of caregivers attending Australian specialist FASD diagnostic clinics align with these findings, whereby caregivers reported experiencing satisfaction, validation, and supportive, and non-judgemental care.

The second theme also indicated a focus on the quality, meaning, and benefit of the student-client interactions. A systematic review by Bostick et al. [51] found that students involved in similar placement opportunities reported their clinic experience to be personally fulfilling and reinforcing their interest in working with underserved communities. The narratives of students in the current study identified similar notions that exposure to "real world" interactions with marginalised families was an important learning experience within their placement. Notably, the experiences of the students were mirrored by the experiences of the caregivers who attended the clinic, who reported feeling supported and validated that their concerns were attended to and legitimised, highlighting the mutual benefits of the experience for the clients and students [7].

Although students primarily reported benefits associated with their placement experience, several challenges were described within the third theme. A primary challenge included the needs of the client population, as students had little previous exposure to complex client presentations. Students reported that many of the standardised assessments were difficult to administer due to emotional and behavioural regulation challenges that the children and young people were experiencing. However, consistent with challenges found in similar previous studies [e.g., 57, 58, 59] students described difficulties as beneficial to their learning due to increased autonomy, often leading to creativity, reformulation of plans, and innovation. This was also consistent with the principles described by Knecht-Sabres [35] and Knecht-Sabres et al. [34] regarding effective experiential learning on placement. Students' reflective practice and application of their theoretical knowledge to a new learning situation helped them to address the complexities of placement. This construction of new knowledge not only helped students feel more competent, but facilitated the development of their client-centred practice. Given the challenges that students noted, the clinic provided an important opportunity for exposure to the complexities of the client group in a supportive learning environment, more effectively equipping students for their future practice.

Lastly, the fourth theme indicated that students were pleased with the onsite supervision provided, felt comfortable asking for help, and reported benefits from the IP nature of the supervision. This finding was consistent with previous research regarding pedagogical factors related to student placement success [52, 60]. For instance, Rodger et al. [61] found that Australian OT students identified the importance of the student-practice educator relationship as the basis for their learning on placement. Similarly, Kavanagh et al. [59] found that open, trusting, and supportive supervisory relationships enabled students to take risks and develop their skills as future therapists.

An important overall finding was that student narratives indicated elements of transformative learning, the process of reflecting on assumptions and beliefs to consciously promote new or alternative views. Ng, Hu, McNaughton, and Martimianakis' [15] evaluation of transformative learning within a student-led clinic describes this effect: students evidenced attitude shifts towards self-awareness of assumptions, recognition of the need for systemic interventions, greater individualising of assessment procedures, and increased comfort working in IP teams. This point may provide important

insights regarding the benefits of reflective learning processes provided through IP student-led clinics on developing student's knowledge, skills, and behaviours for effective interprofessional, collaborative patient care.

Limitations and future directions

The current study needs to be interpreted in light of a number of limitations. Firstly, the lack of gender diversity within the sample, which future research should aim to address. Furthermore, the current study did not collect data regarding the ethnicity of participants. An ethnically diverse sample can help to ensure that the study results are representative and relevant to all communities of students. Gender and ethnicity may also be important to consider for further exploration of transformative learning, to gain insight regarding the interactions between life experience and a student's learning environment. In addition, the current study utilised both phone and face-to-face methods of data collection, however, did not compare phone and face to face interviews. This is something that future research could also examine.

To formally evaluate students' perception of IP skill development and the impact (e.g., on patient outcomes, on learning) future research could also include a direct measure of IP skill development, such as the Video Observation Tool for Interprofessional Skills (VOTIS; [62]). The VOTIS IP uses video reflection to evaluate students' IP skills within an authentic IP context. The VOTIS aims to help students develop their capacity to critically engage and reflect on the skills required for effective IP practice, [63]. A tool such as the VOTIS will allow future research to investigate and compare student's quantitative learning outcomes and their narrative perceptions of learning for a more comprehensive understanding of factors that may contribute to a valuable IP experience.

Conclusion

The results of the current study outlined the potential for reciprocal benefits of student-led services for both students and clients. For students, student-led clinics offer the opportunity to gain hands-on experience, professional development, improved clinical skills, exposure to IP practice, knowledge of health systems, and the chance to work with a unique and complex population. For clients, student-led clinics offer a chance to receive high-quality healthcare that may otherwise be inaccessible.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-024-05756-w.

Supplementary Material 1

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Author contributions

Conceptualization: N.R., K.G., M.M., K.L., M.G., H.G, T.R., K.M., and H.H. Methodology: N.R., K.G., T.R. Formal analysis: K.G. with assistance from N.R. Investigation: N.R., N.H., R.M. Resources: N.R., N.H., and R.M. Writing - Original Draft: K.G. Writing - Review & Editing: K.G., N.R., M.G., T.R., N.H., M.M., H.G, K.L., K.M., H.H., R.M. Supervision: N.R. Project administration: N.R., N.H., K.M.

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Data availability

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from Children's Health Queensland Ethics Committee (HREC/18/QCHQ/46648) and UQ Ethics Committee (2019000170). All methods were carried out in accordance with the Children's Health Queensland and UQ Ethics Committee regulations and procedures for working with human participants in line with the National Statement on Ethical Conduct in Human Research (2007) – updated May 2015. Participant Information Sheets and Informed Consent Forms were provided to all participants; written and verbal informed consent to participate and permission to audio-record the interviews was obtained and re-confirmed prior to the commencement of each interview. All participants were over the age of 18 years old.

Consent for publication

All participant information was de-identified and no individual details beyond demographics are included in this manuscript. A statement regarding consent for publication was included within the Participant Information Sheet and Consent Form: "The results of this project may be presented at conferences and published in professional journals. Quotations of the information you provide may be used, however individual identifying information will not be used."

Competing interests

The authors declare no competing interests.

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