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Barriers and Enablers of Primary Healthcare Professionals in Health Research Engagement: A Systematic Review of Qualitative Studies

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ABSTRACT

Health professional engagement ensures relevant, clinically focused research that informs evidence-based care. Research shows health professionals may not engage optimally in research. Understanding barriers and enablers influencing participation is necessary to enhance engagement. This systematic review explores these factors among primary healthcare professionals. We searched peer-reviewed studies using CINAHL, Medline, and SCOPUS in February 2023, updated in June 2024. The review followed PRISMA and the ENTREQ checklist. Studies included those published in English, reporting factors influencing engagement among primary healthcare professionals. Qualitative data were extracted and thematically synthesized. Methodological quality was assessed using the Joanna Briggs Institute Critical Appraisal Checklist. Nineteen studies were included. Enablers include individual positive attitudes and a scholarly environment. Barriers include negative attitudes, an unconducive environment, and system constraints. Primary health professionals view research engagement positively, recognizing its potential to enhance health outcomes, professional growth, and business performance. Balancing clinical responsibilities, workload and research is challenging. Targeted strategies promoting partnerships and stakeholder involvement can foster a scholarly environment and empower research engagement.

1 | Introduction

Primary health professionals, including medical, dental, nurses, midwives, and allied health professionals support and empower individuals by integrating health services within the community and enabling self-management of health (Commonwealth of Australia Department of Health 2022; World Health 2018). The goal of research engagement is to identify and address real-world problems and facilitate the co-creation of knowledge between researchers and the wider community (Oliver, Kothari, and Mays 2019). A strong health system relies on the ability of

primary healthcare professionals to deliver evidence-based, sustainable models of care that have the potential to keep people out of hospitals and reduce healthcare costs (Commonwealth of Australia Department of Health 2022). Healthcare professionals and organizations that integrate research into daily operations improve health outcomes and enhanced performance (Hanney et al. 2013).

Health professionals have unique insights that can influence research priorities and design, and they can share knowledge about evidence-based practices while promoting the uptake of

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Summary

- The study provides evidence and identifies the barriers and enablers that influence engagement for primary healthcare professionals using an adapted health research engagement framework.
- Primary health professionals exhibit positive attitudes toward research engagement and recognize its potential to improve health outcomes, professional development, and business performance.
- Our study emphasizes that a scholarly environment plays a significant role in facilitating engagement and addressing the challenges of balancing workload, time constraints, and prioritizing research over clinical responsibilities.

evidence and improving overall clinical performance (Boaz et al. 2015; Sashka et al. 2020). This is important given the well-documented issues with research waste, including research focusing on questions that are not important or relevant at the clinical interface as well as difficulty in implementing research findings (Al-Shahi Salman et al. 2014; Chalmers et al. 2014; Chan et al. 2014; Glasziou et al. 2014; Ioannidis et al. 2014). Investment in research engagement has led to improved organization performance, which includes benefits for patients, professionals, and practice (Harding et al. 2017). Engaging professionals in clinical research ensures continuous knowledge generation and dissemination and optimizes healthcare delivery (Angus et al. 2024). There has been a growing emphasis on increasing healthcare professionals' capacity to support, undertake, and utilize research, as well as encouraging healthcare organizations to increase research engagement (Peckham et al. 2023). There are, however, barriers to health professionals to engage in research, which limits their ability to challenge and inform their clinical practice skills through clinical research (Stephens, Taylor, and Leggat 2009). Factors that influence health professionals to engage in research have been investigated via various methodologies in mixed settings. Examples of facilitators include personal interest, motivation to conduct research, research skills, perceived opportunities to enhance career advancement, and associated reputational or financial benefits (Ciemins et al. 2019; Pager, Holden, and Golenko 2012). A recent review identified key barriers to research engagement, such as knowledge and skill deficits, limited research time, funding constraints, and insufficient peer and institutional support (D'Arrietta et al. 2022). Of the studies included in the review, 15% (7/46) involved primary healthcare professionals, but none were solely focused on primary health settings. Another review found allied health professionals in primary health settings in 27% (4/15) of the studies and highlighted individual motivation for skill development, job satisfaction, and career progression (Borkowski et al. 2016). There remains a need to focus on the experiences of primary healthcare professionals in health research engagement. This systematic review aims to synthesize what is known about enablers and barriers among primary healthcare professionals to engage in research.

2 | Methods

2.1 | Design

A systematic review was conducted in accordance with JBI methodology for systematic reviews (Aromataris et al. 2024) and reported in accordance with the PRISMA (preferred reporting items for systematic reviews and meta-analyses) checklist (Moher et al. 2009) and ENTREQ (enhancing transparency in reporting the synthesis of qualitative research) checklist (Tong et al. 2012). The protocol was registered [details omitted for double-anonymized peer review] with the International Prospective Register of Systematic Reviews (PROSPERO).

2.2 | Eligibility Criteria

2.2.1 | Types of Studies

We included peer-reviewed primary articles that used qualitative and mixed studies design. We included studies that focused on the experiences, barriers, and enablers (any of these three components) reported by health professionals about engagement in research. We included these studies if they had used qualitative methods for data collection, including open-ended questions, interviews, focus groups, qualitative questions from surveys and a combination of these methods.

2.2.2 | Types of Participants

The study population consisted of all health professionals: allied health professionals, medical, dental, nursing, and midwifery who make the first contact with individuals with a health concern (Commonwealth of Australia Department of Health 2022).

2.2.3 | Types of Settings

We included health professionals working in primary healthcare settings. For the purpose of this review, we defined primary care settings as, health services that are provided in the community, including general practices, community health centers, and allied health practices. It is differentiated from secondary healthcare delivered by specialists, where a referral is usually required, and tertiary care delivered in hospitals (Commonwealth of Australia Department of Health 2022; Health Service Executive 2023).

2.2.4 | Engagement in Research

We defined research engagement as an active partnership in the research process, ranging from understanding, influencing and applying evidence to actively participating in the production and translation of research (Frank et al. 2020; Jull et al. 2019; Slade, Philip, and Morris 2018). This review focuses on the aspect of understanding the experiences of health professionals through their active participation in research activities.

2.3 | Search Strategy

We conducted an electronic search (February 13, 2023 and updated search June 11, 2024) of databases CINAHL (EBSCOhost), Medline (Ovid), and SCOPUS using identified keywords and MESH terms (full search terms shown in Data S1). With the expertise of a senior librarian, search terms related to primary healthcare professionals, research engagement and experiences, and barriers and enablers were created and combined in the final search. The search was conducted by one review author (MM), and the results were uploaded to the Covidence systematic review software for screening. Duplicates were removed automatically by the Covidence software and checked manually. Two review authors (MM & IS) independently screened titles and abstracts for potentially eligible trials based on a predetermined checklist of inclusion criteria. The full text of potentially eligible trials was retrieved and independently assessed by the same two review authors to determine eligibility.

2.4 | Methodological Quality Assessment

We used the Joanna Briggs Institute Critical Appraisal for Checklist for Qualitative Research assessment tool to examine the methodological quality of the included studies. The checklist includes 10 questions, including questions about the congruity among the research methodology, the research question, data collection, data analysis and the interpretation of the results, and questions addressing the researchers' statement culturally or theoretically, the researchers' influence on the study, adequate representation of the participants' voices, ethical approval and a logical conclusion from the data (Lockwood, Munn, and Porritt 2015). The answer options to each question in the checklist are: "yes," "no," "unclear," or "not applicable." Two review authors (MM & IS) independently assessed each article. Agreement was achieved by consensus or by consulting a third review author (PM) in the case of disagreement.

2.5 | Data Extraction

One review author (MM) performed data extraction independently to collect relevant information from all the included studies. We extracted primary data, as well as the individual authors' conceptual interpretations, in the synthesis. A second review author (IS) randomly selected 10% of the included articles and independently extracted the data. Characteristics of descriptive data included author, study year, country of study, health setting, study design, participants' profession, and participant numbers. Characteristics of the outcomes that outlined either defining the experiences, barriers, and enablers of engagement in research or contributing to people's understanding were extracted.

2.6 | Synthesis

Data were thematically synthesized using the first two of three steps of the method described by Thomas and Harden: (1) Relevant qualitative text data were extracted from included articles (results, table, figures, and [Supporting Information](#)) and imported into Microsoft Excel; the findings were separated and organized, with one text block per row. Text blocks were then

initially line-by-line coded and where relevant text blocks were separated into multiple rows. (2) Initial codes were collated into common themes via iterative discussion involving all authors. (3) While we did not generate new interpretive constructs, as described by Thomas and Harden, to address our research questions we used the codes from step two to generate analytic interpretations in the form of barriers and enablers (Thomas and Harden 2008).

2.7 | Research Team and Reflexivity

One researcher (MM) the lead author, clinician and PhD student with an interest in improving research in primary healthcare. The remaining authors are physiotherapists and experienced qualitative researchers with extensive knowledge in qualitative research methods, which has helped in the analysis and interpretation of the findings from a professional perspective. Our position within the healthcare system affords a unique vantage point from which to assess the applicability and relevance of research findings. The research team's diverse academic training and clinical experiences in the healthcare system helped to promote reflexivity throughout the project.

2.8 | Confidence in Evidence

We used the GRADE-CERQual to assess the Confidence in the Evidence from Reviews of Qualitative research approach to examine the overall confidence of the evidence included to address our aims (Lewin et al. 2015). To determine the confidence of each subtheme, we assess according to the quality domain (i) methodological limitations, which evaluates any methodological concerns in the primary studies contributing to the review finding, (ii) relevance to the review question, which evaluates the applicability of primary study data to the context specified in the review question, (iii) coherence, which evaluates the fit between the primary study's data and the review finding it contributes to, and (iv) adequacy of the data, which evaluates the richness and quantity of primary study data for each review finding as either, "no or very minor," "minor," "moderate," and "serious concerns." An overall judgment for confidence in each review finding of "high," "moderate," or "low" was determined based on an evaluation of the four components by one review author (MM) and checked by a second (IS). Discrepancies were resolved through discussion until a consensus was reached. Otherwise, a third author (PM) was consulted to adjudicate.

3 | Results

3.1 | Study Selection

A total of 5150 studies were identified in the literature search of the CINAHL (EBSCOhost), Medline (Ovid), and SCOPUS databases. After duplicate removal, 4351 titles and abstracts were screened based on the inclusion criteria, resulting in 4240 studies being excluded. One hundred and eleven full-text articles were screened and 92 were excluded. An updated search identified 628 studies, and after duplicate removal, 543 were excluded. The final synthesis included 19 studies, all in the English language (Figure 1).

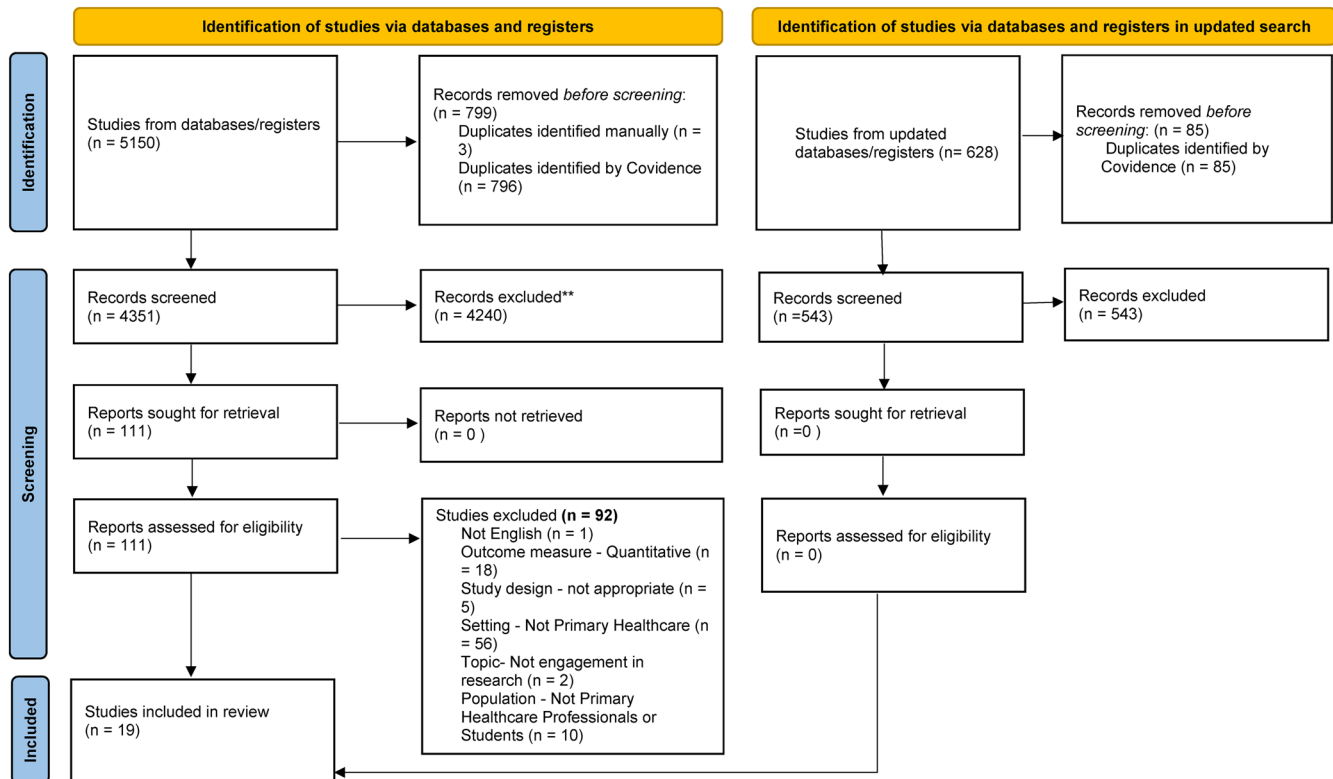


FIGURE 1 | PRISMA flow diagram summarizing results of the search, screening, and selection processes.

3.2 | Study Characteristics

The primary healthcare professionals included family physicians (1/19) ($n=77$), family doctors (1/19) ($n=21$), general practitioners (8/19) ($n=436$), community pharmacists (4/19) ($n=292$), practice nurses (2/19) ($n=70$), occupational therapists (1/19) ($n=28$), dentists ($n=21$), clinical psychologists (2/19) ($n=36$), and a psychiatrist ($n=1$).

Methods for data collection included online surveys using open-ended questions ($n=3$), focus groups ($n=6$), a panel discussion ($n=1$), semi-structured interviews ($n=5$), and interviews either face-to-face or via telephone ($n=3$), and a combination of semi-structured interviews and focus groups ($n=1$).

The geographical scope of the included studies was Australia, Canada, England, Germany, Netherlands, Norway, Sub-Saharan Africa, Sweden, the United Kingdom, the United States, the East Mediterranean region, and French regions. A summary of the characteristics and findings of the included studies is provided in Table 1.

3.3 | Quality Assessment

A summary of the methodological quality assessment is provided in Data S2. All papers clearly stated the congruity between research methodology and data collection, data analysis and the interpretation of results. Participants' voices and logical conclusions from the data were also clearly stated and justified in all studies. Questions that scored infrequently included statements

culturally or theoretically and the researchers' influence on the study.

3.4 | Syntheses

We found 5 themes and 14 subthemes; two main themes (individual positive attitudes and scholarly environment) were enablers, and three (individual negative attitude, unconducive environment, and system constraints) were barriers. Under the two enabler themes, we categorized seven subthemes (personal interest, an interest in scientific inquiry, perceived benefits to the patient, practice or profession, support from mentors or networks, administration support, effective collaboration pro-research environment). Under the three barrier themes, we also categorized seven subthemes (lack of administration, lack of mentorship, lack of confidence, limited training and knowledge, perception they are removed from research, perceived value to patient, practice or profession and workload and time constraints). Figure 2 demonstrates the interaction of the themes and subthemes with research engagement.

3.5 | Enablers

3.5.1 | Theme 1: Individual Positive Attitudes: the Desired Attributes of the Health Professional That Enable Engagement

This theme includes the identified subthemes: "personal interest," an "interest in scientific inquiry," and the "perceived benefits to the patient, practice, or profession" (Table 2).

TABLE 1 | Characteristics of included studies.

Author	Setting	Profession	Participants	Data collection
Ameh et al. 2022	Sub-Saharan Africa	Family physician	$n = 77$	Online cross-sectional survey with open-ended questions
Armour, Brilliant, and Krass 2007	United Kingdom	Community pharmacists	$n = 11$	Focus groups
Askew, Schluter, and Claravino 2008	Australia	General Practitioners	$n = 18$	Semi-structured interviews
Cadwallader et al. 2014	French regions (North, Centre West, Centre East)	General practitioners	$n = 17$	Focus groups
Campbell et al. 2018	Canada	Community pharmacists	$n = 11$	Semi-structured interviews
Davies et al. 2002	United Kingdom	Practice nurse	$n = 55$	Focus groups
Di Bona et al. 2017	United Kingdom	Occupational therapists	$n = 28$	Focus groups
Frisk et al. 2019	Sweden	Community pharmacists	$n = 18$	Semi-structured interviews and focus group
Halvorsen et al. 2020	Norway	Clinical psychologists and psychiatrists	Clinical psychologists ($n = 11$); psychiatrists ($n = 1$)	Online survey open-ended questions
Hange et al. 2015	Sweden	Nurses or general practitioners	($n = 15$ nurses GPs $n = 13$)	Focus groups
Hopper, Morris, and Tickle 2011	England	Dentists	$n = 21$	Semi-structured Interviews
Hummers-Pradier et al. 2008	Germany	General practitioners	$n = 21$	Interviews were performed by telephone ($n = 12$) and face-to-face ($n = 9$)
Kaner, Haighton, and McAvoy 1998	United Kingdom	General practitioners	$n = 269$	Telephone interviews
Kuipers et al. 2019	Netherlands	Community pharmacists	$n = 252$	Online survey open-ended questions
Plane et al. 1998	United States	General practitioners	$n = 8$	Focus groups
Rosemann and Szecsenyi 2004	Germany	General practitioners	$n = 76$	Telephone interviews
Stewart, Chambless, and Sitrman 2012	United states	Psychologists	$n = 25$	Semi-structured interviews
Stocks et al. 2004	United Kingdom	General practitioners	$n = 14$	Semi-structured interviews
Yakubu et al. 2018	North America and Africa	Family doctors	$n = 21$	Panel discussion

Seven studies highlighted how *Personal interest* and internal motivation have assisted with involvement and facilitated research activity (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Di Bona et al. 2017; Frisk et al. 2019; Halvorsen et al. 2020; Kaner, Haighton, and McAvoy 1998; Yakubu et al. 2018). Participating in research was described using

adjectives including “good,” “enjoyable,” “stimulating,” “interesting,” and “exciting,” and participating in projects delivers the opportunity to provide services of perceived value for the individual (Di Bona et al. 2017; Halvorsen et al. 2020) and can be seen as a welcome break from clinical duties (Yakubu et al. 2018).

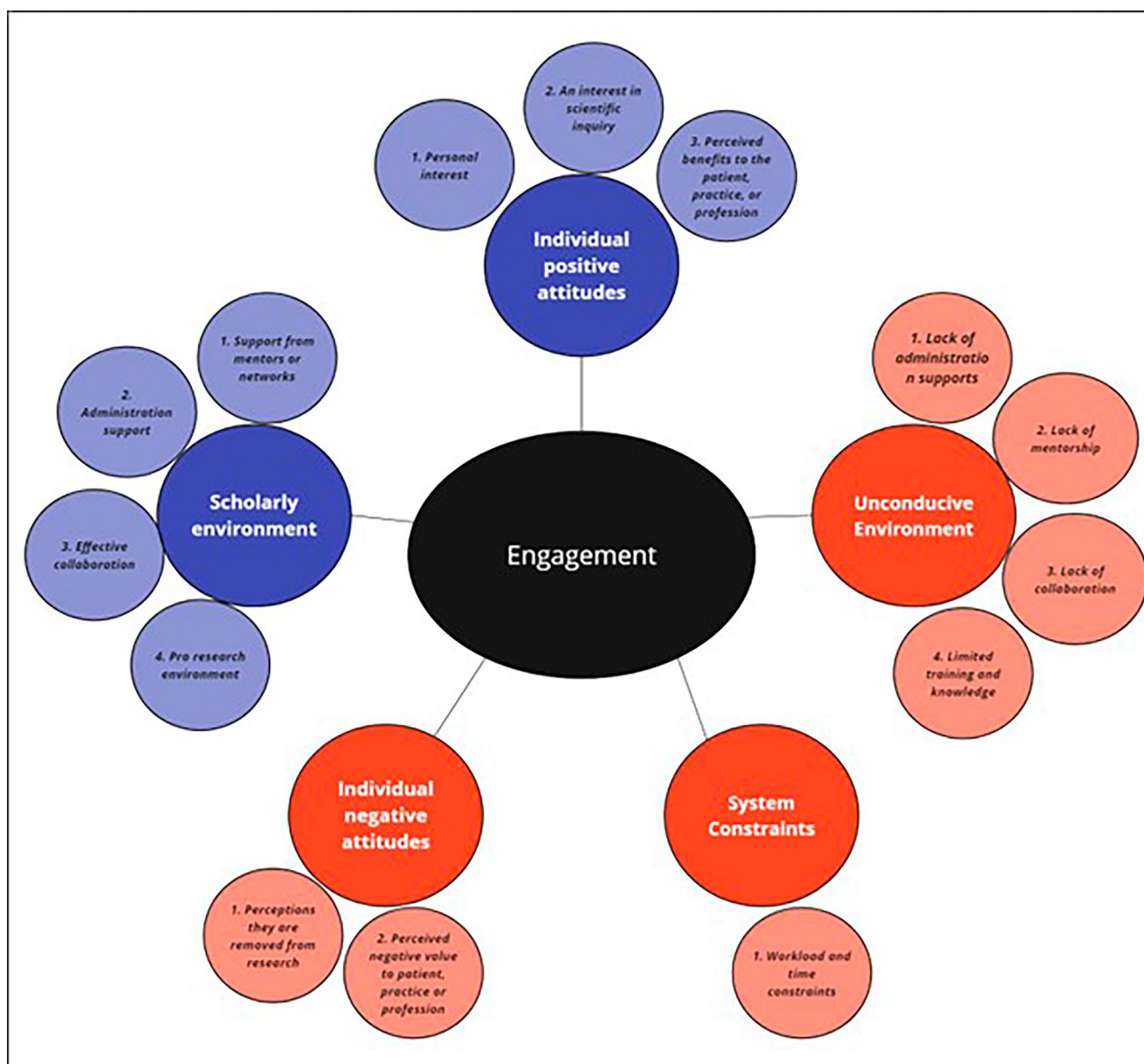


FIGURE 2 | Content analysis—the interaction of enablers and barriers with engagement.

An *interest in scientific inquiry* as an enabler of health research engagement was identified in five studies (Ameh et al. 2022; Di Bona et al. 2017; Halvorsen et al. 2020; Hange et al. 2015; Stewart, Chambless, and Sitrman 2012). The identified topics highlighted an interest in the ability to acquire knowledge of the research process, address knowledge gaps, and an aim to find local solutions to community challenges (Ameh et al. 2022; Di Bona et al. 2017; Halvorsen et al. 2020; Hange et al. 2015).

Eight studies highlighted that primary care health research should be acceptable, relevant and an integral part of practice, and perceived as *beneficial to the patient, practice, or profession* (Armour, Brilliant, and Krass 2007; Cadwallader et al. 2014; Campbell et al. 2018; Davies et al. 2002; Frisk et al. 2019; Hopper, Morris, and Tickle 2011; Kuipers et al. 2019; Yakubu et al. 2018). The studies identified that involvement in research

creates professionalism and influences the perception or promotion of the profession in the community (Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Frisk et al. 2019). Increasing promotion and awareness of the importance that health research plays within the profession was reported to assist professionals in their engagement (Armour, Brilliant, and Krass 2007; Cadwallader et al. 2014; Campbell et al. 2018; Yakubu et al. 2018). The studies found that positive attitudes among healthcare professionals toward research stem from perceived outcomes. Current practice has evolved from prior research, and future developments in the profession will be informed by evidence-based care (Armour, Brilliant, and Krass 2007; Campbell et al. 2018). Additional perceived benefits highlighted that research can create services or opportunities that promote future economic benefits or reduce professional isolation (Davies et al. 2002; Hopper, Morris, and Tickle 2011; Kuipers et al. 2019; Yakubu et al. 2018).

TABLE 2 | Illustrative quotes from Theme 1: Individual positive attitudes.

Theme 1	Illustrative quotes
Individual positive attitudes: the desired attributes of the health professional that enable engagement	<i>Subtheme—Personal interest</i> “Occupational therapists mostly expressed positive attitudes towards research involvement. Some spoke with great enthusiasm about how participating in research had given them the opportunity to deliver an intervention they valued.” (Di Bona et al. 2017) “Those who enjoyed research and thought of it as fun had a more favorable disposition towards a blended career in research and clinical practice (Family Doctors).” (Yakubu et al. 2018)
	<i>Subtheme—An interest in scientific inquiry</i> “Many of the clinicians noted positive aspects of research, specifically that it is important for them to know what works. As one clinician explained. There’s part of me that thinks that it makes sense, you would want treatment to have some empirical basis, want people to be helped, some measurement about how and that they are helped, more than an intuitive sense that you are helping people. That’s a positive in that way (Psychologists).” (Stewart, Chambless, and Sitrman 2012)
	<i>Subtheme—Perceived benefits to patient, practice, or profession</i> “To incorporate research into one’s family practice, young (Family doctors) FDs need to see how a regular practice of research can promote the discipline of FM and improve the status of FDs in the world of medicine.” (Yakubu et al. 2018) “Several pharmacists indicated that they became involved in research projects because the research topic was of particular relevance to their patients and or business (Community pharmacists).” (Armour, Brillant, and Krass 2007) “Participants felt that pointing out the relevance and impact of research to medical practice can be a way of making research more attractive to the emerging (Family Doctors).” (Yakubu et al. 2018)

Note: Illustrate quotes are authors conceptual interpretations.

3.5.2 | Theme 2: Scholarly Environment: the Desired Organizational Facilitators That Promotes Research Activity

The second theme consists of support from mentors or networks, administration support, training (skills and knowledge), effective collaboration, and a pro-research environment.

Support from mentors as a positive facilitator, in that the support guidance and leadership or being a mentor, encourages research activity or assists in the pathway of becoming researchers (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Davies et al. 2002; Di Bona et al. 2017; Yakubu et al. 2018). Additionally, a support network from peers, colleagues, and supervisors resulted in inspiration, facilitated research activity, and assisted in maintaining a healthy work-life balance (Ameh et al. 2022).

The need for *administration support* to enable a scholarly environment was emphasized in five studies; this included having the infrastructure to support research, and having access to time, technology, funding, and resources (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Di Bona et al. 2017; Frisk et al. 2019). Administrative or organizational support was highlighted as important for engagement, including managers providing permission to engage in the study, providing training (skills and knowledge) and experience by leading a project or providing training specific to the research project (Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Di Bona et al. 2017). Additional support from managers also included helping researchers prioritize their workload, negotiate specific time for research, and link researchers with departments (Di Bona et al. 2017) or complete administrative tasks (Frisk et al. 2019).

Effective collaboration between stakeholders was described by five studies as a feature of health research engagement (Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Hange et al. 2015; Hummers-Pradier et al. 2008; Kaner, Haighton, and McAvoy 1998). Key features of collaboration included co-operation and communication among stakeholders, clear expectations and goals, and the necessity of collaboration and communication throughout all aspects of the research project (Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Hange et al. 2015; Hummers-Pradier et al. 2008; Kaner, Haighton, and McAvoy 1998).

Five studies emphasized that positive environments or cultures were *pro-research environments* and consisted of peers actively involved or showing an interest (Campbell et al. 2018; Di Bona et al. 2017; Hopper, Morris, and Tickle 2011; Stocks et al. 2004; Yakubu et al. 2018). The identified features of a conducive research culture included demonstrated active interest in research, stimulated by research articles, engaged with research to apply it to clinical practice, promoted their interest to colleagues, and distributed an evidence-based culture (Campbell et al. 2018; Hopper, Morris, and Tickle 2011). This environment should provide a sense of safety, incorporate multiple support networks, and allow the opportunity to share feelings about research involvement and its challenges (Di Bona et al. 2017). Additionally, it should result in a healthy work-life balance

(Yakubu et al. 2018). Table 3 identifies the subthemes and illustrated quotes (Table 3).

3.6 | Barriers

3.6.1 | Theme 3: Individual Negative Attitudes: the Negative Biases and Perceptions That Influence Engagement

This theme includes the identified subthemes of negative perceptions about research and the perceived negative value to the patient, practice, and profession (Table 4).

Eleven studies identified *Perceptions that are removed from research* as a barrier to health research engagement (Ameh et al. 2022; Askew, Schluter, and Claravino 2008; Cadwallader et al. 2014; Campbell et al. 2018; Hopper, Morris, and Tickle 2011; Hummers-Pradier et al. 2008; Plane et al. 1998; Rosemann and Szecsenyi 2004; Stewart, Chambless, and Sitrman 2012; Stocks et al. 2004; Yakubu et al. 2018). The identified topics included personal factors (lacks intrinsic motivation, confidence, interest, and influence), perceived relevance, poor perception, personal difference between stakeholders and personal commitment, and reliance on others to identify and conduct research (Ameh et al. 2022; Askew, Schluter, and Claravino 2008; Campbell et al. 2018; Hummers-Pradier et al. 2008; Plane et al. 1998; Stocks et al. 2004; Yakubu et al. 2018). Negative attitudes included the perception that research is not a part of the primary role of healthcare professionals, it is rather performed by specialists or laboratory workers (Cadwallader et al. 2014; Hummers-Pradier et al. 2008; Plane et al. 1998; Rosemann and Szecsenyi 2004). The negative opinion included that primary healthcare research required additional resources, was not relevant for their patients in the practice, and academics did not understand the practice environment (Cadwallader et al. 2014; Plane et al. 1998; Stewart, Chambless, and Sitrman 2012). Some perceive their contribution as limited to data collection without involvement in study design or management (Cadwallader et al. 2014).

Eight studies assessed the *Perceived negative value to patient, practice and profession* as barriers to health research engagement (Armour, Brilliant, and Krass 2007; Davies et al. 2002; Hange et al. 2015; Hopper, Morris, and Tickle 2011; Hummers-Pradier et al. 2008; Stewart, Chambless, and Sitrman 2012; Stocks et al. 2004; Yakubu et al. 2018). These identified issues include a lack of influence on the study design, restricted inclusion criteria, irrelevant research projects, and that research is too controlled to be generalized to their patients and/or practice (Hange et al. 2015; Hopper, Morris, and Tickle 2011; Hummers-Pradier et al. 2008; Stocks et al. 2004). Additionally, the qualities and intentions of researchers could be perceived negatively, which could influence a professional's engagement with projects.

Research projects are viewed as being not of high quality, undermining clinical practice and an obligation such as something required for certification or career progression, or that previous experiences in research have led them not to be involved after training (Davies et al. 2002; Hopper, Morris, and Tickle 2011; Yakubu et al. 2018). Research conducted in collaboration with

TABLE 3 | Illustrative quotes of Theme 2: Scholarly environment.

Theme 2	Illustrative quotes
Scholarly environment: the desired organizational facilitators that promotes research activity	Subtheme—Support from mentors or networks “Participants thought that forming dedicated research teams with people who have the same scholarly interest within a family practice can help young Family Doctors take up their roles as researchers and clinicians (Family Doctors).” (Yakubu et al. 2018)
	Subtheme—Administration support “Many participants highlighted that access to time, technology, funding, and other resources (such as reference managers, statisticians, and data analysis support or software) were prominent facilitators to conducting research (Family Physician).” (Ameah et al. 2022)
	“While all had management permission to engage in the study, some described additional mechanisms by which managers had facilitated their research involvement. Highlighting its importance to other colleagues and managers and encouraging occupational therapists to prioritise it within their workload, negotiating specific time and linking therapists with their research and development departments, who had subsequently provided further support (Occupational therapists).” (Di Bona et al. 2017)
	Subtheme—Effective collaboration “They felt it was important to establish a relationship between researchers and community pharmacists so that each set of skills is used productively (Community pharmacists).” (Armour, Brilliant, and Krass 2007)
	“The participants lacked continuous contact with the researchers during patient recruitment, which the participants believed resulted in fewer patients being included and decreased motivation to participate (General Practitioners).” (Hange et al. 2015)
	Subtheme—Pro-research environment “Clinicians who were more interested in research were seen as a more positive means of disseminating an evidence-based culture. This cohort of practitioners, who are interested in research, they would feed that to the other dentists they work with, their colleagues (Dentists).” (Hopper, Morris, and Tickle 2011) “Having multiple support networks not limited to researchers, but including the family, peers and senior colleagues, can help the young Family Doctors keep a healthy work–life balance (Family Doctor).” (Yakubu et al. 2018)

Note: Illustrate quotes are authors conceptual interpretations.

TABLE 4 | Illustrative quotes of Theme 3: Individual negative attitudes.

Theme 3	Illustrative quotes
Individual negative attitudes: the negative biases and perceptions that influence engagement	<p>Subtheme—Perceptions they are removed from research</p> <p>“Several participants cited personal factors such as a lack of intrinsic motivation, confidence, or interest in research (Family Physician).” (Ameh et al. 2022)</p> <p>“Personal differences between General Practitioners and academics had led to antipathetic attitudes toward research (General practitioners).” (Stocks et al. 2004)</p> <p>“University research and daily work in family medicine have only little in common, makes no sense because research is dominated by specialists (General Practitioners).” (Rosemann and Szeceenyi 2004)</p> <p>“Research is not part of General Practitioners’ role (‘modern nonsense’) Incompatible with/useless for good patient care (‘it’s my job to heal patients’).” (Hummerts-Pradier et al. 2008)</p> <p>“Main role of General practitioners in research was to collect data rather than being involved in study design or management.” (Cadwallader et al. 2014)</p> <p>“Research to me suggests a particular speciality and technological innovations very far removed from general practice (General Practitioners).” (Cadwallader et al. 2014)</p> <p>“Even if research is relevant in theory, it’s enough steps removed from my practice that I have a hard time feeling it provides a compelling case for treating people in a certain way (Psychologists).” (Stewart, Chambless, and Sitrman 2012)</p> <p>“One of the things academics forget is that we run a business, and part of my making that business work means doing things that make money; and doing your research is not going to make me any money (General Practitioners).” (Plane et al. 1998)</p> <p>Subtheme—Perceived negative value to the patient, practice, or profession</p> <p>“Some Dentists commented that very little of the published dental research was relevant to their clinical practise.” (Hopper, Morris, and Tickle 2011)</p> <p>“Many General practitioners interviewed in this study were either cynical about the value of research or felt it was irrelevant.” (Stocks et al. 2004)</p> <p>“‘Most researchers are corrupt and/or fraudulent’, ‘Researchers serve only their personal interests and careers’ (General Practitioners).” (Hummerts-Pradier et al. 2008)</p> <p>“‘Clinicians often commented that their patients have many comorbid conditions, that are not addressed in randomized controlled trials and that their patients do not fall in “nice and neat” categories and diagnoses (Psychologists).’ (Stewart, Chambless, and Sitrman 2012)</p>

Note: Illustrate quotes are authors conceptual interpretations.

pharmaceutical companies was considered irrelevant, low-quality research or not good for business, resulting in unsustainable economic services (Armour, Brilliant, and Krass 2007; Stocks et al. 2004).

3.6.2 | Theme 4: Unconducive Environment: the Organization Barriers Influencing Engagement

This theme consists of a lack of administration support, a lack of mentorship, a lack of collaboration, and limited training and knowledge (Table 5).

Eight studies identified that a *lack of administration support* from organization/managers and or resources leads to an unconducive environment (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Davies et al. 2002; Di Bona et al. 2017; Frisk et al. 2019; Hange et al. 2015; Hopper, Morris, and Tickle 2011; Kuipers et al. 2019). This lack of administration support (including business partners or employees) resulted from the lack of organizational structure, a lack of protected research time for staff, and work environments that prevented collaboration between colleagues and were less research-focused (Ameh et al. 2022; Armour, Brilliant, and Krass 2007). Non-supportive organizations were described as presenting an environment in which research engagement was more challenging and giving low priority or discouraging attempts to alter clinical practice (Di Bona et al. 2017; Hange et al. 2015; Hopper, Morris, and Tickle 2011). They were also described as non-academic or located in rural institutions (Ameh et al. 2022). One study highlighted the importance of gaining access to supportive resources, such as libraries and computer services, which are provided to those enrolled at a university (Davies et al. 2002).

Two studies highlighted the *lack of mentorship* influencing an unconducive environment. These were described as an existing mentor being too busy, providing inadequate timely feedback, and being more clinically oriented than research-oriented (Ameh et al. 2022; Di Bona et al. 2017).

Three studies identified how a *lack of collaboration* throughout the research process and the lack of follow-up about the outcomes from stakeholders result in an unconducive environment (Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Stocks et al. 2004). The lack of collaboration was also described as a lack of communication, including unclear articulation of the aims and purpose of the research project, and once the project started, the need for regular follow-ups from the research team during and post-research (Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Stocks et al. 2004).

Limited training and knowledge to carry out research as barriers to health research engagement were identified by five studies (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Frisk et al. 2019; Yakubu et al. 2018). Appropriate training and competency in the research process, procedures, or projects were identified as barriers (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Frisk et al. 2019; Yakubu et al. 2018). Increasing research efficiency was deemed important given the busy schedules faced in primary healthcare (Campbell et al. 2018).

3.6.3 | Theme 5: System Constraints: the Challenges of Work Life Balance

The final theme relates to the impact and challenges of work life balance (Table 6).

Thirteen studies highlighted the impact of *workload and time constraints* on the ability to engage in health research (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Campbell et al. 2018; Di Bona et al. 2017; Frisk et al. 2019; Hange et al. 2015; Hummers-Pradier et al. 2008; Kaner, Haighton, and McAvoy 1998; Kuipers et al. 2019; Plane et al. 1998; Rosemann and Szecsenyi 2004; Stocks et al. 2004; Yakubu et al. 2018). Factors identified included competing duties across clinical and work responsibilities, time constraints, a lack of flexibility to participate, and inadequate compensation for time (Ameh et al. 2022; Armour, Brilliant, and Krass 2007; Kuipers et al. 2019). Factors affecting these barriers included overwhelming paperwork, administration tasks, additional requirements of the study, recruitment barriers, and the daily schedule was fully booked (Campbell et al. 2018; Di Bona et al. 2017; Hange et al. 2015; Hummers-Pradier et al. 2008; Kaner, Haighton, and McAvoy 1998; Plane et al. 1998; Rosemann and Szecsenyi 2004; Stocks et al. 2004; Yakubu et al. 2018). Research was also considered time-consuming and required a lot of paperwork (Frisk et al. 2019). Additional factors included the difficulties combining research and practice and achieving a healthy work-life balance (Hummers-Pradier et al. 2008; Stocks et al. 2004; Yakubu et al. 2018).

3.7 | Assessment of Confidence

The GRADE CERQual assessment was applied to the 14 sub-themes, seven were graded as high confidence, and seven were graded as moderate confidence; the summary of the findings and overall confidence assessment of each finding are shown in Data S3.

4 | Discussion

4.1 | Main Findings

Our review offers a comprehensive qualitative analysis of the complexity of health research engagement by identifying the barriers and enablers that influence engagement for primary healthcare professionals. The experiences of primary health professionals were comparable to those of professionals working in other healthcare settings (Borkowski et al. 2016; D'Arrietta et al. 2022). Awareness of these experiences is essential for driving and supporting active participation in the production and translation of research. Our analysis offers greater insight than previous studies and the opportunity for healthcare leaders, managers and organizations to increase efforts to support health professionals. According to our findings, effective engagement depends on health professionals' positive attitudes toward research and its potential to improve health outcomes and organizational performance. Providing support through environmental enablers can address and engage those with negative attitudes toward research.

TABLE 5 | Illustrative quotes of Theme 4: Unconducive environment.

Theme 4	Illustrative quotes
Unconducive environment: the organization barriers influencing engagement	Subtheme—Lack of administration support “According to the participants, research was one of the areas that had less priority, and the current organization was not supporting research (Nurses or General practitioners).” (Hange et al. 2015) “Where support was more ambivalent, research involvement became more challenging (Occupational therapists).” (Di Bona et al. 2017) “Most of the research I’ve done was when I belonged to the University, and I could access the facilities, but it would be difficult if you are not registered for a course. If I did research on my own, I might find it more difficult (Practice nurse).” (Davies et al. 2002)
	Subtheme—Lack of mentorship “If participants cited that they had a mentor, some also noted that their mentors were often too busy to dedicate time to mentoring, the mentors provided feedback and advice that was often delayed, or the mentors were more clinically-oriented than research-oriented (Community pharmacists).” (Ameh et al. 2022)
	Subtheme—Lack of collaboration “To improve communication between academics and practitioners: the aims, long term goals and potential benefit of research projects should be clear, clear and frequent communication during research projects and provide feedback on results of research projects and describe how to apply the outcomes in pharmacy.” (Armour, Brilliant, and Krass 2007)
	Subtheme—Limited training and knowledge “Explaining research specific issues, such as personal data protection issues, to patients was suspected to be particularly difficult (Community pharmacists).” (Frisk et al. 2019) “Issues included, not being fully trained with study procedures and as a consequence, lacking the confidence to recruit patients and forgetting about the study (Community pharmacists).” (Campbell et al. 2018) “Many participants mentioned the lack of general research knowledge, experience, and/or training in research skills, such as determining a research topic, analyzing data, and writing a proposal, as a barrier to conducting research (Family Physician).” (Ameh et al. 2022)

Note: Illustrate quotes are authors conceptual interpretations.

TABLE 6 | Illustrative quotes of Theme 5: System constraints.

Theme 5	Illustrative quotes
System constraints: the challenges of work life balance	<p>Subtheme—Workload and time constraints</p> <p>“Many participants mentioned competing clinical duties and their work or training schedules as being a barrier to conducting research, in addition to general time constraints (Family physician).” (Ameh et al. 2022)</p> <p>“Pharmacists felt they should be adequately compensated for their time, either financially or with replacement pharmacists.” (Armour, Brilliant, and Krass 2007)</p> <p>“Participants indicated that they became easily frustrated with the additional requirements of study orientation, filling out forms and tracking patients (General Practitioners).” (Plane et al. 1998)</p> <p>“Increased workload and its attendant stress was that GPs had begun to prioritize tasks and many had decided that participating in research was a lower priority.” (Kaner, Haighton, and McAvoy 1998)</p> <p>“Achieving a balance between work and family life added to this pressure: I’ve done very little research because I’ve been a busy working GP and been trying [to] maintain a household.” (Stocks et al. 2004)</p>

Note: Illustrate quotes are authors conceptual interpretations.

4.2 | Comparison With Literature

The lack of evidence on the experiences of primary health professionals highlights the importance of our aims, which specifically focus on primary healthcare settings. Unlike previous reviews that included both primary and other health settings without specifically referencing primary healthcare (Borkowski et al. 2016; D’Arrietta et al. 2022).

To promote research engagement among allied health professionals in both primary and other healthcare settings, (Slade, Philip, and Morris 2018) proposed a multifaceted framework encompassing four key themes. The framework was informed by considering the data analyzed under the following domains individuals, organizations and systems. The four themes (1) Regulatory environment, governance and organization structures, (2) Leadership and management buy-in, (3) System, tools, resources and time, and (4) Attributes of individual clinicians, underpin, and inform processes to embed the culture of allied health research into healthcare services (Slade, Philip, and

Morris 2018). The refinement of these themes to suit the specific needs of healthcare professionals and primary settings were identified from our study and informed the development of our five themes.

Previous quantitative studies conducted in primary settings have identified factors that facilitate or are barriers to research involvement for example dedicated time, administration support, and research training (Adler, Gabay, and Yehoshua 2020; Ciemins et al. 2019; Pager, Holden, and Golenko 2012). Our findings are consistent with these results and explores in depth the complexity of health professional experiences from a qualitative analysis, indicating that while health professionals often possess a positive attitude and desire to engage in research, barriers within an unconducive environment or system constraints can prevent them fully participating. Tension exists between prioritizing research and addressing barriers, such as workload, and providing clinical duties for the community. One possible solution to addressing this barrier is by ensuring the quality and relevance of research projects is essential to sustaining a positive attitude, while addressing negative perceptions, irrelevance, and unsustainable economic services is necessary. Consequently, investment in training and knowledge and managing the impact of workload and time constraints is needed to enable professionals to combine research and clinical duties and achieve a healthy work-life balance. Similar findings were identified for example scholarly inquiry, leadership encouragement and a supportive environment by (Scala et al. 2019) in clinical nurses reinforcing our findings, that individual attitudes and providing a scholarly environment can empower health professionals to engage in research activities (Scala et al. 2019).

4.3 | Attributes That Drive Engagement Among Health Professionals

A health professional’s characteristics and attitudes toward research can positively and negatively influence research engagement. Our review highlighted that to drive an individual’s engagement, the research must be of personal interest and connected to the health professional’s motivation. These findings are consistent with previous research aimed at understanding what motivates or engages professionals in research (Scala et al. 2019). Health professionals who possess a positive attitude feel competent in their research capacity, have high expectations of success, and are more likely to take up research despite the barriers (Scala et al. 2019) or are rewarded with dedicated research time over clinical duties (Goldstein et al. 2021).

A positive research environment is safe, incorporates multiple support networks, allows the opportunity to share feelings about research involvement and its challenges, and supports research engagement. Minimizing the tension that exists between requiring permission to prioritize research activity over clinical activities (Cordrey et al. 2022) and misalignment between organization goals and professional goals (Alison, Zafiroopoulos, and Heard 2017). Our review emphasizes that organizational structures, processes, and system designs that advocate engagement through practical and accessible support mechanisms (e.g., administration, mentorship, networking support, and collaboration) are significant facilitators and should be investigated

further. Support via leadership and management plays a key role in facilitating and prioritizing research involvement and creating a scholarly environment. It also enhances visibility and accessibility to research projects within the organization, which can lead to positive reputations, increased awareness and utilization of research findings, while establishing an evidence-based culture and further opportunities for engagement (Newington, Alexander, and Wells 2021). The association between the engagement of professionals and the integration of research into organization structure leads to improved healthcare performance (Boaz et al. 2015).

4.4 | Barriers of Engagement

There is also a need to address the negative perception about the relevance, values, and role research has in primary healthcare and its potential effect on research engagement. The lack of facilitators, for example mentorship, collaboration, training, and knowledge can lead to a negative or uncondusive environment for research engagement. The findings of the review highlighted that there may be internal conflict in prioritizing self-interests and desires in research over clinical work. Similar concerns have been highlighted in previous studies conducted in an allied health professional department at a large NHS Foundation Trust in the United Kingdom (Cordrey et al. 2022). Additionally, non-academic or rural institutions with a limited research focus or unsupportive environments also pose significant barriers to research engagement due to the absence of support networks and collaboration opportunities. Similar findings were identified by Cordrey et al. (2022) when surveying allied health staff working in publicly-funded secondary and tertiary healthcare about building research capacity and culture (Cordrey et al. 2022). Health professionals already have busy clinical workloads, and our study highlighted difficulties in prioritizing research while managing busy clinical workloads.

4.5 | Creating Strategies for Engagement

The findings of our review offers insights for stakeholders to assist in engaging health professionals effectively in research. The findings align favorably with previous research that explored strategies encouraging family physicians to participate in research (Girard et al. 2023). These studies emphasize the importance of integrating research into the work environment, support team and network relationships, and providing necessary training and education (Girard et al. 2023). Addressing the lack of support, for example, mentor availability and feedback, is crucial to minimizing these barriers, as identified in research exploring clinician engagement in community-based health systems (Ciemens et al. 2019). Methods of addressing these barriers within other healthcare settings have involved incentivizing research positions through changes in salary structures, increased rewards, and acknowledgment by colleagues (D'Arrietta et al. 2022).

Government investment acknowledges the critical importance of health professionals' engagement. Establishing partnerships through the national industry research PhD scheme between universities and industry can be used to build the foundation

and expertise to drive research and innovation within primary healthcare (Australian Government Department of Education 2024). Further exploration is required to identify the necessary research networks and schemes to promote engagement (Hanney et al. 2013).

Ensuring accessibility to training, resources, and research competencies is essential, as indicated by our findings and prior studies that examined allied health professionals working within large Australian metropolitan health districts. These studies identified the lack of knowledge, skills and competence as key factors influencing research capacity and motivation to undertake research (Alison, Zafiropoulos, and Heard 2017; D'Arrietta et al. 2022). Early exposure to research training during undergraduate/postgraduate education helps develop the necessary skills and confidence for research engagement. These findings were consistent in community-based health systems in the United States, where not knowing where to start in research was considered a frequent barrier by health professionals who had not participated in research since training (Ciemens et al. 2019). Future research should focus on the evaluation of these strategies to assist in developing guidelines or frameworks.

5 | Limitations

While a comprehensive search strategy consisting of a database search was performed, it is possible that studies were missed due to exclusion of grey literature and rapidly progressing evidence-base. We excluded non-English studies and as such could have missed potentially relevant studies published in other languages. Nevertheless, this study to our knowledge provides a comprehensive overview of the characteristics of studies examining research engagement using high quality processes. The concept of "research engagement" is broad and has no agreed definition. Our definition was chosen to encompass all levels of professional engagement and the deliberate intellectual and practical research activities of health professionals. Other definitions may have captured different aspects of research engagement which could have influenced the included studies and findings of this review. General practitioners were overrepresented in the included studies (52% included general practitioners or family doctors). Therefore, this review's findings may not be generalizable to all health professionals.

5.1 | Future Directions and Clinical Relevance

The findings of this review emphasize the need for a comprehensive strategy to build and sustain research engagement within primary healthcare in the future. An aging population and transition from acute services to the delivery of services in primary care settings highlights the need to develop strategies to improve research engagement among primary care professionals. This review has important implications on how to potentially support research engagement.

Support for healthcare professionals could explore frameworks connecting research teams with universities or clinical academic positions (Cooke et al. 2008; Friesen et al. 2014). The findings should also influence healthcare leaders, managers

and organizations to increase efforts to support health professionals in addressing barriers and promoting research engagement. Leaders should recognize the value of integrating research-active professionals into clinical practice (Cordrey et al. 2022). Their inclusion in other healthcare settings addressed and bridged key enablers and barriers highlighted in our results (Newington, Alexander, and Wells 2021; Olive et al. 2022). Establishing industry-focused research projects requires support from employers while retaining industry employment and salary benefits (Department of Australian Government Department of Education 2024). Implementing dedicated research workloads may enhance the ability to secure funding, promoting further research engagement (Newington, Alexander, and Wells 2021) and the integration of research into practice (Janssen et al. 2016). Strategies proven effective in primary healthcare research include incentives and compensations, peer networks, and affiliation with academic institutions (Girard et al. 2023).

Successful examples include clinical academic positions within NHS trusts in England and Wales, which enhance care quality by bridging clinical and academic skills (Olive et al. 2022). Similar roles in Australian hospitals have shown benefits in skill development and engagement (Flenady et al. 2022).

6 | Conclusion

Primary healthcare professionals encounter various barriers and enablers to engage in research. To address health professionals' engagement, it is necessary to explore the themes of individual, environmental, and system constraints when establishing sustainable strategies in primary healthcare. Health professionals hold positive attitudes toward research engagement and the opportunity to improve health outcomes or business performance. In addition, their perception of irrelevance or negative value must be addressed. Targeted strategies that promote active partnerships (industry, academic, research centers, and health professionals) can foster a scholarly environment, create relevant research opportunities and empower professionals to engage in research. Further research is needed to assess the sustainability of these facilitators and their effectiveness in promoting engagement. Research engagement is essential to ensure high-quality care for the community and overall business performance within primary healthcare settings.

Author Contributions

Mark Matheson: conceptualization, writing – original draft, investigation, methodology, writing – review and editing, project administration, formal analysis, validation, visualization, data curation. **Ian W. Skinner:** methodology, formal analysis, writing – review and editing, validation. **Arianne Vehagen:** methodology, writing – review and editing, supervision, validation. **Sean Mc Auliffe:** writing – review and editing, supervision, methodology. **Peter Malliaras:** supervision, conceptualization, methodology, validation, visualization, writing – review and editing, project administration.

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Ethics Statement

The review did not require an ethical board approval because it did not directly involve humans or animals.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.