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Comparing consecutive third-year Chiropractic Student cohorts: A successful evaluation of the Paired Junior Clinic programme

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Introduction: A survey was conducted among third-year chiropractic students to evaluate the substantive effectiveness of junior clinical placements in preparing them for final-year clinical placements. The study aimed to assess the feelings towards perceived readiness and confidence levels of students who participated in the junior clinic program compared to those who did not.

Methods: The entire third-year cohort consisting of 166 students, including 42 students involved in junior clinical placements, completed an eight-question survey. Participants in the junior clinic program and non-participants were compared to determine differences in feelings towards perceived clinical preparedness.

Results: Students who participated in the junior clinic placements reported significantly higher levels of preparedness and confidence for their final-year clinical placements than non-participants.

Conclusion: The survey results showed the importance of junior clinical placements in enhancing the clinical readiness of chiropractic students in preparation for their final-year clinical placement. As indicated by the data collected, the success of these placements suggests that junior clinical placements play a critical role in developing clinical competence.

Indexing terms: Chiropractic; Education; Junior Clinic; Student confidence; Student preparedness; Student readiness.

Introduction

The *Chiropractic Professional Examination Board* (CPEB), previously used at the *AECC University College* (now *Health Sciences University*), was a crucial tool for assessing students' clinical and practical competencies before entering their final year placements. (Brown 1998)

> *'... non-participants in Junior Clinic placements demonstrated lower levels of perceived readiness underscores the critical importance of early clinical exposure in chiropractic education...'*

Alongside assessments like the *Objective Structured Long Examination Record* (OSLER) and *Objective Structured Clinical Interview* (OSCI), the CPEB ensured that students were thoroughly evaluated in patient management, diagnostic reasoning, and decision-making in controlled clinical scenarios. (Alice, 2024) These rigorous assessments helped students build confidence and clinical competence, preparing them for real-world practice Tobias (2006) and Wright et al. (2014)

These historical assessments tie directly into the findings on junior clinic

placements. Like the CPEB and OSLER/OSCI exams, junior clinics foster increased confidence and enhanced preparedness by providing hands-on clinical experience early in the educational process. Wright et al. 2014 stated that non-participants in these placements demonstrate gaps in readiness, highlighting the continued importance of structured, early clinical assessments to ensure all students are equally prepared for final-year placements and professional practice. This reflection underscores the need for standardised clinical exposure, akin to what the CPEB historically provided. (Russel et al., 2012)

Assessing the clinical preparedness of third-year chiropractic students is essential for enhancing patient care and promoting their seamless integration into healthcare teams. This study compares the clinical readiness of third-year chiropractic students from two cohorts, specifically evaluating the impact of junior clinic placements on their educational experiences.

Background

Extensive research in chiropractic education has highlighted important areas requiring improvement, such as patient-centred care and the effectiveness of clinical training methods. (Morzek et al., 2006) Establishing a robust framework for clinical placements should foster positive peer relationships, implement effective feedback mechanisms, and create an optimal learning environment to enhance students' readiness.

Importance of Clinical Placements

Clinical placements play a crucial role in integrating theoretical knowledge with practical skills. Research has demonstrated that engagement in student-run health clinics presents valuable opportunities for students to develop essential clinical skills, leadership qualities, and empathy. (Wilson et al., 2023) Additionally, effective clinical teaching involves demonstrating enthusiasm, strong interpersonal skills, and providing constructive feedback, according to Sutkin et al. (2008) This literature review identified the key characteristics of effective clinical teachers in medicine and in the development of clinicians, which may help inform best practices in chiropractic clinical education.

Tailor et al. (2024) emphasise the significant impact of peer learning relationships on student confidence and learning outcomes during clinical placements. Students’ interactions can either bolster or impede their learning progress, highlighting the importance of nurturing positive peer dynamics in clinical settings, like collaborative learning experiences or collaborative learning in practice (CLIP). (Hill et al., 2020)

Differences in learning environments

Chiropractic students encounter learning environments during clinical placements that can vary significantly, impacting their overall educational experience. Williams et al. (2012) found considerable mismatches between paramedic students’ actual and preferred learning environments during clinical placements, suggesting a need to align clinical experiences with students' expectations to enhance satisfaction and learning outcomes.

Similarly, Rusticus et al. (2022) highlight the importance of ongoing evaluation and improvement of educational environments across health professions. This study observed significant differences among nursing, occupational therapy, and pharmacy programs. The findings suggest that improving learning environments could improve clinical preparedness for chiropractic students. This paper provided further insight into factors which influenced student engagement.

Methods

Of the 166 students enrolled in the *AECC University College* Year 3 MChiro program, 42 actively participated in the Junior Clinic Placement (JCP). These students were paired to conduct initial triage assessments for patients.

Participants assessed patient suitability for chiropractic care or identified cases requiring referral to other healthcare services. Before participating in this service evaluation, all participants signed informed consent.

A qualitative semi-structured reflective diary approach was employed to understand the participants' experiences comprehensively. This approach allowed participants to critically document their insights and thoughts, providing a deeper understanding of their evolving experiences throughout the four-week placement period.

An eight-question MS Forms survey was designed to comprehensively evaluate the participants' experiences and perceptions. This survey, which included inquiries about the challenges faced during patient assessments, levels of clinical confidence, collaborative learning experiences, and overall satisfaction with the placement, was sent to the entire third-year cohort, including the 42 students participating in the junior clinical placement.

All responses were anonymised by following the best practice outlined by Ricci et al. (2019) This process ensured the confidentiality and security of the participant's data. The data were then analysed using thematic analysis, following an inductive approach described by Chin Tie et al. (2019) The authors identified themes emerging naturally from the responses, ensuring that the data guided the conclusions.

Results

There was a 54% response rate from non-placement students who completed the evaluation questionnaire administered. In contrast, participating students provided only a 20% response rate for the same evaluation questionnaire administered.

Improving Confidence

Paired Junior Clinic participants felt more confident handling clinical cases independently.

One of the most significant outcomes of junior clinic placements is the noticeable increase in student confidence when handling clinical cases independently. Confidence is a crucial aspect of clinical competence, as it directly influences decision-making, patient interactions, and overall performance in real-world scenarios. In chiropractic education, confidence manifests through the ability to perform patient assessments, develop treatment plans, and execute therapeutic interventions without constant oversight from supervisors. This self-assurance enables students to manage clinical situations more effectively, enhancing their learning experience and patient outcomes.

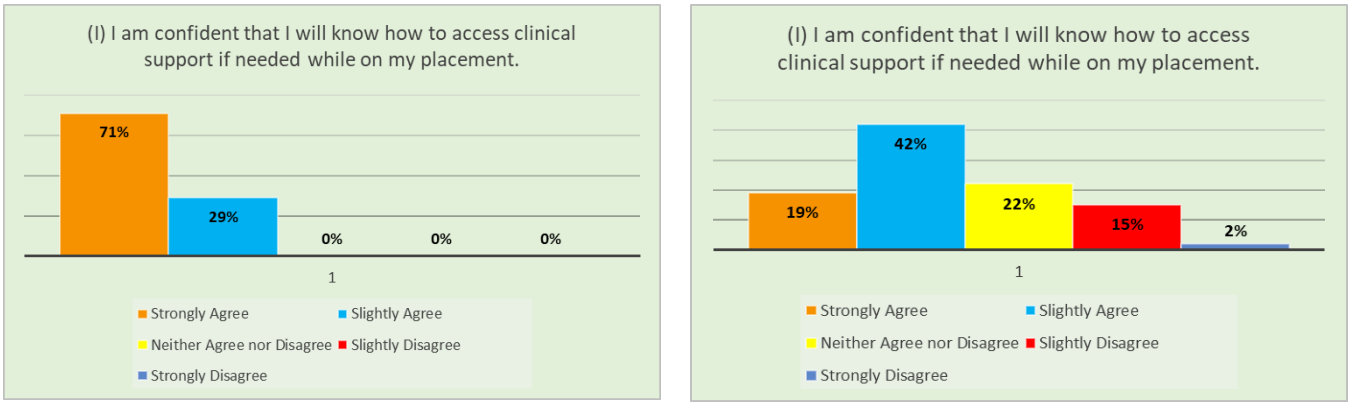
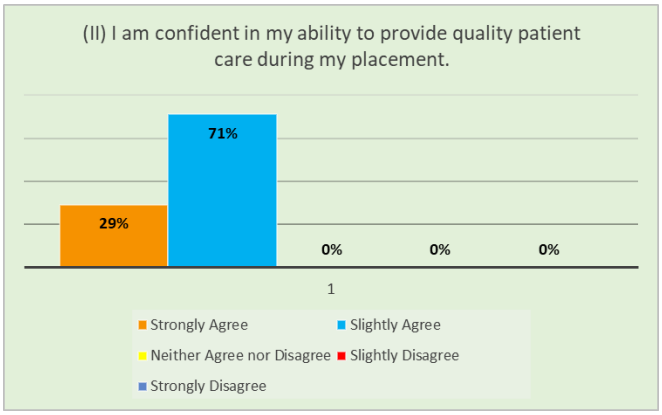


Fig: 1 Placement Student Responses (LEFT graphic) and Non-placement student Responses (RIGHT graphic)

Developing confidence through junior clinical placements can be attributed to several factors. Repeated exposure in a paired placement (Tailor et al., 2024) to varied clinical environments allows students to familiarise themselves with the practical aspects of patient care. Unlike academic simulations or role-play scenarios, junior clinic placements provide authentic, unpredictable clinical cases that challenge students to think critically and apply their theoretical knowledge. This process gradually builds their confidence as they navigate increasingly complex cases. As students gain experience, they develop a sense of ownership over their clinical decisions, reducing their reliance on tutors and supervisors.

Moreover, confidence is closely linked to self-efficacy, which refers to an individual's belief in their ability to succeed in specific situations. Bandura's theory of self-efficacy suggests that mastery experiences, successful encounters in real-world conditions, are the most effective way to build confidence. (Bandura, 1977) Junior clinic placements offer students numerous opportunities for mastery experiences. Whether accurately diagnosing a condition, communicating effectively with patients, or successfully executing a treatment, each positive outcome reinforces the student's belief in their abilities.

However, it is important to reflect critically on this increase in confidence. While confidence is undoubtedly beneficial, there is a risk of overconfidence, particularly in students who may still need to develop clinical reasoning skills fully. (Bandura, 1977) Overconfidence can lead to errors in judgment, especially in more complex cases.



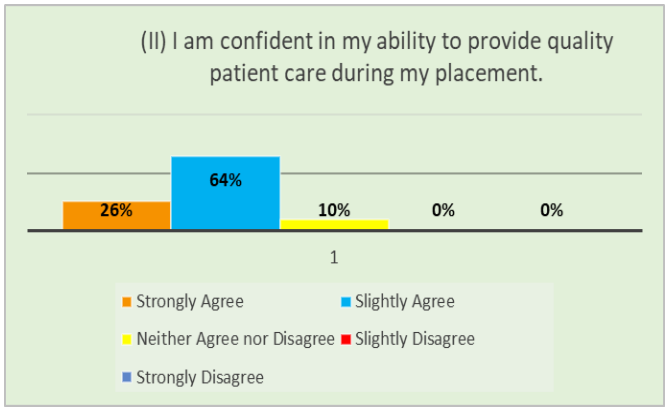


Fig: 2 Placement Student Responses (LEFT graphic) and Non-placement student Responses (RIGHT graphic)

Therefore, while junior clinic placements foster confidence, they must be paired with adequate supervision and constructive feedback to ensure confidence does not outpace competence.

The support systems also influence confidence in clinical practice in place during placements. The presence of a clinical tutor who can guide students through challenges without taking over the case management builds a safety net that allows students to take calculated risks. Knowing that help is available further enhances their confidence, encouraging them to push beyond their comfort zones and engage with more complex cases. This scaffolding approach is a critical pedagogical strategy that promotes learning and confidence-building, fostering a balance between autonomy and guidance.

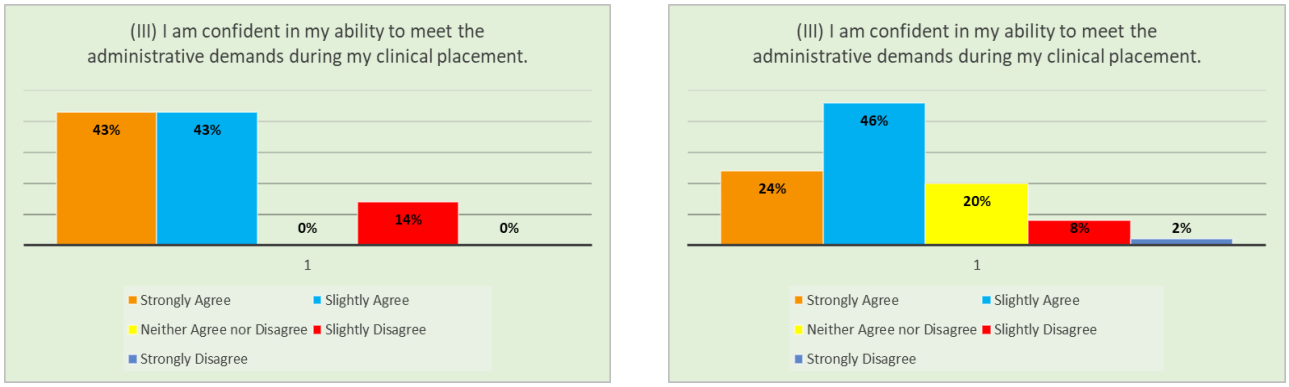


Fig: 3 Placement Student Responses (LEFT graphic) and Non-placement student Responses (RIGHT graphic)

Enhanced preparedness

Paired Participants Reported Being Better Equipped to Transition into Their Final-Year Placements. Preparedness, as a concept, amongst students in healthcare education refers to students' readiness to apply the skills, knowledge, and attitudes acquired in academic settings to real-world clinical environments. Junior clinical placements are pivotal in bridging the gap between classroom learning and final-year clinical placements, where students take on greater responsibility for patient care. By participating in these early clinical experiences, students reported feeling better prepared to transition smoothly into their final-year placements, where the stakes are significantly higher.

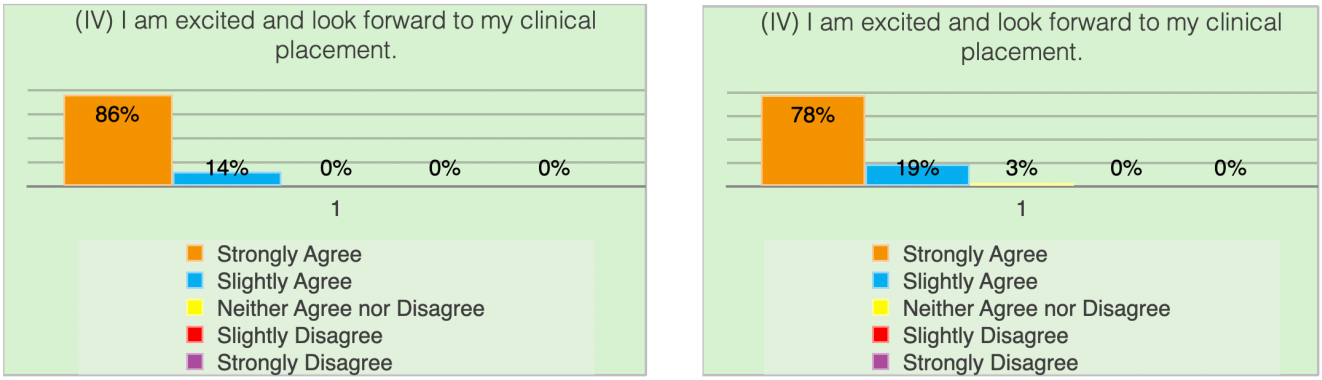


Fig: 4 Placement Student Responses (LEFT graphic) and Non-placement student Responses (RIGHT graphic

The enhanced preparedness observed among junior clinic participants is understood through experiential learning theory, particularly Kolb's (1984) model of learning through experience. Kolb 1984 posits that knowledge is created through the transformation of experience.

Junior clinic placements allow students to engage in concrete clinical experiences, which they can then reflect on, abstract, and conceptualise, leading to deeper clinical understanding and skills. This cyclical learning process ensures students acquire and apply knowledge effectively in subsequent clinical encounters .(Chen et al., 2024)

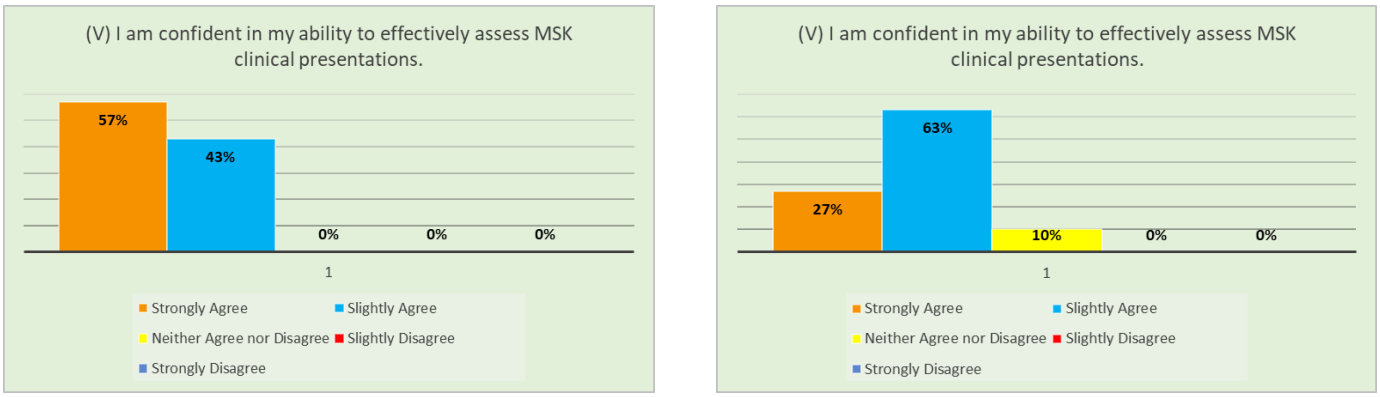


Fig: 5 Placement Student Responses (LEFT graphic) and Non-placement student Responses (RIGHT graphic)

Being better equipped for final-year placements reflects improved clinical decision-making and problem-solving skills. (Chen et al., 2024) In the early stages of clinical education, students often rely heavily on theoretical frameworks and rigid protocols to guide their actions (Hill, 2020). However, real-world clinical situations are rarely straightforward, requiring flexibility, critical thinking, and adapting to changing circumstances. Junior clinic placements expose students to this complexity, helping them develop the ability to think on their feet and make informed decisions in dynamic environments. This adaptability is crucial for success in final-year placements, where students are expected to function with greater independence.

Additionally, junior clinic placements help students become familiar with clinical work's administrative and procedural aspects, which can be overwhelming for those entering their final year without prior exposure; thus, empathy plays an important role. (Winter et al 2023) From managing patient records to following clinic protocols and navigating interprofessional communication, these non-clinical tasks are integral to the daily functioning of healthcare settings. By gaining experience in these areas early on, students enter their final-year placements with a comprehensive understanding of the operational demands of clinical practice, allowing them to focus more on refining their clinical skills.

However, the notion of preparedness should not be viewed in absolute terms. While junior clinic placements undoubtedly enhance readiness, it is important to recognise that preparedness is a continuum. Some students may still need help with their final-year placements despite participating in junior clinics, particularly when faced with unfamiliar cases or more complex patient presentations. This study highlights the need for continuous support and mentorship throughout the educational journey, ensuring students can build on the foundations laid during their junior placements.

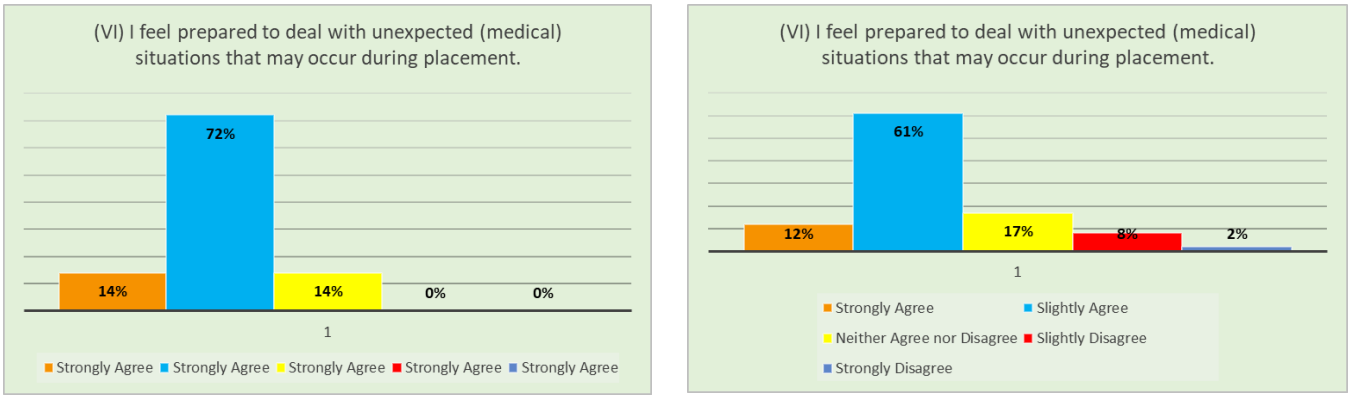


Fig: 6 Placement Student Responses (LEFT graphic) and Non-placement student Responses (RIGHT graphic)

Gaps in readiness

Non-participants in the Junior Clinic Placement demonstrated lower levels of perceived readiness, Highlighting the value of the Junior Clinical Placement. The finding that non-participants in Junior Clinic placements demonstrated lower levels of perceived readiness underscores the critical importance of early clinical exposure in chiropractic education. Clinical readiness refers to students' ability to apply their academic knowledge and practical skills in a clinical setting with minimal supervision. It encompasses technical competence, professional behaviours, communication skills, and the ability to handle the pressures of real-world healthcare environments. (Hill, 2020)

The next step is advocating for permanently including junior clinical placements in the third-year curriculum. Non-participants' lower levels of perceived readiness may be attributed to their limited opportunities to engage with actual patients and clinical scenarios. While classroom-based education provides the theoretical underpinnings of clinical practice, it cannot fully replicate the unpredictability and complexity of actual patient care. Without early clinical exposure, non-participants may have been less equipped to deal with the nuances of patient interaction, clinical decision-making, and the emotional demands of healthcare work.

The gaps in readiness identified among non-participants also highlight the potential disparities in learning experiences across different student groups. (Hawk et al., 2005) Students in a paired junior clinical placement gain valuable experiential learning opportunities that deepen their understanding of patient management. In contrast, those who miss out on these placements may need help bridging the gap between theory and practice. This disparity can create unequal learning outcomes within the same cohort, with some students feeling more confident and prepared than others.

Furthermore, the gaps in readiness can have long-term implications for both the students and the patients they serve. Students who feel underprepared may experience heightened levels of stress and anxiety during their final-year placements, which can negatively impact their performance and learning. Moreover, if these gaps are not addressed, they may carry over into professional practice, potentially affecting patient care quality. This reinforces the argument for making junior clinical placements a mandatory curriculum component to ensure that all students have access to the same high-quality clinical training.

Critically, the lower readiness levels among non-participants may also reflect the broader challenges academic programs face in balancing theoretical education with practical training. As the demands on healthcare professionals continue to evolve, educational institutions must adapt their curricula to provide students with more opportunities for experiential learning. The findings from this study suggest that without structured clinical placements, students may leave their education with significant gaps in their preparedness, ultimately affecting their ability to meet the challenges of modern healthcare practice.

Establishing a benchmark

This paper establishes a benchmark to assess the progress in creating a sustainable junior clinical placement system for third-year chiropractic students to integrate into the curriculum design.

Addressing these gaps requires a multifaceted approach. First, ensuring that all students have access to junior clinical placements would help level the playing field, providing equal opportunities for skill development. Second, academic programs should explore alternative experiential learning methods for students who cannot participate in traditional placements due to logistical or personal barriers. These could include virtual simulations, interprofessional

learning activities, or part-time clinical rotations that allow flexibility while providing meaningful clinical experiences.

Finally, the findings from this study demonstrate the value of junior clinical placements in improving student confidence, preparedness, and clinical readiness. These early placements offer a crucial bridge between academic learning and professional practice, equipping students with the skills and experience they need to succeed in their final-year placements and prepare them for clinical practice. The disparities in perceived feelings recorded between participants and non-participants highlight the need for expanded access to these junior clinic placements to ensure that all students benefit from the same high-quality clinical training early in their studies.

Lateral and horizontal application in Junior Clinical Placements

The permanent incorporation of junior clinical placements in Chiropractic education provides an opportunity to apply lateral and horizontal learning frameworks, fostering a deeper understanding of clinical concepts and skills. Lateral application emphasises integrating knowledge across different subjects and domains at the same level of education. For instance, students in junior placements can apply theoretical knowledge from subjects such as anatomy, biomechanics, and pathology to real-world patient care scenarios. This approach encourages interdisciplinary thinking and enables students to see the interconnectedness of their learning, enhancing clinical reasoning and decision-making skills, which are crucial in chiropractic education.

Horizontal application, on the other hand, focuses on the progression and layering of skills and knowledge across educational levels. Junior clinical placements play a crucial role as a scaffold, allowing students to build foundational clinical competencies such as patient communication, assessment, and basic treatment strategies. This sense of progression and achievement can be expanded upon in senior clinical placements. This stepwise progression ensures a smooth transition from theoretical learning to practical application, promoting confidence and competence as students advance in their training. Furthermore, vertical application aligns with the principles of scaffolding, where initial guidance gradually decreases as students develop expertise and autonomy in clinical practice.

Incorporating junior clinical placements into the curriculum provides an opportunity to apply lateral and horizontal learning frameworks and offers peer learning and mentorship opportunities. Third-year students benefit from observing and working alongside senior peers, reinforcing the lateral application of concepts and establishing a continuum of learning that mirrors professional practice environments. These placements have been shown to improve clinical preparedness, professional behaviour, and the ability to handle complex patient presentations in the future. (Paterson et al., 2022)

Incorporating junior clinic placements into the Chiropractic curriculum has yielded promising results. Ebrall et al. (2008) and Ebrall et al. (2009) assert that aligning chiropractic education with industry practice is essential for cultivating students' clinical skills and fostering their engagement in research. The authors present ways to improve the assessment standards within Chiropractic education, specifically clinical skills. This alignment enhances educational outcomes and bolsters students' confidence in their clinical abilities. (Hecimovich et al., 2009), where the importance of building confidence in patient communication and clinical skills among chiropractic students is examined, highlighting strategies to enhance student learning.

Implications and future directions

The findings strongly suggest the potential benefits of expanding junior clinical placements to all third-year students. This expansion could mark a significant step forward in the evolution of

Chiropractic education, ensuring that all students can develop the skills and confidence required for their final-year clinical experiences.

Conclusion

Collaboration with *Health Sciences University* and stakeholders in this field is key to ensuring students are well-equipped for their professional roles. The comparison of clinical preparedness among third-year chiropractic students from two cohorts highlights the positive impact of junior clinic placements on their educational experiences.

Chiropractic education can enhance clinical preparedness by addressing identified learning environment gaps and promoting supportive peer relationships in a junior clinical placement setting. Promoting and continuing research and working collaboratively to refine educational approaches and elevate student outcomes in clinical practice would benefit the chiropractic profession.

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Author contributions

The authors confirm their contribution to the paper: study conception and design: AB, NN, and DD. Data collection: AB. Analysis and interpretation: AB, NN. Draft manuscript preparation: AB, NN, and DD. All authors reviewed the results and approved the final version of the manuscript.

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Ethics approval and consent to participate

All participants provided informed consent to participate in this study. This study was approved on 07/03/2024 by the AECC UC Ethics Approval Number: SOC-1123-002

Competing interests

The authors declare no potential conflicts of interest with respect to research, authorship and/or publication of this article.

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