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Research training curriculum and projects undertaken by medical students in Australia and New Zealand

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Abstract

Background Research training is vital to medical education, providing students with essential skills for their future evidence-based practice. Most medical programs worldwide include opportunities for students to implement projects. However, gaps remain in understanding how research training is delivered, integrated and assessed with project completion, and little data exists on the range of project types and topics. This study aims to document research training curricula across Australian and New Zealand medical schools and explore the types of projects undertaken by students.

Methods An online survey of the 23 Australian and New Zealand medical school research training programs was undertaken. The survey recorded details about research training curriculum, project types and topics investigated. The titles of medical student projects completed in 2023 were collected and categorised using standard Australian Bureau of Statistics field of research codes and national health priority areas. Data were analysed using descriptive statistics.

Results Eighteen medical programs responded to the survey (18/23, 78%). The survey responses identified various designs for research training curriculum, including coursework only, and combinations of coursework and different project options. Projects were mandatory in half the programs. Some programs facilitated an Honours year or intercalated higher degree by research. Projects were either integrated into coursework or stand alone, with 78% providing scheduled time to conduct the projects. The titles of 2024 medical student projects completed in 2023 were provided by 17 of the 18 participating medical schools. The research areas covered were broad, with most focusing on biomedical and clinical sciences (69%) or health sciences (20%). Additionally, 34% of the projects addressed Australian National Health Priority areas, with cancer control (28%) and mental health (26%) the most common topics.

Conclusions This study provides a comprehensive overview of the current approaches to research training across medical programs in Australia and New Zealand. It highlights the diverse approaches to this aspect of medical education curriculum and the range of project types and topics undertaken by medical students. The findings

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provide valuable insights for medical curriculum developers and policymakers and can be used to inform research training practices and outcomes.

Keywords Medical education, Research training, Scholarly projects, Research projects, Curriculum development, Research topics, Medical students, Evidence-based practice

Introduction

Research training is an essential component of medical education, equipping students with critical skills for their future careers, fostering research engagement, and supporting the development of clinician-researchers [1]. It cultivates key competencies such as critical thinking, evidence appraisal, and ethical research governance; skills necessary for navigating modern medical practice [2]. The inclusion of research training in medical programs has been shown to enhance students' abilities in formulating research questions, data analysis, and manuscript writing while also fostering general professional skills such as teamwork and self-directed learning [3, 4]. Furthermore, exposure to research training has been associated with a higher likelihood of future involvement in research and academic careers [5].

Despite the recognized importance of research training, the optimal way to integrate it into medical curricula remains unclear, particularly whether all students should be required to undertake an independent research project. Medical schools worldwide employ diverse approaches tailored to their specific educational and healthcare contexts [6, 7]. The International Association for Health Professions Education (AMEE) recommends a combination of coursework and independent research or scholarly projects [2]. In Australia, most medical programs mandate scholarly projects [8–11], whereas in the United States, the Liaison Committee on Medical Education (LCME) sets accreditation standards emphasizing research integration within medical curricula [12]. Programs in Sweden and the UK report improved student engagement, academic skills, and research interest through mandatory or intercalated research training [13].

Medical education literature distinguishes between "research projects" and "scholarly projects," though these terms are sometimes used interchangeably. Research projects are a subset of scholarly projects that involve systematic investigations aimed at generating new knowledge using scientific methodologies and theoretical frameworks, often leading to peer-reviewed publications and conference presentations [5]. In contrast, scholarly projects encompass a broader range of activities, including literature reviews, research planning, quality improvement initiatives, and educational innovations [14, 15]. These projects emphasize critical thinking and lifelong learning rather than solely contributing to new research findings [16]. While research projects are assessed based on scientific rigor and contribution to knowledge, scholarly projects are also evaluated on criteria such as educational impact, methodological rigor, creativity, and clinical relevance [17, 18]. Successful scholarly projects also incorporate reflective practice and critical analysis, reinforcing essential competencies in medical graduates [19].

In Australia and New Zealand, research training is integrated into medical curricula to meet accreditation requirements set by the Australian Medical Council (AMC) and the Medical Council of New Zealand (MCNZ) [20]. However, there is limited information on how research education is structured, delivered, and assessed across medical schools in these regions. Additionally, there is little data on the types of student projects undertaken, their topics, or their alignment with healthcare priorities. This lack of comprehensive documentation hinders the ability to evaluate the effectiveness of current research training approaches and their impact on developing research-informed clinicians.

To address this gap, we aimed to survey and document the research training curricula, teaching approaches, and types of student projects undertaken by medical students across Australia and New Zealand. Understanding these components will be a crucial first step toward evaluating outcomes and developing evidence-based recommendations for effective research training that aligns with both educational goals and community healthcare needs.

This study addressed the following research questions:

1. How do Australian and New Zealand medical schools structure research training within their curricula?
2. What types of projects and what project topics are commonly undertaken by medical students in Australia and New Zealand?

Methods

Ethics statement

This project was approved by the University of Sydney HREC # 2024/115. Local approval from each participating Australian and New Zealand medical program was also obtained.

Study context: Australian and New Zealand medical programs

Medical programs in Australia and New Zealand are designed to produce skilled, competent, and ethical medical practitioners capable of addressing the diverse health

needs of urban, regional, rural and remote populations. These programs are accredited by the Australian Medical Council (AMC) and the Medical Council of New Zealand (MCNZ), ensuring adherence to national and international standards for high-quality education and graduate outcomes [20].

The most common medical qualification in Australia and New Zealand is the Doctor of Medicine (MD) degree, classified under the Australian Qualifications Framework (AQF) as Level 9E (Extended Master's Degree). This classification reflects a combination of advanced clinical training, theoretical knowledge, and alignment with international professional standards [21]. At this level, the AQF mandates that students *"plan and execute a substantial research-based project, capstone experience, and/or professionally focused project"* as part of their training [21]. Additionally, the AMC accreditation standards emphasize the importance of research in medical education, stating that graduates should recognize *"that research, along with quality improvement and assurance approaches, underpins continuous improvement of clinical practice and the broader healthcare system"* [20]. Thus, research training is integral in medical curricula across Australia and New Zealand.

During the survey period there were 23 medical programs in Australia and New Zealand. These programs are geographically diverse, with medical schools located in urban centres, regional areas, rural and remote communities. Many universities offer distributed programs with rural sites that offer extended placements. Specific training is provided to address rural and remote healthcare, with a focus on first nations health, ensuring that graduates can deliver care that is both culturally and contextually relevant. This broad geographical reach and project integration demonstrate a commitment to addressing the unique healthcare needs of Australia and New Zealand. The medical programs aim to graduate professionals who can adapt to modern healthcare challenges and provide equitable, high-quality, and culturally safe care in diverse settings.

Participants

Research educators, who are academic, clinical, or public health experts involved in delivering and supervising research training or delivering project programs to medical students, were invited to participate in this study. These individuals were identified and approached via email through professional organisations relevant to medical education. They represented all 23 medical schools in Australia and New Zealand and were asked to provide detailed information about their medical program context, including the structure and content of the research training curriculum, the methods of curriculum delivery, and the range of projects undertaken by medical students.

Survey tool

The research team developed the online survey tool (JH, DE, WH) and pilot tested it for coverage and clarity (MW, EL). The survey is available in the supplementary files. The survey collected self-reported data on:

1. **Medical program context** including location (metropolitan, regional and/or rural), enrolment numbers, medical program type (undergraduate, graduate and degree type), research intensity and medical school focus or mission.
2. **Research training curriculum and delivery**, research training curriculum and learning activities offered, project programs, the timing of the content delivery, and the assessment of these learning activities. Participants were allowed free text answers to capture the diversity of research training programs and delivery methods.
3. **Medical student project titles** for convenience and considering the numerous medical programs available in Australia and New Zealand medical schools, titles of projects completed in 2023 were requested and collected.

Data analysis

Quantitative data were analysed using descriptive statistics. Free text responses were collated, and common research training activities were tabulated. All student project titles were assigned research topic areas based upon the Australian Bureau of Statistics (ABS) Australian and New Zealand Standard Research Classification (ANZSRC), Field of Research Codes [22]. These research codes are highly detailed and hierarchical, covering broad disciplines, sub-disciplines, and specific fields [22]. They serve dual purposes of academic classification and alignment with national priorities and are similar to the Canadian Research and Development Classification or Research Excellence Framework in the UK. Additionally, projects in Australian National Health Priority Areas (cardiovascular health, cancer control, injury prevention and control, mental health, diabetes mellitus, asthma) [23] were documented. ChatGPT4o (OpenAI, 2024) was prompted to assign research topic codes from the ANZRC research code list and National Health Priority Areas to some of the project titles, whilst some of the participants assigned these codes independently. All coding was then cross checked by the investigators (JH, EL, KU) for accuracy. The frequency of the different research topic areas and the proportion of projects in National Health Priority Areas were then calculated.

Results

Response rate

All 23 medical programs in Australia and New Zealand were invited to participate. The majority of medical programs in Australia and New Zealand responded to the curriculum survey (18/23, 78%) and 17/23 (74%) provided titles for student projects completed in 2023. Two universities declined to participate at this time as they were redeveloping their research training curriculum.

Medical degree programs and university context

The participating institutions offered a range of Medical Degree programs, including Bachelor of Medical Science or Bachelor of Clinical Science and Doctor of Medicine, though the majority (94%) offer a Doctor of Medicine Degree (MD). These programs may be graduate entry (9/18), direct entry (4/18), and some universities offer both entry pathways (5/18). Many programs offered Honours programs or an intercalated MD-PhD program (10/18). Degree duration ranged from 4 to 6 years (5–6 years for undergraduate degree, 4 years for graduate-entry degree and 7 years for MD-PhD). There was an equal distribution of medical programs in research-intensive universities and those with a community or rural focus, and most universities have campuses in metropolitan and regional or rural areas (Table 1).

Research training curricula

To deliver their research training curriculum, all responding medical programs offered both coursework and project activities.

Coursework

The participant medical programs demonstrated varied approaches to providing research training. All responding medical programs included research training coursework covering core topics such as evidence-based medicine, research methods, and statistics. However, the integration of projects and research training coursework varied. Three programs (3/18) provided mandatory research training coursework without requiring students to complete a project. Thirteen (13/18) programs supplemented the foundational coursework with additional project-specific training, including topics such as developing project proposals, obtaining research ethics approvals, scientific writing, and oral presentations. Nine programs (9/18) provided multiple research training streams, allowing for tailored learning pathways based on students' interests or the focus of their projects.

Table 1 Medical degree programs and university context

Demographic Information	*n*
Degree level	
Undergraduate	4
Postgraduate	9
Both	5
University Context	
Research intensive	10
Community or rural focus	8
Medical Program location	
Metropolitan	4
Regional or Rural	3
Have metropolitan and regional or rural campuses	11

Student projects

All participating programs provided opportunities for medical students to undertake projects. Five programs (5/18) offered only elective projects, in nine programs (9/18) projects were mandatory, while in four programs (4/18) project participation was elective and extra-curricular. All participating medical programs offered scholarly project opportunities, with research projects as a subset focused on generating new knowledge through empirical investigation. Some programs included optional research projects through Honours or Higher Degree by Research (Master's or PhD). Other scholarly projects, distinct from empirical research projects; included literature syntheses, narrative medicine projects and initiatives in leadership, service learning, or advocacy. A list of project delivery examples is given in Table 2.

Models for delivery and assessment of projects

Medical programs employed diverse models for delivering projects which were tailored to the program structure and context (Table 3). Participation in the project could be either mandatory (13/18) or elective (5/18), depending on the program and optional higher degree research was offered at (10/18) programs. Project formats varied significantly, with half of the programs (9/18) offering individual projects and others (8/18) allowing either individual or group projects. The duration of these projects ranged from 3 to 48 weeks, with a median length of 12 weeks. There was no difference in project duration between undergraduate and graduate entry programs, though one undergraduate program devoted an entire year to the project. Regarding project location, most were conducted in metropolitan areas ($n = 1082$, 64.2%). A fifth of the projects ($n = 378$, 18.6%) were reported to be conducted in regional or rural contexts, and some did not report location ($n = 274$, 16.3%). Where projects were done in regional or rural contexts, nearly half ($n = 164$, 43%) were focussed on rural health.

Fourteen medical programs (14/18) allocated dedicated time within the timetable for projects, as either regular weekly sessions (e.g. a day per week) or concentrated blocks spread over the program, though (4/18) required students to complete their projects in addition to the core medical curriculum, in their own time. The timing

Table 2 Project delivery examples

Type of Project	Context	Example Task	Objective	Outcome
Coursework-Integrated Project work	Part of a mandatory Research Methods and Critical Appraisal course	Analyse a dataset from a simulated clinical trial on a new diabetes medication	Perform basic statistical analysis and critique the study design	Write a 1,500-word report critiquing statistical methods and scientific writing. Present findings in a poster session
Individual Research Projects	A mandatory research project within a four-year MD program	Investigate the impact of exercise on mental health in post-stroke patients	Recruit participants, collect data, and analyse the effect of exercise programs on depression scores.	Produce a scientific report, present findings at a local conference.
Group Research Projects	Mandatory group research project within a 6-year undergraduate program.	Conduct a retrospective chart review of 500 hypertension patients at a metropolitan hospital.	Divide tasks (e.g., data extraction, ethics applications) and deliver a group presentation.	Provide meaningful insights into clinical practice. Share findings with local healthcare providers
Individual Research Projects	Elective research project in a rural medical school	Design and conduct a qualitative study exploring barriers to healthcare access for a rural community	Conduct interviews, analyse themes, and propose healthcare strategies	Share findings with local healthcare providers to inform policy development.
Group Research Projects	A two-semester elective research project for small groups	Investigate the accuracy of wearable devices in measuring blood pressure compared to standard clinical devices.	Divide tasks (e.g., literature review, data collection, analysis) and collaboratively write a final report.	Submit findings as a poster at a student research symposium.
Honours Year	An elective research year, typically undertaken after completing core medical coursework.	Students complete a research project in an Honours year. Investigate genetic markers for cardiovascular diseases using laboratory-based techniques.	Conduct an independent research project under supervision, develop advanced research methodologies, and enhance critical thinking and scientific communication skills.	Students produce a research thesis, potentially leading to publication or conference presentations. This may be a pathway to higher degrees or academic medicine roles.
Intercalated Research Degrees	Optional research degrees intercalated during or outside the medical program.	Students enrol in a HDR program and typically intercalate full time research years within their medical degree to conduct independent research in biomedical sciences, epidemiology, or clinical trials.	Gain extensive research training and produce a thesis contributing original findings in the chosen field of study	Graduates develop advanced research skills, gain authorship in peer-reviewed journals, and present findings at national or international conferences. This pathway prepares students for academic or clinician-researcher careers.

Table 3 Research training curriculum and project delivery

Research training curriculum and project delivery	Number of Programs	%
Coursework with elective projects	3	17
Coursework and mandatory project	15	83
Option of Honours or intercalated higher degree by research	10	56
Extra-curricular research projects	3	17
Project requirement		
Mandatory	9	50
Elective	5	28
Both	4	22
Individual or group projects		
Individual project only	9	50
Both individual and group projects	8	44
Group project (small 1–2 students)	7	39
Group project (medium 3–5 students)	8	44
Project time allocation		
Scheduled during the program (full-time block)	7	39
Scheduled during the program (weekly allocation of time)	7	39
No quarantined project time allocated	4	22
Project allocation		
Students allocated to pre-approved projects	17	94
Students allocated to a supervisor then develop projects	1	6
Students find their own supervisor and project	11	61
Students do projects through an intercalated degree	4	22
Project assessment*		
Written report/thesis	17	94
Oral presentation	14	78
Poster presentation	8	44
Community engagement	4	22
Service learning	2	11
Project duration (Full Time Equivalent (hours/wk), median)		
Undergraduate	11 weeks	
Postgraduate	12 weeks	
Both	12 weeks	
All offerings	12 weeks	

*All programs offer a mix of assessment tasks

of projects also varied, with some spanning several years and others condensed into shorter blocks of time. Projects were allocated to students in various ways, either by preference to pre-approved projects, or to a supervisor to develop a project proposal. Some students had to find their own projects and supervisors, though the program would intervene if they could not do so. Some students undertook projects as part of intercalated Honours or higher degree by research programs.

Approaches to preparation for projects differed. Some programs required students to complete coursework units focused on project proposal development and ethics approvals before beginning their projects. Others utilized existing datasets for retrospective or prospective studies. Some programs curated approved project lists and allocated students to these, while others required students to find their own projects.

Projects were all assessed by a combination of assessment tasks, commonly a submission of a written project report, dissertation, or thesis (17/18), along with an oral presentation of the project (14/18). Scientific poster presentations were popular assessment tasks (8/18), and some programs evaluated participation in engagement activities (6/18) (Table 3).

Intended outcomes of projects

All programs with a research project encouraged students to publish their work via the academic peer-review process, in journal publications, presenting at conferences or by another scholarly avenue. However, none of the medical programs required their students to publish their projects and some specifically indicated that the project was primarily an educational activity, with no requirement for a research output.

Project types, objectives and areas of study

All participating medical school programs were open to a wide range of project types and topics, generally in any area of medicine or health, though one prioritised investigations in Australian Government defined National Health Priority Areas (cardiovascular health, cancer control, injury prevention and control, mental health, diabetes mellitus, asthma [23]). Table 4 highlights the broad and diverse range of projects offered, encompassing practical, theoretical, and innovation-based aspects of medical and clinical sciences, as well as addressing areas from local health issues to broader public health challenges and health disparities. Projects could use primary or secondary research methods, retrospective or prospective recruitment, and quantitative, qualitative, or mixed methods designs.

Project research topic areas

Seventeen medical programs provided a list of project titles for all 2,024 medical student projects completed in 2023. These projects spanned 11 distinct research areas (Table 4). Most projects were in Biomedical and Clinical Sciences (69%), followed by Health Sciences (20%), then medical education projects (5%).

National health priority areas

Among the 2,024 projects completed by medical students in 2023, a third of them ($n = 665$, 32.9%) were in Australian National Health Priority Areas. Of those, the most common were cancer control and mental health (Table 5).

Table 4 Research areas of medical student projects in 2023 ($n = 2,024$)

Research Area*	*n*	%
Biomedical and Clinical Sciences	**1404**	**69.4**
Clinical sciences	*547*	*27.0*
Cardiovascular medicine and haematology	*148*	*7.3*
Oncology and carcinogenesis	*145*	*7.2*
Paediatrics	*103*	*5.1*
Neurosciences	*85*	*4.2*
Reproductive medicine	*76*	*3.8*
Nutrition and dietetics	*56*	*2.8*
Ophthalmology and optometry	*34*	*1.7*
Pharmacology and pharmaceutical sciences	*31*	*1.5*
Immunology	*27*	*1.3*
Health Sciences	**397**	**19.6**
Health services and systems	*283*	*14.0*
Public health	*93*	*4.6*
Education *Medical education*	*103*	*5.1*
Indigenous Studies (First nations health)	**39**	**1.9**
Environmental Sciences	**20**	**1.0**
Human Society	**15**	**0.7**
Philosophy And Religious Studies *Medical Ethics*	*15*	*0.7*
Information And Computing Sciences	**12**	**0.6**
Psychology	**8**	**0.4**
Biological Sciences	**6**	**0.3**
Engineering	**5**	**0.2**

*Research areas correspond to Australian Bureau of Statistics, Field of Research division codes, sub-categories are Field of Research group codes [22]

Table 5 Research in National health priority areas (NHPA)

Health Priority Area*	*n*	%(NHPA)	%(Total)
Cancer control	184	27.7	9.1
Mental health	173	26.0	8.6
Cardiovascular health	133	20.0	6.6
Diabetes Mellitus	92	13.8	4.5
Injury prevention and control	74	11.1	3.7
Asthma	9	1.4	0.4
Total in NHPA	665	100	32.9

*Health priority area defined by Australian Government National Health Priorities [23]

Discussion

This study provides a comprehensive investigation into current approaches to delivering research training in medical degrees across Australia and New Zealand. The findings reveal rich variability in how research training is structured, encompassing coursework, scholarly and research projects, intercalated Honours programs, and higher degree by research pathways. All responding programs align with institutional and accreditation requirements, ensuring that medical students develop essential research skills alongside their clinical training [24].

A significant finding of this study is the broad range of project topics undertaken by medical students. While biomedical, clinical, and health sciences dominated, other areas, such as health services research, rural health, and medical education, were also prominent. This breadth reflects both student interests and the expertise of supervisors within participating institutions. Notably, rural placement locations often drove rural health research, and approximately one-third of projects focused on National Health Priority Areas.

Curricular structures and institutional context

The study demonstrates that most Australia and New Zealand medical schools have integrated or plan to integrate research training into their curricula, irrespective of university context or location. This integration not only aligns with AMC and AQF standards but also reflects the broader goal of fostering evidence-based practice, research literate clinicians and future clinician-academics [24, 25]. This is particularly important given the challenges of pursuing a clinician-academic career in Australia and New Zealand, where structured support is crucial for bridging the gap between research and clinical practice. These findings are consistent with a previous cross-sectional audit of Australian medical schools, which showed a widespread movement toward enhancing student research knowledge and skills as institutions transitioned to Doctor of Medicine (MD) programs in alignment with AQF standards [26]. This transition reflects an increasing recognition of the value of embedding research training into medical curricula to prepare students for evidence-based practice.

The absence of a universally agreed-upon research training curriculum, both locally and globally, presents significant challenges for medical education [27]. For example, the Australian Medical Council's (AMC) graduate outcome statements do not explicitly define the research skills expected of medical graduates [20]. This lack of standardization may lead to inconsistent skill development and missed opportunities for engagement with scholarly activities [28]. Without structured research training, students may view research as peripheral to their clinical education, resulting in lower participation in elective research opportunities [16]. This disengagement is particularly concerning in a healthcare system that increasingly relies on clinician-academics to integrate research into practice [29].

One way forward could be to establish an agreed baseline threshold of research training while preserving flexibility to address local needs, rather than enforcing a standardized curriculum. Current models demonstrate adaptation to institutional priorities, such as rural projects in rural medical schools, which should be maintained in any future approach. A structured yet adaptable framework would ensure that all students develop

essential research competencies while allowing institutions to offer deeper engagement where capacity permits.

Models of project delivery and assessment

The study identified a wide range of models for delivering and assessing projects across Australia and New Zealand medical schools. Most programs supported project work through complementary coursework, with assessment typically involving research reports, oral and poster presentations, and community and professional engagement activities. Projects were allocated in various ways, including by student preferences for pre-approved projects or direct assignment to a supervisor. Some students engaged in projects through intercalated Honours or higher degree by research programs. Projects were undertaken either individually or within small to medium-sized groups, spanning varying timeframes. Scheduled time for research activities was provided in most programs, a known facilitator of project success [14]. However, despite these diverse approaches, there is no consensus on best practices for delivering and assessing research training [27].

Project types, locations, and outcomes

The study found considerable diversity in the types of projects undertaken by medical students, including empirical research, literature syntheses, study protocol development, and health innovations such as digital health solutions, clinical decision-making aids, and educational frameworks. While all aimed to develop core research competencies, they also allowed flexibility to align with student interests and institutional priorities. This raises the question of whether essential research skills can be developed through different types of projects or if specific experiences are necessary. This parallels the longitudinal integrated clerkship model [30], which challenges the idea that broad clinical learning requires rotations across multiple specialties. Just as longitudinal integrated clerkships provide comprehensive training within a single setting by ensuring exposure to core clinical presentations and continuity of learning, diverse research project types may similarly achieve the required research competencies through structured, competency-focussed design rather than uniform project formats. Research topics spanned eleven broad categories, with most focused on biomedical, clinical, and health sciences. Health services research, including primary care [31] and rural health [32], was well represented, aligning with broader healthcare priorities, while medical education research was the third most common area [33], reflecting student interest in improving curricula. These findings suggest that while institutional priorities shape research opportunities, maintaining flexibility in project types is key to fostering engagement while ensuring students acquire essential research skills.

While the number of First Nations Health projects was relatively small, this likely reflects the complexities of conducting research in this area, the restricted timeframes available for student projects and the limited availability of supervisors with expertise in Indigenous health research [34]. Effective engagement with First Nations communities requires culturally sensitive approaches and collaborative partnerships [35]. The study found that First Nations health projects were evenly distributed across metropolitan and rural settings, challenging the assumption of a rural focus. These findings highlight the need for medical curricula and policies to address Indigenous health in both contexts, ensuring comprehensive and equitable training.

While publication of project outcomes was viewed as desirable, no programs required students to produce publications, consistent with the educational purpose and scale of these projects. Short-term projects often serve as platforms for exploratory research and skill development rather than publication [33]. Moreover, research impact is the contribution that research makes to the economy, society, environment or culture, beyond the contribution to academic research outputs. Considering this, student scholarly projects such as community service learning may have more impact than a research project [15]. Regardless, research publications and conference presentations are often used as metrics for evaluating medical student project programs. Globally, around 30% of medical student projects result in publication [5], aligning with findings from New Zealand and rural Australia [32, 36]. However, barriers such as time constraints, lack of mentorship, and limited institutional support can hinder students' ability to publish their findings [14, 37]. Developing mechanisms to track research outputs could provide useful evaluation data but introducing publication requirements risks shifting the focus from skill development to pressure to prioritise output over learning, potentially undermining the educational goals of these programs.

Implications for medical education and research capacity

The findings of this study have several implications for medical education and research training capacity in Australia and New Zealand. The diversity of research project types and topics suggests that current curricula offer flexible opportunities for students to engage in scholarly activities, recognizing their diverse interests, capacities, and abilities. This flexibility can be beneficial, ensuring that students find meaningful ways to participate in research. However, without a standardized research training curriculum, student experiences and skill development may vary, potentially leading to inconsistencies

in their clinical preparedness [27]. Further, while many projects aligned with National Health Priority Areas and rural health needs, this alignment was often driven by project availability rather than explicit curricular goals. Encouraging more projects in priority areas could enhance the relevance and impact of student research while potentially addressing workforce needs in underserved communities.

There is also great value in research training beyond skill acquisition. Participation in projects has been shown to enhance critical thinking, data analysis, scientific writing, and professional skills, such as teamwork, communication, and self-directed learning [32, 38–43]. An understanding of the complexities of research, along with research ethics and governance processes, is also a valuable takeaway for students. The importance of collaboration, teamwork and the difficulties of navigating ethical considerations is best understood through a project [6]. These skills add significant value to project programs and are highly desirable in our graduating medical students. Students with research experience report increased confidence and are more likely to pursue future research opportunities and academic careers [4, 5, 9, 44, 45].

Limitations

This study has several strengths, including high participation rates among medical programs in Australia and New Zealand, providing a comprehensive overview of current Research training practices. However, several limitations should be acknowledged.

First, the cross-sectional nature of the study limits the generalizability of findings, particularly as some programs were still affected by the COVID-19 pandemic during the survey period. Additionally, the high-level standard research area coding used for project classification, while aligned with national priorities, did not capture detailed information about research methodologies or project designs.

Future directions

Future research should investigate the long-term outcomes of research training curricula, including their impact on student learning, graduate clinical practice, and continued engagement with research, in addition to the actual impact on health outcomes. Further exploration of how student project topics align with community healthcare needs and future career interests could also inform curriculum development. Attaining a consensus on core research competencies for medical graduates would further support the development of standardized research training frameworks.

Summary and conclusion

This study highlights the considerable diversity in research training curricula across Australia and New Zealand medical programs, offering students varied opportunities to engage with projects. The findings underscore the importance of integrating research training into medical curricula to foster evidence-based practice and support the development of clinician-academics. By documenting current approaches, this study provides a valuable baseline resource for curriculum developers and policymakers seeking to refine research training practices. It also highlights opportunities to better integrate medical student researchers into the broader research community, fostering a culture of inquiry that can enhance both medical education and healthcare outcomes.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-025-07339-9.

Supplementary Material 1

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Author contributions

All authors read and approved the final manuscript.Conception of the project: JH, DE, JB, WH, KH. Development of the study protocol: JH, DE, WH, JM, KH, VP, AC. Project management: JH. Survey design and testing: JH, DE, WH, MW. Data collection coordination: JH. Data analysis: JH, EL, KU, DE. Preparation of the manuscript: JH. Editing of the manuscript: DE, KU, WH, JB, KH, JM, NE, VP, SP, JC, CM, LM, MW, EL, VP.

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Data availability

The datasets generated and/or analysed during the current study are not publicly available, but de-identified data are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This research project was approved by the University of Sydney Human Research Ethics Committee, #2024/115. This research was conducted in accordance with the Declaration of Helsinki on ethical principles for medical research involving human subjects. Informed consent was obtained from each participant.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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