

SYSTEMATIC REVIEW

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Impact of allied health student placements for older clients' health and wellbeing in primary healthcare settings: a systematic integrative review

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Abstract

Purpose Allied health student placements in healthcare settings are complex, constantly evolving, and tailored to real-life environments. The value of student placements in acute and primary healthcare settings is reflected in enhanced student learning, improved service delivery, and positive patient outcomes. This review aims to synthesise the effects of allied health student placements in primary healthcare settings, particularly focusing on older clients' health outcomes and satisfaction with care.

Materials and methods A systematic integrative review was conducted. The five-step integrative review approach, established by Whittemore and Knafl was used to allow the inclusion of diverse research methodologies. Five major databases, i.e., Medline-EBSCO, PubMed, PROQUEST, CINAHL, and SCOPUS were searched. The CLUSTER model was used to track additional references. Data were extracted as suggested by Whittemore and Knafl and then the-matically synthesised.

Results Eleven papers were reviewed. Despite a lack of rigorous methodologies, five mixed-methods studies, four quantitative studies, one qualitative study, and one cost-benefit analysis were identified exploring the possible effects of allied health student placements for older clients. From these papers, four main themes were identified: student integration in service delivery, older clients' health outcomes, satisfaction with care, and insights into mechanisms to achieving health and well-being outcomes.

Conclusion This review suggests that integration of allied health students into service delivery can provide additional healthcare support for older clients, but further high-quality research is needed to confirm.

Keywords Clinical training, Student placements, Allied health, Ageing, Older adults, Primary healthcare

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Introduction

Allied health student placements in healthcare settings are increasing, characterised by their immersion within real-life environments, complexity, and constant evolution. These placements are grounded in experiential learning theory, which posits that students learn effectively through immersion in practical, hands-on experiences [1–5]. Educators and allied health professionals expect that, as part of the curriculum, students will gain valuable skills and knowledge by actively participating in the delivery of health services to patients [6]. Placements that facilitate student learning and support healthcare teams in delivering services to patients extend the insight that student placements are beneficial [4, 5]. Students can address the unique healthcare needs of the older clients (aged 65 years and above), such as managing chronic conditions, improving mobility, and enhancing overall quality of life [1, 7]. These placements often incorporate innovative, individual and group care interventions that promote holistic health and well-being, such as wellness intervention, rehabilitation exercises, and social engagement activities [2, 8, 9]. As students engage in diverse aspects of care (i.e., clinical assessment, clinical interventions, referral, preventative care, rehabilitation etc.) [4, 7, 8], they help create a more dynamic and responsive healthcare environment.

Caring for older clients in primary healthcare settings presents an important public health issue, nationally and internationally [2, 6]. Primary healthcare generally refers to the first point of contact individuals, families, and communities have with the healthcare system [10, 11]. Primary healthcare is typically delivered in a community setting, such as local clinics, community health centres, residential aged care homes, and in-home care services, and focuses on providing comprehensive, accessible, care that meets the health needs of individuals throughout their lives [12]. This approach ensures that healthcare is not only about treating illnesses but also about promoting health, preventing diseases, and managing chronic conditions. For older clients, primary healthcare services are crucial in addressing common geriatric issues such as mobility problems, sensory impairments, cognitive decline, and multiple chronic conditions that require ongoing management [13, 14].

Despite allied health student placement policies and guidelines developed by universities and healthcare organisations (e.g. The University of Sydney Student Placement Policy 2025, Allied health student training guide developed by Queensland Health, The University Centre for Rural Health Student placement Guide 2021) being diverse and context-specific, they are yet to be designed to best meet the needs of older clients in primary healthcare settings [4, 11]. Limited reviews report

a small body of evidence describing allied health student placements for this cohort [15, 16]. However, there is a need to identify possible and consistent findings about current placements for older clients' care in the primary healthcare settings, to ensure that students are well integrated in service delivery, effectively and efficiently, addressing older clients' clinical and wider social needs. A review of current evidence of allied health student placements for older clients in primary healthcare settings is important to inform the characteristics of that evidence base, in particular, the similar and distinctive findings in primary studies, the health and wellbeing outcomes reported, and the consistency of objectives and practices across student placements.

Review aims and questions

This review aimed to identify evidence of impact of allied health student placements on older clients' health and well-being in primary healthcare settings and to identify which placement strategies best meet the needs of older clients. The PICO framework was employed to formulate the review questions [17].

P (Population) – Older clients aged 65 years and above

I (Intervention) – allied health student placements

C (Comparison) – not applicable

O (Outcomes) – Implementation: student integration in service delivery; and Effectiveness: health outcomes and satisfaction with care.

Two main questions guided this review:

Q1: How do the studies describe the integration of allied health students in health services delivery in primary healthcare settings?

Q2: What is the evidence for student placements impacting older clients' health and well-being?

Methods

The steps followed for this review included identifying the problem, searching for relevant literature, critical appraisal of data, data synthesis, and presentation. This integrative review process was established by Whittemore and Knafl in 2005 [18]. A systematic search was conducted to identify literature and in order to assess the quality and rigor of the chosen papers, the Mixed Method Appraisal Tool (MMAT) was used [19]. The extracted data were then analyzed and presented thematically.

Search strategy

The PRISMA guidelines informed the systematic search for published documents [20]. Searches across five electronic databases: Medline-EBSCO, PubMed, PROQUEST,

CINAHL, and SCOPUS were conducted by the first author (MH) in early 2024. MeSH headings and relevant concepts were used in primary search areas: health professional training, clinical placements, allied health professions, and older adults (the full search strategy is available in Table 1). Further, supplementary references were enhanced by employing the CLUSTER model to track sibling studies and citations [21].

Inclusion and exclusion criteria

Two reviewers, MH and SJ, independently screened the records based on the inclusion and exclusion criteria. Any discrepancies during the screening process were resolved through team discussion to reach a consensus.

- the search was limited to the allied health disciplines of physiotherapy, occupational therapy, dietetics, speech pathology, exercise physiology, social work, optometry, podiatry, psychology, and osteopathy. The selection of allied health professions included in the search strategy was based on their relevance to the study's scope and objectives and the list of allied health professionals in Australia. These professions were chosen because they commonly engage in student placements within primary healthcare settings and provide services directly contributing to older clients' health and wellbeing. The specific terms were selected to ensure comprehensive coverage of all relevant allied health disciplines, accounting for variations in terminology across different regions and databases

- studies reporting integration of allied health students in service delivery
- The placements aimed at service delivery for older clients aged 65 years and above
- studies reported the impact of placements on older clients' health and well-being and satisfaction with care
- papers published in English
- commentary/reviews of literature were excluded
- medical and nursing professions are excluded from the search
- placement designs were not described in the studies
- placements were not in primary healthcare settings
- placements were not part of the curriculum
- no country or time limits applied

Quality appraisal

The quality of studies was assessed using the MMAT criteria utilizing a scale from 0 indicating no criteria met, to 5 indicating all criteria met as described by Hong et al. in 2018. [19] Two reviewers, MH and SJ undertook separate assessments allocating scores out of 5 (0—Unclear/No and 1: Yes) to evaluate the studies. Reviewer consensus determined that the papers included in this review exhibited quality levels ranging from moderate (score of 3) to high (score of 5), as shown in Table 2.

Data extraction and analysis

Multiple readings of the papers that met the inclusion criteria were undertaken by two reviewers, MH and SJ, to allow data extraction. The reviewers kept separate Excel

Table 1 Search strategy to identify papers for this review (CINHAL)

Step	Search term	Results
1	Health educat*	159,483
2	Health professional Training	112
3	S1 OR S2	159,483
4	("model* n2 (placement OR clinical education OR clinical learning OR clinical placement OR clinical practice OR "interprofessional learning" OR service-learning placements" OR service learning placement OR work-integrated learning)	2,075
5	(MH "Simulation training")	1,615
6	S4 OR S5	3,689
7	(Allied health profession* n2 (physiotherap* OR occupational therap* OR dietician OR speech patholog* OR exercise physio* OR social work* OR optomet* OR podiat* OR psych* OR osteopath*))	48,744
8	("older* n2 (senior citizen OR elderly OR older people OR aged people")	149,392
9	(mh(aged +)	81,582
10	S8 OR S9	149,992
11	Primary healthcare OR residential aged care home OR residential aged care facility OR nursing home or community health OR rehabilitation clinic OR student clinic OR student-led clinic	7612
12	S3 AND S6 AND S7 AND S10 AND S11	791
13	Language: English	788

Table 2 Studies evaluating the impact of allied health student clinical placements for older adults in primary care settings

Author (year) & Country	Study design	Placement Settings	Study participants	Integration of allied health students in service delivery			MMAT scores		
				Placement focus and student disciplines involved	Placement design	Level of integration in service provision			
								Placement outcomes	Older adults' health and wellbeing outcomes
Hams et al. (2022) [22] Australia	Quantitative, pre-post evaluation Survey	A community-based private physiotherapy practice Regional	Patients (N= 42)	Evaluate the impact of a physiotherapy student-led community-based rehabilitation service Physiotherapy students	Student-led community-based rehabilitation service Length of placement 5 weeks	Assessment and treatment: mobility challenges (e.g., terrain and distance), optimization of gait aid, balance retraining, muscular strength endurance prescription, and manual therapy when indicated	Demographics: Mean age of patient: 74 years (SD: 10) Gender: Female (57%), male (43%) Health problems dealt with: balance disturbance, Parkinson disease, and cerebrovascular accident Average number of appointments by patients: 13.0 (range 3–28) Health outcomes: For clients completing physiotherapy rehabilitation in an SLS, the Physical Health was significant improved ($P<0.001$) The patient-nominated items across the PSFS were improving mobility ($n=48$, 55%), an activity of daily living (ADL) (eg, hanging washing, making bed; ($n=23$, 26%), or a hobby (eg, weeding the garden; $n= 17$, 19%) There was a significant improvement ($P< 0.05$) for clients with balance disturbance, CVA, and neuropathic conditions Psychosocial wellbeing outcomes: A positive trend for improvement in the Psychological domain was observed but did not reach significance ($P<0.08$) For clients completing physiotherapy rehabilitation in an SLS, the social relationship was significantly improved ($P<0.001$)	Highly satisfied for appointment with students "I was determined to succeed, and the team were always attentive to my goals. Their ability to listen to me when I had questions was excellent. I thank the whole team for their assistance to help me achieve my goals." "I have noticed a considerable benefit from attending the sessions and enjoyed the exercises given. I am feeling physically stronger which is helping with my posture and pain levels."	4

Table 2 (continued)

Author (year) & Country	Study design	Placement Settings		Study participants	Integration of allied health students in service delivery			Placement outcomes		MMAT scores
					Placement focus and student disciplines involved	Placement design	Level of integration in service provision	Older adults' health and wellbeing outcomes	Satisfaction with care	
Kent et al. (2016a) [23] Australia	Mixed methods design, incorporating surveys and interviews	Residential aged-care facility, Urban		Aged Care Residents (N = 16), University Healthcare Students (N = 26): Medicine Students (N = 10) Nursing Students (N = 5) Occupational Therapy Students (N = 2) Pharmacy Students (N = 9) Educators	Setting: 70-bed Residential Aged Care Facility (RACF) in a metropolitan area of Melbourne, Australia Participants: Aged Care Residents: 16 participants, majority female Healthcare Students: From disciplines such as medicine, nursing, occupational therapy, and pharmacy Educators: Clinically focused and academic staff from various healthcare disciplines	Enhancing resident care and student education through inter-professional collaboration Student-Led Consultations: Interprofessional teams of students conducting consultations Disciplines Involved: Medicine, nursing, occupational therapy, and pharmacy	Screening: Guided by a screening tool, students conducted a one-hour semi-structured interview under supervision Assessment: Issues such as medications, mobility, falls, activities of daily living, toileting, cognition, nutrition, social status and foot care Referrals: Identify the need for referral to additional services	Demographics: Mean age of residents 90 years (range: 78–97) Gender: Female (81.25%), Male (18.75%) Health problems dealt with: chronic diseases Average number of appointments: Not reported Health outcomes: Identification of new active issues: Student-led teams identified new health issues that required medical management Referrals and Medication Management: Proposed 17 recommendations for referrals and suggested modifications to medications for some residents, which included improvements in physiotherapy, podiatry, occupational therapy, and dietary needs among others Implementation of Recommendations: At a six-week follow-up, some of the student suggestions had been acted upon, leading to changes in medication that positively impacted residents' health, such as improved sleep and more regular blood pressure monitoring	High levels of satisfaction were reported by residents' post-consultation. Residents appreciated the thorough nature of the consultations and the attention to their health care needs. The majority were satisfied or very satisfied with the care received. 10/11 respondents were satisfied or very satisfied with the consultation	4

Table 2 (continued)

Author (year) & Country	Study design	Placement Settings	Study participants	Integration of allied health students in service delivery			Placement outcomes		MMAT scores
				Placement focus and student disciplines involved	Placement design	Level of integration in service provision	Older adults' health and wellbeing outcomes	Satisfaction with care	
Kent et al. (2016b) [24] Australia	Cohort study design, patient screenings and interprofessional education	Community-based services Outer metropolitan area, a suburban setting	Patients (N = 98) Student (N = 89)	Provides interprofessional education and patient care Setting: Targets older, community-dwelling patients post-hospital discharge Participants: Involves final-year students from medicine, nursing, dietetics, physiotherapy, and social work Activities: Students assess patients' needs and coordinate follow-up services	Student-led clinic acting as a practical learning site Activities: Students perform health screenings and make service referrals under supervision Restrictions: Direct treatment is limited to ensure legal compliance and reduce risks Disciplines, including dietetics (15), medicine (18), nursing (20), social work (7), occupational therapy (11)	Assessment: Student-led teams identified significant health issues that required medical management Referrals: Student teams wrote 120 referrals for additional service. The most common referrals were to health promotion and injury prevention programmes and services such as physiotherapy and podiatry	Demographics: Mean age of patient: 76 years (SD: 7) Gender: Male (53%), female (47%) Health problems dealt with: including rectal bleeding, acute depressive episodes, and wound infection Average number of appointments by patients: Not reported Health outcomes: About 20% patients said attending student clinic-led to a fewer health problems Around 85% (n = 51) respondents reported they knew more about how to reduce their healthcare problems 79% (n = 48) reported being able to handle their health problems differently Wellbeing outcomes: Not reported	High satisfaction with the care provided; approximately 85% of participants felt they had gained knowledge on managing their health problems better after the consultations Communication Quality: The interaction quality was praised, with a majority feeling reassured and understood by the student teams	5
Kent and Keating (2013) [25] Australia	Quantitative study Survey & prospective data collection	Public community rehabilitation centre	Patients (N = 25) Students (N = 18)	Evaluation of user perceptions of services provided through an interprofessional student-led primary healthcare clinic	Student-led interprofessional clinic Disciplines: dietetics (n = 6), medicine (n = 3), nursing (n = 2), physiotherapy (n = 4), occupational therapy (n = 1) and social work (n = 2)	Patient-centred care was well reported with all patients Screening: student teams identified factors affecting health or independence Assessment: physical, functional and social health needs Referrals: referred to relevant services	Demographics: Mean age of patient: 79 years (SD: 7.3) Gender: Not reported Average number of appointments by patients: Not reported Health problems dealt with: gastroenteritis, pneumonia or urinary tract infection Health outcomes: 94% believed that their interprofessional care would "lead to fewer health problems" Wellbeing outcomes: Not reported	Patient perceptions of the consultation indicated that this was a very well-received intervention 15 patients (94%) reported that they felt "able to handle their health problems differently"	4

Table 2 (continued)

Author (year) & Country	Study design	Placement Settings	Study participants	Integration of allied health students in service delivery			MMAT scores
				Placement focus and student disciplines involved	Placement design	Level of integration in service provision	
Lauckner et al. (2018) [26] Canada	Pre- and post-test surveys Focus groups Interviews	Maplestone Enhanced Care (Nursing Home), located in Halifax, Nova Scotia, both rural and regional areas	Students (N = 24) who completed pre- and post-tests Staff members (N = 30) participated in focus groups Family members (N = 5) and one resident were also interviewed to provide qualitative insights into the impacts of the interprofessional education experiences	Training in geriatric care and long-term care	Interprofessional team placement Interprofessional education 4–6 weeks of duration	Students participated in a shadowing experience with a front-line care worker and long-term residents For 1 to 2 h the student shadowed the care worker and then they spent 1 to 2 h with a resident the care worker delivered services Assessments: Student teams participate in weekly facilitated meetings to conduct assessments and develop care plan recommendations Collaboration with staff: staff participate in meetings to discuss active resident care concerns	
				Undergraduate students from Pharmacy, Social Work, Therapeutic Recreation and Dietetics programs, and graduate students from Speech-Language Pathology and Occupational Therapy	Demographics: not reported Health outcomes: In terms of the impact on resident care, staff mentioned some concerns, such as reduced resident privacy when multiple students are involved in their care or a decreased homelike atmosphere due to larger numbers of people on site Staff noted improved care because residents received more one-on-one attention with students and students identified additional ways to further support resident care	Positive Impact on Residents and Staff: Both staff and residents benefited from the inclusion of students in the care process. Staff noted improved care due to more individualised attention for residents, and residents received better services such as improved adaptive equipment and connections to community resources. Family members appreciated the students' involvement, which they felt contributed to the residents' sense of pride and well-being Enhanced Teamwork and Communication: The interprofessional education approach led to better teamwork and communication among staff members, which likely contributed to higher overall satisfaction with care	

Table 2 (continued)

Author (year) & Country	Study design	Placement Settings	Study participants	Integration of allied health students in service delivery			MMAT scores
				Placement focus and student disciplines involved	Placement design	Level of integration in service provision	
Li et al. (2018) [27] Australia	Qualitative case study design, Semi-structured interviews	Geriatric acute care Sub-acute rehabilitation Community aged care Geographical Locations: Mostly metropolitan areas Includes rural settings	Student Participant (N=8)	Assessing the impact of occupational therapy students on services for older adults Participants: Number: 8 fourth-year undergraduate students Enrolment: All from an Australian university Background: Varied placement experiences in acute, rehabilitation, and community settings	Student integration in client services	Students actively participated in direct client services Applied university-taught knowledge and skills Assessment: assessment of residents wellbeing using a form Treatment: Provided additional therapy sessions Integration of family members in care Recommended alternative interventions based on evidence-based practices Assisted in managing larger caseloads by sharing responsibilities with supervisors	4 Care Recipients: High satisfaction was noted among older adults, who appreciated the extended interaction times and felt valued in their role in the educational process of students "[Client] thanked me and told me "You'd be great in the hospital" ... She's really happy and appreciates the way I talk to her ... In the last day she said "Oh, I'm gonna miss you"
						Demographics: not reported Psychological wellbeing: Students provided more frequent therapy sessions, leading to improved health outcomes for older adults, especially in settings with limited access to qualified therapists "[Client] had lots of psychological issues. I found my mental health placement skills came in very handy. ... I have red flagged [her psychological issues] to my supervisor" "[Some clients] could only get [therapy sessions from qualified therapists] once every second day ... I could see [clients] twice a day because I had that extra time ... It does make a difference [to therapy outcome] – how early and how regularly [clients] get that therapy" "[There was] a sudden influx of stroke patients ... [My supervisor] said she was really grateful that I was able to take on that and get some confidence after a couple of weeks and then do therapies by myself"	

Table 2 (continued)

Author (year) & Country	Study design	Placement Settings	Study participants	Integration of allied health students in service delivery			Placement outcomes		MMAT scores
				Placement focus and student disciplines involved	Placement design	Level of integration in service provision	Older adults' health and wellbeing outcomes	Satisfaction with care	
Nguyen et al. (2019) [28] Australia	Benefit–cost analysis	Residential aged care homes Cities, regional and rural	Cost: Initial investment and the operating cost Benefits to reference group Health Professional Students (N = Average 5 per week, Min 2, Max 10) RACF Staff involved in training and supervision RACF Residents benefit from the care and services provided by the students	Integrating students to provide optimal care for older adults Graduate students from Dietetics, Occupational Therapy, Physiotherapy, Pharmacy, Medicine, and Nursing	Interprofessional clinical placements	Engaged in delivering care, including clinical assessments, case studies, ward rounds, and training sessions	Demographics: Not reported Physical and Mental Well-Being: Students contribute to the improved physical and mental health of residents through direct care and educational sessions, which also leads to reduced unnecessary health service utilisation Quality of Life: There is an assumed 10% improvement in the quality of life for residents, reflecting significant benefits from the additional care and interaction provided by students	Residents' Satisfaction: The program is reported to improve the satisfaction levels of residents, indicated by positive feedback from residents, staff, and family surveys	3
O'Shea et al. (2024) [29] Australia	Quantitative study Type 1 hybrid effectiveness-implementation trial	Residential aged care homes Location -not reported	Residents (N = 207)	To test a model of malnutrition screening and assessment conducted by dietetics students on placement Dietetic students (N = 32)	The placement model prepares student dietitians for the residential aged care workforce through two objectives: (1) Increase student competence in nutrition screening and assessment; (2) Improve the nutrition status of residents Students who consented to participate were provided with a site-specific booklet outlining the facility structure, room locations, and medical record login details before their first placement visit Upon arrival at the placement site, aged care facilities provided students with a resident bed list and electronic access to resident medical files while onsite	Screening: Two hundred-seven residents (85%) were screened Assessment: Malnutrition assessment showed 67% (n = 125) of residents were categorised as well-nourished, 31% (n = 57) were mild to moderately malnourished, and 3% (n = 5) were severely malnourished	Demographics: Mean age of residents assessed: 85 years (SD 8.63) Gender: Female (62%), male (38%) Average number of appointments by patients: Not reported Health problems dealt with: Malnourishment Health outcomes: 3% (n = 5) of patients were severely malnourished, identified for treatments Wellbeing outcomes – not reported	Nor reported	4

Table 2 (continued)

Author (year) & Country	Study design	Placement Settings	Study participants	Integration of allied health students in service delivery			Placement outcomes		MMAT scores
				Placement focus and student disciplines involved	Placement design	Level of integration in service provision	Older adults' health and wellbeing outcomes	Satisfaction with care	
Seaman et al. (2015) [30] Australia	Mixed methods evaluation Surveys Focus groups and interviews	Residential aged care homes Cities, regional and rural	Staff (N=45) Residents (N=15) Family and friends (N=35)	Integrating students to provide optimal care for older adults	Interprofessional clinical placements Graduate students from Dietetics, Occupational Therapy, Physiotherapy, Pharmacy, Medicine, and Nursing	Engaged in delivering care, including clinical assessments, case studies and training sessions	Demographics: Not reported Physical Mobility: Residents noted improvements in physical health, enhancing their mobility and confidence "...made us so much more alive.... we have to do things with our hands and work things out in our heads." Motivation: Interaction with students increased residents' motivation and physical capabilities "I feel that they give me something that I haven't got, and I am starting to get it too, which is motivation." Social Interaction: The program facilitated social interactions among residents, improving their community involvement and overall happiness "I look forward to coming to meet people and to sit... This changes my whole outlook and I really look forward to it and enjoy it. Enjoy coming and yeah...I think about it the day before."	Family and Friends: High levels of satisfaction were reported, with families noting the positive impacts on residents and their comfort with the students providing care Staff: Staff reported benefits from the program, such as additional support in care delivery and opportunities for learning from students	4

Table 2 (continued)

Author (year) & Country	Study design	Placement Settings	Study participants	Integration of allied health students in service delivery			MMAT scores
				Placement focus and student disciplines involved	Placement design	Level of integration in service provision	
Seaman et al. (2016) [31] Australia	Mixed methods evaluation report Surveys Focus groups and interviews	Residential aged care homes Cities, regional and rural	Students (N = 453)	Integrating students to provide optimal care for older adults	Interprofessional clinical placements Graduate students from Dietetics, Occupational Therapy, Physiotherapy, Pharmacy, Medicine, and Nursing Placement length: 2–13 weeks	Engaged in delivering care, including clinical assessments, case studies, and training sessions	5
Seaman et al. (2017) [32] Australia	Quasi-experimental pre-/post-intervention design	One residential aged care facility (RACF) Setting Details: The study was conducted in an urban setting	Types of Participants and Numbers: Nursing University 1 (N = 4) Nursing University 2 (N = 9) Physiotherapy (N = 11) Occupational Therapy (N = 8) Speech Pathology (N = 6) Pharmacy (N = 5) Dietetics (N = 2) Social Work (N = 2) Total Number of Participants: 47 students	Interprofessional Education (IPE) within a Residential Aged Care Facility	Both voluntary and involuntary, dependent on university and discipline Duration: Ranged from 2 to 13 weeks from health-related fields Professions included medicine, pharmacy, physiotherapy, occupational therapy, nursing, speech pathology, social work, and dietetics	Activities: Leadership in resident therapy programs Staff training sessions Interprofessional case discussions General practitioner visits Learning Environment: Rich interactive setting at RACF Supervised practice with onsite health professional teams Encouraged collaboration across various healthcare disciplines	5

Placement outcomes

Older adults' health and wellbeing outcomes

Physiotherapy Impact: Placements improve mobility strength, and exercise capacity in elderly patients

Dietetic Management: Nutritional assessments and interventions by dietetic students enhance patient nutritional status and overall health

Educational Benefits: Placements increase student awareness and preparedness to work in aged care, improving service delivery and care satisfaction

Residents and Family Members: There is reported satisfaction among residents and their families, who noted that students brought a new vitality to the care setting and helped enhance the overall capacity for care

Staff and Student Perceptions: Both care staff and students expressed positive views on the impact of the placements, with students gaining a valuable understanding of aged care, which could influence their career choices positively

The interprofessional nature of placements helps students understand and perform various health-related roles, potentially leading to better health management, including physical and nutritional aspects of elderly care

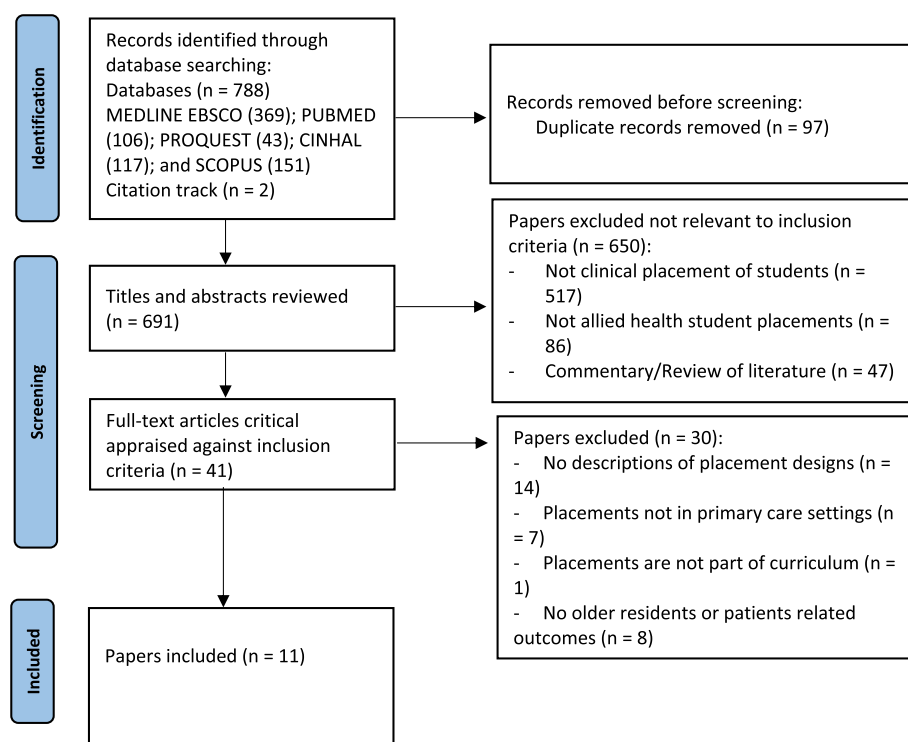


Fig. 1 PRISMA 2020 flow diagram of systematic search and selection process

records of their findings with discrepancies carefully cross-checked (Table 2). Included in the extracted data were the study characteristics (author, year, country of origin, study design, study participants); characteristics of allied health student placements (placement setting, focus, participants, type of placement, the level of student involvement in service delivery); and outcome data for older clients (health outcomes, and satisfaction with care). A reflexive thematic synthesis of data was deemed the most suitable approach to balance the heterogeneous methodologies evident in the selected studies [33]. Review team meetings provided avenues to deliberate on the categories and sub-themes that were independently identified by the reviewers, MH, and SJ. Interpretations were validated and themes were finalised during review team meetings.

Results

The study characteristics

Eleven studies were reviewed as illustrated in Fig. 1. All studies originated from developed countries, with the majority of the studies being conducted in Australia (n=10) and one in Canada. Most of the studies were published within the last decade. Among the papers, five studies used mixed-methods approaches for assessing student placements, four were quantitative studies,

one adopted a purely qualitative approach, and one study conducted a cost-benefit analysis. Over half of the placements occurred in residential aged care homes (n=7), and the rest were in rehabilitation community aged care centres (n=2), community health services (n=1), and community-based physiotherapy practice (n=1). Data collection encompassed input from students, older patients/residents, healthcare staff, and family members to evaluate placements. Regional and/or rural placements of allied health students were reported in five studies, with an exclusive focus on regional/rural and urban placements discussed in three and five studies, respectively. No studies examined the comparative effects of different placement locations on the health outcomes of older adults.

Commonly, undergraduate and postgraduate students from different allied health disciplines undertook the placements, including physiotherapy, occupational therapy, nutrition and dietetics, social work, podiatry, and speech pathology. Three studies examined the impact of allied health discipline-specific student placements; one study focused on physiotherapy, another on occupational therapy, and the third one on nutrition and dietetics [22, 27, 29]. Interprofessional allied health student placements were mentioned in one study [26], while the majority of placements (n=7) involved allied health

students being placed alongside medicine, nursing, and pharmacy students [23–25, 28, 30–32]. Various terminologies were used to describe student placements, such as clinical training, student-led clinic, interprofessional team placement; work-integrated learning; and interprofessional rural training. While most studies did not report the placement duration, a few noted that the placement length varied based by discipline. For example, one study confirmed the physiotherapy student placements of five weeks [22] and another mentioned the placement of four to six weeks for occupational therapy, speech pathology and social work students [26].

All studies reported that older clients were the intended focus of allied health student placements in primary healthcare settings. Five studies reported the demographics of care recipients [22–25, 29], in which the mean age was 81.56 years, ranging from 64 to 103 years. Most of the care recipients were female [22, 29], with one study reporting a predominance of males in services delivery [24]. Allied health students encountered with various health conditions during their placements, including balance disturbance, Parkinson's disease, cerebrovascular accident, malnutrition, gastroenteritis, pneumonia, urinary tract infection, rectal bleeding, acute depressive episodes, wound infection, and psychological illness. According to one study, older clients had an average of 13 appointments with students, with a range from 3 to 28 times [21].

Synthesis of outcome data generated four key themes: a. student integration in service delivery; b. older clients' health outcomes; c. satisfaction with care; and d. insights into mechanisms to achieving health and well-being outcomes.

Student integration in service delivery

The integration of allied health students in the delivery of primary healthcare services for older adults was identified as important across all placements. No discernible differences were identified in student integration based on primary care settings, such as residential aged care homes, community health services, or rehabilitation centres. Student integration was described as involvement in individual client care activities, including clinical assessments (i.e. screening) and care plan design and implementation (e.g. running therapy sessions, recommending alternative interventions, and making service referrals). Clinical assessments conducted by allied health students focused on mobility [22, 23, 25, 30–32], infection [25], malnutrition [23, 29], cognition [23], and wellbeing [25, 27, 28]. Examples of individual and group health services provided to older clients included: therapy to reduce falls and improve mobility [22], additional cognitive therapy [27], individualised one-on-one exercise [26],

group health education and training sessions [30–32], and nutritional assessments and interventions [29]. Rehabilitation care services, e.g. occupational therapy, physiotherapy and podiatry services were offered by allied health students during their placements in two studies [24, 27].

The extent of student integration in primary care services appeared to be somewhat related to the degree of services offered to older clients within the facility. While the majority of the placements prioritised assessments and referrals, allied health students were frequently tasked with direct delivery of health service interventions/ therapy [22, 27, 28, 30–32]. In one study, placements were limited to shadowing with a front-line care worker and a long-term resident [26]. Integrating students in clinical assessments, providing health services, assisting in managing workload, and discharge planning contributed to timely service delivery [30–32].

Older clients' health outcomes

The integration of allied health students in the delivery of primary healthcare services for older adults was found to influence the health outcomes of older clients, leading to improvements in both physical and psychosocial wellbeing. Seven studies reported on physical health outcomes as a result of allied health student placements [22–25, 29, 31, 32]. Significant improvements were observed in older clients with balance disturbance and neuropathic conditions [22], while non-significant improvements were reported in mobility, daily living activities, preventing deterioration, sleep quality, and nutritional status [32]. Significant improvements were observed in social interactions [22, 32], while a positive trend was noted in psychological wellbeing [22, 26, 27], and quality of life [28]. Education and training sessions run by students contributed to older clients' self-efficacy in managing health problems [24, 25]. However, in one study, staff expressed some concerns, including reduced privacy for clients and a diminished homelike environment because of student presence on site [26].

Satisfaction with care

Ten studies reported the satisfaction with care during the placements among different groups, including older clients, family members, and staff. Resident satisfaction was highlighted across eight studies, with notable improvements in their attendance in exercise sessions [22], achieving goals [22], feeling valued [27], and overall satisfaction with the care received [23, 25]. Older clients reported feeling less isolated and more connected to the community due to the presence of students [32]. Family members expressed high levels of satisfaction as families noticed improvements in the spirits and overall

satisfaction of these older adults [28, 32]. Families and friends also reported being very comfortable with the care provided by allied health students appreciating the positive impacts on older clients [26]. Staff were positive regarding these placements and the care delivered to residents/ clients [26, 28, 30–32]. Staff appreciated the additional resource and support as they noted that the student involvement allowed for more person-centred care [26, 28, 30–32].

Insights into mechanisms to achieving health and well-being outcomes

Seven studies reported improvements in primary healthcare services offered to older clients and attributed to allied health student placements. This was, regardless of the type of healthcare settings [22, 24, 26, 27, 30–32]. These improvements were attributed to students' person-centred approach [22, 25], one-to-one sessions with extended consultation times [26, 27], additional therapy sessions [31], and the ability to listen and motivate older clients to achieve their goals [22, 24, 27]. Student placements also expanded the scope and quality of care in residential aged care homes [30, 31], where interprofessional team placements led to better teamwork and communication among staff members, resulting in older clients' feeling of belonging and being cared for [26]. Student-led collaborative practice during placements was instrumental in delivering quality and safe care, as well as connecting older clients to local community services [24–26, 28, 30–32]. Additionally, student placements in primary care settings help prepare patients for earlier discharge from local hospitals, by assisting in caseload management and coordinating follow-up services [24], providing staff with flexibility in using patient care modalities [32].

Discussion

This review indicates that allied health students' participation in health service delivery, as part of an intentionally planned student placement, may improve older clients' health outcomes and satisfaction with care across residential and aged care homes and community healthcare settings [11, 16, 34]. Review of diverse placement designs and their outcomes highlights that allied health student placements, either as part of an interprofessional team of students or as an individual discipline can improve older clients' access to healthcare services [3, 9, 35–41]. Similar to the studies investigating student placements in acute care settings [15, 42, 43], older clients, their family members, and healthcare staff in the reviewed studies were positive about the ways students were integrated into service delivery and the services provided to patients to improve care [2, 4, 44]. Older clients self-reported perceptions of positive health

outcomes and satisfaction with care provided by allied health students during the placements are supported by both quantitative and qualitative studies [2, 11, 45–48]. While quantitative studies used validated scales to measure health outcomes because of student placement in primary healthcare setting, qualitative studies explored the perspectives of older clients, their family carers and health care staff regarding the patients' quality of life and psychosocial wellbeing. The findings of this review are positioned within a general system theory framework (Fig. 2) to facilitate the discussion of the practices of allied health student placements in primary healthcare settings and associated outcomes for older clients in this sector [49].

The impact of allied health student placements on older clients' (65 year or above) health outcomes and satisfaction with care has not been widely investigated, and inconsistencies in study designs and reporting across the reviewed studies make definite conclusions difficult [6, 15]. There was evidence for the benefit of student placements on individualised client care. The majority of student-led health service interventions and therapy sessions were person-centred, reporting significant improvements in balance, neuropathic conditions, and social interactions [50]. Publications over the period have consistently highlighted positive outcomes in mobility, daily living activities, sleep, nutrition status, and overall quality of life [51]. In all placements, students played integral roles in addressing both immediate and long-term health goals for older clients [2, 52]. This indicates that student placements not only focused on medical care but also ensured social care (e.g. one-to-one sessions to address individual needs, counselling, organising group therapies for promoting social interactions etc.) which has far-reaching implications for service delivery in primary healthcare settings. These healthcare services provided by students likely to contribute to build therapeutic relationships with older clients, an aspect of placements mentioned in some reviewed studies and seen as valuable by patients in Patterson et al.'s (2021) and Chan et al. (2013) studies [42, 53]. In addition, while delivering timely care remains a challenge for primary healthcare settings, integrating students can support better health outcomes and increased satisfaction with care.

Student placements incorporated interprofessional team work, facilitating interprofessional learning and collaboration with medicine, nursing, and pharmacy students in service delivery [2, 34, 47, 54–57]. These placements were implemented in both residential aged care homes and community health services [58]. The importance of interprofessional team placements lies in their ability to foster a holistic approach to client care, integrating different perspectives and expertise to address

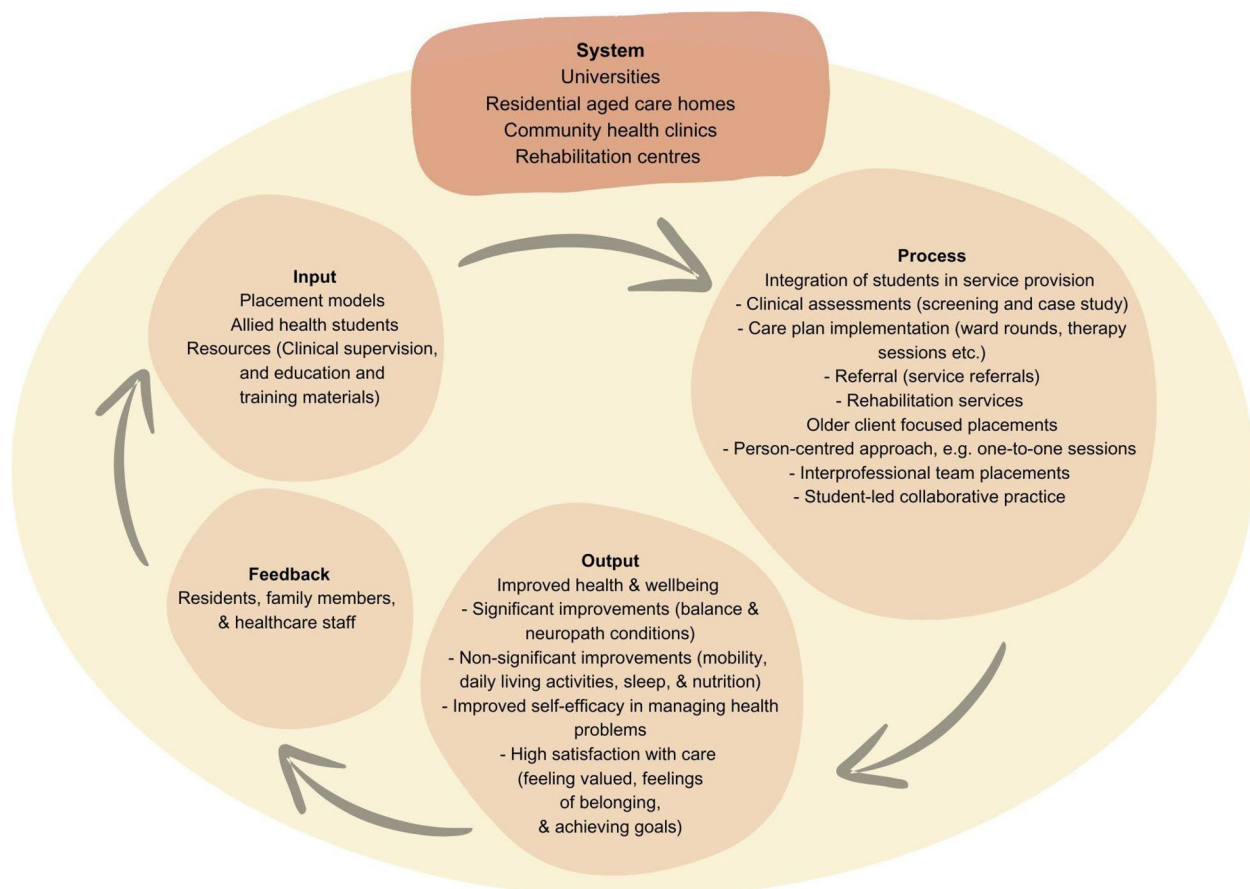


Fig. 2 Integration of allied health students in primary healthcare settings and its impact on older clients' health and satisfaction with care^a. ^aFindings from the 11 reviewed studies are presented within the framework of system theory, as illustrated in Fig. 2

the multifaceted needs of older clients [6, 11, 59–61]. For instance, physiotherapists, occupational therapists, dietitians, and social workers each bring unique skills and knowledge that, when combined, create a more comprehensive care plan than any single discipline could achieve alone [62]. Interprofessional student placements in primary healthcare settings can take various forms to enhance client care. These placements often include interdisciplinary team meetings, collaborative case studies, and joint therapy sessions. These approaches likely contribute to a more cohesive and integrated healthcare delivery system, which in turn leads to improved health outcomes for older clients.

There were some variations in how students were integrated within service delivery. Smith et al. (2018) and Brown et al. (2022) found that offering student placements in healthcare settings enabled students to integrate their theoretical knowledge in practical scenarios, but this integration in service delivery differ based on contexts, for example rural vs metropolitan settings [63, 64]. Additionally, student placements are often considered an

adjunct to the core task of delivering healthcare services to clients [43, 65]. This perspective may reflect differences in the academic institutions' and healthcare settings' approaches to placement design: some prioritised immersive, hands-on experiences integrating students across all aspects of care delivery, while others favoured the integration of students in clinical assessment or discharge planning only. Placements that allowed students to actively participate in planning sessions, case discussions, and the development of tailored care strategies, not only enhanced student learning experience [41] but also enriched the care provided to older clients. Finally, variations in the length of student placements may also have affected how students were integrated in service delivery as shorter placements tend to favour the 'one-off' type activities such as screening [64]. The variability in student integration into service delivery often reflected differences in institutional priorities, available resources, and curriculum needs.

There was a lack of evidence of appraising the processes and economic impact of allied health student placements

in primary healthcare settings. While there is increasing evidence supporting the integration of allied health student placements in both acute and primary healthcare settings, current research tends to focus predominantly on assessing the impact of these placements on older clients' health outcomes and well-being, such as falls prevention, mobility improvement, and emotional wellbeing [15]. However, there is a distinct lack of comprehensive metrics that assess the broader process-related aspects of these interventions, including acceptance and adoption of placements, economic benefits, and sustainability. Future studies investigating student placements should incorporate robust economic evaluations and sustainability assessments. This holistic approach is crucial for understanding not only the clinical benefits but also the long-term viability and cost-effectiveness of integrating allied health students into primary healthcare services.

A notable strength of this review is the synthesis of perspectives from older clients, their family carers, and healthcare staff across the reviewed studies. However, our review is limited to each author's interpretation of study findings. In addition, the number of studies was limited, and the methodologies employed in the available studies often were not designed to demonstrate significant causal associations between student placements and health outcomes for older clients but rather reported on relationships between the two. This review's inclusion criteria focused exclusively on studies describing the placements, thereby excluding some studies that fell outside this criterion. A few studies were excluded as the placements were not part of the curriculum, reducing the number of studies for this review.

Conclusions

This review of existing literature originated from a strong desire to understand the objectives and immersion of allied health student placements into service delivery in primary healthcare settings whereby the benefits are achieved for older clients. This review highlights that the quality of individualised care can be improved for older clients when allied health students are integrated into the delivery of healthcare services that might otherwise be unavailable. While this review presents student placements as additional support for older clients, it underscores the need for more rigorous studies to substantiate these findings. Future research should aim to employ robust methodologies that can establish causal relationships, thereby providing stronger evidence of the effects of student placements for older clients in primary healthcare settings.

Acknowledgements

We are thankful to Bianca Pizzol who contributed to the illustration of the study findings in figure 2.

Authors' contributions

MH: Conceptualization, Methodology, Data curation, Project Administration, Formal analysis, Visualization, Writing – original draft. VM: Conceptualization, Writing – review & editing, Validation. GN: Conceptualization, Writing – review & editing, Validation. SJ: Data curation, Visualization, Writing – review & editing. SM: Conceptualization, Writing – review & editing, Validation. SC: Conceptualization, Writing – review & editing, Validation. KN: Conceptualization, Writing – review & editing, Validation. CW: Conceptualization, Writing – review & editing, Validation. VF: Conceptualization, Writing – review & editing, Validation.

Funding

Not funded.

Data availability

All data generated or analysed during this study are included in this article.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 22 October 2024 Accepted: 24 January 2025

Published online: 25 April 2025

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