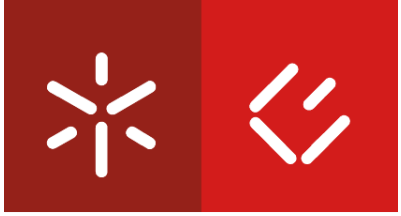
Universidade do Minho
Escola de Economia e Gestão

Liliana Filipa de Carvalho Sousa

Breaking Barriers and Perceptions: A Path Towards the Increase of Health Professionals Research Participation

september of 2024

Breaking Barriers and Perceptions: A Path Towards the Increase of Health Professionals Research Participation
Liliana Filipa de Carvalho Sousa
Uminho | 2024



Universidade do Minho
Escola de Economia e Gestão

Liliana Filipa de Carvalho Sousa

Breaking Barriers and Perceptions: A Path Towards the Increase of Health Professionals Research Participation

Ph.D.Thesis
Doctoral Program in Business Administration

A work made under the supervision of
Professor Ana Cristina de Almeida e Carvalho
and
Professor Carla Isabel Gonçalves de Oliveira

september of 2024

DIREITOS DE AUTOR E CONDIÇÕES DE UTILIZAÇÃO DO TRABALHO POR TERCEIROS

FINANCIAL SUPPORT

This study was supported by Fundação para a Ciência e a Tecnologia (FCT) through a PhD grant (SFRH/BD/144911/2019) financed by Programa Operacional and União Europeia.

Supervisor

Doctor Ana Carvalho, PhD, Associate Professor

Escola de Economia e Gestão (EEG) da Universidade do Minho, Braga, Portugal

Núcleo de Investigação em Políticas Económicas e Empresariais (NIPE), Braga, Portugal

Co-supervisor

Doctor Carla Oliveira, PhD, Affiliated Professor

Instituto de Investigação e Inovação em Saúde da Universidade do Porto (i3S), Porto, Portugal

Instituto de Patologia e Imunologia Molecular da Universidade do Porto (IPATIMUP), Porto, Portugal

Faculdade de Medicina da Universidade do Porto (FMUP), Porto, Portugal

ACKNOWLEDGMENTS/ AGRADECIMENTOS

Gostaria de expressar os meus sinceros agradecimentos a todos aqueles que, com o seu apoio, orientação e colaboração, contribuíram de forma decisiva para a realização desta tese de doutoramento. Sem o vosso envolvimento e dedicação, este trabalho não teria sido possível.

À Ana Carvalho, minha orientadora de tese, pela orientação dedicada, apoio inestimável e comprometimento ao longo deste percurso académico. A sua expertise, incentivo e orientação foram fundamentais para o sucesso desta investigação.

À Carla Oliveira, minha co-orientadora, agradeço profundamente pela inspiração constante e pelo ambiente de aprendizagem colaborativo que me proporciona desde sempre. Foi, e é, uma honra e um privilégio ser orientada por alguém tão exemplar e dedicada, que tanto contribuiu para o meu crescimento profissional e pessoal. A Carla é uma verdadeira força da natureza e inspiração para todos nós.

Quero expressar o meu agradecimento ao grupo ERiC por todo o apoio e pela troca de ideias ao longo desta jornada. Trabalhar lado a lado com cada membro do grupo tem sido verdadeiramente enriquecedor.

Por fim, quero expressar a minha profunda gratidão a todos os profissionais de saúde que participaram neste estudo, pela sua colaboração essencial e dedicação incansável. O vosso compromisso em melhorar a qualidade dos cuidados de saúde, aliado ao vosso envolvimento na investigação, é uma fonte de inspiração. A todos os que procuram constantemente aprimorar o seu trabalho através da ciência e inovação, o meu reconhecimento sincero.

DEDICATION/ DEDICATÓRIA

Dedico esta tese à minha família e amigos, cuja presença e apoio incondicional me deram força ao longo deste percurso. A todos vocês, que me inspiraram e estiveram ao meu lado em cada passo, esta conquista também vos pertence.

À Celina, Silvana e Marta, quero agradecer a amizade e companheirismo ao longo destes anos. Apesar de não compartilharmos a mesma área académica, o apoio constante que recebi de cada uma de vocês foi verdadeiramente valioso. Nos momentos de desafio no mundo académico e além, a vossa amizade e apoio foram insubstituíveis.

À minha Filó, um agradecimento especial por estar sempre na linha da frente. O teu apoio e amizade significam o mundo para mim. Agradeço do fundo do coração por estares presente em todas as fases da minha vida.

Gostaria de expressar a minha gratidão à Ana Sofia, Filipa e Luzia. A vossa amizade e companheirismo e alegria são fundamentais para o meu sucesso.

Quero dedicar um agradecimento especial aos meus pais e irmão. Sem eles, eu jamais teria alcançado este patamar. Todo o meu percurso é profundamente marcado pela vossa presença, apoio e amor incondicional. Cada desafio superado, cada conquista alcançada é, em grande parte, resultado do suporte incrível que recebi da minha família. À Cátia, minha cunhada, obrigada por toda a paciência e apoio em todo este processo.

Ao Nelson, meu melhor amigo e companheiro nesta incrível aventura que é a vida. Agradeço por suportares todos os altos e baixos que esta jornada implicou, por permaneceres sempre ao meu lado e por nunca duvidares de mim, mesmo quando eu própria duvidava. O teu apoio constante é um inestimável, e agradeço por seres a rocha que sustenta a minha jornada. (A nossa aventura está só a começar, e em breve a três). E ao Eddie, o nosso companheiro de 4 patas, por me obrigar a levantar da secretaria e atirar umas bolas ao ar livre.

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

University of Minho School of Economics and Management

Ph.D. in Business Administration

September 2024

Name: Liliana Filipa de Carvalho Sousa

Signature:

Assinado por: **LILIANA FILIPA DE CARVALHO SOUSA**
Num. de Identificação: 14176371
Data: 2024.09.23 14:53:06+01'00'

CHAVE MÓVEL

ACADEMIC PAPERS AND COMMUNICATIONS

Publications in preparation as a result of this thesis:

Title: "Deadly Sins and Heavenly Virtues: A systematic literature review and future research directions on health professionals' research participation"

Authors: Sousa, L[1,2,3,4]; Oliveira, C[3,4,5]; Carvalho, A *[1,2]

[1]Escola de Economia e Gestão - Universidade do Minho; [2]NIPE - Escola de Economia e Gestão - Universidade do Minho; [3]i3S – Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal; [4]Instituto de Patologia e Imunologia Molecular da Universidade do Porto – IPATIMUP; [5]FMUP - Faculdade de Medicina da Universidade do Porto; *Corresponding author

Title: "Health Research participation: The Narrative of Portuguese Health Professionals"

Authors: Sousa, L[1,2,3,4]; Oliveira, C[3,4,5]; Carvalho, A *[1,2]

[1]Escola de Economia e Gestão - Universidade do Minho; [2]NIPE - Escola de Economia e Gestão - Universidade do Minho; [3]i3S – Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal; [4]Instituto de Patologia e Imunologia Molecular da Universidade do Porto – IPATIMUP; [5]FMUP - Faculdade de Medicina da Universidade do Porto; *Corresponding author

Title: "A Path Towards the Increase of Health Professionals Research participation: The Case of the Health Workforce in Portugal"

Authors: Sousa, L[1,2,3,4]; Carvalho, A[1,2]; Oliveira, C*[3,4,5]

[1]Escola de Economia e Gestão - Universidade do Minho; [2]NIPE - Escola de Economia e Gestão - Universidade do Minho; [3]i3S – Instituto de Investigação e Inovação em Saúde, Universidade do Porto, Portugal; [4]Instituto de Patologia e Imunologia Molecular da Universidade do Porto – IPATIMUP; [5]FMUP - Faculdade de Medicina da Universidade do Porto; *Corresponding author

ACADEMIC COMMUNICATIONS

National and International communications:

→ "Breaking Perceptions: How to Effectively Support Health Professionals to Participate in Research Projects". **Poster communication** in the 5th Annual Meeting of the Portuguese Society of Human Genetics. Online. November 2021.

→ "Breaking Perceptions: How to effectively support health professionals to participate in research projects". **Poster communication** in the 5th PhDay: "Break borders and build opportunities" held online at i3S – Instituto de Investigação e Inovação em Saúde. November 2021.

→ "Breaking Perceptions: How to effectively support health professionals to participate in research projects". **Oral communication** at the European Health Management Association 2022 Conference. Brussels, Belgium. June 2022.

→ "Breaking Perceptions: How to effectively support Healthcare Professionals to participate in research projects". **Poster communication** in the European Society of Human Genetics 2023. Glasgow, Scotland. June 2023.

→ "Breaking Perceptions: How to effectively support Healthcare Professionals to participate in research projects". **Oral communication** at the EHMA 2023 Conference. Rome, Italy. June 2023.

→ "Why is clinical research not done by clinician-researchers?" **Oral communication** at the i3S Young Scientists Seminar. Porto, Portugal. September 2023.

→ "Breaking Perceptions: How to effectively support Healthcare Professionals to participate in research projects". **Speed talk presentation** at the i3S 10th Annual Meeting. Póvoa de Varzim, Portugal. November 2023.

RESUMO

Superação de Barreiras e Alteração de Perceções: Um Caminho para Fomentar a Participação dos Profissionais de Saúde na Investigação

Ao longo dos últimos anos, a comunidade de profissionais de saúde envolvidos na investigação em Portugal e na Europa tem sido uma preocupação recorrente. A participação ativa dos profissionais de saúde em projetos de investigação traz uma perspetiva prática e clínica para a investigação básica. Apesar das evidências claras que destacam os benefícios de ter profissionais de saúde a liderar e contribuir para projetos de investigação clínica nas instituições e organizações de saúde onde trabalham, a sua participação permanece aquém do ideal. Temos o objetivo de compreender melhor os desafios que os profissionais de saúde enfrentam ou o apoio que encontram para se envolverem com sucesso em investigação, como percecionam o apoio organizacional e como esta perceção afeta o envolvimento em investigação.

Neste projeto, procuramos proporcionar uma compreensão mais aprofundada do impacto que o apoio organizacional tem no envolvimento dos profissionais de saúde em investigação. Além disso, desejamos compreender como apoiá-los de forma eficaz, dentro do seu contexto clínico, no sentido de os incentivar à participação e/ou liderança em projetos de investigação. A metodologia deste estudo avançou com uma integração sistemática de dados quantitativos e qualitativos, através de entrevistas e de um questionário, aplicado para compreender a experiência dos profissionais de saúde portugueses que participam em projetos de investigação, no âmbito das suas organizações de saúde.

Os resultados mostraram que os principais facilitadores destacados pelos profissionais de saúde estão predominantemente relacionados com o domínio pessoal, e as barreiras estão predominante focadas nos domínios organizacionais. Contudo, e considerando o baixo nível de apoio organizacional percebido, os profissionais de saúde em Portugal parecem possuir a resiliência necessária para superar obstáculos. Acreditamos que existe potencial para um grupo mais alargado de profissionais de saúde se envolver em investigação, se as condições apropriadas na organização forem consideradas.

Palavras-chave: Profissionais de saúde; Gestão de Organizações de Saúde; Perceção de Apoio Organizacional; Facilitadores e Barreiras; Participação em Investigação.

ABSTRACT

Breaking Barriers and Perceptions: A Path Towards the Increase of Health Professionals Research participation

Over the past few years, the community of health professionals engaged in research in Portugal and Europe has been a recurrent concern. The active participation of health professionals in research projects brings a practical and clinical perspective to basic research. Despite clear evidence highlighting the benefits of having healthcare professionals lead and contribute to clinical research projects in the institutions and healthcare organizations where they practice, their involvement remains less than optimal. We aim to better understand why health professionals might face challenges or find support in engaging successfully in research, how they perceive organizational support, and how this perception impacts their research participation.

In this project, we aimed to provide a better understanding of the impact that perceived organizational support has on health professionals' research participation. Moreover, we wish to understand how to effectively support them, within their clinical context, towards participation and/or leadership in research projects. The methodology of this research advanced a systematic integration of quantitative and qualitative data, through interviews and a survey questionnaire applied to understand the experience of Portuguese health professional who participate in research projects, within their health organizations.

The results showed that the main enablers highlighted by healthcare professionals are predominantly linked to the personal domain and barriers are mainly present a predominant emphasis on organizational and managerial domains. Despite this, and in light of the low level of perceived organizational support, health professionals in Portugal appear to possess the resilience to overcome obstacles.

We believe that there is potential for a wider range of health professionals to engage with research, if the appropriate conditions in the organization are met.

Key-words: Health Professionals; Health Organizations Management; Perceive Organizational Support; Enablers and Barriers; Research Participation.

INDEX

TABLE INDEX

FIGURES INDEX

ACRONYMS AND ABBREVIATIONS

ACA - Affordable Care Act

ACSS - Administração Central do Sistema de Saúde

DGEEC - Private Non-Profit Institutions

DGS - Direção Geral de Saúde

FCT - Fundação para a Ciência e a Tecnologia

HP - Health Professionals

HRM - Human Resources Management

IPCTN - National Scientific and Technological Potential Survey

ME-MCTES - General Directorate of Statistics for Education and Science

OB-HMR - Organizational Behaviour and Human Resource Management

OE - Ordem dos Enfermeiros

OM - Portuguese Medical Association

POS - Perceived Organizational Support

SEM - Structural Equation Modeling

SET - Social Exchange Theory

SNS - National Health Service (*Serviço Nacional de Saúde*)

SPSS - Statistical Package for Social Science

TSDT - Sindicato dos Técnicos Superiores de Diagnóstico e Terapêutica

"*We're at risk of having two separate worlds that don't interact - the research world and the clinical world*"

- Robert Alpern

CHAPTER 1 – INTRODUCTION

1.1. Contextualization and justification of the topic

Scientific research in areas such as healthcare is nowadays integrated into a complex panorama, requiring and prioritizing the direct involvement of health professionals.

Health professionals, including medical doctors, nurses, allied health professionals, and other health professionals, have a critical role to play in conducting clinical research, in advancing medical knowledge and improving patient care (Hanney et al, 2013). Health professionals, with their expertise and experience in patient care, are well-positioned to identify research questions that are relevant to their patients' needs and can help to design studies that are practical and feasible to conduct in a clinical setting (Pager et al, 2012; Hanney et al, 2013).

The benefits at individual, organizational and societal levels for health professionals that participate or lead research projects, has been shown in previous studies (Wenke et al, 2021). Indeed, this type of practice is directly linked to reduced staff turnover among health professionals, increased productivity and efficiency in patient care, treatment, and diagnosis (Lizarondo et al, 2011; Williams et al, 2015; Boaz et al, 2015).

By participating in research, health professionals can also gain experience in research design, data analysis, and scientific communication. This experience can be valuable for career advancement, as well as for improving the quality of patient care (Babiker et al, 2014; Wenke et al, 2021).

Health professionals who engage in clinical research can help to bridge the gap between research and practice. They can serve as a link between researchers and clinicians, helping to ensure that new knowledge generated from research is translated into clinical practice in a timely and effective manner (Smee, 2002; Nass et al, 2009).

Finally, health professionals who conduct clinical research can contribute to the development of evidence-based guidelines and policies that can improve patient care and outcomes, by generating high-quality evidence (Pager et al, 2012; Hanney et al, 2013; Sashka et al, 2020).

More benefits of health professional's participation in research projects are mentioned regarding impact on research studies, wider research system, clinical practice and at a personal level (Sashka et al, 2020).

Despite the obvious advantages listed above, health professionals' participation in research projects remains sub-optimal (Lander et al, 2010; Deligiannidis, 2015; Traill et al, 2016; Windsor et al, 2017). In previous studies, concerns have been raised about the fluctuating levels of health professionals engaging in research activities. James Wyngaarden highlighted the issue 40 years ago in his article "The Clinical Investigator as an Endangered Species" (1979), emphasizing the need for ongoing attention to this matter. While the situation may vary across regions, recent data from countries such as the United States show that the percentage of medical researchers decreased from 4.7% in 1980 to 1.5% in 2019 (Jain et al, 2019). Similar trends have been reported in countries like Canada, Australia, and New Zealand (Lander et al, 2010; Windsor et al, 2017; Al-Busaidi & Tarr, 2018; Al-Busaidi & Wells, 2017).

Although the decline may not be as pronounced or verifiable in every context, including Portugal, it remains crucial to explore strategies aimed at fostering greater participation of health professionals in research. By identifying potential barriers and opportunities, stakeholders can design targeted interventions and policies to encourage a culture of research within the healthcare community. This, in turn, will help advance healthcare research and improve patient care quality, ultimately benefiting society as a whole

Several limitations of previous studies regarding health professionals' involvement in research projects, are listed below:

- Most previous studies were performed by health professionals interested in their colleagues' involvement in research, and rarely by Organizational Behaviour and Human Resource Management (OB-HMR) scholars, therefore lacking their perspective (Wenke et al, 2020);
- Most previous studies focused exclusively on research careers for medical doctors or nurses, disregarding other categories of health professionals, who perform clinical or non-clinical activities (Borges et al 2010);
- Recent studies on this topic rely on small samples, since they are developed with a low number of clinicians from a single organization, making it inadequate to generalize the results to the health professional's community (Buckley et al, 2000);
- The inconstant terminology and inconsistent definitions are also mentioned as a limitation in previous studies regarding what is considered "a research active individual"; "research

participation" and "engagement in research" (Hanney et al, 2013; Sanders et al, 2021; Daniels et al, 2021);

- Most studies have been developed in UK, USA, Canada or Australia and the specificities of other countries such as Portugal, with a unique national health system and career development system of health professionals, were never considered (Ciemins et al, 2020), to the best of our knowledge

1.2. Healthcare Organization & Healthcare Research

Healthcare Organizations play a pivotal role in ensuring the delivering of high-quality medical services to the population. These organizations encompass a diverse spectrum, ranging from public hospitals and primary care centres to private clinics and specialized medical institutions. The healthcare landscape is characterized by a blend of public and private entities working in tandem to provide comprehensive healthcare services to citizens (Nunes & Ferreira, 2022).

Healthcare Research stands as a dynamic and evolving field that contributes to the advancement of medical knowledge and the improvement of healthcare practices. Renowned research institutions, both academic and clinical, are dedicated to exploring various dimensions of medical science, including disease mechanisms, treatment modalities, and healthcare policies. Collaborative efforts between these institutions, healthcare professionals, and regulatory bodies foster innovation and drive progress in medical research, ultimately enhancing the overall quality of healthcare services (Institute of Medicine (US), 1994; Condell & Begley, (2007).

The evolution of healthcare research is full of historical milestones and transformative developments. One pivotal moment in the medical history occurred in 1537 when the renowned surgeon Ambroise Parè inadvertently conducted the first clinical trial of a novel therapy, marking an accidental yet ground-breaking finding into evidence-based medicine (Bhatt, 2010). Fast forward to the 1960s, a period that witnessed the inception of health services research as a scientific field of inquiry. Academic leaders from a select number of institutions laid the groundwork for the systematic study of crucial questions surrounding access, cost, and quality of care. This era set the stage for a profound understanding of the intricacies of the healthcare system (Bindman, 2013). Over the ensuing decades, traditional health services research has played a pivotal role in shaping healthcare practices. Its contributions extend beyond academia, influencing innovations in healthcare organization, delivery, and policy. Notably, this

body of research has underpinned transformative initiatives such as the Affordable Care Act (ACA), and its enduring legacy continues to fuel the ongoing expansion of the role of health services researchers in shaping the future of healthcare (Zerhouni, 2005).

Also, it is important to highlight that healthcare research in developed and developing countries exhibits notable differences due to variations in resources, infrastructure, priorities, and healthcare systems. The gap in research and development investment between developed and developing regions is substantial (UNESCO, 2005).

Sanyal and Varghese (2007) explain that "all developing countries invest less than 1 per cent of their GDP in R&D activities while almost all developed countries invest more than 1 per cent, while many invest more than 2 per cent and a few invest over 3 per cent" (Sanyal & Varghese, 2007, p.10).

In developed nations, the focus often revolves around advanced technologies, precision medicine, and the management of chronic diseases, reflecting the sophisticated healthcare infrastructure and resources available (Smith et al, 2019). On the other hand, developing countries struggle with challenges such as limited resources, a higher burden of infectious diseases, and the need for cost-effective and scalable interventions to address pressing health issues (Shiffman & Smith, 2007). The disparities in research priorities, infrastructure, and disease profiles necessitate tailored approaches in each context. Moreover, ethical considerations and regulatory frameworks may differ, adding an additional layer of complexity to global health research endeavours (Pratt et al, 2016).

In Portugal, the healthcare system operates through a combination of public, private, and social sectors. The cornerstone of the public system is the National Health Service (SNS – Serviço Nacional de Saúde), which provides accessible and comprehensive healthcare to all Portuguese citizens and legal residents. Funded primarily through taxes, the SNS offers a wide range of services, including primary care, hospital treatments, specialist consultations, medical tests, surgeries, and medications. Primary healthcare is delivered through a network of health centres and clinics, where patients can access general medical care, referrals to specialists, and prescriptions (Nunes & Ferreira, 2022).

In addition to the public sector, the private healthcare sector also plays a role, although its contribution to the treatment of acute, severe, or complex conditions is relatively limited. Private hospitals, clinics, and practitioners offer services on a fee-for-service basis, often covered by private health insurance or schemes like ADSE, which is a special public-sector health insurance scheme that provides additional coverage for civil servants and public employees (Nunes & Ferreira, 2022).

Furthermore, various professional bodies and associations, such as the Portuguese Medical Association (OM – Ordem dos Médicos), Portuguese Nurses Association (OE – Ordem dos Enfermeiros), and the Union of Diagnostic and Therapeutic Technicians (TSDT – Sindicato dos Técnicos Superiores de Diagnóstico e Terapêutica), General Directorate of Health (DGS - Direção-Geral da Saúde), Institute of Legal Medicine and Forensic Sciences (IMLCF - Instituto da Medicina Legal e Ciências Forenses), National Health Agency (ANS - Agência Nacional de Saúde), play a critical role in regulating medical practice and ensuring the quality of healthcare delivery. These organizations, along with others, contribute to the oversight and continuous improvement of healthcare standards across the country.

It is also important to acknowledge the role of the social sector, which includes charitable and nonprofit organizations that complement the SNS by providing healthcare services, particularly in areas like long-term care and support for vulnerable populations. In summary, while the SNS remains the central pillar of healthcare in Portugal, the private and social sectors, alongside various regulatory and professional bodies, contribute to the overall provision of health services in the country (Nunes, 2016). As mentioned before, healthcare research carried out by health professionals has unique characteristics. And in the last decades, there has been remarkable progress in biomedical sciences in the country, with a significant growth in highly qualified human resources, although most of them are non-medical scientists (FCT, 2019).

The National Scientific and Technological Potential Survey (IPCTN) of 2022, shows that the human resources allocated to Research & Development activities in Portugal in 2022 totalled 74.025, of which 59.051 performed researcher functions, values that reflect a growth of 6% and 5%, respectively, compared to the previous year. This survey also reveals that researchers continue to focus on the Higher Education sector 29.763 (50%), and on Companies, 26.456 (45%) (IPCTN, 2022).

However, when we check the expenditure on research and development (€3.236.212 thousand) by execution sector and thematic area, we see that the health theme allocated a total of 580.492 thousand euros, 33% in the Business sector, 48% in Higher Education, 10% in the Government and 9% in the Private non-profit Institutions (DGEEC, 2023). This, aligned with the creation of laboratories of excellence focused on researching crucial topics for Medicine, shows that currently Portuguese health professionals seem to have favourable conditions to establish productive collaborations between clinical practice and healthcare science.

1.3. Health Professionals

As aforementioned, the central role of health professionals working within healthcare organizations to participate in research is unquestionable, due to their privileged position (Hanney et al, 2013). But it is also important to define specifically which health professionals are being considered.

There are several categories within the group of health professionals, with a high number of people involved, this number being composed by medical doctors, nurses, administrators, health assistants, social workers, psychologists, nutritionists, and diagnostic and therapeutic technicians. According to their functions, these professionals perform clinical or non-clinical activities.

The target group of this study are health professionals who exercise clinical activity, such as: medical doctors, nurses, and allied health professionals. As they are in direct contact to patients and clinical cases. This proximity to patients and the involvement in research gives them the possibility to objectively evaluate their practice and be involved in the advancement of their discipline.

i. Medical Doctors

The career of medical doctors in Portugal is structured into various categories and levels, as defined by Decree-Law No. 176/2009. The training of doctors is governed by the attainment of a medical degree and the completion of specialized training. After graduation, physicians must undergo a period of complementary training, which varies in duration depending on the chosen specialty (ACSS, n.d.; Dec-lei n.º 176/2009 de 4 de Agosto).

Doctors can be classified as family doctors, specialists, or consultants, depending on their training and experience. Progression in the career is linked to merit-based criteria, professional experience, and performance evaluation, with continuous education being essential throughout their careers (DGS, n.d.).

The rights and duties of doctors are detailed in the legislation and regulations governing the SNS, ensuring that professionals maintain high standards of quality in providing healthcare to the population (ACSS, n.d.).

ii. Nurses

The Nurse is the professional with scientific, technical and human competences to provide general nursing care to an individual or family, groups and the community, at the levels of primary, secondary and tertiary health care. In Portugal, nursing is a regulated profession that requires a specific educational pathway. Nurses must obtain a Bachelor's degree in Nursing, which typically lasts four

years, from an accredited institution. Following their education, nurses must register with the Portuguese Nurses Association (Ordem dos Enfermeiros) to practice legally. The profession emphasizes a commitment to continuous professional development, with various specialization options available, including critical care, pediatrics, and geriatrics. The regulatory framework also outlines the responsibilities of nurses in providing care, conducting assessments, and implementing treatment plans (DGS, n.d.; ACSS, n.d.; Dec-lei n.º 248/2009 de 22 de setembro).

iii. Allied Health Professionals

The category of Allied Health Professionals includes health professionals whose functions involve the exercise of technical diagnostic and therapeutic activities, namely related to biomedical laboratory sciences, medical imaging and radiotherapy, clinical physiology, therapy and rehabilitation, vision, hearing, oral health, pharmacy, orthoses and public health, being specifically specialized in: Clinical and Public Health Analysis Technician; Pathological Anatomy, Cytology and Thanatology Technician; Audiology Technician; Cardio pneumology Technician; Pharmacy Technician; Physiotherapist focuses; Oral Hygienist; Nuclear Medicine Technician; Neurophysiology Technician; Orthopaedist; Orthoprosthetic; Dental Prosthesis Technician; Radiology; Radiotherapy Technician; Speech Therapist; Occupational Therapist; Environmental health technician. In Portugal, these professionals typically require specific qualifications based on their area of practice, usually involving a Bachelor's degree and, in some cases, further specialization. Allied health professionals must also register with their respective professional associations, which oversee the licensing and regulation of practice standards. Their roles include delivering diagnostic, therapeutic, and preventive services, contributing significantly to patient care and rehabilitation (DGS, n.d.; ACSS, n.d.; Dec-lei n.º 261/93 de 24 de julho).

iv. State of the health workforce in Portugal

The *Social Report* of *May 2023* from the Portuguese National Health Service (SNS), unveiled a cumulative count of 151.379 health professionals within the confines of Portugal. This encompasses medical doctors (32.105), nursing personnel (50.654), along with allied health professionals (9.761), collectively constituting approximately 61% of the comprehensive healthcare labour cohort in Portugal. Evidently, these vocations play a major role in shaping the health field (SNS, 2023).

Statistics provided by the *General Directorate of Statistics for Education and Science* (DGEEC/ME-MCTES) elucidate that women constitute approximately 80% of the health professional workforce. This

data underscores the prevailing trend evident in 2021, wherein women's representation within the medical domain stands at 70%, followed by 83% in nursing and a parallel 83% in the domain of diagnosis and treatment (Fundação Francisco Manuel dos Santos, 2023).

Having a dedicated cadre of healthcare professionals, including doctors, nurses, and allied health professionals, Portugal has made substantial strides in providing quality healthcare services. However, like many countries, Portugal faces challenges such as workforce distribution disparities between urban and rural areas, as well as the need for ongoing professional development and training. Additionally, demographic shifts and evolving healthcare needs underscore the importance of strategic planning to ensure a robust and adaptable workforce capable of meeting the demands of a diverse patient population. Overall, Portugal's health workforce is a cornerstone of its healthcare system, and addressing its strengths and areas for improvement remains essential for delivering high-quality care to the population (Ferrinho et al, 2018).

1.4. Research Participation in Healthcare Settings

The benefits of having health professionals participating in and leading clinical research projects have already been mentioned, but variable terminology and definitions have not yet been explained.

Throughout the literature, it is possible to verify that the term “research participation” regarding health professionals is interpreted broadly. The Australian Research Council states that “research participation is the interaction between researchers and research end-users outside of academia, for the mutually beneficial transfer of knowledge, technologies, methods or resources” (“Australian Research Council—EI 2018 Framework”, 2018, p. 5).

Hanney et al. (2013), in a review of the benefits regarding research participation for healthcare performance, deliberated the set of intellectual and practical activities involved in research participation undertaken by healthcare staff and healthcare services and organizations:

i. Healthcare staff (as individual clinicians and as teams): being involved in actively undertaking research studies; playing an active role within the whole research cycle, including research design and commissioning; undertaking research training for a research degree; playing an active role in research networks, partnerships or collaborations.

ii. Healthcare services and organizations: supporting healthcare staff in the activities outlined in above playing an active role in research networks, partnerships or collaborations, either

internally (within the particular service or organization) or externally (with other organizations and researchers).

Despite the debate in some terms related to the research commitment, the participation activities are "defined along a continuum that analyses and represents non-academic stakeholder activities and interactions with academic researchers. In the continuum of participation, participation may represent an effort to share education and information with the community, but at another point on the continuum, participation may involve shared decision-making throughout the research process" (Sanders et al, 2021, p. 442). The term "engagement" regarding academic research can be divided in: non-participation, symbolic, collaborative or full engagement (Israel et al, 1998; 2008a; Goodman, 2017).

It is important not to confuse the involvement of health professionals in research with the "hired hand" approach. Roth (1966) explains that hired hand research is when individuals have to follow the imposed plan and the tasks assigned to them, in order to achieve the principal researcher's ultimate goal, not participating in the study design and decisions about how to develop the study and what to do with the final results. A very common example of this type of paradigm are health professionals who are recruited only to collect clinical data, without having any other type of participation in the research project.

However, the participation of health professionals in research can and should be much more collaborative regarding "theoretical propositions such as participatory methodologies, knowledge production, engaged scholarship, and integrated knowledge translation" (Daniels et al., 2021, p. 3).

In order to engage health professionals in research with academic researchers, it is important to make collaborative decisions about the research question, study design, how to collect and analyse data, outcome measures, relevance and dissemination of results - in other words, an equal partnership and equal view in the study (Bowen & Graham, 2013). But not every academic researcher and health professional agrees with this notion. In the study of Daniels et al. (2021), the shared decision-making notion was contested, where academic researchers argued that "a study is ultimately their responsibility" and health professionals agreed. Nevertheless, health professionals also mentioned they "feel their clinical perspectives are of equal value to the scientific perspectives of researchers generally, and used to influence the research process, particularly at the formative stage" (Daniels et al., 2021, p. 543; Alison et al, 2017).

Some authors define research participation as "the feeling of positive emotions toward research work; investing personal resources, energy, and time in doing research as a meaningful activity; considering the research workload to be manageable while taking advantage of collaborative, faculty, and institutional support; and having hope that the research work will attract better opportunities in future" (Atibuni et al., 2017 p. 104).

Since our intention is to explore the main enablers, barriers and how the level of perceived organizational support (POS) can influence health professionals' research participation, we decided to adopt the interpretation of research participation as 'engagement in research' mentioned above and concentrated in Hanney et al. (2013) and the Daniels et al. (2021) participation paradigm supported by the Bowen & Graham (2013) approach.

Through the latest National Scientific and Technological Potential Survey (IPCTN), it was possible to verify that both in terms of expenditure and in terms of human resources in Research & Development activities, Portugal recorded the highest values ever in 2022. However, researchers continue to be generally concentrated on the higher education sector (48%) and on the private business sector (46%), while public organizations (4%) and private non-profit institutions (2%) have the lowest number of researchers (IPCTN, 2022).

Public health organizations are part of the group with the lowest number of active researchers, although a vast number of health organizations in Portugal present clinical and translational research development as their objective (IPCTN, 2022).

To establish and implement an effective strategy to engage health professionals in research projects, it is important to identify the associated key enablers and barriers. The literature has uncovered enablers and barriers at the level of organizations, culture, values and behaviours, and the ability to be involved in research (Sashka et al, 2020).

However, these contributions are scattered, raising the need to carry out a systematic literature review on this topic.

1.5. Objectives of the study

To successfully assess the path towards the increase of health professionals research participation, first it is important to understand what are the main barriers and enablers that health professionals face, when engaging in research. Then, what is the organizational support perceived by these health

professionals, and how this perception affects their research participation within the organization. In this case, the participation of health professionals in research is important for the success of health organizations and the perception of organizational support. In fact, when employees realize they are supported by the organization, they generally respond with positive cooperative behaviours, aiming to achieve organizational goals (Chullen et al, 2010).

The main objective of this research study is to understand which variables can enable or hinder health professionals to engage and/or lead of research projects, within healthcare sector entities at national level, and how perceived organizational support (POS) can affect their research participation.

This study proposes, the use of methodological bases for quantitative research, through an online survey questionnaire, as the main tool for collecting information. The quantitative methodology is used to validate some theoretical assumptions associated with: a) identifying barriers and enablers that health professionals face to participate in research; b) measuring the perception of organizational support of health professionals in the organization where they perform their activity; c) assessing how this influences their research participation.

Preparatory to the questionnaire survey, a qualitative study is carried out, through semi-structured interviews with health professionals, for the selection of the main enablers and barriers. This mixed methods approach allows us to address the hypotheses and objectives of this study.

Based on the results obtained, we offer several recommendations to be considered, when healthcare organizations aim to develop strategies to involve healthcare professionals in research.

The presented assessment may broaden specific theoretical perspectives in understanding health professionals' behaviour towards research. The findings from this study provide a valuable theoretical framework that can be used to explain the research participation of health professionals, or the lack thereof, in light of Social Exchange Theory (SET). It is important to note that this study aims to analyse the phenomenon in accordance with this theoretical foundation.

SET is a fundamental framework in sociology and psychology that illuminates the dynamics of social interactions. At its core, it posits that individuals engage in relationships and interactions based on a rational calculation of costs and benefits. According to this theory, people aim to maximize rewards while minimizing costs, striving for a balanced exchange. Reciprocity is a cornerstone, as it implies that actions in a relationship should ideally yield mutual benefits. This theory has proven invaluable in explaining a wide array of social phenomena, from interpersonal relationships to economic

transactions, shedding light on the intricacies of human behaviour in various social contexts (Homans, 1958).

This study aspires to yield a substantive contribution to the advancement of health professionals actively engaged in research. More specifically, it aims to dissect the inherent capacity of human resource management practices in strategically reinforcing research participation within the purview of Portuguese public health organizations. Moreover, the anticipated outcome entails a broadening of insights within a twofold prism that profoundly impacts our society—firstly, from the standpoint of health professionals, and secondly, from the vantage point of healthcare organizational management.

1.6. Structure and organization

This study is organized in six chapters. The first chapter present a broad introduction, covering the background and rationale for the research, main objectives and discussing the guiding framework.

Chapter two presents the theoretical framework. It intends to understand the contextualization of healthcare organizations and healthcare research, the main characters involved, and the research participation in healthcare settings definition. This chapter also explores a systematic literature review on the potential enablers and barriers for health professionals research participation, and the characterization of Perceived Organizational Support (POS) and Social Exchange Theory.

Chapter three presents the methodology employed in this study. This section outlines the specific approaches and techniques utilized to gather and analyse data, providing a clear roadmap for how the research was conducted. It elucidates the rationale behind the chosen methods and justifies why they are the most appropriate tools for addressing the research questions at hand.

Chapter four provides the comprehensive findings and interpretation of the semi-structured interviews conducted with Portuguese health professionals. These interviews served as a crucial step in validating the findings of the systematic literature review, shedding light on the specific enablers and barriers encountered by health professionals in their pursuit of research participation. Additionally, this chapter delves into the outcomes of the questionnaire survey, which focused on assessing the context of the health workforce in Portugal and the path towards the increase of health professionals' research participation.

Lastly, in chapters five and six, we discuss the main key findings of this study linking past research to anticipated managerial implications, theoretical foundations, exploring contributions, and presenting future research perspectives.

CHAPTER 2 - THEORETICAL FRAMEWORK

In order to conduct an empirically based study, it is essential to explore all the variables and mechanisms, and their theoretical synthesis to deeply understand the state of the art of the subject in study. Therefore, this chapter presents a literature review on the specificities of the main barriers and enablers that these health professionals face to successfully engage in research and other variables and theories under study.

2.1. Potential Enablers and Barriers for Health Professional Research participation (a systematic literature review)

To successfully assess the path toward the increase of health professionals' research participation and to reorganize all the dimensions involved, first, it is important to understand what are the main barriers and enablers that health professionals face when engaging in research. Hence this systematic literature review to (i) examine the main barriers and enablers to health professionals engaging in research and (ii) identify current research gaps. A constant comparative technique was applied to identify dominant themes, which were integrated to create a conceptual model.

This systematic literature review followed a clear and defined protocol with specific inclusion and exclusion criteria. It is a comprehensive, transparent search conducted over multiple databases and grey literature that can be replicated and reproduced by other researchers (Dewey & Drahota, 2016). The potential enablers and barriers to the involvement of health professionals in research, identified through this systematic literature review, were considered, analysed, and synthesized within three main determinants: Individual; Managerial; and Organizational and Cultural.

i. Search Strategy and Selection Criteria

The electronic databases Pubmed, Web of Science, and Scopus were searched for publications where the assertions were based on empirical evidence or practical experience. For the purpose of this review, the term Health Professional could be defined as doctor, nurse, diagnostic and therapeutic technician, allied health professional, or other MeSH terms considered. Other key search terms using explosions and combinations such as healthcare research, participation, barriers, and enablers were considered (table 1).

Table 1- Search terms used in the systematic literature review

Databases: Pubmed, Scopus, and Web of Science **Time Frame:** 2000-2023 (Last updated April 30, 2023) MeSH terms considered	Health Professional; Health Personnel; NHS Staff; Clinician; Doctor; Nurse; General Practitioner; Diagnostic Therapeutic Technicians; Allied Health Professional;
	Research; Healthcare Research; Health Research;
	Participation; Engage; Involve; Contribute; Design; Codesign; Co-Design; Conduct; Produce;
	Barrier; Enabler; Facilitator; Motivation; Obstacle; Challenge;

Databases were searched within a specific time period starting in 2000, with a last update on April 30, 2023. Table 2 lists the inclusion and exclusion criteria for this systematic literature review that were established before the electronic databases search. Studies were included if based on empirical evidence or practical experience, with full text in the English language. Commentaries, editorials, opinion pieces without direct reference to empirical evidence or practical experience, and conference abstracts were not included.

The exclusion of studies and articles conducted in developing countries was a deliberate choice aimed at fostering a nuanced comprehension of research outcomes within distinct contextual settings. This approach guarantees that the conclusions derived from the systematic literature review are pertinent, adaptable, and attuned to the distinctive challenges and opportunities encountered in developing countries.

A total of 1,981 identified articles were imported into the Endnote software from Clarivate and followed the flow diagram of the different phases of the systematic search and review based on PRISMA (Fig. 1). After screening the titles/abstracts and eliminating duplicates, 1,695 articles were excluded due to duplication or irrelevance, and 286 documents remained for further evaluation to determine their eligibility.

Table 2- Inclusion and exclusion criteria for studies screening. Legend: HP=health professionals

Title and abstract screening	**Inclusion**	**Exclusion**
Topic	Articles which: • Focus on methods or approaches to the participation of HP in the prioritization, design, or conduct of research studies or evaluations of healthcare or improvement interventions; • Focus on the barriers and enablers to HP research participation; • Focus on formal schemes such as research fellowship programs; • Study elaborated in developed countries;	Articles which: • Focus on the involvement of HP as participants in research, but where they are not actively involved in its prioritization, design, or conduct; • Focus on the involvement of HP solely in the delivery of an intervention to be evaluated; • Focus on patient recruitment for clinical trials or academic research; • Focus on barriers and enablers of research results application in health organizations; • Study elaborated in developing countries;
Language	• English	• Any language other than English
Document type	• Any type of publication where the assertions are based on empirical evidence or practical experience.	• Commentaries, editorials, or opinion pieces without direct reference to empirical evidence or practical experience; • Conference abstracts.
Text availability	• Abstract • Full text	• No abstract available • No full text available
Date of publication	From 2000 onwards	Before 2000

The remaining process was carried out strictly following all exclusion and inclusion criteria, excluding 204 articles that did not meet the appropriate criteria, resulting in a total of 82 articles included for review. However, the reference lists of included studies and previous reviews were also selected as additional relevant articles, adding 19 more included articles to the final list for review of 101 articles (Appendix III).

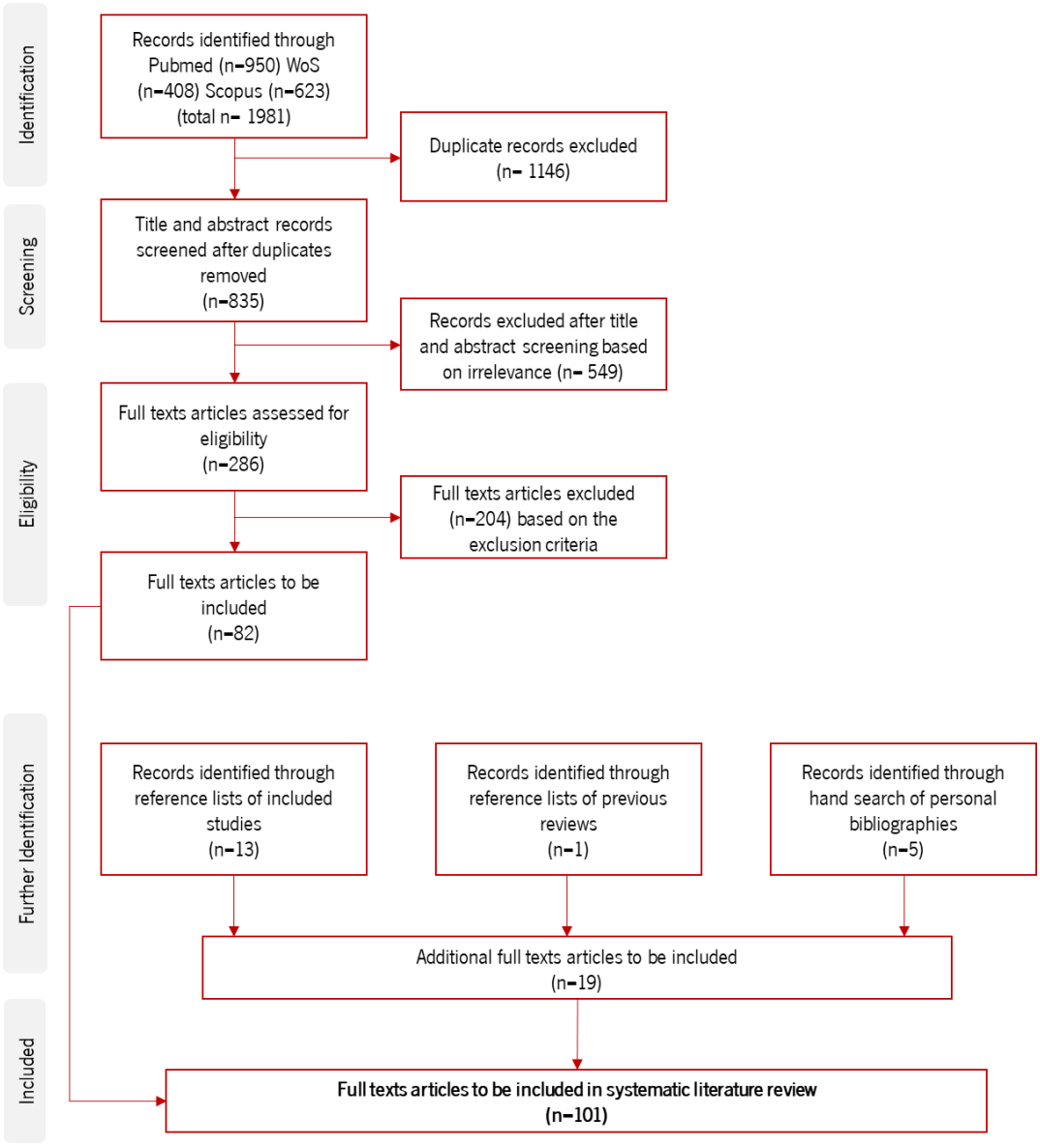


Figure 1- PRISMA flow diagram characterizing the literature review process for the main barriers and enablers for HP research participation.

ii. Outcomes

These results of the review of the 101 articles provide us with an overview of the studies carried out on this topic, by country, year, category of health professionals, and methodology. Also noteworthy is the analysis of the results of items with similar content and meaning, grouped by specific determinants.

In the literature search, we included a time frame from 2000 onwards. The earliest result obtained in our review is from 2001, and the most recent result is from 2023. This demonstrates that the topic in

question has been recurrent and emerging over time (Fig. 2). Furthermore, the frequency of publications presents oscillations, with a peak (10) in the year 2022.

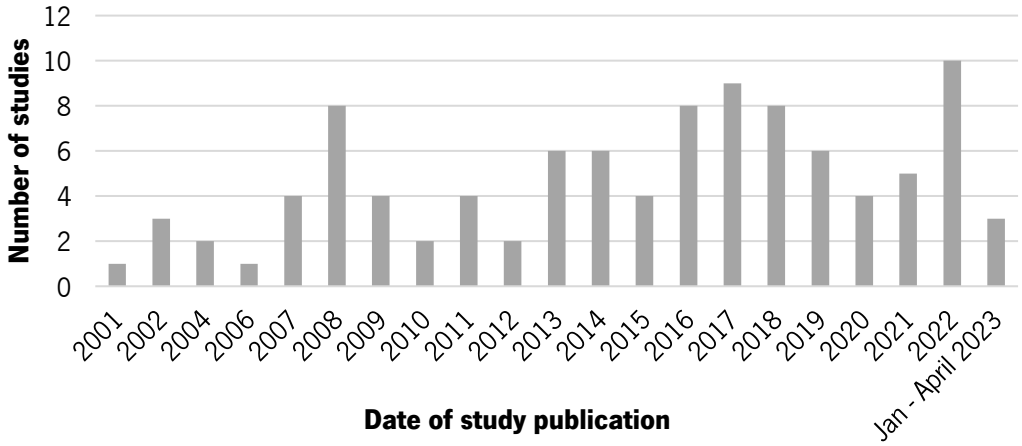


Figure 2- Frequency of articles published between 2000 and April 2023

From figure 3, it is evident that most studies have been developed in Australia (22%), UK (19%), USA (17%) and Canada (13%). The majority of studies performed in Europe are from the UK, with very few studies carried out in other European countries such as Austria, Finland, France, Italy, Switzerland, and The Netherlands (all with 1% each). These results identify 13 European countries as the producers of publications in this area, leaving out many developed countries and their respective specificities.

Figure 3- Cohort studied distribution by country

Fourteen studies focused on all health professionals as a heterogeneous group, fifteen on allied health professionals, thirty-three on nurses, and thirty-nine on medical doctors.

While enablers and barriers to [illegible] were investigated by all 101 reviewed studies, only eight stu[illegible]del in their investigation. These

18

included Self-Determination Theory (SDT), Social Cognitive Career Theory (SCCT) and Professional Identity Formation as an integrated framework, COM-B framework, Vroom's Expectancy Theory, Social Cognitive Theory, combination of TDF and COM-B.

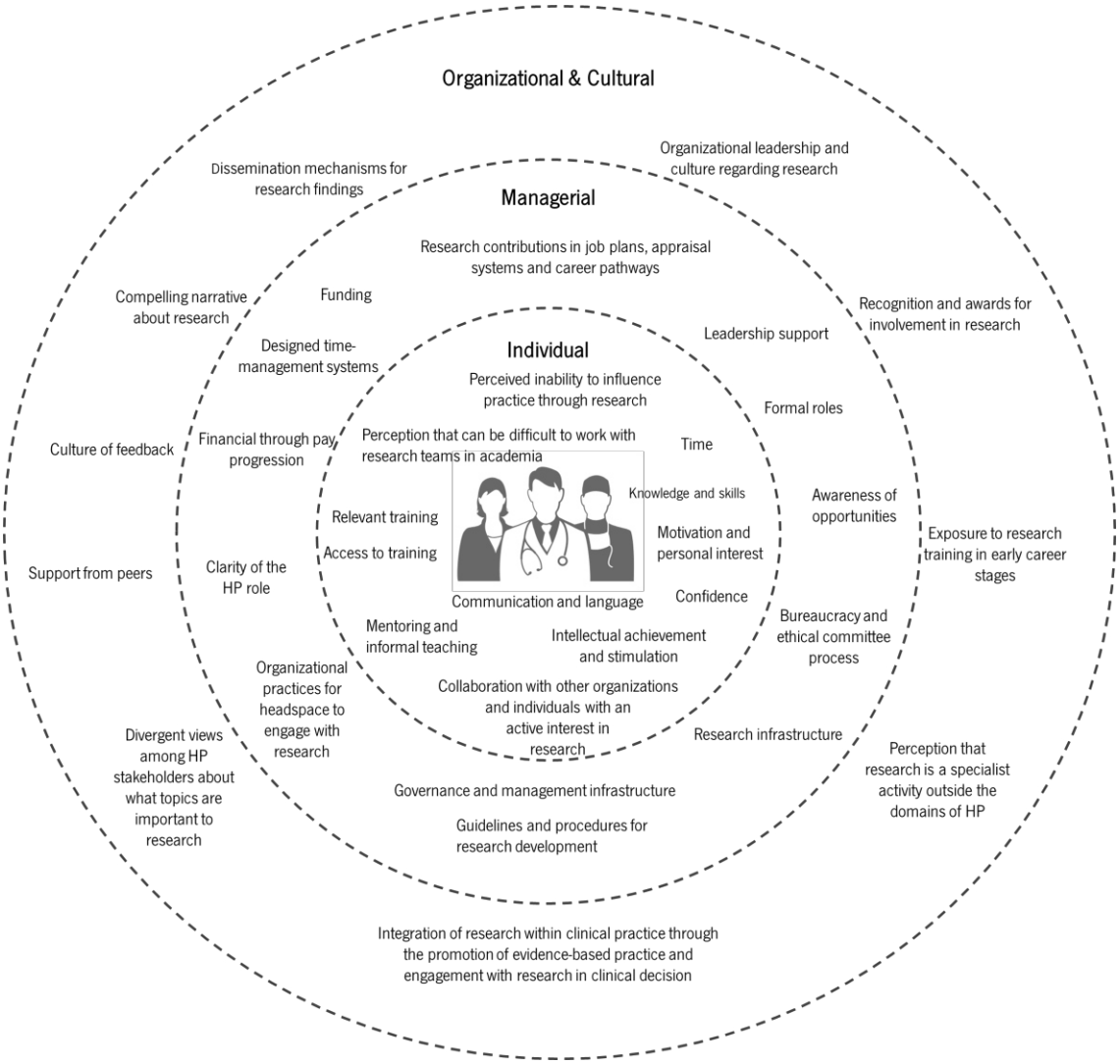
A constant comparative technique was applied to identify dominant themes, which were integrated to create a conceptual model regarding the main barriers and enablers that health professionals face to engage in research, in the individual domain, organizational domain, or the environment and cultural domain.

A total of 34 variables that can be defined as enablers or barriers were extracted from the 101 included studies for review. Through an interactive review process and constant comparison, the variables with similar content and meaning were grouped using the domain headings summarized in Figure 4.

At the **individual level**, we were able to assess that health professionals encounter both barriers and enablers that significantly influence their participation in research activities. One prominent barrier is the constraint of time, often due to the demanding nature of clinical obligations. Additionally, a lack of specific training in research methodology and data analysis may hinder their confidence and ability to conduct research effectively. However, intrinsic factors such as high levels of motivation, a genuine interest in advancing medical knowledge, and strong analytical skills serve as powerful enablers. Moreover, health professionals who actively seek opportunities for collaboration with peers, academic institutions, and research organizations are more likely to overcome barriers and engage in meaningful research. Additionally, ongoing professional development and access to resources, including mentorship and funding, play a pivotal role in nurturing a research-oriented mindset among health professionals. Overall, recognizing and addressing these

individual-level factors is imperative for creating a conducive environment that empowers healthcare practitioners to actively contribute to the research landscape.

Figure 4- Conceptual model regarding the main barriers and enablers that health professionals face to engage in research



At the **managerial level**, health professionals encounter a range of factors that either enable or hinder their involvement in research. Adequate funding emerges as a critical enabler, as it provides the necessary resources for conducting studies, procuring equipment, and supporting research personnel. A well-structured governance and management infrastructure further streamline the research process, ensuring efficient coordination and allocation of resources. Moreover, integrating research contributions into job plans, appraisal systems, and career pathways demonstrates an organizational commitment to valuing and rewarding research participation, motivating health professionals to actively participate in scholarly activities (Bench et al., 2019; Harvey et al., 2016).

Leadership support can be a crucial enabler or barrier, as it fosters a culture that champions research initiatives and provides guidance to aspiring researchers, as well as establishing formal roles dedicated to research within the organization. (O'Brien et al., 2022; Elphinston & Pager, 2015).

Efficiently designed time-management systems can alleviate the challenge of balancing clinical duties with research commitments (French & Stavropoulou, 2016; Slade et al., 2018; Orton et al., 2021).

As mentioned by Rahman et al. (2011, p. 87) "Financial incentives have been shown to be among the most important factors motivating physician involvement in research", such as pay progression tied to research contributions, can further incentivize health professionals to invest time and effort in research activities.

Additionally, implementing practices that allow headspace for professionals to engage with research, coupled with streamlined bureaucratic processes and ethical committee procedures, alleviates administrative burdens and promotes a favourable research environment (Diebolt et al., 2008; Black et al., 2015; Kunhunny et al., 2017). Clarity regarding the role of health professionals in research within the organization reinforces the importance of their contributions (Moore et al., 2012; Roberts et al., 2015).

In summary, it is clear throughout this systematic analysis that a supportive organizational environment, characterized by effective governance, financial backing, and structured pathways, plays a pivotal role in enabling health professionals to actively engage in research (Fudge et al, 2016; Caldwell et al, 2017; Burkinshaw et al, 2022).

At the **organizational and cultural level**, health professionals are influenced by a variety of factors that either impede or enable their participation in research activities. A crucial enabler is the presence of a robust organizational leadership and culture that places a premium on research (Segrott et al., 2006; Kjerholt & Hølge-Hazelton, 2018; Ajjawi et al, 2018). This fosters an environment where research is valued, encouraged, and integrated into the core mission of the healthcare practice. Recognition and awards for involvement in research further incentivize health professionals, providing tangible acknowledgment of their contributions and spurring continued participation (Evans et al., 2013; Elphinston & Pager, 2015; Gilbert et al., 2016).

In addition, effective dissemination mechanisms for research findings are imperative, ensuring that valuable insights reach a wide audience and exert a meaningful impact on clinical practice (Mitchell et al, 2015). A compelling narrative about research, underlining its relevance and potential to enhance patient outcomes, acts as a motivational force, inspiring health professionals to actively participate in scholarly pursuits (Awaisu & Alsalimy, 2015). Simultaneously, a culture of feedback within the

organization encourages continuous improvement and provides vital support for ongoing research efforts (Albers & Sedler, 2004; Rahman et al., 2011; Roberts et al., 2015).

Early exposure to research training during the formative stages of a health professional's career is mentioned as a significant enabler, equipping individuals with the skills and confidence to embark on research. Moreover, support from peers, including mentorship and collaborative opportunities, creates a network of like-minded professionals who can share insights and resources, further strengthening the research ecosystem (Rait et al., 2002; Beasley et al., 2007; Miller et al., 2020; D'Arrietta et al., 2022a).

Nonetheless, certain barriers are also mentioned at this level. For example, the divergent views among stakeholders about what topics are important to research can lead to conflicting priorities and hinder collective efforts (Elphinston & Pager, 2015; Reali et al., 2021). Additionally, the perception that research is a specialized activity distinct from the domains of healthcare practice seems to discourage some professionals from engaging in research activities, as mentioned by Moore et al. (2012, p. 42) "In a discussion with the staff of all grades there was a general recognition that research was regarded as a specialized activity and in some instances, it was seen as the domain of the medical staff".

In contrast, it is recognized that establishing a strong connection between research and clinical decision-making enables health professionals to discern the immediate applicability and influence of research on patient care. This, in turn, cultivates a culture in which research is regarded as a vital and inseparable element of delivering high-quality healthcare (Jensen et al., 2013; Scarsini et al., 2022; Jensen et al., 2023).

iii. Discussion

The synthesis of findings from the selected studies provides valuable insights into the main variables identified as barriers or enablers of health professionals to engage in research.

Numerous studies highlight the significance of the individual domain as a key factor potentially facilitating health professionals' participation in research. Constructs related to personal motivation and opportunities, such as collaboration with other organizations and individuals displaying an active research interest, are consistently mentioned in the majority of studies as enabling factors. Moreover, the nature of the health organization can significantly impact the extent which health professionals engage in research. For instance, public health organizations with direct affiliations to universities and

research institutes tend to foster collaborative environments, thereby serving as facilitators for research involvement (Ref in the appendix-III e.g., Rait et al, 2002; Segrott et al, 2006; etc).

Conversely, this systematic literature review consistently highlights time constraints as the most frequently cited barrier (Ref in the appendix-III e.g., Albers & Sedler, 2004; Salmon et al, 2007; etc).

As mentioned in the Unertl et al. (2018, p. 5) study, "Balancing routine work with the research-related work impacted more than the individual clinician and affected practices as a whole, including administrative staff". The challenge of juggling regular clinical duties with research responsibilities has a significant impact not only on health professionals but also on the overall functioning of the medical practice, including the administrative staff. This suggests that managing both clinical and research duties can often be demanding in the day-to-day practice and may have broader implications for the efficiency and operations of the entire healthcare organization.

Hence, the implementation of effective time management policies within healthcare organizations is of paramount importance for professionals aspiring to engage in research. Moreover, the establishment of formal roles in health organizations provides as a well-defined framework, empowering healthcare professionals to immerse themselves in research. This structure ensures that their contributions hold substantial value, receive adequate support, and harmoniously align with the overarching objectives of the organization (Pager et al., 2012; Bartelink et al., 2019; Morrison et al., 2022; Roberts et al., 2015; Moore et al., 2012; Jansse et al., 2016; Jones et al., 2016; Elphinston & Pager, 2015).

This systematic literature review shows that, although studies regarding barriers and enablers for health professionals' research participation have attracted much attention throughout the years, knowledge is still scattered. Different concepts and variables are used to measure similar realities, and many relevant questions seem yet neglected, for example, establishing which specific barriers and enablers have the greatest impact on health professionals research participation.

Also, there is a lack of studies in European countries, and the specificities of other countries such as Portugal, with a unique national health system and career development system of health professionals, were never considered.

By making sense of this complex topic, this review allows us to observe that the topic would benefit from studies grounded on a wider range of theoretical frameworks, for example in light of the Social Exchange Theory, and the use of quantitative methodologies.

Ultimately, and according to the results obtained, it is important to dissect the potential enhancing function of Human Resource Management practices to strategically reinforce research participation in healthcare organizations.

iv. Conclusions

This systematic review and critical evaluation of the literature identified more than 30 enablers and barriers for the involvement of health professionals in research, the most prominent of which are: time, recognition and awards, organizational support, accessible funding, consideration of research in career appraisal, training, organizational culture, and collaboration with other organizations and individuals with an active research interest.

We were additionally able to analyse this data through a concept model with 3 main domains regarding the main barriers and enablers: Individual domain; Managerial domain; Organizational and cultural domain.

Primarily, barriers commonly arise within the organizational domain, garnering frequent mention in the literature. In contrast, enablers, which predominantly stem from individual motivations, are consistently highlighted throughout the body of literature. This suggests that a significant portion of factors supporting negative outcomes is associated with organizational and managerial aspects, while personal motivation tends to be a recurring theme in discussions about enablers.

This observation hints at the potentially profound impact of organizational policies and human behaviour theories in strategically strengthening research participation within healthcare organizations. By comprehensively understanding the motivational drivers and psychological needs of health professionals, we can craft targeted strategies that resonate with their intrinsic aspirations for professional growth and fulfilment. Drawing from theories like Social Exchange Theory, illuminating the dynamics of reciprocal relationships and the judicious allocation of rewards, offer a roadmap to create mutually beneficial collaborations within healthcare settings. Through a nuanced application of these theories, we stand poised to unlock untapped reservoirs of innovation, dedication, and resilience within the healthcare workforce, boosting research participation to new heights and ultimately advancing the frontiers of medical knowledge and practice.

Moreover, these results will inform future research studies to include a more quantitative analysis regarding the impact of each of these variables and the inclusion of other European countries with different national health system and career development systems.

2.2. Social Exchange Theory

The Social Exchange Theory, a cornerstone in social psychology, provides a comprehensive framework for understanding human interactions and relationships, including Perceived Organizational Support (POS) and its antecedents/consequences. Developed by scholars like George Homans and Peter Blau, this theory posits that individuals engage in social interactions with the expectation of receiving benefits or rewards in return. It operates on the premise that people are inherently rational actors who assess the costs and benefits of their actions before engaging in any social exchange. This theory has far-reaching implications across various domains, shedding light on everything from interpersonal relationships to organizational dynamics and even economic transactions. By examining the underlying principles of reciprocity, trust, and mutual satisfaction, the SET offers valuable insights into the intricacies of human behaviour and the dynamics that shape our social world (Homans, 1958; Thibault & Kelley, 1959).

Homans explains the frustration with the labelling of the theory as "exchange theory." The term suggests a narrow scope, specifically tied to social behaviours resembling straightforward exchanges. However, the author believes that the theory goes beyond this limited perception, the label implies a specialization that doesn't accurately capture the broad applicability of the theory but a form of general behavioural psychology, albeit one applied to a specific set of social situations.

"*As I might have anticipated, my theory therefore got stuck with the name of 'exchange theory.' This was too bad, not only because the theory is not limited to social behaviour that looks like exchange but also because it suggested that the theory was a special kind of theory, whereas it is a general behavioural psychology, admittedly applied to a limited range of social situations*" (Homans, 1984, p. 338).

Cropanzano et al. (2017) describe the SET as a process characterized by an initial action from one party directed towards another. This action is met with a reciprocal attitudinal or behavioural response from the receiving party, culminating in the establishment of a meaningful relationship. In the contemporary corporate environment, these relational dynamics have grown notably intricate.

Rules and Norms of Exchange are the established social guidelines that govern how individuals interact. These norms dictate what is considered acceptable behaviour in a given social context. For instance, in a professional setting, the norm may be to greet colleagues with a handshake. These rules

provide a framework for understanding and interpreting social interactions (Cropanzano & Mitchell, 2005).

Also, provide the structure and guidelines for how resources are exchanged in social interactions. These rules can be explicit, such as formal agreements, or implicit, understood through social cues and norms. For example, in a friendship, the rule may be that one friend takes turns hosting social gatherings (Cook et al., 1983; Molm, 2003).

Reciprocity Rules are a fundamental aspect of Social Exchange Theory. They entail the expectation that when one person receives a favour or benefit from another, they will feel compelled to reciprocate in kind. This reciprocity fosters trust and mutual obligation, which are vital for sustaining healthy social relationships. For example, if a coworker helps you meet a deadline, you may feel inclined to assist them with a future task (Molm, 1994 and 2003; Cropanzano et al., 2017)

Resources of Exchange encompass a wide array of valuable assets that can be traded in social interactions. These resources can be tangible, such as money, gifts, or services, or intangible, like knowledge, emotional support, or time. Recognizing the value and significance of these resources is crucial in understanding the dynamics of exchanges (Cropanzano & Mitchell, 2005).

Social Exchange Relationships encompass the varying degrees of connection individuals have with one another. These relationships range from casual acquaintanceships to close friendships and partnerships. The nature of the relationship significantly impacts the expectations, responsibilities, and patterns of exchange between individuals (Shore & Coyle-Shapiro, 2003; Eisenberger et al., 2004).

Lastly, Social Exchange Theory distinguishes between individual **Transactions and broader Exchange Relationships**. Transactions are discrete instances of resource exchange. They are specific, one-time interactions where resources are traded. In contrast, Exchange Relationships are ongoing, reciprocal interactions that evolve and deepen over time. These relationships involve a series of transactions and are characterized by mutual trust and interdependence (Cropanzano & Mitchell, 2005; Cropanzano et al., 2017).

Understanding these nuanced aspects of Social Exchange Theory provides a comprehensive framework for analysing and interpreting social interactions in various contexts. It sheds light on the

motivations and behaviours that drive individuals to engage with one another and helps explain the dynamics of relationships and exchanges (Bishop, 2000).

Social Exchange Theory serves as a powerful lens through which we can understand the intricate dynamics of human interactions and relationships. By delving into concepts such as reciprocity, resource exchange, and the rules that govern social behaviour, Social Exchange Theory provides a comprehensive framework for comprehending why and how individuals engage with one another and with organizations. It illuminates the role of trust, mutual benefit, and the establishment of social norms in shaping our interactions. Additionally, Social Exchange Theory offers valuable insights into the complexities of social exchange relationships, from casual acquaintanceships to deep-seated partnerships. By exploring these fundamental principles, we gain a deeper appreciation of the underlying motivations that drive our social interactions, ultimately enriching our understanding of human behaviour and relationships (Redmond, 2015).

This theory holds significant relevance in the context of health professionals and their interactions within the healthcare system, suggesting that individuals engage in social interactions based on the anticipation of receiving benefits or rewards in return. Applied to healthcare, it suggests that health professionals, such as doctors, nurses, allied health professionals and other health professionals, engage in their roles with the expectation of achieving certain outcomes or rewards, which may include professional recognition, financial compensation, or personal fulfilment. Moreover, this theory also encompasses the notion of reciprocity, emphasizing the give-and-take dynamic between health professionals and their patients, colleagues, organization, and the broader healthcare system. Understanding these social exchanges can offer valuable insights into the motivations and behaviours of health professionals, ultimately influencing aspects like job satisfaction, performance (Liden et al, 2000), and possibly health professionals research participation.

Social exchange theory has provided a valuable perspective for examining numerous pivotal subjects within organizational behaviour over time. It has been a lens through which some of the most critical issues in this field have been scrutinized (Cropanzano et al, 2017).

Social Exchange Theory provides the theoretical underpinnings for POS.

The connection between the two lies in the reciprocal nature of the relationship. When employees feel supported and valued by their organization, they are more likely to engage in positive social exchanges, such as displaying higher levels of commitment, going above and beyond their job obligations, and

contributing to the overall success of the organization. In turn, when employees engage in these positive behaviours, the organization benefits, creating a mutually reinforcing cycle (Kurtessis et al., 2017).

2.3. Perceived Organizational Support

Perceived Organizational Support (POS) refers to the employee's perception that the organization is concerned with them, and the extent to which the organization values its employees' contributions and cares about their well-being (Eisenberger et al., 1986).

The exploration of this variable commenced in the 1980s, catalysed by Eisenberg and colleagues (1986). Their investigations centred on the perception of organizational support, rooted in the notion that individuals tend to personify the organization where they carry out their roles, viewing the actions of its agents as representative of the organization itself.

The research underscores the significant impact of high levels of POS on various facets. It positively influences employees' attitudes toward the organization, their overall happiness, job satisfaction, as well as performance for both the employee and the organization (Kurtessi et al., 2017; McCarthy et al., 2013; Shoss et al., 2013; Eisenberger & Stinglhamber, 2011).

Moreover, the cultivation of an emotional bond with the organization, stemming from POS, has been evident in both hospital staff and scientists (Steers, 1977). By fostering supportive social networks characterized by strong connections that offer emotional, social, and instrumental backing, managers and administrators within health organizations can profoundly shape their employees' perception of organizational support (Hayton et al., 2012). This, in turn, leads to enhanced feelings of respect and value for health professionals within the organization (Ogbonnaya et al., 2018).

In a study conducted by Chien et al. (2009), it was discerned that the connection between POS and engaging in activities that exceed the standard job requirements, known as extra-role behaviour, was notably more robust than the association between POS and typical job duties (in-role performance). This includes endeavours like honing knowledge and skills that directly enhance healthcare delivery.

While it's imperative for individuals in any organization to fulfil their designated roles effectively, it's equally pivotal, and even advantageous, for them to exhibit behaviours that transcend these roles (Cunha et al, 2006). This is particularly crucial in healthcare settings, where the ability to undertake

tasks that enhance health outcomes often hinges on the allocation of health professionals' time and personal resources.

Antecedents of POS encompass a range of factors that influence an individual's perception of the extent to which their organization values their contributions and cares about their well-being. These antecedents can include various organizational practices and behaviours. For instance, fair treatment, supportive leadership, opportunities for skill development, effective communication, and equitable compensation are all recognized as key antecedents. Additionally, the presence of positive social interactions among colleagues, a positive work environment, and clear organizational policies can also contribute to an enhanced perception of organizational support. Moreover, the alignment of personal values and goals with those of the organization, as well as a history of positive experiences within the work environment, can further bolster an individual's sense of organizational support. Overall, understanding these antecedents provides valuable insights into the factors that shape employees' perceptions of the support they receive from their organization (Wayne et al., 2002; Ling et al., 2006; Dawley et al., 2010).

The perception of organizational support among health professionals is intricately linked to a range of antecedents that shape how these individuals perceive the value attributed by the organization to their contributions and the care devoted to their well-being. Factors such as fair treatment, supportive leadership, opportunities for skill development, effective communication, and equitable compensation are recognized as key elements. Additionally, positive social interactions, a healthy work environment, and clear organizational policies contribute to an enhanced perception of support. In the context of research, identifying barriers and facilitators becomes crucial. Barriers, such as lack of resources, limited time, and a lack of organizational incentive, can undermine POS. Conversely, enablers, such as a culture of innovation, institutional recognition of research, and investment in training, have the potential to strengthen the perception of support. The association of these elements is essential when considering that engaged research can be a direct consequence of POS, where healthcare professionals, perceiving strong organizational support, are more likely to overcome barriers and actively engage in research activities.

The consequences of POS are far-reaching and have profound implications for both individuals and the organization itself. When employees perceive high levels of support from their organization, they are more likely to exhibit greater job satisfaction, organizational commitment, and overall well-being.

This, in turn, leads to reduced turnover intentions and increased retention rates, as employees feel a stronger attachment to the organization. Additionally, individuals with a heightened sense of POS tend to demonstrate higher levels of discretionary effort, going above and beyond their formal job requirements. This extra effort positively impacts organizational performance, productivity, and effectiveness. Moreover, they are also more likely to report lower levels of stress and burnout, resulting in improved mental and physical health outcomes. Overall, the consequences of POS extend beyond individual well-being to encompass broader organizational success and effectiveness (Wayne et al, 2002; Wu, 2006; Lee et al, 2011; Yu et al., 2017).

The literature posits that a heightened sense of obligation to contribute to organizational goals and an escalating anticipation of recognizing and rewarding superior performance stem from POS. These outcomes of POS are of paramount interest to research-oriented health organizations, given that active involvement in research, especially for professionals primarily engaged in clinical activities, is typically viewed as an extra-role endeavour (Eisenberger et al., 1986). Nonetheless, the participation of health professionals in research has been correlated with heightened productivity and efficiency in patient care, treatment, and diagnosis, significantly aiding health organizations in attaining their objectives (Lizarondo et al, 2011; Williams et al, 2015; Boaz et al, 2015). Hence, evaluating the POS experienced by health professionals stands as a valuable instrument in fostering their research participation within their respective organizations.

CHAPTER 3 - METHODOLOGY

3.1. Study Design

As outlined by Freixo (2010), a comprehensive review of existing literature lays the foundation for shaping the research question and determining the suitable methodologies to be employed. The main research questions of this study are: what are the main barriers and enablers that health professionals face to engage in research in their health organization; what is the level of organizational support perceived by these health professionals; and how does this POS affect their research participation within the organization?

To offer a more insightful comprehension of how factors like enablers, barriers, and POS impact the involvement of health professionals in research, and how best to facilitate their active participation, we present the conceptual framework illustrated in Figure 5.

This framework posits that enablers and barriers influencing research participation among health professionals ultimately affect their level of Research participation by influencing their perception of Organizational Support. As a result, Perceived Organizational Support is suggested to act as an intermediary in the relationship between research participation facilitators and barriers, and the level of Research participation exhibited by health professionals.

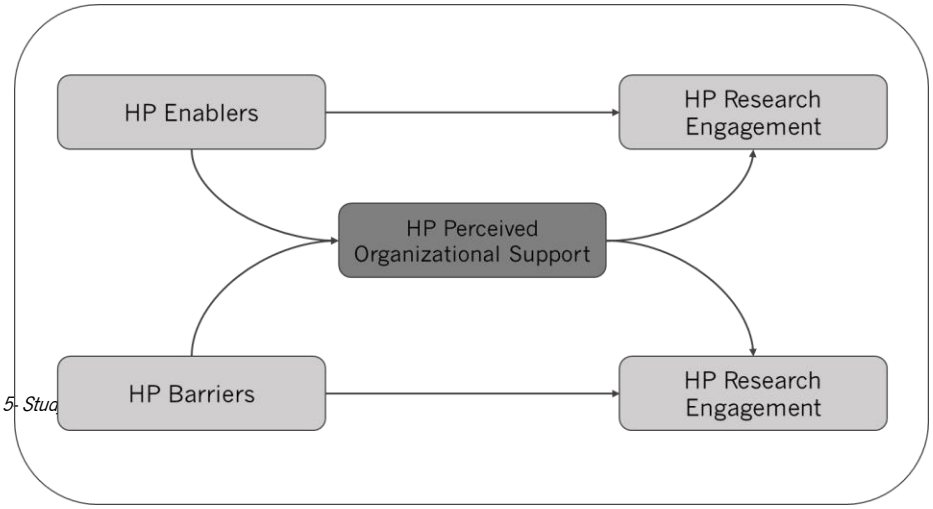


Figure 5- Stud

The following hypotheses are therefore derived:

H1: The main research participation Enablers are positively related to Health Professionals' Research participation.

H2: The main research participation Barriers are negatively related to Health Professionals' Research participation.

H3: The main research participation Enablers are positively related to Health Professionals' POS.

H4: The main research participation Barriers are negatively related to Health Professionals' POS.

H5: Health professionals' POS is positively related to Health professionals' research participation.

H6: POS mediates the relationship between the main research participation Enablers and Research participation.

H7: POS mediates the relationship between the main research participation Barriers and Research participation.

To test the proposed hypotheses, we designed the following objectives:

i. Analyse the main factors that influence health professionals to successfully engage in research projects (barriers and enablers).
ii. Unravel the experience of Portuguese health professionals that may (or may not) be involved in research.
iii. Understand the level of POS among Portuguese health professionals and how can this affect their research participation.
iv. Design a set of HRM practices to strategically reinforce research participation in Portuguese Public Healthcare Organizations.

3.2. Methodological Approach

Due to the increasing complexity of health management, the mixed methods approach allows us to explore different perspectives and unravel the relationships that exist between the intricate layers of our multifaceted research questions (Bowers et al, 2013).

To address our objectives, we propose the following tasks:

a. Assessment of the Portuguese health professionals' experience in the involvement in research and validation of the main barriers and enablers identified in the literature review, through semi-structured interviews;
b. Development of a questionnaire survey to evaluate in Portuguese public health organizations the practical relevance of the: main barriers and enablers identified in the previous task; the perception of organizational support of health professionals in the organization where they perform their clinical activity; research participation.
c. Design a set of recommendations to strategically reinforce research participation in the Portuguese Public Healthcare Organizations, based on the results obtained in the previous tasks.

The main data collection technique used is the questionnaire survey. It is a data collection technique geared toward large-scale studies, which allows us to obtain comparable and generalizable data, that can be submitted to statistical analysis (Freixo, 2010). However, semi-structured interviews with health professionals were used to contribute to the selection of the main enablers and barriers to be included in the questionnaire survey, keeping in mind that the qualitative research interview's main goal is to "gather descriptions of the lifeworld of the interviewee with respect to interpretation of the meaning of the described phenomena" (Kvale, 1996, p. 174).

3.3. Qualitative Study

A number of semi-structured interviews with health professionals were carried out with the goal of understanding the experience of a health professional participating in research projects in Portugal, focusing on what are the main enablers and barriers they face and the position of their organization regarding this theme. The main goal of these semi-structured interviews was to compare the results with the literature described in other countries (since this theme has never been studied in Portugal) and mainly to select the enablers and barriers - adapted to the reality of Portuguese health professionals - that were selected to integrate the survey questionnaire.

We balanced the main contributions of the current literature review with a validation perspective, in order to extract an integrative and global model to evaluate and, consequently, design a set of human resource management recommendations to strategically reinforce research participation in Portuguese healthcare organizations.

Hereafter, this part of the study aimed to answer the following research questions:

a. What is the perceived perspective held by Portuguese health professionals regarding their participation in research activities?

a) Do the barriers and enablers encountered by health professionals in conducting research, as identified in the literature, align with those perceived by health professionals in Portugal?

The twenty-three interviews performed with medical doctors, nurses, and allied health professionals performing clinical activities in Portuguese health organizations (table 3) were conducted predominantly via Zoom meetings, with a few conducted over the phone. The duration of each interview varied, ranging from a minimum of fifteen minutes to a maximum of one hour. Prior consent was obtained from all participants for recording purposes, with the intention of capturing detailed notes and verbatim quotes for the study. Following this, all audio recordings underwent transcription, with particular attention paid to identifying key concepts within individual transcripts. The subsequent step involved subjecting all transcripts to a thorough comparative analysis, enabling the identification of both shared themes and contrasting responses across participants.

The interview guide (appendix I) was structured with open-ended questions, providing respondents the opportunity to freely share their personal experiences. While each interview encompassed consistent

themes, a flexible approach to the interview schedule was adopted, allowing each participant to express their unique narratives. The areas of inquiry covered were: (i) their involvement in research; (ii) the specific scope of their involvement; (iii) reasons for not engaging, if applicable; (iv) their perspective on the importance of research participation for health professionals; (v) their assessment of leadership support; (vi) their emotions towards involvement in research projects; (vii) factors influencing their decision; (viii) the enablers and barriers they identified; and (ix) their organization's stance on this matter.

3.3.1. Sample

The target population under study includes healthcare professionals (medical doctors, nurses, and allied health professionals) working in health organizations in Portugal, specifically focusing on clinically active professionals who may or may not be involved in healthcare research within their organizations. Our qualitative research employed a two-tiered sampling methodology: purposeful sampling followed by snowball sampling. Purposeful sampling allowed us to select participants based on specific criteria essential to our research objectives: all healthcare professionals currently performing clinical activities in Portuguese health organizations, regardless of their involvement in research. We aimed to include participants of any age range, from various regions across Portugal, as long as they were medical doctors, nurses, or allied health professionals. This intentional selection ensured that participants possessed characteristics and experiences directly pertinent to our exploration of health professionals' experiences regarding healthcare research.

Snowball sampling complemented purposeful sampling by leveraging social networks and referrals, enabling us to identify additional participants from across the country.

Informed consent was collected at the beginning of each interview, ensuring that participants were fully aware of their rights and the study's aims. Anonymity for both participants and their organizations were guaranteed throughout the research process.

A total of 23 semi-structured interviews were conducted as part of this qualitative study. The decision to conclude the interview phase was guided by the principle of data saturation, which occurs when new interviews cease to yield substantially new information or insights, indicating a comprehensive understanding of the research topic has been reached within the chosen sample.

3.3.2. Data Analysis

The data analysis for the conducted interviews with health professionals encompassed a systematic and comprehensive approach to extract meaningful insights. Following verbatim transcription, an initial open coding process was applied to identify recurring themes across the nine key areas of inquiry. Each interview was meticulously analyzed to capture nuances related to (i) the extent of health professionals' involvement in research, (ii) the specific focus of their participation, (iii) reasons for non-participation, if applicable, (iv) perceptions on the importance of research participation for health professionals, (v) their evaluation of leadership support, (vi) emotions associated with involvement in research projects, (vii) factors influencing their decision-making, (viii) enablers and barriers identified, and (ix) their organization's stance on research participation. Subsequently, these initial codes were organized into broader themes, enabling a holistic interpretation of the data (Fig. 6).

Constant comparison techniques were employed to refine emerging themes, ensuring a nuanced understanding of health professionals' perspectives and experiences regarding research participation. The analysis aimed to provide rich insights into the multifaceted dynamics surrounding health professionals' involvement in research activities, shedding light on both individual and organizational factors influencing this crucial aspect of professional practice.

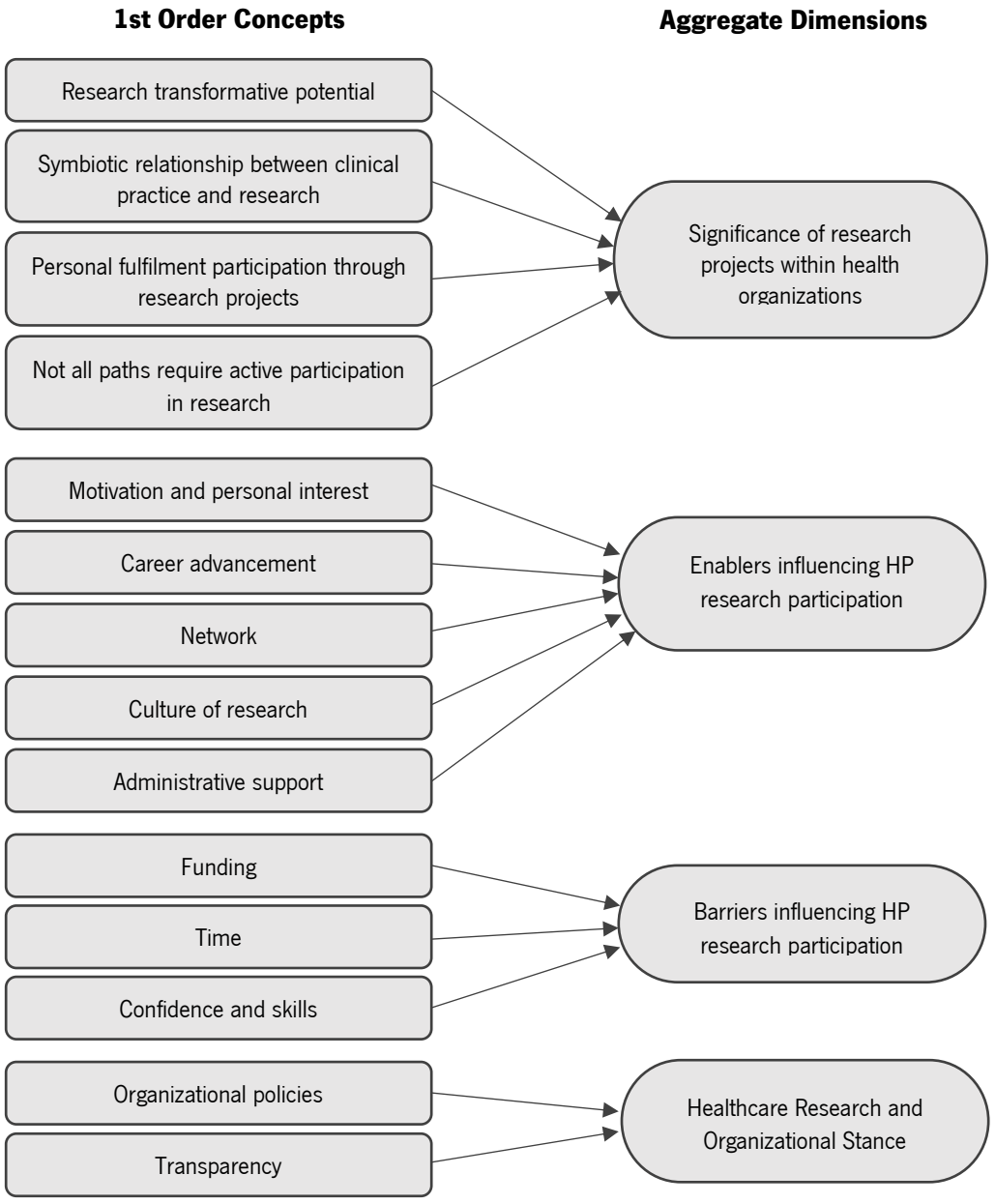


Figure 6- Interviews data structure process

3.4. Quantitative Study

The prominent instrument selected for data collection was a survey questionnaire (appendix II). This questionnaire was preferably distributed through the organization's computerized system. The questionnaire was structured into four parts to assess variables in the conceptual model and gather respondents' sociodemographic data:

1. **Sociodemographic Data:** This section included 10 questions designed to characterize the sample by gender, age, marital status, educational qualifications, professional category, health organization location (north, center, or south), type of health organization (public, private, public-private), and affiliation with research institutes or universities.
2. **Enablers and Barriers:** Respondents assessed the main enablers and barriers identified through literature review and interviews using a Likert scale from 1 (strongly disagree) to 5 (strongly agree).
3. **Perceived Organizational Support (POS):** The POS of healthcare professionals was evaluated using the scale proposed by Eisenberger et al. (1986), again on a scale from 1 (strongly disagree) to 5 (strongly agree).

4. **Research Participation:** This final section focused on the research participation of health professionals, measured through an adapted scale addressing the number of projects they participated in, the percentage of time devoted to research, roles in projects, types of collaborations, and sources of funding.

To ensure clarity and reliability, the questionnaire underwent a preparatory study with 5 individuals from various health professional categories and organizations. This pilot testing facilitated the refinement of statements related to barriers and facilitators.

Following the validation of the final questionnaire, it was distributed digitally via the Qualtrics platform across nine distinct health organizations, with further outreach requests among health professionals. The survey was accessible from January to May 2023, with two dedicated follow-up periods in each organization to enhance participation. This collaborative approach aimed to create a diverse and representative participant pool.

The initiative to distribute the questionnaire to healthcare organizations underwent a rigorous ethical approval process, ensuring adherence to robust data protection standards. Prior to engaging in the study, explicit informed consent was prominently featured at the outset of the questionnaire. This consent was mandatory, and participants were excluded from the study if they chose not to accept it. The careful integration of ethical considerations and the requirement of informed consent underscore the commitment to upholding ethical standards throughout the research endeavour.

3.4.1. Sample

The target population under study includes medical doctors, nurses, and allied health professionals working in health organizations in Portugal, specifically focusing on clinically active professionals who may or may not be involved in healthcare research within their organization. Participants were required to complete the entire questionnaire to ensure comprehensive data collection.

To conduct this quantitative study, collaboration was established with nine public health organizations across diverse regions of the country, including the north, center, south, and islands. The sample was best described as a convenience sample, selected for accessibility rather than statistical representativeness. Outreach efforts included contacting all hospitals listed in the SNS portal; however, some organizations did not respond, while others encountered extensive and complex ethical approval processes that delayed the dissemination of the questionnaire until the data collection period had commenced.

To enhance the reach of the survey and engage a broader audience, the questionnaire was also shared on professional social networks, such as LinkedIn, targeting additional health professionals beyond the nine organizations initially contacted. This collaborative approach aimed to include a diverse range of healthcare professionals active in clinical settings across Portugal.

The final sample comprised medical doctors, nurses, and allied health professionals who participated in the questionnaire survey between January and May 2023. After applying the specified eligibility and exclusion criteria—specifically, the exclusion of incomplete surveys or those with indeterminable answers—a total of 936 validated responses were obtained.

3.4.2. Variables

The variable is the characteristic or property of the object under study. Bryman & Cramer (2003) define an independent variable as the one that produces an effect and the dependent variable as the one that suffers the effect expected by the independent variable. Considering the above, we defined as dependent variable the health professionals' research participation. Research participation was assessed through an adapted scale from previous studies (e.g., Daniels et al., 2021; Ciemins et al., 2020; Australian Research Council—EI 2018 Framework, 2018). As there is no validated scale in the literature and studies that explore this variable use different methodologies (quantitative/qualitative), a scale adapted from information measured in these previous studies was used, focusing on the

number of projects they participate in, percentage of time devoted to research, roles reported in the project, type of collaborations and funding (Daniels et al., 2021; Ciemins et al., 2020; Australian Research Council—EI 2018 Framework, 2018).

The independent variables are the main barriers and enablers that these health professionals face to participate in research. After identifying all possible enablers and barriers through systematic literature review, 10 enablers plus 10 barriers were selected to be part of the questionnaire. This selection process was validated through the preliminary interviews with health professionals. These selected variables were evaluated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

When considering a mediation model, it is the third variable that specifies how the association between the independent and the dependent variable occurs (Bennett, 2000). The mediating variable presents a mechanism through which the independent variable is able to influence the dependent variable (Baron & Kenny, 1986). Health professionals' POS is defined as the mediator variable.

Early research on perceived organizational support by Eisenberger et al. (1986) established it as a one-dimensional construct, creating two scales: a 36-item scale and an 8-item scale. Their scales garnered widespread use due to their strong reliability and singular focus. Subsequent studies often adapted these scales by selecting specific items to suit their research needs, highlighting their robust internal validity. McMillin (1997) expanded on Eisenberger's concept, asserting that organizational support should encompass both emotional support and practical resources like equipment and information. McMillin introduced a 15-item scale to measure these aspects.

Kraimer and Wayne (2004) further nuanced POS, dividing it into three dimensions: adaptive support, career support, and financial support. Their 12-item scale catered specifically to expatriate employees. Ling et al. (2006) also dissected POS into three dimensions: value recognition, job support, and concern for interests, utilizing a 24-item Likert-6 scale for comprehensive measurement. Chen (2006) offered both a four-dimension scale (16 items) and an extensive nine-dimension scale (56 items) for POS. The four-dimension scale assessed emotional, instrumental, superior, and colleague support, while the nine-dimension scale encompassed elements like work support, value, competence, ambition, and various forms of social support.

Yuan (2017) introduced a five-dimension scale for POS, encompassing job support, value recognition, concern for interests, emotional support, and developmental support. This comprehensive scale

featured a total of 23 measurement items. These validated scales have played a crucial role in assessing the multifaceted nature of POS in diverse organizational contexts.

For this study we selected the 8-item scale created by Eisenberger et al. (1986). The decision to select the 8-item scale from Eisenberg (1986) over a longer alternative was grounded in several considerations. Specifically, we employed the adaptation of the Portuguese scale, as studied and validated by Santos and Gonçalves (2013).

Firstly, the scale's recognition and utilization in numerous studies, especially those involving health professionals, underscored its established reliability and validity within relevant contexts. This not only contributes to the credibility of the instrument but also facilitates comparability across studies. Moreover, the choice of a more concise scale aligns with the intention of preventing questionnaire saturation. Given the diverse demands on the participants' time, a shorter scale was deemed more appropriate to enhance survey completion rates and reduce respondent burden.

Additionally, the necessity to include questions specific to research involvement led to the augmentation of the original scale. These additional inquiries were carefully crafted to address the unique aspects of research participation among health professionals. The subsequent validation of these supplementary questions through the obtained results further reinforces the appropriateness of their inclusion, emphasizing the relevance of this tailored approach for capturing nuanced aspects of professional participation in research activities. The POS was evaluated on a scale from 1 (strongly disagree) to 5 (strongly agree).

It is important to highlight that, that a set of sociodemographic variables was also used to characterize the sample and as a form of control in multivariate analyses. This was the first part of the questionnaire and consists on questions that allows the characterization of the sample regarding gender, age, marital status, educational qualifications, professional category, health organization location (north, center or south), type of health organization (public, private, public-private), and association to research institutes and/or universities.

3.4.3. Data Analysis

The collected data was processed and analysed using the Statistical Package for Social Science (SPSS) and SmartPLS 4 software. Several statistical tests were applied to scrutinize the dataset and extract meaningful insights. These included descriptive statistics to summarize the main characteristics of the

variables, linear regression analyses to identify significant predictors of specific outcomes, and cross-tabulation tests to examine relationships between key variables (Chin et al, 2003).

Multiple linear regression is a statistical test designed to ascertain the relative influence of independent variables on a dependent variable (Bryman and Cramer, 2003). Using this statistical method, our goal was to explore the connection between research participation and the key factors that affect health professionals. In particular, we looked into how variables in the personal, managerial, organizational, and cultural domains could impact the link between research participation and the perception of organizational support.

SmartPLS 4 was employed for structural equation modelling (SEM), allowing for a sophisticated examination of the complex relationships among the variables in our study. This powerful tool facilitated a nuanced exploration of the latent constructs and their interdependencies, providing a robust framework for understanding the intricate dynamics revealed by the survey responses.

SEM are a general statistical modelling technique that allows us to analyse complex relationships, in which the dependent variables represent a small number of latent constructions that cannot be directly measured, only inferred from the former. This model describes, using diagrams, a model to analyse simultaneously multiple dependency relationships, including mediating effect (Grace, 2006).

This dual-method approach, combining the cutting-edge capabilities of SmartPLS 4 with the versatile statistical analyses afforded by SPSS, ensured a thorough and rigorous exploration of the questionnaire data. The synergy of these tools allowed us to draw meaningful conclusions and uncover patterns within the dataset, contributing to a comprehensive understanding of the factors influencing the participation of healthcare professionals in research.

CHAPTER 4 – FINDINGS AND INTERPRETATION

4.1. Interviews with Portuguese Health Professionals

In total, twenty-three semi-structured interviews were conducted, providing the participants with an open platform to share their insights on the matter. Geographically, all interviewees were Portuguese, 12 participants were based in the northern region, 2 in the central region, and 9 in the southern region of Portugal.

In terms of demographics, participants belonged to various healthcare professions, including 9 medical doctors, 6 nurses, and 8 allied health professionals, comprising 7 males and 16 females, with ages ranging from 26 to 65 years. A detailed breakdown of the interviewees' demographic and professional profiles can be found in Table 3.

Table 3- Interviewee's demographics (n=23)

	Female (n=16)	**Male** (n=7)
Age range		
26-35	8	5
36-45	4	1
46-55	3	0
56-65	1	1
Health Professional Category		
Medical Doctor	5	4
Nurse	6	0
Allied Health Professional	5	3
Organization location		
North of Portugal	8	4
Center of Portugal	2	0
South of Portugal	6	3

The qualitative interviews provided insights into the perspectives and experiences of healthcare professionals regarding their participation in research. Participants openly shared their views on a range of critical aspects related to research involvement.

These encompass participants' involvement in research, the scope and significance they attribute to it, factors influencing their involvement, and the perceived organizational stance on research participation.

4.1.1. The significance of research projects within health organizations

Health professionals conduct research within their public health organization to generate results and knowledge for the benefit of a community of patients, and not only the patients participating in the study. Aligned with the narrative of these interviewees, the Institute of Medicine (US) Committee on Health Research and the Privacy of Health Information mentioned that "participation in research should be voluntary, and decisions to participate should be based on researchers' full disclosure of all the potential risks and benefits. In addition, these authors assert that research is designed to create new knowledge about human health, rather than relying solely on existing knowledge and that most research does not result in any direct benefit to the institution where the research is being conducted" (Nass et al, 2009, p138).

Health professionals, through these interviews, articulated a compelling narrative emphasizing the significance of active involvement in research within their respective health organizations. Their collective voice resonated with a resounding emphasis on the transformative potential that research has in advancing healthcare. Moreover, they illuminated the symbiotic relationship between clinical practice and research, illustrating how one informs and enriches the other in a perpetual cycle of progress:

> *"The involvement in research projects allows the cooperation of multidisciplinary teams and contact with new analytical methodologies in order to explore, observe and answer questions in a given scientific area, including healthcare research".* (Allied health professional, male)

> *"Only by participating in research projects can there be a scientifically based improvement in what we do on a daily basis".* (Nurse, female)

Many times, the involvement in research for these health professionals seems to encompass an intrinsic motivation, as participation in research projects is a source of personal fulfilment. These participants demonstrated that engaging in research is not just a professional duty, but a deeply

meaningful endeavour. Emphasizing that the satisfaction arises from the belief that their contributions are part of a larger effort for the betterment of society:

"Participation in research projects for me is having some type of personal fulfilment. In other words, when we believe that we are contributing to a greater good, we are satisfied. We become better professionals because we are participating in specific science-based developments for our patients." (Allied health professional, female)

"I see participation in research as a complement to my clinical activity." (Medical doctor, female)

On the other hand, not every health professional is required to be actively engaged in research. While research plays a crucial role in advancing healthcare, there are various roles within the field that don't necessitate direct involvement in research activities. It's important to recognize that each health professional contributes to the overall healthcare ecosystem in a unique way, and not all paths require active participation in research:

"I do not agree that all healthcare professionals should be expected to participate in research projects. There are people who don't have this vocation or this calling, and that's okay. But conditions should be given to the few who want to participate in research". (Medical doctor, male)

Absolutely, while it's true that not every health professional needs to be directly involved in research, it's imperative that those who aspire to engage in this pursuit should have the means and opportunities to do so. Providing avenues for research involvement ensures that individuals with a passion for advancing medical knowledge can actively contribute to the progress of healthcare.

As previously mentioned in the literature review, the reality is that health professionals who want to engage in research often encounter a mix of enablers and barriers.

4.1.2. Enablers influencing Health Professionals' research participation

Our interviewees showed that motivation and personal interest seems to be the main enablers for the participation of health professionals in research:

"Research enriches me clinically and personally, but it is mainly a personal choice because it allows me to develop my most creative side." (Medical doctor, male)

The type of health organization where health professionals work is presented as an influencing factor to their research involvement. It seems that health organizations that maintain direct affiliations with universities and research institutes, or health professionals that present a personal connection with research institutes or universities are likely to foster greater participation in research:

"I maintain a close contact with the University of Cambridge where I developed my PhD project and we continue to collaborate in several studies" (Medical doctor, male)

Moreover, several interviewees mentioned that is easier to participate in research if other members from the service where they work are already involved in research projects, or even if they present a position of mentorship. It creates an environment where curiosity and innovation thrive, making it easier for individuals to get involved (Matus et al, 2019). This study showed that when other professionals, especially those in higher positions, were involved in research activities, it encouraged others to join and participate:

"Dr. X is always careful to involve us in her research and help us with all the tasks to be carried out throughout the project." (Nurse, female)

Within the organizational framework, for health professionals to get involved in research, it seems to be helpful if their workplace provides good facilities and there is support from the administrative side. Having the right tools and spaces for research is reported as important:

"Our hospital has recently created a research department to help professionals who want administrative help or even help searching for funding opportunities. Which makes life much easier for us." (Medical doctor, female)

Also, smooth administrative processes, like getting approvals and managing funding, make it easier for health professionals to focus on research.

4.1.3. Barriers influencing Health Professionals' research participation

On the other hand, a notable issue arises when there's a lack of such support, particularly in crucial areas like funding. This emerges as a significant obstacle for these health professionals, which demonstrate that in many cases, if they want to publish the results obtained in their research projects, they need to use personal savings or raise money in creative ways:

"*Often, when we want to publish the results of our studies, we have to draw on a piggy bank to which everyone contributes a little, in order to finance it."* (Medical doctor, female)

While conducting the interviews, a recurring barrier emerged, consistent with existing literature: the limitation of time. Each and every interviewee emphasized the challenge of balancing clinical duties and patient care with dedicated research efforts. The healthcare sector's overall workload further compounds this challenge, as many professionals associate involvement in research with dedicating their personal and leisure time. This highlights the considerable time constraints that health professionals encounter when seeking to engage in research:

"I just don't participate in research projects anymore because I don't have time. We are overwhelmed with clinical and bureaucratic activities that our role requires." (Medical doctor, female)

"Health professionals doing research is the syndrome of the 3 F's: vacations, holidays and weekends. [in Portuguese: férias, feriados e fins-de-semana]" (Medical doctor, male)

"There is no time allocated for research in healthcare organizations. What is reported to the FCT [Foundation for Science and Technology in Portugal] is false." (Medical doctor, male)

In addition, some health professionals may refrain from engaging in research due to feelings of inadequacy or a lack of confidence in their abilities to participate effectively:

"Sometimes I feel like I don't have the necessary skills." (Nurse, female)

They might perceive the research process as complex or scary, potentially leading them to doubt their own capacity to contribute meaningfully. Additionally, the unfamiliarity with research methodologies and the perception of a steep learning curve seem to possibly create apprehension. Consequently, these professionals might opt to stay on the side-lines, despite their potential interest in research.

4.1.4. Healthcare Research and Organizational Stance

In our study, a notable finding emerged concerning the managerial organization and policies: regardless of their current involvement in research activities, all health professionals expressed a shared desire for changes in the research policies within health organizations.

A good number of health professionals we interviewed felt that their organizations didn't provide enough support. Some even mentioned that they felt the management of their organization was not fully honest about certain things:

"There is an incentive for us to participate and develop research projects because it increases the prestige of the hospital, but at the same time, they don't want to spend a lot of money on it. The objective is to carry out the investigation as long as it does not bring extra expenses or trouble to the organization." (Nurse, female)

However, when asked if they have ever tried to discuss this matter with managers or service leaders regarding the potential for improvement in research support, the answer was no. The majority have never openly addressed this issue.

It's important to emphasize that no differences were observed in the participation in research projects, regardless of the various categories of health professionals, their gender, age, and location of the organization.

4.2. Questionnaire Survey to Portuguese Health Professionals

In this section, we present the results derived from a comprehensive questionnaire survey designed to illuminate critical aspects regarding Portuguese health professionals' participation in research.

The robust methodology, expounded upon in the previous chapter, played a pivotal role in securing a comprehensive dataset, garnering a total of 1.204 submitted responses, of which 936 were validated. The trust analysis conducted, indicating that with a confidence level of 95% and a margin of error of 5%, we would require 659 participants, further strengthens our confidence in the representativeness of the obtained sample. Notably, we surpassed this requirement with a total of 936 validated responses, affirming that our sample adequately mirrors the population under investigation.

4.2.1. Sociodemographic features of Health Professionals operating in Portugal

Table 4 summarizes the sociodemographic characteristics of our sample, showing that 692 of the health professionals who participated in the study are female, representing 74% of the sample, while only 244 of the health professionals surveyed are male, representing 26% of the sample. This can be justified by the factor that in Portugal, women represent around 80% of the health professional's workforce.

Regarding marital status, 297 individuals are single (32%), 492 are married (52%), 81 are divorced (9%), 8 are widowed (1%) and 58 selected the option "other" without specifying (6%).

Regarding age, the majority of respondents are in the age range between 36-45 years old with a representation of 32% of the sample, followed by the age group 26-35 years with 29%, the age group 46-55 years old with 21%, the group with more than 56 years of old with 14% and, finally, the age group with less than 25 years old with a representation of 4%.

Table 4- Distribution of Health Professionals according to sociodemographic characteristics (N=936).

Sociodemographic Variables	**Frequency**	
	N (n=936)	**%**
Sex		
Male	244	26%
Female	692	74%
Age		
≤ 25 years old	39	4%
26 – 35 years old	272	29%
36 – 45 years old	297	32%
46 – 55 years old	194	21%
≥ 56 years old	134	14%
Marital Status		
Single	297	32%
Married	492	52%
Divorced	81	9%
Widowed	8	1%
Other	58	6%

Table 5 shows that, of the 936 individuals participating in the study, 324 are medical doctors, being the most represented category of the sample with 35%, followed by 319 individuals as allied health professionals represented with 34%, and 293 individuals are nurses with a representation of 31%.

While the representation of various categories of health professionals in our sample is not precisely identical, the similarity observed across these categories suggests a balanced distribution. This ensures

that our sample does not exhibit a biased distribution concerning the professional categories of health professionals participating in the study.

Inquiries regarding the medical specialty and/or clinical service in which participants engage in their professional activities revealed that none of the 29 specialties demonstrated a notable prominence or significance (appendix II, question 6).

Table 5- Distribution of health professionals according to professional category (N=936)

Professional Category	**Frequency**	
	N (n=936)	**%**
Medical Doctor	324	35%
Allied Health Professional	319	34%
Nurse	293	31%

Upon examination of table 6, it becomes evident that a predominant proportion of respondents hold a bachelor's degree, constituting 58% of the sample. Following this, 34% of participants possess a master's degree, while a smaller segment, comprising 8% of the respondents, holds a PhD degree.

Table 6- Distribution of health professionals according to educational qualification (N=936)

Literary abilities	**Frequency**	
	N (n=936)	**%**
Bachelor degree	546	58%
Master degree	317	34%
PhD degree	73	8%

Inquiring into organizational details during the questionnaire survey design, we probed respondents about their seniority within the organization. Table 7 reveals a breakdown of this information, indicating that 258 individuals (28%) have been affiliated with the organization for less than 5 years, 149 individuals (16%) have accumulated a tenure of 6 to 10 years, 253 individuals (27%) have a service span ranging from 11 to 20 years, and a notable 276 individuals (30%) have been part of the organization for more than 21 years.

In terms of the organizational context in which these health professionals operate, the predominant setting is public general hospitals, constituting 38% of the sample. Following closely, 22% of respondents are affiliated with public university hospitals, while another 22% are associated with public hospitals under private administration (E.P.E.). A smaller segment, comprising 18% of the participants, is engaged in professional roles within private hospitals.

In terms of the geographic distribution of these organizations, the majority is situated in the northern region of Portugal, comprising 59% of the total. This is attributed to the significant participation of organizations from the northern part of the country in this study. Subsequently, 28% of respondents are affiliated with organizations located in the southern and island regions of Portugal, while 13% of participants work in organizations positioned in the central part of the country.

Table 7- Distribution of health professionals according to the organization's context (N=936).

Organizational Context	**Frequency**	
	N (n=936)	**%**
Seniority in the Organization		
≤ 5 years	258	28%
6-10 years	149	16%
11-20 years	253	27%
≥ 21 years	276	30%
Type of Organization		
Public General Hospital	356	38%
Public University Hospital	206	22%
E.P.E.	206	22%
Private Hospital	168	18%
Organization Location		
North	552	59%
Center	122	13%
South & Islands	262	28%

In response to inquiries about their affiliations with research-related organizations and, if applicable, the nature of these affiliations, the majority of participants, totalling 477 individuals (51%), reported not being associated with any type of research-linked organization. Among the remaining 459 participants (49%) who affirmed their ties to such organizations, 23% indicated affiliations with universities/polytechnics, 10% with research institutes, another 10% reported dual associations with both research institutes and universities/polytechnics, while 6% mentioned other unspecified forms of research-linked organization.

4.2.2. Evaluation of the enablers for Health Professionals participation in research

The paramount enabler acknowledged by health professionals for engaging in research (Table 8) is the aspiration to "improve knowledge, skills, and professional abilities through research activity" garnering agreement or strong agreement from 83% of respondents. Subsequently, "seeking intellectual fulfilment and the stimulation and development of creativity through research" is affirmed by 74% of participants. Moreover, over 63% of respondents express agreement or strong agreement with the enabler factor, "I am personally motivated for research activity".

It is noteworthy to emphasize the potential enabler with the least agreement among health professionals, as "There are time management policies at my institution that recognize research activities" encountered disagreement from 65% of participants.

The questionnaire provided an opportunity for participants to identify an additional enabler and evaluate it as the tenth option. However, no significant outcomes emerged, and the introduction of other enablers yielded interpretations similar to those already considered.

Table 8. Evaluation of the enablers for health professionals' participation in research through a likert scale from 1 to 5. (Legend: 1- Strongly disagree; 2- Disagree; 3- Neither agree nor disagree; 4- Agree; 5-Strongly agree)

Rank	Enablers for Health Professionals research participation	Strongly agree/ Agree (%)	Neither agree nor disagree (%)	Disagree/ Strongly disagree (%)	Mean/ SD
1.	"I seek to improve my knowledge, skills and professional abilities as a result of research activity."	83%	9%	8%	4,09±0,91
2.	"I seek intellectual fulfilment and the stimulation and development of my creativity through research."	74%	14%	12%	3,84±1,06

3.	"I am personally motivated for the research activity."	63%	18%	19%	3,62±1,13
4.	"I look for opportunities for professional progression, including learning and new opportunities, as a result of research activity."	59%	23%	18%	3,56±1,10
5.	"There are established collaborative relationships between my health institution and universities or research institutes."	58%	25%	17%	3,51±1,09
6.	"There are mechanisms on the part of my health institution for the dissemination of research opportunities."	33%	26%	41%	2,76±1,17
7.	"My institution has an appropriate organizational and operational infrastructure for research."	32%	21%	47%	2,63±1,20
8.	"I seek recognition and awards through research."	25%	28%	47%	2,66±1,14
9.	"There are time management policies at my institution that recognize research activities."	17%	18%	65%	2,20±1,19

4.2.3. Evaluation of the barriers for Health Professionals participation in research

The predominant obstacle recognized by health professionals in research participation (Table 9) is articulated as 'I lack dedicated time to engage in research,' with concurrence or strong agreement from 81% of respondents. Subsequently, the barrier "There is a lack of sufficient funding for research and/or a lack of information on access to funding" is affirmed by 80% of participants. Furthermore, over 76% of respondents express agreement or strong agreement with the barrier "Management support and strategic planning for research participation at institutional level is insufficient". Lastly, with an agreement of more than 70%, respondents identified the barrier "The institution's work plans, evaluation systems and career plans do not properly recognize research contributions".

Regarding the barriers that health professionals disagreed upon with more than 60% of disagreement is "I have the perception that research is a specialized activity and outside the scope of my practice as a health professional", "I feel that a health professional's priority should be clinical and not academic", "I think it would be difficult to work with academic research teams", and, "I have little personal interest in doing research".

The questionnaire provided an opportunity for participants to identify an additional barrier and evaluate it as the tenth option. However, no significant outcomes emerged, and the introduction of other barriers yielded interpretations similar to those already considered.

Table 9- Evaluation of the barriers for health professionals' participation in research through a likert scale from 1 to 5. (Legend: 1- Strongly disagree; 2- Disagree; 3- Neither agree nor disagree; 4- Agree; 5-Strongly agree)

Rank	Barriers for Health Professionals research participation	Strongly agree/ Agree (%)	Neither agree nor disagree (%)	Disagree/ Strongly disagree (%)	Mean/ SD
1.	"I lack dedicated time to engage in research."	81%	8%	11%	4,21±1,03
2.	"There is a lack of sufficient funding for research and/or a lack of information on access to funding."	80%	19%	1%	4,15±0,79
3.	"Management support and strategic planning for research participation at institutional level is insufficient."	76%	18%	6%	4,10±0,93
4.	"The institution's work plans, evaluation systems and career plans do not properly recognize research contributions."	74%	18%	8%	3,98±0,98
5.	"I lack the knowledge and skills needed to do research."	35%	22%	43%	2,90±1,11
6.	"I have the perception that research is a specialized activity and outside the scope of my practice as a health professional."	24%	13%	63%	2,45±1,16
7.	"I feel that a health professional's priority should be clinical and not academic."	19%	17%	64%	2,36±1,09
8.	"I think it would be difficult to work with academic research teams."	16%	21%	63%	2,33±1,03
9.	"I have little personal interest in doing research."	14%	20%	66%	2,20±1,09

4.2.4. Assessment of the Perceived Organizational Support among Health Professionals

To assess the internal consistency of the POS scale by Eisenberger et al. (1986), Cronbach's Alpha was computed. Notably, this analysis encompassed the entirety of the scale, inclusive of the four additional questions pertaining to research support that were introduced beyond the original scale. The obtained result from this assessment yielded a global scale α=0.92, indicating an excellent level of

internal consistency for the entire scale. Given this robust internal consistency, there is no need to exclude any items from this dimension, as the results reflect a satisfactory level of reliability.

The results (table 10) reveal an average perception of organizational support for the entire scale at M=2,45. According to the scale's reference values, a mean below 3,5 indicates a low perception of organizational support among these health professionals, which is evident in this case.

Table 10- Perception of Organizational Support of health professionals in the organization where they perform their clinical activity

Items evaluated on the POS scale (Eisenberger et al, 1986)	**Mean**	**SD**	**Corrected item-total correlation**	**Cronbach's alfa if item is deleted**
1. The institution values my contribution to institutional well-being.	2,53	0,09	0,71	0,91
2. The institution does not properly appreciate my professional effort.	2,38	0,97	0,64	0,92
3. The institution ignores my protests.	2,64	0,93	0,68	0,91
4. The institution really cares about my well-being.	2,32	0,93	0,68	0,91
5. Even if I did my job as well as possible, the institution wouldn't notice.	2,41	1,01	0,74	0,91
6. The institution is concerned with my professional qualification.	2,28	0,99	0,75	0,91
7. The institution shows a lot of concern for me.	2,59	1,14	0,66	0,92
8. The institution values my professional achievement.	2,37	0,99	0,79	0,91
9. The institution appreciates my contribution to research.	2,52	0,97	0,67	0,91
10. The institution values my effort to reconcile my clinical activities with research activities.	2,66	0,92	0,63	0,92
11. The institution does not value my research work.	2,32	0,94	0,66	0,91
12. The institution does not provide me with conditions for completing the investigation.	2,34	1,09	0,50	0,92
Total mean	2,45			

4.2.5. Health Professionals research participation

When queried about their involvement in research projects within their current organization (table 11), 69% of healthcare professionals participating in this study affirmed having prior participation, while 31% responded negatively.

Table 11- Research participation at current health organization (N=936 healthcare professionals)

Research participation	**N** (n=936)	**%**
Yes	647	69%
No	289	31%

Among the 69% who affirmed their involvement in research projects, 30% were within the scope of obtaining an academic degree, 28% were as part of collaborative research projects with a university or research institute, 22% were engaged in research projects within the healthcare organization where they work, and finally, 20% participated in research within the scope of clinical trials within their organization (table 12).

Table 12- Scope of the research (n=936)

Scope of the research	**N** (n=289)	**%**
Obtaining an academic degree	281	30%
Research project in collaboration with universities/research institutes	262	28%
Research project at my organization	206	22%
Participation in a clinical trial at my organization	187	20%

When asked the types of roles that respondents undertook In projects they have participated In the last five years (even If not In the same organization they worked at the momento), it was observed (table 13 that 72% assumed highly active positions in research (16% of HP as principal investigator, 16% as the site principal investigator, and 40% as co-investigator). Observing the other roles assumed by these health professionals in research, 12% of the respondents indicated a position as a site champion, 15% served as consultants, and 14% of HP performed roles as recruiter of patients from their own clinical practice or other practices for research.

Conversely, a notable 28% exclusively assumed the role of a participant, engaging in research studies through activities like completing questionnaires or participating in interviews. Additionally, 5% of respondents reported a lack of involvement in any research project over the past five years. Combining these figures—comprising 28% as active participants and 5% with no involvement—yields a cumulative 33%, aligning closely with the 31% who indicated non-participation in research within their respective

health organizations. This consistency in responses suggests a significant portion of the surveyed individuals either exclusively participated as subjects in studies or refrained from involvement altogether, mirroring their reported lack of participation within their organizational research frameworks.

Table 13- Role that HP represented in research activities (n=936)

Role in research	Yes		No	
	N	%	N	%
Principal Investigator (n=936)	151	16%	785	84%
Site Principal Investigator (n=936)	148	16%	788	84%
Co-investigator (n=936)	373	40%	563	60%
Site Champion (n=936)	116	12%	820	88%
Consultant (n=936)	138	15%	798	85%
Recruiter (n=936)	131	14%	805	86%
Participant (n=936)	262	28%	674	72%
None, I have not participated in any research project in the last 5 years (n=936)	45	5%	891	95%

Regarding the funding sources for research projects involving health professionals, as detailed in Table 14, a noteworthy 45% indicated a lack of external funding. In contrast, 25% of health professionals reported receiving support from funding agencies, suggesting their participation in more extensive research endeavors. Approximately 15% secured funding from the industry, likely within the context of clinical trials, while 9% obtained funding through various research grants. An additional 4% received financing directly from the organizations where they conducted clinical activities.

It is crucial to highlight that 25% of respondents expressed uncertainty about the funding status of their projects. This uncertainty may signify a potential lack of active involvement or awareness in the research project process among this subset of respondents. This lack of clarity underscores the need for increased transparency and communication within the research community to ensure a more informed and engaged approach to funding-related aspects of healthcare research.

Table 14- Types of organizations that funded research projects (FCT- Fundação para a Ciência e a Tecnologia)

Type of funding	Yes		No	
	N	%	N	%

Funding agency (e.g. FCT) (n=936)	229	25%	707	75%
Other research grant (n=936)	87	9%	849	91%
Financial support from the organization (n=936)	33	4%	903	96%
Industry sponsored research/ clinical trial (n=936)	144	15%	792	85%
The research project was not funded (n=936)	425	45%	511	55%
I don't know (n=936)	234	25%	702	75%

4.2.6. Cross-tabulation analyses

In the context of our cross-tabulation analyses, the significance of associations between categorical variables was assessed using the Pearson chi-square test. The test aimed to determine whether there exists a statistically significant relationship between the variables in the cross-tabulation table. The obtained result, with a p-value (α) less than 0.01, signifies a high level of statistical significance. This outcome indicates that the observed associations are unlikely to occur by chance alone, providing robust evidence to reject the null hypothesis and suggesting a meaningful and significant relationship between the analysed categorical variables.

Analysing the data presented in table 15 allows us to estimate the involvement of healthcare professionals in research across different categories. Notably, the results indicate a robust participation in research activities, with 79% of medical doctors actively participating. Allied health professionals also demonstrate a considerable level of research involvement, with 71% actively engaged. However, it is noteworthy that the participation rate among nurses is comparatively lower, standing at 56%. Possible considerations may include variations in research training opportunities, institutional support, or perceived relevance of research to specific healthcare roles. Additionally, it is crucial to acknowledge the unique employment landscape for nurses in Portugal, where it is not uncommon for them to hold more than one job simultaneously. Many nurses engage in dual employment, often dividing their time between public hospitals and private hospitals. This dual commitment to both public and private healthcare sectors may influence their ability to actively participate in research activities.

Table 15- Participation in research projects by health professional category

Participation in research projects		
Yes	**No**	**TOTAL**

	N (n=647)	**% of row**	**N** (n=289)	**% of row**	**N** (n=936)	**%**
Medical Doctor	254	78%	70	22%	324	100%
Allied Health Professional	228	71%	91	29%	319	100%
Nurse	165	56%	128	44%	293	100%

Table 16 offers a comprehensive overview of the intricate relationships between various health professional roles in research and the diverse categories of health professionals. The findings underscore the substantial involvement of medical doctors in research, exhibiting their predominant presence across all roles: principal investigator (54%), site principal investigator (57%), co-investigator (45%), site champion (74%), consultant (76%), and recruiter (75%). This robust participation may be attributed to their extensive training and expertise, positioning them as key contributors to research endeavors.

In contrast, allied health professionals follow in prominence, with 25% assuming the role of principal investigator, 25% as site principal investigator, 37% as co-investigator, 23% as site champion, and 14% serving dual roles as consultant and recruiter. The notable representation of allied health professionals suggests their growing significance in research, possibly influenced by their unique perspectives and specialized knowledge that enrich the multidisciplinary nature of research projects.

Conversely, nurses emerge as the health professional category with the lowest representation across the various research roles, with figures ranging from 3% to 21%. The lower participation of nurses in these roles may stem from factors such as workload constraints, differing priorities in clinical settings, or potential gaps in research training. Exploring strategies to enhance the integration of nurses into research initiatives could be a valuable avenue for promoting a more inclusive and collaborative approach to healthcare research.

These nuanced findings shed light on the diverse roles assumed by healthcare professionals in research, informing potential areas for further collaboration and targeted support within the research landscape.

Table 16- Relationship between the roles that HP represented in research and the different health professional categories

	Medical Doctor	**Allied Health Professional**	**Nurse**

	Yes		No		Yes		No		Yes		No	
	N	%	N	%	N	%	N	%	N	%	N	%
Principal Investigator (n=151)	82	**54%**	242	31%	38	25%	281	36%	31	21%	262	33%
Site Principal Investigator (n=148)	85	**57%**	239	30%	37	25%	282	36%	26	18%	267	34%
Co-investigator (n=373)	166	**45%**	158	28%	139	37%	180	32%	68	18%	225	40%
Site Champion (n= 116)	86	**74%**	238	29%	26	23%	293	36%	4	3%	289	35%
Consultant (n=138)	105	**76%**	219	27%	19	14%	300	38%	14	10%	279	35%
Recruiter (n=131)	98	**75%**	226	28%	19	14%	300	37%	14	11%	279	35%

The funding patterns presented in Table 17 appear to align with the observed roles of health professionals in research outlined in Table 16. Medical doctors, who demonstrate a substantial presence across all research roles, particularly as principal investigators, exhibit a relatively higher reliance on external funding sources, with 48% receiving support from agencies like FCT. This aligns with their extensive involvement in research, indicating a potential correlation between their active participation in diverse research roles and the need for external financial backing.

In the case of allied health professionals, who show notable representation in various research roles, including principal investigator and co-investigator, there is a diverse distribution of funding sources. This may suggest that the growing significance of allied health professionals in research, as highlighted in Table 16, is mirrored by a varied reliance on funding, with 30% receiving support from external agencies like FCT and 32% obtaining financial assistance from other research grants.

Nurses, on the other hand, consistently exhibit lower representation across the research roles in Table 16, and the funding patterns in Table 17 echo this trend. With the lowest percentages in roles such as principal investigator (3%) and site champion (10%), nurses also show lower reliance on external funding sources, with only 9% receiving support from agencies like FCT. This correlation may imply that the lower participation of nurses in research roles is reflected in a reduced dependence on external

funding, potentially indicating a need for targeted strategies to enhance their involvement in both aspects of healthcare research.

Table 17- Distribution of funding sources across diverse health professionals' categories

	Medical Doctor				Allied Health Professional				Nurse			
	Yes		No		Yes		No		Yes		No	
	N	%	N	%	N	%	N	%	N	%	N	%
Funding agency (e.g. FCT) (n=229)	110	48%	214	30%	99	43%	220	31%	20	9%	273	39%
Other research grant (n=87)	48	56%	275	32%	31	36%	288	34%	7	8%	286	34%
Financial support from own organization (n=33)	16	49%	308	34%	11	33%	308	34%	6	18%	287	32%
Industry sponsored research (n=144)	85	59%	239	30%	39	27%	280	35%	20	14%	273	35%
The research was not funded (n=425)	203	48%	121	24%	115	27%	204	40%	107	25%	186	36%

The cross-tabulation table 18 delves into the relationship between individuals' marital status and the time allocation for a research activity. Among singles, a substantial 41% spend no time on research, while 36% dedicate up to 4 hours. The distribution further diminishes for higher time brackets, with 8% allocating >4 but ≤10 hours, 4% >10 but ≤20 hours, and 10% >20 hours.

For married individuals, 34% report no commitment to research, while 52% allocate up to 4 hours. The percentages decline for >4 but ≤10 hours (8%), >10 but ≤20 hours (2%), and >20 hours (3%).

Within divorced individuals, 48% spend no time on research and 35% allocate up to 4 hours. Smaller proportions are reported for >4 but ≤10 hours (11%), >10 but ≤20 hours (1%), and >20 hours (5%).

Among Widowers, 50% invest no time and 38% allocate up to 4 hours to research. Responses for higher time brackets (>4 but ≤10 hours, >10 but ≤20 hours, >20 hours) are minimal or non-existent.

In the "Other" category, 34% report 0 hours, while 47% dedicate up to 4 hours. The distribution tapers for >4 but ≤10 hours (5%), >10 but ≤20 hours (7%), and >20 hours (7%).

In future investigations, it would be valuable to include information about whether these health professionals have children or not. This additional data could provide insights into potential correlations between parental responsibilities and the time allocated to research activities, offering a more comprehensive understanding of the factors influencing their research participation.

Table 18- Relationship between individuals' marital status and allocated time for a research

	0 hours		>0 hours but ≤4 hours		>4 hours but ≤10 hours		>10 hours but ≤20 hours		>20 hours		TOTAL	
	N	% of row	N	% of row	N	% of row	N	% of row	N	% of row	N	% of row
Single (n=297)	122	41%	108	36%	25	8%	11	4%	31	10%	297	100%
Married (n=492)	167	34%	258	52%	40	8%	10	2%	17	3%	492	100%
Divorced (n=81)	39	48%	28	35%	9	11%	1	1%	4	5%	81	100%
Widower (n=8)	4	50%	3	38%	1	13%	0	0%	0	0%	8	100%
Other (n=58)	20	34%	27	47%	3	5%	4	7%	4	7%	58	100%

4.2.7. Effect of enablers and Barriers on Research participation and POS

In order to test Hypothesis 1 (The main research participation Enablers are positively related to Health Professionals' Research participation) and Hypothesis 2 (The main research participation Barriers are negatively related to Health Professionals' Research participation), the multiple linear regression test was applied with the factor "Research participation in the Organization" and "Perceived Organizational Support" as dependent variables and the main barriers and enablers as independent variables. It is crucial to emphasize that the variables have been appropriately coded to facilitate accurate result interpretation. Specifically, the variable "Research participation" was assigned a value of 1 for a positive response and 0 for a negative response. Table 19 illustrates the relationships between independent variables and their predictive capabilities concerning Research participation and POS.

*Table 19- Regression analysis to predict the influence of different enablers and barriers with the factor research participation in the organization. *p≤0.05; **P≤0.01*

	"Research participation in the organization"	"Perceived Organizational Support"
Enabler 1 - "I seek to improve my knowledge, skills and professional abilities as a result of research activity."	**0.096***	**0.092***
Enabler 2 - "I seek intellectual fulfillment and the stimulation and development of my creativity through research."	**0.195****	0.041
Enabler 3 - "I am personally motivated for the research activity."	**0.120****	-0.054
Enabler 4 - "I look for opportunities for professional progression, including learning and new opportunities, as a result of research activity."	-0.004	0.003

Enabler 5 - "There are established collaborative relationships between my health institution and universities or research institutes."	**0.204****	**0.088****
Enabler 6 - "There are mechanisms on the part of my health institution for the dissemination of research opportunities."	-0.061	**0.121****
Enabler 7 - "My institution has an appropriate organizational and operational infrastructure for research."	0.059	-0.060
Enabler 8 - "I seek recognition and awards through research."	**-0.094***	-0.040
Enabler 9 - "There are time management policies at my institution that recognize research activities."	**-0.165****	**0.396****
R2	0.152	0.233
R adjusted	0.143	0.226
Barrier 1 - "I lack dedicated time to engage in research."	**-0.115****	-0.022
Barrier 2 - "There is a lack of sufficient funding for research and/or a lack of information on access to funding."	0.048	0.048
Barrier 3 - "Management support and strategic planning for research participation at institutional level is insufficient."	**-0.233****	**-0.433****
Barrier 4 - "The institution's work plans, evaluation systems and career plans do not properly recognize research contributions."	-0.024	**-0.121****
Barrier 5 - "I lack the knowledge and skills needed to do research."	**-0.095****	**-0.125****
Barrier 6 - "I have the perception that research is a specialized activity and outside the scope of my practice as a health professional."	-0.013	**-0.123****
Barrier 7 - "I feel that a health professional's priority should be clinical and not academic."	**-0.080***	-0.028
Barrier 8 - "I think it would be difficult to work with academic research teams."	**-0.123****	**0.108****
Barrier 9 - "I have little personal interest in doing research."	**-0.104****	0.014
R2	0.130	0.290
R adjusted	0.122	0.283

A meticulous examination of the table reveals that, out of the nine enablers under study, only six demonstrate explanatory power on research participation. Enabler 4, focused on seeking professional progression and learning opportunities through research activity, as well as Enablers 6 and 7, pertaining to mechanisms and organizational infrastructure for research dissemination, yielded results with p-values greater than 0.05, indicating a lack of statistical significance.

Conversely, Enablers 1 (the pursuit of knowledge and skills improvement), 2 (seeking intellectual fulfilment and creativity development through research), 3 (personal motivation for research activity), and 5 (established collaborative relationships with universities or research institutes) exhibited positive explanatory power on the variable "Research participation". These findings align with the emphasis

placed by Portuguese healthcare professionals on these specific enablers, as highlighted in the results of the evaluation of the enablers for health professionals' participation in research (section 4.2.2.).

Enabler 8, focused on the pursuit of recognition and awards through research, and Enabler 9, which involves time management policies recognizing research activities at the institution, surprisingly exhibit a negative impact (β=-0.094; $p<0.05$ and β= -0.165; $p<0.01$, respectively) on the variable "Research participation." Intriguingly, these specific enablers align with the areas where healthcare professionals in the study express the highest disagreement, as highlighted in the results of the evaluation of the enablers for health professionals' participation in research (section 4.2.2.). The unexpected negative impact observed in the linear regression results suggests that, contrary to expectations, the pursuit of recognition and the existence of time management policies might be associated with decreased research participation among the participants, or It Is possible that these time management practices are not appropriate and end up constraining health professionals' activities rather that helping. Further exploration into the nuanced dynamics of these enablers and their potential implications is warranted. Therefore, we can affirm that Hypothesis 1 has been partially verified. Specifically, the key research participation enablers exhibit a positive correlation with the research participation of health professionals. In other words, as these main enablers are confirmed, there is a tendency for an increase in the research participation levels among health professionals.

Concerning the barriers under study, six of them present explanatory influence on research participation. Notably, Barrier 2, highlighting the inadequacy of funding and access information, Barrier 4, emphasizing the institutional failure to adequately acknowledge research contributions within work plans and career structures, and Barrier 6, centered on the perception of research as a specialized activity beyond the scope of health professionals' practice, produced results with p-values exceeding 0.05, signaling a lack of statistical significance.

On the other hand, Barrier 1, emphasizing the constraint of insufficient dedicated time for research participation, Barrier 3, highlighting the inadequacy of management support and strategic planning at the institutional level, Barrier 5, underscoring the lack of necessary knowledge and skills for research, Barrier 7, expressing the belief that a health professional's primary focus should be clinical rather than academic, Barrier 8, indicating perceived difficulty in collaborating with academic research teams, and Barrier 9, centred on limited personal interest in research, collectively demonstrated a negative explanatory impact on the variable "Research participation".

Consequently, we can affirm that Hypothesis 2 has been partially verified. It is evident that their confirmation is associated with a discernible decrease in research participation levels among health professionals, thus affirming the findings in support of Hypothesis 2 (The main research participation Barriers are negatively related to Health Professionals' Research participation).

In essence, the examination revealed that, as anticipated, the presence of enablers identified in the literature review and validated through interviews with Portuguese health professionals generally corresponds to elevated levels of research participation. Similarly, the identification of barriers tends to exert a negative influence on research participation levels. Contrary to initial expectations, it was surprising to find that certain enablers exhibited a negative impact on the research participation of these health professionals. This unexpected finding may be attributed to differing expectations; specifically, since these enablers were not validated by the majority of respondents in the questionnaire, individuals harboured lower expectations regarding their involvement in research. To validate this hypothesis, further interviews or additional questionnaires would be necessary.

The enabler that appears to exert a more substantial influence on the research participation of health professionals is Enabler 5 - "There are established collaborative relationships between my health institution and universities or research institutes" (β=0.204; $p<0.01$). This finding is reinforced by various studies documented in the literature review, as evidenced in Appendix III (e.g., Rait et al., 2002; Fudge et al., 2016; Frisk et al., 2019). These studies consistently support the notion that fostering collaborative relationships between health institutions and academic or research entities positively contributes to enhancing the research participation levels of healthcare professionals. The robust support from multiple sources in the literature enhances the credibility and generalizability of this observed impact.

On the other hand, among the identified barriers, Barrier 3 - "Management support and strategic planning for research participation at the institutional level is insufficient" emerges as having a more pronounced negative impact on the research participation of health professionals (β=-0.233, $p<0.01$). This finding is supported by multiple studies in the literature review, as presented in Appendix III (e.g., Pager et al., 2012; Elphinston and Pager, 2015; O'Brien et al., 2022). These studies consistently emphasize the critical role of management support and strategic planning at the institutional level in fostering an environment conducive to reinforced research participation among health professionals.

The wealth of supporting evidence from various sources strengthens the validity and reliability of this observed negative impact.

Regarding the impact of main enablers and barriers on the variable "Perceived Organizational Support," our assessment reveals that only a select few exhibit statistically significant explanatory power.

Enablers 5 - "There are established collaborative relationships between my health institution and universities or research institutes", 6 - "There are mechanisms on the part of my health institution for the dissemination of research opportunities", and 9 - "There are time management policies at my institution that recognize research activities" exhibit a positive effect on the "perceived organizational support" variable (β=0.088; $p<0.01$; β=0.121; $p<0.01$; β=0.396; $p<0.01$ respectively). This result can be justified by the nature of these enablers, all of which pertain to organizational mechanisms and policies. It is inherently logical that when such enablers are observed, they possess the inherent capacity to enhance perceived organizational support. Collaborative relationships with external institutions (Enabler 5) foster a sense of broader support and networking. Dissemination mechanisms for research opportunities (Enabler 6) demonstrate a commitment to communication and inclusivity within the organization, contributing to perceived support (Andrew et al, 2013; Bartelink et al, 2019).

Additionally, time management policies recognizing research activities (Enabler 9) signal an institutional acknowledgment of the importance of research, further bolstering the perception of organizational support (Gilbert et al, 2016). Therefore, these findings align with the intuitive expectation that organizational structures and policies promoting collaboration, communication, and recognition positively influence the POS among health professionals.

Regarding barriers, barrier 3 - “Management support and strategic planning for research participation at institutional level is insufficient”, barrier 4 - “The institution's work plans, evaluation systems and career plans do not properly recognize research contributions”, barrier 5 - “I lack the knowledge and skills needed to do research” and barrier 6 - “I have the perception that research is a specialized activity and outside the scope of my practice as a health professional” present a negative effect on the "perceived organizational support" variable (β= -0.433 $p<0.01$; β= -0.121; $p<0.01$; β= -0.125; $p<0.01$; β= -0.123; $p<0.01$ respectively).

The observed negative effects of Barriers 3 and 4 on the "perceived organizational support" variable can be attributed to specific organizational policies and mechanisms. Barrier 3, which denotes insufficient management support and strategic planning for research participation at the institutional level, implies a deficiency in organizational commitment to fostering a supportive environment for research activities. Similarly, barrier 4, highlighting the inadequacy of the institution's work plans, evaluation systems, and career plans in recognizing research contributions, indicates a critical gap in the organizational infrastructure. If the institution fails to adequately acknowledge and integrate research contributions into its evaluation and career advancement frameworks, health professionals may perceive a lack of organizational support for their research endeavours (Berthelsen & Hølge-Hazelton, 2018; Kunhunny et al, 2017).

Considering that barrier 5 and 6, involving a perceived lack of knowledge and skills needed for research, can underscores a potential deficiency in organizational support for professional development. When health professionals feel inadequately equipped to engage in research due to a perceived lack of support for skill development, it can negatively impact their overall perception of organizational support. Also, the centred perception that research is a specialized activity outside the scope of a health professional's practice, can suggest a potential communication or cultural gap within the organization, if health professionals perceive that the institution does not recognize or integrate research as an integral part of their roles (Elphinston and Pager, 2015; Kunhunny et al, 2017). To confirm these assumptions, further investigation would be necessary, delving into the specific dynamics of organizational support for professional development, as well as exploring potential communication or cultural gaps within the organization that may impact health professionals' perceptions of research integration into their roles.

Paradoxically, Barrier 8 - "I think it would be difficult to work with academic research teams" exhibits an unexpected positive effect ($\beta = 0.108$, $p<0.01$) on the variable "perceived organizational support". This counterintuitive result may be indicative of a unique organizational context where individuals who perceive challenges in collaborating with academic research teams also interpret such difficulties as a demonstration of the organization's commitment to maintaining high standards and expectations for collaborative efforts and/or standards of healthcare. This unexpected positive association suggests that, in this particular context, the perceived complexity of working with academic research teams may be viewed as a testament to the organization's emphasis on rigorous collaboration, which, in turn,

positively influences health professionals' perceptions of overall organizational support. However, to thoroughly comprehend and validate this surprising finding, further investigation is needed, exploring the nuanced perceptions and contextual factors influencing health professionals' views on collaboration and organizational support.

4.2.8. Perceived Organizational Support effect on Research participation

To test Hypothesis 5 (Health professionals' POS is positively related to Health professionals' research participation), we employed a bootstrap calculation. In this analysis, the POS dimension served as the independent variable, while the research participation dimension acted as the dependent variable. This method, widely utilized across diverse fields, is particularly advantageous for handling distributions that may not be well-understood in more complex models. Its utility lies in simplifying the inference calculation process, automating the generation of inferences (Efron & Tibshirani, 1993).

Table 20- Path coefficients to predict the influence of perceived organizational support with the factor research participation

Model	Original Sample	Sample Mean	Standard Deviation	T statistic	p value
POS > Research participation	0.122	0.138	0.050	2.418	0.016

Based on the presented results in table 20, there appears to be a statistically significant and positive relationship between POS and Research participation among health professionals ($\beta = 0.122$; $p \leq 0.05$). These findings suggest that higher levels of POS are associated with increased participation in research activities.

4.2.9. Mediating Effects Unveiled: Insights from structural equation modelling

In order to test Hypothesis 3 (The main research participation Enablers are positively related to Health Professionals' POS), Hypothesis 4 (The main research participation Barriers are negatively related to Health Professionals' POS), Hypothesis 6 (POS mediates the relationship between the main research participation Enablers and Research participation) and Hypothesis 7 (POS mediates the relationship between the main research participation Barriers and Research participation), a structural equation modelling analysis was conducted.

In our study, we conducted an examination of the Average Variance Extracted (AVE) for the latent variables Perceived Organizational Support (POS) and Enablers included in our structural equation model. The AVE serves as a crucial metric in assessing the convergent validity of these latent variables, offering insights into the extent to which the variance captured by the constructs surpasses measurement error. Convergent validity is imperative for ensuring the reliability and accuracy of our measurement model (Fornell & Larcker, 1981).

Table 21- Average Variance Extracted and correlations of latent constructs

	Average variance extracted (AVE)
Enablers	0.560
Barriers	0.511
POS	0.542

As depicted in Table 21, the calculated square roots of the Average Variances Extracted for the latent constructs surpassed the threshold of 0.5, affirming satisfactory discriminant validity (Chin, 1998). Specifically, the AVE values for Enablers (0.560), Barriers (0.511) and POS (0.542) surpassed the recommended criterion, underscoring that each latent construct captures more variance from its indicators than measurement error. This finding reinforces the robustness of our measurement model, assuring that the latent constructs are distinct and reliably represent their respective underlying concepts.

To test the mediating effect of "Perceived Organizational Support", it is necessary to verify the following prerequisites: the mediation model illustrates a causal sequence in which the independent variable (enablers/barriers) indirectly influences the dependent variable (research participation) through the mediator variable (perceived organizational support). It is postulated that barriers and enablers affect POS, and this effect subsequently causally propagates through research participation.

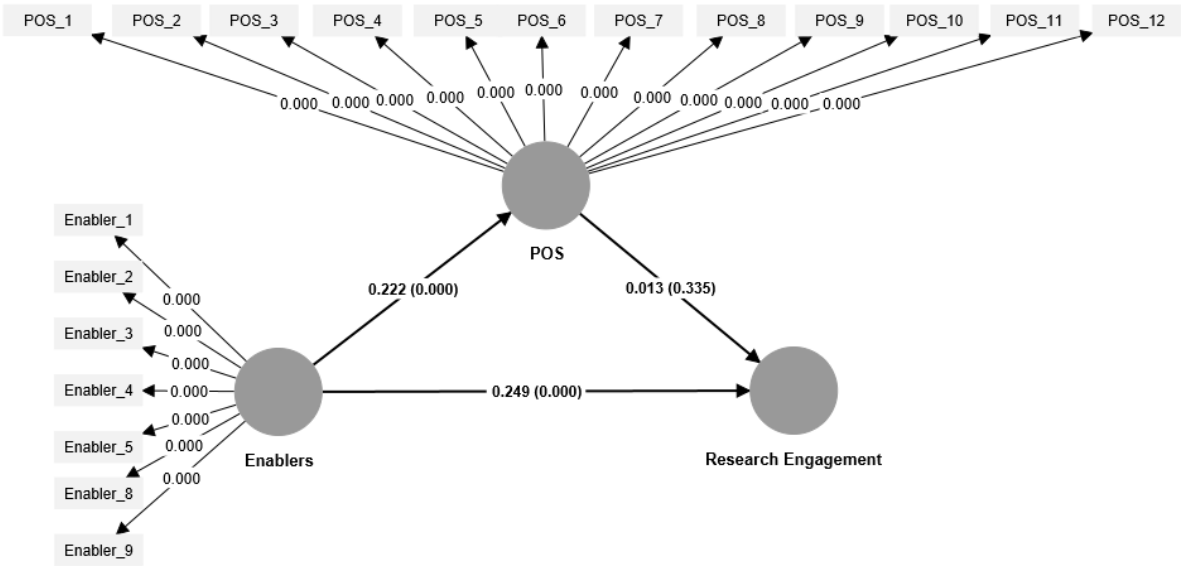


Figure 7- Results of statistical analysis of mediating effect of POS between enablers and research participation

To assess the significance of the mediation model, we employed bootstrap calculation, a well-established technique (Fig. 7). This path analysis serves as a practical method for examining the relationships among multiple variables and the variance in multiple regression (Stage et al, 2004).

Table 22- Path coefficients from the model Enabler > POS > RE. (POS - Perceived Organizational Support; RE - Research participation)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (STDEV)	P values
Enablers -> POS	0.222	0.222	0.036	6.197	0.000
Enablers -> RE	0.249	0.249	0.032	7.788	0.000
POS -> RE	0.013	0.013	0.031	0.425	0.335

The analysis in figure 7 and table 22 reveals a statistically significant relationship between enablers and POS, with an estimated coefficient of 0.222 ($p < 0.01$). This underscores a substantial association between the factors facilitating research participation and the perceived support within the organizational context. Similarly, the direct relationship between enablers and research participation remains more significant, as indicated by an estimated coefficient of 0.249 ($p < 0.01$).

Considering the aforementioned results, we can assert that Hypothesis 3, which posits a positive association between the main research participation enablers and health professionals' POS, has been confirmed. The findings unmistakably indicate that the presence of these identified enablers correlates with a noticeable positive effect in POS levels among health professionals, thereby substantiating the hypothesis 3 (The main research participation Enablers are positively related to Health Professionals' POS).

However, the mediation effect of POS in the relationship between enablers and research participation does not attain statistical significance ($p > 0.05$). Therefore, hypothesis 6 (POS mediates the relationship between the main research participation Enablers and Research participation) is rejected.

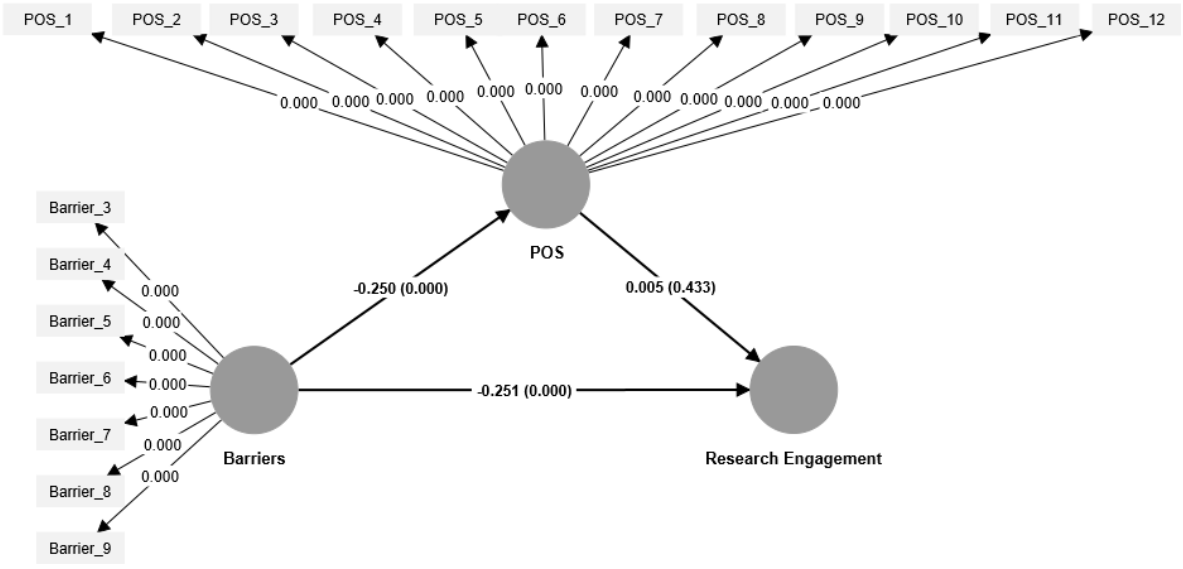


Figure 8- Results of statistical analysis of mediating effect of POS between barriers and research participation

Also, in figure 8 and table 23, we can verify a statistically significant negative relationship between barriers and POS, with an estimated coefficient of -0.250 ($p < 0.01$), and a statistically significant negative relationship between barriers and research participation with an estimated coefficient of -0.251 ($p < 0.01$). In light of these results, we can affirm that hypothesis 4 (The main research participation Barriers are negatively related to Health Professionals' POS) has been verified. This confirmation arises from the notable negative impact observed in the "POS" variable associated with the main barriers, particularly within the context of specific organizational dynamics.

However, the mediation effect of POS in the relationship between barriers and research participation also does not attain statistical significance ($p > 0.05$). Consequently, hypothesis 7 (POS mediates the

relationship between the main research participation Barriers and Research participation) is also rejected.

Table 23- Path coefficients from the model Barriers > POS > RE. (POS - Perceived Organizational Support; RE - Research participation)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (STDEV)	P values
Barriers -> POS	-0.250	-0.250	0.043	5.808	0.000
Barriers -> RE	-0.251	-0.252	0.035	7.174	0.000
POS -> RE	0.005	0.006	0.032	0.168	0.433

Despite the clear influence of enablers/barriers on both POS and research participation individually, the lack of a significant mediating role for POS suggests that the association between enablers/barriers and research participation may operate through other mechanisms or factors not accounted for in this study.

While the direct relationships between enablers, barriers, and research participation are evident and statistically significant, the absence of a mediating effect for POS prompts a closer examination of the intricate dynamics at play. The results suggest that, contrary to our initial hypothesis, POS may not serve as a primary channel through which the influence of enablers and barriers is transmitted to impact research participation. This observation underscores the complexity of the relationship among these variables and suggests the existence of other factors or pathways influencing health professionals' research participation that extend beyond the mediating role of POS. Future research endeavours should delve deeper into these nuanced interactions to unveil the nuanced mechanisms driving the participation of health professionals in research activities within the healthcare context.

Chapter 5 – GENERAL DISCUSSION

The interviews performed to Portuguese health professionals allowed us to have real-world examples and was used for the selection of the main enablers and barriers to be included in the questionnaire survey, addressed to health professionals in public health organizations in Portugal.

In these interviews, we also explored cases of health professionals who were never involved in any type of research, demonstrating that in some cases, the reason was lack of opportunity, lack of interest, or "I never thought about this possibility".

These results underscore a unanimous narrative among health professionals, emphasizing the paramount significance of fostering and actively participating in research projects within their respective health organizations. This finding contributes to the theoretical framework surrounding research engagement by illustrating the disconnect between perceived opportunities and actual participation, which has been less explored in the existing literature.

It is important to note that while not all health professionals may be directly involved in research activities, the collective participation of a portion of the workforce contributes significantly to the advancement of healthcare practices. This collaborative approach ensures a holistic perspective and the generation of evidence-based insights, ultimately enhancing the quality of healthcare delivery. The findings reinforce the notion that a robust culture of research involvement among health professionals is indispensable for continuous improvement in healthcare outcomes. This aligns with the theoretical concept of "research culture," which posits that a supportive environment encourages greater engagement in research, thus bridging the gap between theory and practice.

Noteworthy is the unanimous expression of a collective desire for transformative changes in the research policies of health organizations. The interviews not only revealed this shared aspiration but also served as a pivotal step in identifying a comprehensive set of enablers and barriers. These insights collected from the interviews guided the formulation of a targeted questionnaire survey, administered to health professionals in Portugal, specifically addressing the intricate dynamics of research participation in the healthcare sector.

Regarding the questionnaire survey, while the sampling method employed in this study is best described as a convenience sample and may not fully represent the entirety of the health sector in Portugal, the substantial size of the sample (N=936) is noteworthy. Notably, a confidence analysis has been conducted, revealing that, with a confidence level of 95% and a margin of error of 5%, the required

sample size would be only 659 participants. This finding enhances our confidence in the representativeness of the acquired sample, underscoring the robustness of the study's statistical foundation. Such methodological rigor contributes to the theoretical discourse on sampling strategies in healthcare research, demonstrating the importance of adequate sample sizes for generalizability and validity of findings.

In addition, we achieved a comprehensive and geographically diverse representation, encompassing the north, center, south, and islands of Portugal.

The results showed that the main enablers highlighted by healthcare professionals are predominantly linked to the personal domain, emphasizing personal motivation, the pursuit of improvement in knowledge and skills, and the quest for professional progression. Throughout the results, the importance of establishing collaborative relationships is also emphasized, both at a personal and organizational level.

Concerning the identified barriers, our findings reveal that Portuguese health professionals encounter significant obstacles to active research participation, with a predominant emphasis on challenges within organizational and managerial domains. Key barriers include the perceived absence of dedicated time for research involvement, insufficient funding or inadequate information about accessing research funds, a lack of strategic support and planning for research initiatives at the institutional level, and a deficiency in the institutional recognition of research contributions within work plans, evaluation systems, and career development frameworks. These results highlight the need for targeted interventions addressing organizational and managerial aspects to facilitate and promote a more conducive environment for health professionals to actively participate in research activities (Berthelsen & Hølge-Hazelton, 2018).

The perception of organizational support results among healthcare professionals in Portugal revealed a notable deficiency. This observation resonates with the recurring themes identified throughout interviews and the comprehensive literature review. The multifaceted barriers encountered by health professionals, prominently rooted in organizational management challenges and an apparent lack of recognition from superiors, underscore the critical role of POS in the healthcare context. These findings extend the theoretical understanding of organizational support theory by demonstrating its direct correlation with research participation, thereby adding depth to existing models of health professional engagement.

The evident disconnect between professionals and organizational support, as illuminated by the data, calls attention to the urgency of addressing issues related to management practices, resource allocation, and institutional acknowledgment. Notably, the low perceived support may impede the participation of health professionals in research activities, ultimately affecting the advancement of evidence-based practices within healthcare organizations.

Recognizing the interconnectedness of POS with various facets of healthcare, including resource availability, strategic planning, and career development, becomes imperative. Fostering a positive and supportive organizational culture can serve as a catalyst for overcoming the identified barriers, thereby enhancing not only research participation but also overall well-being and performance among healthcare professionals. As such, interventions targeting the enhancement of POS are not merely a means of addressing isolated issues but stand as pivotal strategies for cultivating a conducive environment that empowers healthcare professionals and contributes to the elevation of healthcare quality.

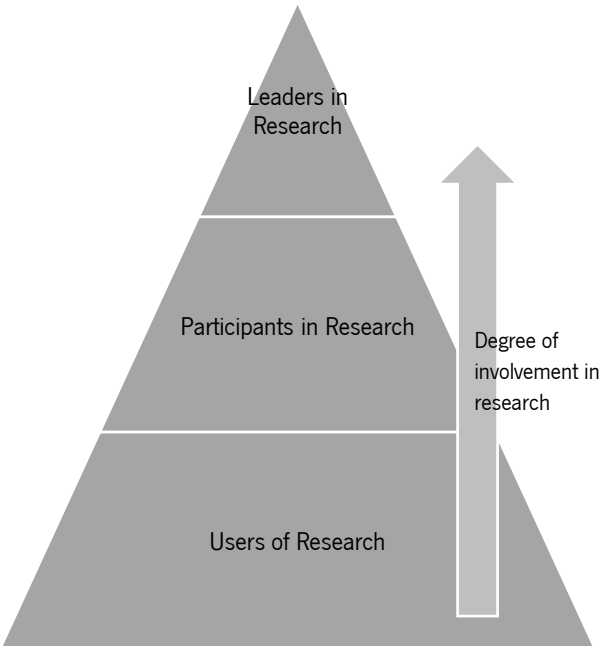


Figure 9- Glasziou's triangle: different levels of research participation (Adapted from Del Mar, 2004)

Regarding the level of research participation, according to Del Mar (2004), health professionals can engage in research as users, participants, or leaders, and that ideally, all levels should be active at health organizations (Fig. 9). According to Glasziou's triangle, they define "Leaders in research are those who design, find funding for, conduct, and publish research. They are often academics (but not necessarily so); Participants in research are those who participate in every sense (that is, they are engaged in it intellectually, understand and feel aligned with the purpose of the research, could describe the project to a third party, and are interested in the results. They usually are sufficiently part of the research to earn authorship. (This distinguishes them from less engaged participants who are asked to, or are paid to, simply recruit patients for a project, such as run by a pharmaceutical

company); Users of research are all clinicians, but to a greater or lesser degree." (Del Mar, 2004; p. s36).

At every tier, health professionals may exhibit varying degrees of participation in research, ranging from suboptimal to optimal levels. It is essential to prioritize efforts aimed at fostering and facilitating health professionals to participate at the highest possible level within each tier. This strategic focus ensures a more robust integration of research activities across all levels, maximizing the positive impact and contributions of clinicians in advancing research within their respective domains. According to the findings from the questionnaire survey, a significant majority of Portuguese health professionals appear to hold leadership roles or actively participate in research endeavors. Notably, 72% of those involved in research projects assume critical roles such as principal investigator, site principal investigator, or co-investigator, indicating a robust participation in the research process. However, a noteworthy aspect is that a substantial portion of these research initiatives (45%) operates without external funding.

This duality in roles — acting as research leaders while a considerable proportion of projects lack financial support — raises important considerations. While the high level of participation and leadership roles among health professionals is commendable, the prevalence of unfunded projects may pose challenges in terms of resource availability, potential limitations in project scope, and overall sustainability. This scenario invites further theoretical inquiry into the interplay between funding structures and research engagement, suggesting that financial support mechanisms are critical for sustaining high levels of participation among health professionals. It prompts further exploration into the dynamics of research funding within the healthcare context and underscores the need for strategies to enhance financial support for research initiatives led by health professionals. Initiatives aimed at fostering collaboration, securing external funding, and promoting awareness of the value of healthcare research could contribute to optimizing the impact of health professionals in advancing research within the Portuguese healthcare system.

Chapter 6 - Conclusions & Future Perspectives

6.1. Conclusions

In light of the considerations outlined above, the primary aim of this study was to investigate the variables that facilitate or impede the active participation and leadership of health professionals in research projects within national healthcare entities. The newly obtained data provides further depth to these findings, reinforcing existing conclusions while offering fresh perspectives on health professionals' participation in research.

Based on this information provided earlier about the main enablers and barriers for health professionals to participate in research in Portugal, several conclusions can be drawn:

a. **Research-Oriented Institutions:** The presence of research-focused institutions and universities in Portugal creates a conducive environment for health professionals. These entities provide essential resources, infrastructure, and mentorship that support research participation.

b. **Collaborative Networks:** National and international collaborative networks significantly facilitate research participation among health professionals. Partnerships with other researchers and organizations foster knowledge exchange and joint research initiatives.

c. **Availability of Research Funding:** Access to research funding, including grants from government agencies and private foundations, offers crucial financial support. Such funding opportunities incentivize health professionals to initiate and sustain research projects.

d. **Skill Development Programs:** Initiatives aimed at enhancing research skills and knowledge contribute to higher levels of participation. Ongoing education, workshops, and training empower professionals to participate effectively in research activities and bridge any confidence gaps regarding their capabilities.

e. **Clinical Workloads:** Heavy clinical workloads and time constraints can hinder health professionals from dedicating adequate time to research. A strategic approach to balancing clinical responsibilities with research demands, particularly through optimized time management systems, is essential.

f. **Research Culture:** The lack of a robust research culture within healthcare settings may deter health professionals from pursuing research. Limited exposure and encouragement can act

as barriers. Strengthening institutional research culture through targeted initiatives can help alleviate this challenge.

g. **Resource Limitations:** Insufficient funding, inadequate research facilities, and limited access to technology can obstruct research participation. Enhancing the visibility of research outputs through effective dissemination can attract additional funding and resources.

Additionally, we explored the impact of perceived organizational support (POS) on health professionals' involvement in research activities. Our study effectively achieved its objectives by providing valuable insights into the factors influencing research participation within the healthcare sector. Social Exchange Theory serves as a theoretical framework for interpreting these findings, emphasizing the role of POS in shaping research participation.

Social Exchange Theory posits that individuals engage in reciprocal relationships with their organizations, where favourable treatment and support foster a sense of obligation and commitment. In this context, when health professionals perceive strong organizational support, they are more likely to reciprocate with increased involvement in research initiatives.

Our findings affirm that POS plays a pivotal role in shaping the landscape of research participation. Health professionals who feel supported by their organizations are more likely to invest time and effort in research activities. This reciprocal relationship is crucial for cultivating a research-oriented culture within healthcare organizations.

However, our findings reveal that the relationship between perceived organizational support and research participation runs parallel to, rather than mediating, the effects of enablers and barriers. While POS positively influences research participation, it does not act as a mediator between enablers and barriers and research participation. Instead, the presence of enablers and the mitigation of barriers independently enhance research participation, while perceived support from the organization further amplifies this participation. This underscores the need for healthcare organizations to address both individual and institutional factors concurrently to foster research involvement.

This nuanced understanding provides valuable insights for healthcare organizations aiming to cultivate a research-oriented culture. While addressing specific enablers and barriers is crucial, concurrently fostering a supportive organizational environment can enhance the effectiveness of strategies designed

to promote research participation among healthcare professionals. The coexistence of these factors emphasizes the multifaceted nature of influences on research participation.

In conclusion, facilitating health professionals' participation in research within Portuguese healthcare organizations requires a comprehensive strategy that addresses prevailing barriers while leveraging key enablers. Aligning with the principles of Social Exchange Theory, POS emerges as an important antecedent, fostering a reciprocal relationship between health professionals and their organizations. Despite facing significant barriers and challenges within the Portuguese healthcare landscape, health professionals demonstrate a commendable level of research participation, driven by their intellectual commitment and alignment with research goals.

Their positive participation is further exemplified by their genuine interest in research outcomes, illustrating a reciprocal exchange where organizational support fosters sustained commitment. Our findings highlight the importance of cultivating a robust research culture and providing institutional support in line with POS principles to motivate health professionals to actively contribute to research activities. Additionally, creating funding opportunities and promoting collaborative initiatives are pivotal in cultivating an environment conducive to research participation. Addressing issues related to workload, resource availability, and administrative burdens is crucial for sustaining and enhancing health professionals' active involvement in research endeavors.

Ultimately, our study reveals that intrinsic motivation emerges as a potent driver of sustained research participation among Portuguese health professionals. This intrinsic motivation can be viewed as a form of psychological reciprocity within the professional-organizational relationship, where health professionals, propelled by an inherent desire for autonomy and competence fulfilment, actively seek and participate in research initiatives.

Based on the findings of our study, we posit that implementing a set of recommendations, which has demonstrated efficacy in other countries, viable and beneficial for application in Portugal. These recommendations include the following:

1. **Cultivate a Research-Conducive Atmosphere in Health Organizations:** Foster a research-friendly environment within hospitals by aligning the institution's strengths and

clinical focus with the professional interests of health professionals. This entails a top-down approach, necessitating active participation from the entire hospital hierarchy.

2. **Recognize and Incentivize Health Professionals' Research Contributions:** Implement measures to acknowledge and reward the active participation of health professionals in research endeavours. This involves transparently outlining how contributions are acknowledged and funded, providing regular updates on research progress and impact, promoting career development opportunities, and establishing mutual benefits for both the health professionals and the organization.
3. **Optimize Time Management Systems for Research-Oriented Health Professionals:** Enhance time management systems for health professionals with a keen interest in research. This includes the implementation of effective strategies and tools to assist them in efficiently allocating their time between clinical duties and research activities.
4. **Establish Infrastructure for Efficient Research Time Utilization:** Develop a robust infrastructure that ensures the efficient utilization of time dedicated to research. This encompasses providing appropriate physical space, as well as administrative and financial personnel support, to facilitate and streamline research activities effectively.
5. **Implement Tailored Contracts for Clinician-Researchers:** Introduce specific contracts designed for clinician-researchers within healthcare organizations. These contracts play a pivotal role in offering clarity and transparency to clinicians as they navigate the dual demands of clinical practice and active involvement in research. Such tailored agreements provide a structured framework to support and balance the diverse responsibilities of clinician-researchers.

In summary, these recommendations collectively aim to cultivate a thriving research culture within the healthcare landscape of Portugal, acknowledging the dual roles of health professionals as clinicians and researchers. By fostering a supportive environment, recognizing contributions, optimizing time management, establishing efficient infrastructure, and implementing tailored contracts, these measures seek to empower health professionals, enhance research participation, and ultimately contribute to the advancement of evidence-based healthcare practices in the country.

6.3. Main Contributions

For the first time, our study pioneers an exploration of healthcare professionals' participation in research and its implications in the context of Portugal. This research is ground-breaking as it not only fills a notable gap in the existing literature but also sheds light on the unique challenges and opportunities within the Portuguese healthcare landscape.

A significant contribution of our study lies in the validation and adaptation of the POS scale, incorporating specific questions related to research support. This tailored approach ensures a more nuanced understanding of the organizational dynamics that influence healthcare professionals' participation in research.

We firmly believe that the potential for a broader spectrum of health professionals to actively participate in research exists, provided that the appropriate organizational conditions are established. Our findings emphasize the crucial role of organizational support in shaping healthcare professionals' involvement in research activities.

The theoretical contributions stemming from the results of this study on the main barriers and enablers influencing health professionals' participation in research unveil a significant role played by POS with a direct effect on research participation. Rooted in Social Exchange Theory, theoretical insights derived from the findings of this study regarding the main barriers and enablers influencing health professionals' research participation highlight the significant and direct impact of POS on research participation. In contrast to the initial hypothesis, which proposed POS as a mediator, our results indicate that POS exerts a direct influence on the level of research participation among health professionals. The Social Exchange Theory provides a compelling framework to rationalize this direct effect.

According to the Social Exchange Theory, POS becomes a vital factor in shaping the relationship between the organizational context and the active involvement of health professionals in research. This theory posits that strong organizational support establishes a foundation for positive social exchanges. In this reciprocal dynamic, health professionals, perceiving robust support, are more inclined to reciprocate with heightened commitment that surpasses mere job obligations, thereby contributing significantly to the organization's overall success. This reciprocal relationship creates a reinforcing cycle, aligning with the findings of Kurtessis et al. (2017).

Therefore, the study not only elucidates the main barriers and enablers influencing health professionals' research participation but also underscores the pivotal and direct role of POS in fostering a positive environment for research involvement. This direct effect underscores the importance of cultivating organizational support as a standalone factor, independent of its mediating role, in promoting and sustaining health professionals' active participation in research activities.

6.2. Limitations & Future Research Perspectives

This research has delved into a particular angle of health professionals' participation in research, exploring the main barriers, enablers, and the intricate relationship with organizational supporting light of these findings, the logical progression for future research involves shifting the focus towards the perspectives of health managers and policy makers within healthcare organizations in Portugal. An insightful extension of this study would entail a collaborative examination of the results with health managers through the implementation of focused and interactive focus groups. This approach not only fosters a deeper understanding of the nuanced challenges and opportunities identified, but also facilitates a more comprehensive and collaborative exploration of strategies to enhance research involvement. By broadening the scope to include the perspectives of key decision-makers, who are often absent in traditional survey-based studies, future research endeavours can address the limitation of not having the health manager's perspective. This inclusion of diverse viewpoints can contribute valuable insights towards the development of targeted interventions and policies that support and promote a culture of active research participation within healthcare settings.

Furthermore, given the apparent significance of time as a crucial variable influencing the participation of health professionals in research, it becomes imperative to investigate whether the presence of children and/or family duties may exert an influence on such involvement. The absence of an exploration into this perspective represents a notable limitation in our study. By not considering the potential influence of parenthood on research participation, we may overlook a crucial dimension that could contribute to a more comprehensive understanding of the factors influencing professionals' participation in research activities. Future research should therefore aim to address this gap by specifically examining the interplay between parental responsibilities and the time constraints experienced by health professionals in the context of research involvement.

Expanding the exploration of perspectives on the involvement of health professionals in research, a compelling avenue for further investigation lies in a more nuanced examination of the relationships between health professionals and academia. Unfortunately, this type of insightful analysis was not possible within the scope of our study. Understanding the dynamics and collaborations between these two realms could reveal innovative approaches to fostering a symbiotic partnership. For instance, investigating how academic institutions and healthcare professionals collaborate in the development and implementation of research initiatives could offer insights into optimizing knowledge exchange and leveraging resources effectively. Additionally, exploring the impact of emerging technologies on this partnership, such as telemedicine and digital health, could provide a futuristic dimension to the study (Butcher & Hussain, 2022).

In addition, exploring future research directions to comprehensively bridge the findings from our study, it becomes imperative to delve into novel theories that can better elucidate the complex panorama of health professionals' research participation. While our initial hypothesis posited that POS might serve as a mediating variable between enablers/barriers and the involvement in research by health professionals, our results demonstrated a rejection of this assumption. Surprisingly, health professionals exhibited a capacity to overcome high barriers associated with organizational policies, showcasing resilience and an inherent motivation to participate in research. This suggests a noteworthy aspect of personal determination, possibly rooted in the overarching goal of delivering optimal patient care.

To further unpack this intriguing dynamic, future research could benefit from incorporating theories that delve into the motivational aspects of health professionals. The application of the self-determination theory, for instance, could provide valuable insights into understanding the internal drive and personal motivations that propel health professionals to participate in research despite organizational barriers (Deci & Ryan, 1985).

By unravelling the intricacies of these connections, future research activities have the potential not only to enrich our comprehension of the collaborative landscape but also to inform strategies that cultivate a robust and mutually beneficial synergy between health professionals and the academic sphere.

REFERENCES

Administração Central do Sistema de Saúde (ACSS). (n.d.). Medical Career in the National Health Service. Accessed in August 2024. Available at https://www.acss.min-saude.pt.

Administração Central do Sistema de Saúde (ACSS). (n.d.). Regulation of the Nursing Career.Accessed in August 2024. Available at https://www.acss.min-saude.pt.

Ajjawi, R., Crampton, P., & Rees, C. E. (2018). What really matters for successful research environments? A realist synthesis. Medical education, 52(9), 936–950. Advanced online publication. https://doi.org/10.1111/medu.13643

Alison, J. A., Zafiropoulos, B., & Heard, R. (2017). Key factors influencing allied health research capacity in a large Australian metropolitan health district. Journal of multidisciplinary healthcare, 10, 277–291. https://doi.org/10.2147/JMDH.S142009

Andrew, J., Johnston, B., & Papadopoulou, C. (2013). Community nurses' participation in palliative care research: the Dignity Care Pathway. British journal of community nursing, 18(7), 326–331. https://doi.org/10.12968/bjcn.2013.18.7.326

Atibuni, D.Z., Olema, D.K., Ssenyonga, J., Karl, S., & Kibanja, G. (2017). Mediation Effect of Research Skills Proficiency on the Core Self-Evaluations – Research participation Relationship among Master of Education Students in Uganda. Journal of Education and Practice, 8, 103-108.

Bacigalupo, R., Cooke, J., & Hawley, M. (2006). Research activity, interest, and skills in a health and social care setting, a snapshot of a primary care trust in northern England: implications for collaboration and capacity. Primary Health Care Research & Development, 7, 68 - 77.

Bhatt A. (2010). Evolution of clinical research: a history before and beyond James Lind. Perspectives in clinical research, 1(1), 6–10.

Bindman A. B. (2013). The evolution of health services research. Health services research, 48(2 Pt 1), 349–353. https://doi.org/10.1111/1475-6773.12051

Bishop, J. W., & Scott, K. D. (2000). An examination of organizational and team commitment in a self-directed team environment. Journal of Applied Psychology, 85(3), 439–450. https://doi.org/10.1037/0021-9010.85.3.439

Boaz, A., Hanney, S., Jones, T., & Soper, B. (2015). Does the engagement of clinicians and organisations in research improve healthcare performance: a three-stage review. BMJ Open, 5(12), e009415. https://doi.org/10.1136/bmjopen-2015-009415

Borges, N. J., Navarro, A. M., Grover, A., & Hoban, J. D. (2010). How, when, and why do physicians choose careers in academic medicine? A literature review. Academic medicine: journal of the

Association of American Medical Colleges, 85(4), 680–686. https://doi.org/10.1097/ACM.0b013e3181d29cb9

Bowen, S. J., & Graham, I. D. (2013). From knowledge translation to engaged scholarship: Promoting research relevance and utilization. Archives of Physical Medicine and Rehabilitation, 94(1 Suppl.), S3–S8.

Bowers, B., Cohen, L. W., Elliot, A. E., Grabowski, D. C., Fishman, N. W., Sharkey, S. S., Zimmerman, S., Horn, S. D., & Kemper, P. (2013). Creating and supporting a mixed methods health services research team. Health services research, 48(6 Pt 2), 2157–2180. https://doi.org/10.1111/1475-6773.12118

Buckley, L. M., Sanders, K., Shih, M., & Hampton, C. L. (2000). Attitudes of clinical faculty about career progress, career success and recognition, and commitment to academic medicine. Results of a survey. Archives of internal medicine, 160(17), 2625–2629. https://doi.org/10.1001/archinte.160.17.2625

Butcher, C. J., & Hussain, W. (2022). Digital healthcare: the future. Future healthcare journal, 9(2), 113–117. https://doi.org/10.7861/fhj.2022-0046

Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. Information Systems Research, 14(2), 189–217. https://doi.org/10.1287/isre.14.2.189.16018

Chullen, C. L., Dunford, B. B., Angermeier, I., Boss, R. W., & Boss, A. D. (2010). Minimizing deviant behavior in healthcare organizations: the effects of supportive leadership and job design. Journal of Healthcare Management, 55(6), 381-397

Ciemins, E. L., Mollis, B. L., Brant, J. M., Hassell, L. A., Albritton, S., Amoroso, P., Lloyd, A., Smith, J. M., Pflugeisen, B. M., Tuttle, K. R., & Baldwin, L. M. (2020). Clinician engagement in research as a path toward the learning health system: A regional survey across the northwestern United States. Health services management research, 33(1), 33–42. https://doi.org/10.1177/0951484819858830

Condell, S. L., & Begley, C. (2007). Capacity building: a concept analysis of the term applied to research. International journal of nursing practice, 13(5), 268–275. https://doi.org/10.1111/j.1440-172X.2007.00637.x

Cook K. S., Emerson R. M., Gillmore M. R. (1983). The distribution of power in exchange networks: theory and experimental results. Am. J. Sociol. 89, 275–305. doi: 10.1086/227866

Cooke, J., Ariss, S., Smith, C., & Read, J. (2015). On-going collaborative priority-setting for research activity: a method of capacity building to reduce the research-practice translational gap. Health Research Policy and Systems, 13(1). https://doi.org/10.1186/s12961-015-0014-y

Cropanzano R., Mitchell M. S. (2005). Social exchange theory: an interdisciplinary review. J. Manag. 31, 874–900. doi: 10.1177/0149206305279602

Cropanzano, R., Anthony, E. L., Daniels, S. R., & Hall, A. V. (2017). Social exchange theory: A critical review with theoretical remedies. The Academy of Management Annals, 11(1), 479–516. https://doi.org/10.5465/annals.2015.0099

Cunha, M. P., Rego, A., Cunha, R. C. & Cabral-Cardoso, C. (2006). Manual de comportamento organizacional e gestão (5ª edição, revista e actualizada ed.). Lisboa: RH Editora.

Daniels, N., Gillen, P., & Casson, K.. (2021). Researcher practitioner engagement in health research: The development of a new concept. Research in Nursing & Health, 44(3), 534–547. https://doi.org/10.1002/nur.22128

Deci, E. L., & Ryan, R. M. (1985). Intrinsic Motivation and Self-Determination in Human Behavior. New York: Plenum Press. http://dx.doi.org/10.1007/978-1-4899-2271-7

Decreto-Lei n.º 176/2009 de 4 de agosto. Ministério da Saúde. Diário da República, n.º 149/2009, Série I de 2009-08-04. Accessed in August 2024. Available at [https://diariodarepublica.pt].

Decreto-Lei n.º 248/2009 de 22 de setembro. Ministério da Saúde. Diário da República, n.º 184/2009, Série I de 2009-09-22. Accessed in August 2024. Available at [https://diariodarepublica.pt].

Decreto-Lei n.º 261/93 de 24 de julho. Ministério da Saúde. Diário da República, n.º 172/1993, Série I-A de 1993-07-24. Accessed in August 2024. Available at [https://diariodarepublica.pt].

Del Mar, C. (2004). Building Family/General Practice Research Capacity. The Annals of Family Medicine, 2(suppl_2), S35–S40. https://doi.org/10.1370/afm.146

Direção-Geral da Saúde (DGS). (n.d.). Continuous Education and Career Progression for Medical Doctors. Accessed in August 2024. Available at https://www.dgs.pt.

Direção-Geral da Saúde (DGS). (n.d.). Nurses' Competencies and Responsibilities. Accessed Accessed in August 2024. Available at https://www.dgs.pt.

DGEEC - Direção-Geral de Estatísticas da Educação e Ciência (2023). DESPESA NACIONAL EM I&D POR ÁREA TEMÁTICA DA ENEI (2014 - 2021). (available at: https://www.dgeec.mec.pt/np4/206/%7B$clientServletPath%7D/?newsId=11&fileName=DespesaIDPorAreaTematicaENEI_ipctn21.pdf)

Eisenberger R., Lynch P., Aselage J., Rohdieck S. (2004). Who takes the most revenge? Individual differences in negative reciprocity norm endorsement. Pers. Soc. Psychol. Bull. 30, 787–799. doi: 10.1177/0146167204264047

Eisenberger, R, & Stinglhamber, F. (2011). Perceived organizational support: Fostering enthusiastic and productive employees. Washington, DC, US: American Psychological Association.

Evans, T. W., Gower, J., Neilson, J., Wass, J., Smye, S. W., & Royal College of Physicians Academic Medicine Committee and National Institute for Health Research Clinical Research Network (2013). Report of a Royal College of Physicians and National Institute for Health Research workshop - developing research capacity to ensure successful study development and delivery. Clinical medicine (London, England), 13(5), 431–433. https://doi.org/10.7861/clinmedicine.13-5-431

Fornell, C, & Larcker, DF (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research 18, 39-50

FCT - Fundação para a Ciência e a Tecnologia, I.P. (2019). Relatório de Atividades FCT 2019. (available at:https://www.fct.pt/wp-content/uploads/2022/06/RA2019_final.pdf)

Ferrinho, P., Simões, J., Pereira Miguel, J., Beja, A., Cortes, M., & Hartz, Z. (2018). Da gestão estratégica do sistema de saúde português à avaliação do seu desempenho – um percurso em construção. Anais Do Instituto De Higiene E Medicina Tropical, 12, 76-87. https://doi.org/10.25761/anaisihmt.195

Fundação Francisco Manuel dos Santos. (2023). PORDATA - Base de Dados Portugal Contemporâneo.https://www.pordata.pt/db/portugal/ambiente+de+consulta/tabela

Gilbert, A., Steel, J., Rachel, D., & Jaggi, A. (2016). Identifying barriers and facilitators to engaging in clinical research within an NHS Therapies Department: results of a listening exercise. Physiotherapy, 102, e179. https://doi.org/10.1016/j.physio.2016.10.214

Goodman, M. S., & Sanders Thompson, V. L. (2017). The science of stakeholder engagement in research: classification, implementation, and evaluation. Translational Behavioral Medicine, 7(3), 486–491. https://doi.org/10.1007/s13142-017-0495-z

Grace, J. B., Bollen, K. A. (2006) The interface Between theory and data in structural equation models. U. S. Geological Survey Open-Fire Report, 2006-1363, 33p

Hanney, S., Boaz, A., Jones, T., & Soper, B. (2013). Engagement in research: an innovative three-stage review of the benefits for health-care performance. Health Services and Delivery Research, 1(8), 1–152. https://doi.org/10.3310/hsdr01080

Harrison, R. A. (2005). Barriers and opportunities to developing research capacity in primary care trusts: the views of staff attached to a primary care trust. Primary Health Care Research & Development, 6(3), 185–189. https://doi.org/10.1191/1463423605pc233oa

Hayton, J. C., Carnabuci, G., & Eisenberger, R. (2012). With a little help from my colleagues: A social embeddedness approach to perceived organizational support. Journal of Organizational Behavior, 33(2), 235–249. https://doi.org/10.1002/job.755

Homans, G. C. (1958). Social behavior as exchange. Am. J. Sociol. 63, 597–606. doi: 10.1086/222355
Homans, G. C. (1958). Social Behavior as Exchange. American Journal of Sociology, 63(6), 597–606. http://www.jstor.org/stable/2772990

Institute of Medicine (US) Committee on Health Research and the Privacy of Health Information: The HIPAA Privacy Rule; Nass SJ, Levit LA, Gostin LO, editors. Beyond the HIPAA Privacy Rule: Enhancing Privacy, Improving Health Through Research. Washington (DC): National Academies Press (US); 2009. 3, The Value, Importance, and Oversight of Health Research. Available from: https://www.ncbi.nlm.nih.gov/books/NBK9571/

Institute of Medicine (US) Committee on Health Services Research: Training and Work Force Issues; Thaul S, Lohr KN, Tranquada RE, editors. Health Services Research: Opportunities for an Expanding Field of Inquiry: An Interim Statement. Washington (DC): National Academies Press (US); 1994. A WORKING DEFINITION OF HEALTH SERVICES RESEARCH. Available from: https://www.ncbi.nlm.nih.gov/books/NBK231502

IPCTN-INQUÉRITO AO POTENCIAL CIENTÍFICO E TECNOLÓGICO NACIONAL (2022). Despesa e recursos humanos em Investigação e Desenvolvimento (I&D). (available at: https://www.dgeec.mec.pt/np4/206/%7B$clientServletPath%7D/?newsId=11&fileName=IPCTN22_ResultadosProvisorios.pdf)

Israel B.A., Schulz A.J., Parker E.A., Becker A.B. (1998). Review of community-based research: assessing partnership approaches to improve public health. Annual Review of Public Health. 19:173–202.

Israel, B.A., Schulz, A.J., Parker, E.A., Becker, A.B., Allen, A., & Guzman, J.R. (2008a). Critical issues in developing and following community-based participatory research principles. In M. Minkler, N. Wallerstein (eds), Community-Based Participatory Research for Health, 2nd ed (pp.47-66). San Francisco: Jossey-Bass.

Kabene, S. M., Orchard, C., Howard, J. M., Soriano, M. A., & Leduc, R. (2006). The importance of human resources management in health care: a global context. Human resources for health, 4, 20. https://doi.org/10.1186/1478-4491-4-20

Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta–analytic evaluation of organizational support theory. Journal of management, 43(6), 1854-1884. doi.org/10.1177/0149206315575554.

Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta-analytic evaluation of organizational support theory. Journal of Management, 43(6), 1854–1884. https://doi.org/10.1177/0149206315575554

Kvale, S. (1996). Interviews: An introduction to qualitative research interviewing. Thousand Oaks, California: Sage Publications.

Liden, R. C., Wayne, S. J., & Sparrowe, R. T. (2000). An examination of the mediating role of psychological empowerment on the relations between the job, interpersonal relationships, and work outcomes. Journal of Applied Psychology, 85(3), 407–416. https://doi.org/10.1037/0021-9010.85.3.407

Lizarondo, L., Grimmer-Somers, K., & Kumar, S. (2011). A systematic review of the individual determinants of research evidence use in allied health. Journal of multidisciplinary healthcare, 4, 261–272. https://doi.org/10.2147/JMDH.S23144

Lowrie, R., Morrison, G., Lees, R., Grant, C. H., Johnson, C., Maclean, F., Semple, Y., Thomson, A., Harrison, H., Mullen, A. B., Lannigan, N., & Macdonald, S. (2015). Research is 'a step into the unknown': an exploration of pharmacists' perceptions of factors impacting on research participation in the NHS. BMJ Open, 5(12), e009180. https://doi.org/10.1136/bmjopen-2015-009180

Matus, J., Wenke, R., Hughes, I., & Mickan, S. (2019). Evaluation of the research capacity and culture of allied health professionals in a large regional public health service. Journal of multidisciplinary healthcare, 12, 83–96. https://doi.org/10.2147/JMDH.S178696

McCarthy, A., Cleveland, J. N., Hunter, S., Darcy, C., & Grady, G. (2013). Employee work–life balance outcomes in Ireland: A multilevel investigation of supervisory support and perceived organizational support. International journal of human resource management, 24(6), 1257-1276. doi.org/10.1080/09585192.2012.709189

Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. Implementation Science, 6(1), 42. https://doi.org/10.1186/1748-5908-6-42

Mitchell, K., Baillie, L., & Phillips, N. (2015). Increasing nurse and midwife engagement in research activity. Nursing standard (Royal College of Nursing (Great Britain): 1987), 29(23), 37–42. https://doi.org/10.7748/ns.29.23.37.e9345

Molm L. D. (1994). Dependence and risk: transforming the structure of social exchange. Soc. Psychol. Q. 57, 163–176. doi: 10.2307/2786874

Molm L. D. (2003). Theoretical comparisons of forms of exchange. Sociol Theory 21, 1–17. doi: 10.1111/1467-9558.00171

Moore, J., Crozier, K., & Kite, K. (2012). An action research approach for developing research and innovation in nursing and midwifery practice: building research capacity in one NHS foundation trust. Nurse education today, 32(1), 39–45. https://doi.org/10.1016/j.nedt.2011.01.014

Nunes, A. M., & Ferreira, D. C. (2022). A Critical Analysis of Decentralizing the Portuguese Public Healthcare Provision Services. International journal of environmental research and public health, 19(20), 13390. https://doi.org/10.3390/ijerph192013390

Nunes, A.M. Reforms in Portuguese Hospital Management: Analysis of the Effects of Entrepreneurship. Ph.D. Thesis, University of Lisbon, Lisbon, Portugal, 2016

Ogbonnaya, C., Tillman, C. J., & Gonzalez, K. (2018). Perceived Organizational Support in Health Care: The Importance of Teamwork and Training for Employee Well-Being and Patient Satisfaction. Group & Organization Management, 43(3), 475–503. https://doi.org/10.1177/1059601118767244

Pager, S., Holden, L., & Golenko, X. (2012). Motivators, enablers, and barriers to building allied health research capacity. Journal of multidisciplinary healthcare, 5, 53–59. https://doi.org/10.2147/JMDH.S27638

Perry, L., Grange, A., Heyman, B., & Noble, P.. (2008). Stakeholders' perceptions of a research capacity development project for nurses, midwives and allied health professionals. Journal of Nursing Management, 16(3), 315–326. https://doi.org/10.1111/j.1365-2834.2007.00801.x

Pratt, B., & Hyder, A. A. (2015). Applying a global justice lens to health systems research ethics: an initial exploration. Kennedy Institute of Ethics journal, 25(1), 35–66. https://doi.org/10.1353/ken.2015.0005

Rahman, S., Majumder, M. A., Shaban, S. F., Rahman, N., Ahmed, M., Abdulrahman, K. B., & D'Souza, U. J. (2011). Physician participation in clinical research and trials: issues and approaches. Advances in medical education and practice, 2, 85–93. https://doi.org/10.2147/AMEP.S14103

Redmond, Mark V., "Social Exchange Theory" (2015). English Technical Reports and White Papers. 5. http://lib.dr.iastate.edu/engl_reports/5

Roth, J. A. (1966). Hired hand research. The American Sociologist,1,190–196.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American Psychologist, 55(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Sanders Thompson, V. L., Ackermann, N., Bauer, K. L., Bowen, D. J., & Goodman, M. S. (2021). Strategies of community engagement in research: definitions and classifications. Translational Behavioral Medicine, 11(2), 441–451. https://doi.org/10.1093/tbm/ibaa042

Santos, J.C., & Gonçalves, G. (2013). Contribuição para a adaptação portuguesa da escala de Percepção de Suporte Organizacional de Eisenberger, Huntington, Hutchison e Sowa (1986).

Sanyal, B. C., & Varghese, N. V. (2007). Knowledge for the future: research capacity in developing countries (Research papers IIEP, No. 20). International Institute for Educational Planning.

Sashka, D., Rob, P., Sarah, B., Amelia, H., Asha, C., & Sonja, M. (2020). Enabling NHS Staff to Contribute to Research: Reflecting on Current Practice and Informing Future Opportunities. Rand health quarterly, 8(4), RR-2679-THIS.

Shiffman, J., & Smith, S.. (2007). Generation of political priority for global health initiatives: a framework and case study of maternal mortality. The Lancet, 370(9595), 1370–1379. https://doi.org/10.1016/s0140-6736(07)61579-7

Shore L. M., Coyle-Shapiro J. A.-M. (2003). New developments in the employee-organization relationship. J. Organ. Behav. 24, 443–450. doi: 10.1002/job.212

Shoss, M. K., Eisenberger, R., Restubog, S. L., & Zagenczyk, T. J. (2013). Blaming the organization for abusive supervision: the roles of perceived organizational support and supervisor's organizational embodiment. The Journal of applied psychology, 98(1), 158–168. https://doi.org/10.1037/a0030687

Smee, C. (2003). "Improving Value for Money in the United Kingdom National Health Service: Performance Measurement and Improvement in a Centralised System", in Measuring Up: Improving Health System Performance in OECD Countries, OECD Publishing, Paris, https://doi.org/10.1787/9789264195950-5-en

Snooks, H., Evans, A., Wells, B., Peconi, J., & Thomas, M. (2015). What are the highest priorities for research in pre-hospital care? Results of a review and Delphi consultation exercise. Australasian Journal of Paramedicine, 6(4). https://doi.org/10.33151/ajp.6.4.471

SNS-Serviço Nacional de Saúde. (2023). Análise Mensal do Balanço Social. https://www.sns.gov.pt/monitorizacao-do-sns/analise-mensal-do-balanco-social/

Stage, F.K., Carter, H.C., & Nora, A. (2004). Path analysis: An introduction and analysis of a decade of research. The Journal of Educational Research, 98(1), 5–13. https:// doi.org/10.3200/JOER.98.1.5-13

Steers, R. M. (1977). Antecedents and outcomes of organizational commitment. Administrative Science Quarterly, 22(1), 46–56. https://doi.org/10.2307/2391745

Thibault, J. W., and Kelley, H. H. (1959). The Social Psychology of Groups. New York: John Wiley

Trostle, J., & Simon, J. (1992). Building applied health research capacity in less-developed countries: problems encountered by the ADDR Project. Social science & medicine (1982), 35(11), 1379–1387. https://doi.org/10.1016/0277-9536(92)90041-n

UNESCO. 2005. Towards knowledge societies. Paris: UNESCO. (www.unesco.org/iiep/en/publications/pubs.htm)

Wenke, R., Mickan, S. The role and impact of research positions within health care settings in allied health: a systematic review. BMC Health Serv Res 16, 355 (2016). https://doi.org/10.1186/s12913-016-1606-0

Wenke, R., Noble, C., Weir, K. A., & Mickan, S.. (2020). What influences allied health clinician participation in research in the public hospital setting: a qualitative theory-informed approach. BMJ Open, 10(8), e036183. https://doi.org/10.1136/bmjopen-2019-036183

Williams, C., Miyazaki, K., Borkowski, D., McKinstry, C., Cotchet, M., & Haines, T. (2015). Research capacity and culture of the Victorian public health allied health workforce is influenced by key research support staff and location. Australian health review: a publication of the Australian Hospital Association, 39(3), 303–311. https://doi.org/10.1071/AH14209

Yu, K., Liu, X. Y., & Huang, Y. H. (2017). Research on the influence of visionary leadership on employees' voice behavior: The role of organizational support and challenge–based stress assessment. Modern management science, 5,106-108.

Zerhouni E. A. (2005). Translational and clinical science–time for a new vision. The New England journal of medicine, 353(15), 1621–1623. https://doi.org/10.1056/NEJMsb053723

APPENDICES

Appendix I – Interview Guide

1. Qual é a sua categoria como profissional de saúde?

2. Qual o tipo de organização de saúde onde desempenha funções?

3. O que significa para si estar envolvida em projetos de investigação?

4. Acha importante que os profissionais de saúde participem em projetos de investigação no local de trabalho?

5. Está ou esteve envolvida(o) em projetos de investigação?

a. Se sim, em que âmbito? Para obter algum tipo de grau académico? No âmbito de algum projeto desenvolvido na sua organização de saúde? No âmbito de alguma colaboração com universidades/institutos de investigação?

b. Se não, porquê?

6. Existe algum tipo de apoio ou incentivo de outras pessoas para se envolver em investigação clínica?

7. Como se sente quando pensa em participar em projetos de investigação?

8. O que pode afetar a sua decisão ou dos seus colegas em participar em investigação?

9. Na sua opinião qual a maior barreira(s) para os profissionais de saúde envolverem-se em projetos de investigação?

10. Na sua opinião qual a maior motivação ou facilitador para os profissionais de saúde envolverem-se em projetos de investigação?

11. Participar em projetos de investigação afeta a relação com outros colegas profissionais de saúde?

12. Qual a posição da organização onde desempenha funções sobre este assunto?

13. Alguma vez falou com alguém da direção sobre este assunto?

Solicitações de exemplos: Pode me falar um pouco mais sobre isto? O que quer dizer com...? Como? Porquê?

Appendix II – Questionnaire Survey

O principal objetivo deste questionário é compreender a experiência dos Profissionais de Saúde Portugueses que participam (ou não) em Projetos de Investigação dentro das suas Organizações de Saúde.

Dito isto, as suas respostas devem ser focadas na sua experiência pessoal como profissional de saúde e na sua participação em projetos de investigação, e por isso não há respostas certas ou erradas. A informação recolhida é estritamente anónima e confidencial, destinando-se exclusivamente a ser tratada estatisticamente no âmbito do projeto.

> Depois de ler o texto introdutório, considero-me informado/a e aceito participar neste estudo. *

☐ Sim ☐ Não

*(só avança para a Parte 1 caso a resposta seja "sim")

PARTE I- Caracterização sociodemográfica da amostra

1- Sexo:

☐ Feminino ☐ Masculino ☐ Outro

2- Idade:

☐ ≤ 25 anos ☐ 26 – 35 anos ☐ 36 – 45 anos ☐ 46 – 55 anos ☐ ≥ 56 anos

3- Estado Civil:

☐ Solteiro(a) ☐ Casado(a) ☐ Divorciado(a) ☐ Viúvo(a) ☐ Outro

4- Habilitações Literárias:

☐ Licenciatura ☐ Mestrado ☐ Doutoramento

5- Categoria Profissional:

☐ Médico(a) ☐ Técnico(a) Diagnóstico e Terapêutica ☐ Enfermeiro(a)

6-Especialidade(s) Médica(s) e/ou Serviço(s) Clínico(s) em que exerce a sua atividade profissional

☐ Anatomia Patológica; ☐ Anestesiologia; ☐ Cardiologia; ☐ Cirurgia; ☐ Cuidados Paliativos e Medicina Interna; ☐ Dermatologia; ☐ Endocrinologia; ☐ Farmácia; ☐ Gastrenterologia; ☐ Genética; ☐ Ginecologia/ Obstetrícia; ☐ Hematologia; ☐ Imagiologia; ☐ Imunohemoterapia; ☐ Medicina Nuclear; ☐ Neurologia/ Neurocirurgia; ☐Nutrição; ☐ Oncologia; ☐ Otorrinolaringologia; ☐ Patologia; ☐ Pediatria; ☐ Pneumologia; ☐ Psiquiatria; ☐ Psicologia; ☐ Radioterapia; ☐ Urologia;

☐ Outro: _____

7- Antiguidade na Organização:

☐ ≤ 5 anos ☐ 6 – 10 anos ☐ 11 – 20 anos ☐ ≥ 21 anos

8- Tipo de Organização onde desempenha funções: (selecione todas opções aplicáveis)

☐ Público; ☐ Privado; ☐ E. P. E.; ☐ Hospital Universitário;

☐ Outro _____

9- Localização da Organização:

☐ Norte; ☐ Centro; ☐ Sul e ilhas;

10- Está associado a organizações ligadas à investigação?

☐ Não;

☐ Sim, universidades;

☐ Sim, institutos de investigação;

☐ Sim, institutos de investigação e universidades;

☐ Outro _____

Parte II

Qual o seu grau de concordância relativamente a cada uma das seguintes afirmações sobre facilitadores para o envolvimento de profissionais de saúde em investigação? Selecione o número associado à resposta que quer dar, usando a seguinte escala:

1- Discordo Completamente; 2- Discordo; 3- Não Concordo Nem Discordo; 4- Concordo; 5- Concordo Completamente

i. Procuro melhorar os meus conhecimentos, competências e capacidades profissionais, em resultado da atividade de investigação;

ii. Estou pessoalmente motivado(a) para a atividade de investigação;

iii. Procuro reconhecimento e prémios através da investigação;

iv. Procuro oportunidades de progressão profissional, abrangendo aprendizagem e novas oportunidades, em resultado da atividade de investigação;

v. Procuro realização intelectual e estimulação e desenvolvimento da minha criatividade através da investigação;

vi. Existem relações colaborativas estabelecidas entre a minha instituição de saúde e universidades ou institutos de investigação;

vii. Existem políticas de gestão de tempo na minha instituição, que reconhecem as atividades de investigação;

viii. A minha instituição tem uma infraestrutura organizacional e operacional apropriada para a investigação;

ix. Há mecanismos por parte da minha instituição de saúde para a divulgação de oportunidades em investigação;

x. Se identifica outro facilitador para o seu envolvimento em investigação, por favor especifique e avalie o seu grau de concordância_____;

Parte III- Qual o seu grau de concordância relativamente a cada uma das seguintes afirmações sobre barreiras para o envolvimento de profissionais de saúde em investigação? Selecione o número associado à resposta que quer dar, usando a seguinte escala:

1- Discordo Completamente; 2- Discordo; 3- Não Concordo Nem Discordo; 4- Concordo; 5- Concordo Completamente

i. Há falta de financiamento suficiente para a investigação e/ou falta de informações sobre o acesso a financiamento;

ii. Os planos de trabalho, sistemas de avaliação e planos de carreira da instituição não reconhecem devidamente as contribuições ao nível da investigação;

iii. Tenho falta de tempo dedicado para me envolver em investigação;

iv. O apoio por parte da administração e o planeamento estratégico para o envolvimento em investigação a nível institucional é insuficiente;

v. Tenho a perceção de que a investigação é uma atividade especializada e fora do domínio da minha prática como profissional de saúde;

vi. Acho que seria difícil trabalhar com equipas de investigação académica;

vii. Sinto falta dos conhecimentos e habilidades necessárias para fazer investigação;

viii. Tenho pouco interesse pessoal em fazer investigação;

ix. Sinto que a prioridade de um profissional de saúde deve ser clínica e não académica;

x. Se identifica outra barreira para o seu envolvimento em investigação, por favor especifique e avalie seu grau de concordância_____;

Parte IV- Relativamente a cada uma das afirmações que se seguem, diga qual o seu grau de concordância. Assinale o número associado à resposta que quer dar, usando a seguinte escala: 1- Discordo Completamente; 2- Discordo; 3- Não Concordo Nem Discordo; 4- Concordo; 5- Concordo Completamente

1. A instituição valoriza o meu contributo para o bem-estar institucional.
2. A instituição não aprecia devidamente o meu esforço profissional.
3. A instituição ignora os meus protestos.
4. A instituição preocupa-se realmente com o meu bem-estar.
5. Mesmo que desempenhasse o meu trabalho o melhor possível, a instituição não se iria aperceber.
6. A instituição preocupa-se com a minha satisfação profissional.
7. A instituição demonstra muito pouca preocupação comigo.
8. A instituição preza a minha realização profissional.
9. A instituição aprecia o meu contributo para a investigação.

10. A instituição valoriza o meu esforço para conciliar as minhas atividades clínicas com as atividades de investigação.

11. A instituição não valoriza o meu trabalho de investigação.

12. A instituição não me proporciona condições para a realização de investigação.

Parte V- Preencha as questões abaixo relativamente ao seu envolvimento em investigação e use os campos de comentários para fornecer qualquer informação ou explicação adicional.

1. Trabalhou em algum projeto de investigação desde que está a desempenhar funções na instituição atual?

    a. Sim

    b. Não

1.1.1. Se sim, em que âmbito? (selecione todas as que se aplicam)

    a. no âmbito da obtenção de um grau académico (ex: mestrado, doutoramento)

    b. participação num ensaio clínico na instituição de saúde

    c. projeto de investigação desenvolvido na instituição de saúde

    d. projeto de investigação desenvolvido em colaboração com universidades/institutos de investigação

2. Nos últimos 5 anos, em quantos projetos de investigação participou?

3. Selecione as funções em que atuou em investigação nos últimos 5 anos (selecione todas as que se aplicam):

    a. Investigador Principal – envolve a captação de financiamento e a supervisão de um estudo realizado em um ou mais locais;

    b. Investigador Principal do Local – líder do estudo/tarefas no seu local, liderado por outra instituição ou pela indústria;

c. Co-investigador - membro da equipa de investigação, mas não um investigador principal ou investigador principal do local;

d. Site Champion – uma pessoa designada que ajuda a garantir que um projeto de investigação seja realizado com sucesso localmente;

e. Consultor - fornece conhecimentos de especialidade para a equipa de investigação;

f. Recrutador - identifica e recruta pacientes da sua própria prática clínica ou de outras práticas para investigação;

g. Participante - completa questionários ou entrevistas para um estudo de investigação;

i. Nenhum, não participei em nenhum projeto de investigação nos últimos 5 anos;

4. Que tipos de organizações financiaram a investigação em que esteve envolvido? (selecione todas as opções aplicáveis)

a. Agência de financiamento (por exemplo: FCT, Institutos Nacionais de Saúde, Agências de Investigação e Qualidade em Saúde, Centros de Inovação);

b. Outra bolsa de investigação (por exemplo: associações de pacientes, donativos de organizações, universidades);

c. Apoio institucional (por exemplo, uma bolsa financiada pela sua própria instituição);

d. Investigação patrocinada pela indústria (ex.: indústria farmacêutica);

e. O projeto de investigação não foi financiado;

f. Não sei;

g. Outro (por favor, especifique) _____;

5. Qual é aproximadamente o tempo por semana que dedica a investigação?

a. 0 horas

b. >0 horas mas ≤4 horas

c. >4 horas mas ≤10 horas

d. >10 horas mas ≤20 horas

e. >20 horas

OBRIGADO POR DISPONIBILIZAR O SEU TEMPO PARA RESPONDER A ESTE QUESTIONÁRIO.

O fato de estar a ler esta mensagem indica que preencheu o nosso questionário sobre a sua experiência como profissional de saúde em Portugal e o envolvimento em projetos de investigação. De forma a anonimizar a sua participação, e caso queira receber os resultados do estudo, deixe um contacto de email através do link:

https://eeguminho.eu.qualtrics.com/jfe/form/SV_9t04hQI6oLYPbE2

Agradecemos imensuravelmente o tempo que dedicou para auxiliar o nosso estudo e estamos comprometidos em usar todas as informações obtidas para contemplar e implementar práticas para reforçar estrategicamente o envolvimento dos profissionais de saúde em investigação.

Appendix III – List of studies included in the systematic literature review

Reference	Country	Sample	Type of study approach	Journal	Identified Enablers	Identified Barriers
McDonald & Smith, 2001	Australia	Nurses	Literature review	Aust Health Rev	Education programs on the research process;	Lack of research literacy;
Rait et al, 2002	UK	Medical Doctors and Nurses	Qualitative	Primary Health Care Research and Development	Training; Mentoring schemes; Understand the research process better; Collaborations; Training on research methods and conducting research; Mentorship schemes;	Clinical commitments; Administrative work-loads; Research perceived as low priority; Fear of unfamiliar territory;
Edwards et al, 2002	Australia	Nurses	Literature review	Nursing and Health Sciences	Early academic nurse education;	Nurses beliefs; Perceptions, values and practices about research;
Carrel, 2002	Switzerland	Medical Doctors	Literature review	Transpl Immunol	Active support; Close contact with PhDs;	Poor understanding of the research process;
Albers & Sedler, 2004	USA	Nurses, midwives, physicians, primary health care teams, occupational therapists, or marital and family therapists	Qualitative	J Midwifery Women Health	Interest in the topic; A responsible party to handle the logistics and deal with problems; A relationship with the lead researcher; Regular feedback and support; Minimal impact on clinical practice; Financial compensation;	Time constraints; Lack of ongoing support and feedback; limited familiarity with research methods and procedures.

					Clinician interest in a particular research method;	
Rosemann & Szecsenyi, 2004	Germany	Medical Doctors	Qualitative	BMC Family Practice	Quality of care with solid research data;	Clinical workload; Administrative overload; Newly introduced Disease Management Programs;
Segrott et al, 2006	UK	Nurses	Literature review	International Journal of Nursing Studies	Creation of infrastructures; Fostering research culture and environment; Facilitation of training and collaboration;	Material constraint; Organisational context; Changing roles and expectations of nurse educators;
Beasley et al, 2007	USA	Health professionals	Qualitative	Journal of the American Board of Family Medicine	Develop Training Programs; Encourage Medical Schools to Develop Research in primary Care Departments; Encourage the Participation of Primary Care Clinicians; Develop a Commitment to Support from International Organizations;	na
Salmon et al, 2007	UK	Medical Doctors	Qualitative	Family Practice	Confer value on research by payment for participation;	Lack of time for research; Lack of research skills and professional status; Research had little intrinsic, clinical, or professional value;

Featherstone et al, 2007	UK	Medical Doctors, nurses, and allied health professionals	Qualitative	Primary Health Care Research and Development	Training approach: 'joined-up';	na
Hummers-Pradier et al, 2008	Germany	Medical Doctors	Mixed-methods	Family Practice	na	Personal issues;Perceived relevance of research in general;Personal quality of the researchers;Participation for other reasons than genuineinterest in research;Special research interests;Influence on the research process and wayof invitation;Obligations in research work;Research-based on electronic data;
Aaraas et al, 2008	Norway	Medical Doctors	Qualitative	Rural Remote Health	Promoting cooperative international activities;	na
Spilsbury et al, 2008	UK	Nurses	Qualitative	J Clin Nurs	na	Lack of confidence; Role conflict as researcher and nurse; Challenges of gaining the cooperation of clinical nursing staff Difficulties maintaining their own motivation;

Diebolt et al, 2008	France	Medical Doctors	Qualitative	Therapie	Availability of the resources needed to conduct research protocols; Feasibility of the trial protocol design and recruitment depends on the centre/team/investigation network (recruitment commitment) and patients and the image they have of biomedical experimentation; The qualifications and motivations of associated individuals and professions that comprise the team leading the research protocols; Flexibility and efficiency of the administrative organization with regard to the shortest preliminary trial preparation times;	na
Peterson et al, 2009	Australia	Pharmacists	Quantitative	Journal of Clinical Pharmacy and Therapeutics	Desire to improve the profession; Opportunity to learn more about disease management; Provide enhanced services to patients and personal interest;	Lack of time; Lack of opportunities;
Bakken et al, 2009	USA	Medical Doctors	Mixed-methods	Journal of the American Board of Family Medicine	collaborators, mentors, research support staff, and trusting patient-clinician relationship	Lack of time; Inadequate training in research methods; Lack of collaborators and support staff; Institutional review board hurdles; Community distrust of research;

Sambunjak et al, 2010	North America	Medical Doctors	Literature review	Journal of General Internal Medicine	Mentorship;	na
Kahn et al, 2011	USA	Health Professionals	Qualitative	Implement Sci	NA	Lack of engagement of community practitioners; Lack of necessary infrastructure; Lack of financial incentives and research participation;
Rahman et al, 2011	UK	Medical doctors	Qualitative	Advances in Medical Education and Practice	Financial and nonfinancial incentives; Adequate training; Research questions that are in line with physician interests; Clear potential to improve patient care; Regular feedback;	Lack of time; Lack of resources; Trial-specific issues; Communication difficulties; Conflicts between the role of clinician and scientist; Inadequate research experience and training for physicians; Lack of rewards and recognition for physicians; Scientifically uninteresting research question;

Pager et al, 2012	Australia	Allied health professionals	Quantitative	Journal of Multidisciplinary Healthcare	To keep the brain stimulated;Career advancement;Research encouraged by managers;Links to universities;Mentors available to supervise;Opportunities to participate at own level;Desire to prove a theory or hunch;Dedicated time for research;Colleagues doing research;Grant funds;Forms part of postgraduate study;Research written into role description;Study or research scholarships	Other work roles take priority;Lack of time for research;The desire for work/life balance;Lack of funds for research;Lack of skills for research;Lack of suitable backfill;Lack of administrative support;Lack of software for research;Lack of a coordinated approach to research;Other personal commitments;Lack of access to equipment for research;intimidated by research language;intimidated by fear of getting it wrong;Lack of support from management;not interested in research isolation;Lack of library/internet access;Other (eg, limited exposure to research, lack of access to expertise, statistical analysis, lack of knowledge);
Paterson et al, 2013	Australia	Health professionals	Quantitative	Medical Journal of Australia	na	Lack of study nurse/coordinator; Limitations of time owing to excessive clinical load; Difficulties with submissions to ethics committees; Difficulties with clinicians in other specialties;
Jensen et al, 2013	Canada	Health professionals	Mixed-methods	Canadian Journal of Emergency Medicine	na	Lack of time, opportunities, and funding; Lack of education and mentorship; Lack of culture of research and research collaboration; Structure, process, and outcome;

Kelly et al, 2013	USA	Nurses	Qualitative	J Nurs Adm	Presence of a research mentor;	Lack of a research mentor; Lack of time;
Upton et al, 2014	UK	Occupational therapists	Literature review	British Journal of Occupational Therapy	Training initiatives; Support to engage fully with research;	Lack of time; Lack of availability and accessibility of research; Limited research skills;
Rothberg et al, 2014	USA	Internal medicine residents	Mixed-methods	Academic Medicine	Specific resident research program focused on: Interest; Time; Technical support; Mentorship;	Limited resident and faculty time; Lack of resident research skills; Absence of a research curriculum; Insufficient resident interest; Inadequate funding; The paucity of mentors;
Ahmed et al, 2014	Germany	Health professionals	Qualitative	Clin Ther	Support through clinical trials, biometricians, and regulatory experts; Advice from the university's ethics committee; Public funding; Support from the respective medical society; Support from the investigator's university as the official sponsor of the trial, providing long-term commitment and covering financial risks;	na
Hoffmann et al, 2015	USA	Medical doctors, nurses, managers, and other clinical staff	Qualitative	Journal of the American Board of Family Medicine	Support from the research coordinator;	Time constraints;

Black et al, 2015	Canada	Nurses	Mixed-methods	Journal of Nursing Administration	Support from their employing organizations; Presence in the clinical setting of advanced practice nurses; Research mentors, and educators knowledgeable about research, nursing research internships, and designated nurse researchers.	Lack of knowledge about the research process; Lack of awareness of research; Colleagues not supportive of practice change; Insufficient time; Lack of access to research;
Berthelsen et al, 2016	Denmark	Nurses	Mixed-methods	Journal of Clinical Nursing	na	Lack of time; The perception that research is not a priority; Not able to see the relevance of research usage;
Messner et al, 2016	USA	Health professionals	Qualitative	Contemporary Clinical Trials Communications	Motivations related to patient care; Intellectual, professional, and societal benefits;	Lack of time; Increased paperwork; Disruption to workflows; Concern over practice finances;
Borkowski et al, 2016	Australia	Allied health professionals	Literature review	Australian Journal of Primary Health	Skills development; Job satisfaction; Career advancement;	Lack of time; Limited research skills; Other work roles taking priority;
Harvey et al, 2016	Australia	Allied health professionals	Qualitative	Aust Health Rev	Quarantined research time; Funding; Research-friendly workplace culture; Positive research relationships; Personal characteristics; Rewards;	Lack of supportive research relationships; Unhelpful workplace culture and systems for research; Time constraints; Lack of funding; Personal characteristics;

Johnson et al, 2016	Canada	Dietitians	Mixed-methods	Can J Diet Pract Res	na	Lack of time; Lack of self-perceived competence; Lack of confidence; Lack of administrative support; Lack of funding;
Barratt et al, 2016	UK	Healthcare and public health partner organisations	Quantitative	BMJ Open	na	Lack of institutional support; Access to relevant equipment and resources; Lack of time;
Liira et al, 2016	Finland	Medical doctors, nurses, dentists, physiotherapists, and nutritionist	Mixed-methods	Scandinavian Journal of Primary Health Care	Activating teaching methods; Encouraging focus on own research planning; Support from peers; Mentoring; Interesting research topic; General interest in research; Curiosity;	na
Fudge et al, 2016	UK	Health professionals	Mixed-methods	PLoS ONE	Healthy research culture; Interdisciplinary collaboration; Translational research as entrepreneurial science;	Differing concepts of translational research; Research processes; The perceived cultural divide between research and clinical care; Poor relationship for interdisciplinary collaboration;
Nordsteien et al, 2017	Norway	Nurses	Mixed-methods	Nurse Education Today	Collaborative library-faculty teaching interventions;	na

Caldwell et al, 2017	UK	Health Professionals	Quantitative	European Journal of Cancer Care	Healthy research culture;	Lack of the required knowledge; Lack of skills and training; Lack of support from managers; Lack of opportunity or time to be involved in research;
Archibald et al, 2017	Canada	Health professionals	Mixed-methods	Health Research Policy and Systems	Program for Innovation in Medical Education (PIME): Programme in which physicians receive the funding, coaching, and supportstaff necessary to complete a 2-year research project.	na
Eley et al, 2017	Australia	Medical Doctors (interns)	Mixed-methods	BMC Med Educ	Job prospects, career options, and professional advancement; Funding (salary increase); Clear pathway and dedicated time for research; Mentoring;	Lack of life balance; Lack of funding for research and delay in paid work; Lack of time;
Mckee et al, 2017	Ireland	Nurses	Mixed-methods	BMC Nursing	Top-down approach; Support of a hands-on research fellow; Peer collaboration with academics; Strong clinical ownership by the clinical nurse researcher; Experiential learning opportunities;	Lack of time; Appropriate support from academics and from peers;
Van Der Graaf et al, 2017	UK	Public health professionals and researchers	Mixed-methods	BMC Public Health	Collaborative models, such as the use of researchers embedded in practice; Flexible research funding schemes;	Structures and challenges under which health professionals and researchers work are required;

Wenke et al, 2017	Australia	Allied health professionals	Quantitative	BMC Health Services Research	Develop skills; Increase job satisfaction; Career advancement;	Lack of time for research; Other work roles that take priority; Lack of suitable backfill;
Kunhunny et al, 2017	UK	Clinical research nurses	Qualitative	Journal of Clinical Nursing	Successful navigation through the complexity of advice; Support; Management and leadership tasks related;	Lack of recognition; Lack of clarity of the role; Lack of career development opportunities;
Poggenburg et al, 2017	Austria	Medical Doctors	Mixed-methods	Wiener Klinische Wochenschrift	Strengthening general practice; Improving the quality of care for patients; Personal knowledge gain; Working on research questions relevant to general practice; Learning evidence of practical relevance; Contributing to the development of the field of general practice in the coming years/decade;	Lack of time; Administrative workload; Lack of assistance;
McRae et al, 2018	Canada	Emergency medicine researchers	Qualitative	Canadian Journal of Emergency Medicine	Research-supportive culture; Clear communication between the research team and ED clinical staff; Optimization of data collection material and strategies; Incentives to promote staff engagement;	Absence of remuneration; Lack of patient engagement; Lack of time;
Berthelsen & Hølge-	Denmark	Nurses	Qualitative	Journal of Clinical Nursing	Low monodisciplinary interest; Lack of recognition of the	Multi-dimensional research participation with physicians; Passionate management support;

Hazelton, 2018					nurse's research work; Lack of support;	
Noble et al, 2018	Australia	Residents	Literature review	Academic Medicine	Guidance on integrating research into their clinical practice;Clear completion requirements;Protected time and more long-term projects;Allowing residents to develop and conduct their own research projects;	Lack of dedicated time;Lack of mentors or faculty support;Lack of guidance on integrating research into their clinical practice;Lack of interest;
Fullam et al, 2018	Ireland	Nurses and midwives	Mixed-methods	Journal of Research in Nursing	A program that provides academic support and mentorship in the clinical environment; Skills development; Research capacity;	Lack of support; Lack of research skills;
Unertl et al, 2018	USA	Health professionals	Mixed-methods	BMC Health Services Research	Personal motivation: Potential benefits for their patients; Matching patients with relevant studies; Contribute to the greater good and the body of medical knowledge; Clear communication and established collaboration; Additional resources; Appropriate compensation for research involvement; Embed research into the existing practice workflow;	Challenges of getting started in research; Consequences of time spent on research; Patient-related barriers to expanding research;

Kjerholt & Hølge-Hazelton, 2018	Denmark	Nurses	Mixed-methods	Journal of Nursing Management	Journal club; Research action learning; Supportive research culture;	NA
Luckson et al, 2018	UK	Nurses and Allied Health Professionals	Mixed-methods	Journal of Clinical Nursing	Time; Build capability; Resources;	Communication issues; Lack of support at the middle management level;
Slade et al, 2018	Australia	Allied health professionals	Literature review	Health Research Policy and Systems	Dedicated staff research positions; Time allocated to research; Mentoring; Professional education; Research infrastructure; Strong partnerships with universities and co-located research leaders; Research skills and capabilities; Motivation; Participation in research teams;	NA
Heard et al, 2019	European (MetabERN Reference Network)	Health professionals	Quantitative	Orphanet Journal of Rare Diseases	Personal motivation; Rotational positions for clinicians and researchers; International collaborations;	Lack of time; Insufficient funding;
Matus et al, 2019	Australia	Allied health professionals	Qualitative	Asia Pacific Journal of Health Management	Building on existing motivators; Linking research engagement goals to strategic plans and key performance indicators; Actively involve the whole	Lack of time; Lack of incentives to prioritize research; Low level of confidence to lead or facilitate research within their teams;

					team in the process of research;	
Bartelink et al, 2019	The Netherlands	Health professionals	Qualitative	Education for Primary Care	Dedicated time;Access to information, experts and peers in networks;Corresponding and compatible interests;Multiple opportunities for interaction;Recognition and appreciation;Adding value in the dual role;Setting priorities;Switching perspectives;Support from organisation;Culture of mutualrespect and trust;Responsibility for making research clinically relevant and practice evidence-based;Need for self-development;Inspiration for both clinical work and research;	Time limitations;Financial constraints;No corres-pondinginterests;No support fromtheorganisation;No support frompeers;Competing priorities;Feeling invisible or not valued;Falling betweentwo camps;Inadequacy because of dua lresponsibilities;
Frisk et al, 2019	Sweden	Pharmacists	Qualitative	International Journal of Pharmacy Practice	Collaboration with other local healthcare; Resources;	Competition among pharmacy chains; Lack of competence; Lack of time; Lack of communication skills; Lack of research knowledge; Lack of funding;

Bench et al, 2019	UK	Nurses	Mixed-methods	International Journal of Orthopaedic and Trauma Nursing	Job appraisal; Designated protected and back filled time for research; Sign posting and buddy systems;	Lack of confidence and competence; Lack of knowledge; Lack of research training; Lack of financial resources;
Gill et al, 2019	Australia	Nurses, allied health staff and doctors	Quantitative	Australian Journal of Rural Health	Skill development; Increased job satisfaction; Brain stimulation;	Lack of time; Clinical work taking priority; Lack of funding;
Miller et al, 2020	UK	Health professional research interns	Qualitative	Nurse researcher	Accessible opportunities; Accessible training; Formal support from the interns' manager and organisation;	Negative, hostile and bullying attitudes from peers and managers; Lack of support;
Lalloo et al, 2020	UK	Occupational therapists	Mixed-methods	Occupational Medicine	na	Not interested; Lack of time; Lack of training; Lack of mentorship; Lack of opportunity;
Frost & Britten, 2020	UK	Research managers, clinical research staff, health professionals, and patients	Qualitative	Healthcare (Switzerland)	Organizational culture; Healthcare performance improvement; Personal interest in the topic;	Behavior of someclinical colleagues (disparaging comments; Lack of time; Ambivalent feeling in recruiting patients; Lack specialist training or leadership;

Wenke et al, 2020	Australia	Allied health professionals	Qualitative	BMJ Open	Motivation;Positive beliefs about the consequences of research participation;Enabling social influences;Peer support and motivation;Skill development;Inform practice;	Fear of failure; Feeling overwhelmed;Lack of funding;Lack of time; Perceptions of reduced capability;
Senecal et al, 2021	Canada	Medical doctors, allied health professionals, and non-clinician researchers	Quantitative	J Transl Med	na	Managing competing interests; Lack of time; Lack of funding; Lack of infrastructure and networks; Lack of permanent post-graduate medical trainees; Collaborators with overlapping interests;
Muhandiramge et al, 2021	Australia	Medical Doctors (interns)	Quantitative	BMC Medical Education	Interest in academia; To determine specialty choice; Increasing employability; Skill development; Interest in a particular field;	Previous negative experience; Financial constraints; Lack of interest; Impact on personal or social life; No active encouragement; Impact on length of medical training; Unsure how to get started; Time constraints;
Orton et al, 2021	Sweden	Registered nurses and physicians with a PhD	Qualitative	Worldviews Evid-Based Nurs	Time allocated for research; Networking and relationship with academia; Support from strategic management; Personal interest;	Work overload; Lack of financial support; Informal permission to pursue research;

Reali et al, 2021	Australia	Pharmacists	Literature review	Journal of Pharmacy Practice and Research	Post-graduate qualification; Positive attitude towards research; Departmental support; Designated research time; Creation of research networks and forums;	Lack of time; Workplace support; Funding; Research culture; Competing priorities;
Mersfelder et al, 2021	USA	Doctor of pharmacy	Quantitative	Curr Pharm Teach Learn	Mentorship; Interest in the research topic; Comfort level in working with faculty; Improvement in the profession/medical community; Pursue a position that requires research/scholarship;	Lack of time;
Morrison et al, 2022	UK	Nurses	Literature review	Journal of Clinical Nursing	Educational partnerships; Research-motivated clinical nurses; Access to research role mode;	Lack of research knowledge; Lack of confidence; Lack of access to resources; Lack of protected time;
O'Brien et al, 2022	Ireland	Nurses	Qualitative	Journal of Nursing Management	Leadership; Supportive environment; Consistent and transparent communication in the team; Shared accountability and support network;	Lack of skills; Staff turnover; Lack of support from management; Lack of time;
Ramón et al, 2022	Spain	Nurses	Quantitative	Healthcare (Switzerland)	Work environment; Economic incentives; Improve curriculum vitae;	Lack of time; Lack of institutional support; Lack of training (especially in languages);

D'Arrietta et al, 2022a	Australia	Allied health professionals, physicians, nurses and midwives	Mixed-methods	Journal of Multidisciplinary Healthcare	Early immersion into formal research training;Attitude to research;Intrinsic and attainment values of research;	Time constraints;Poor visibility of research training opportunities;Lack of organisational support;Low returns on effort;
D'Arrietta et al, 2022b	Australia	Health professionals	Literature review	Journal of Multidisciplinary Healthcare	Utility value;	Lack of knowledge; Lack of skills and competence to conduct research; Lack of protected research time; Lack of funding; Lack of organizational support;
Virnau et al, 2022	Germany	Medical Doctors	Quantitative	Scandinavian Journal of Primary Health Care	Improving patient care; Research on topics within their interest; Reliable contact person the leading institution; Remuneration;	Lack of time;
Bottomley et al, 2022	UK	Medical doctors, nurses, and other allied health professionals	Quantitative	BMJ Open	Employment as a physician; Protected time for research; Appropriate training;	Insufficient staffing; Lack of time; Lack of funding; Lack of encouragement;
Burkinshaw et al, 2022	UK	Medical doctors, allied health professionals, and nurses	Qualitative	BMJ Open	Supportive infrastructure; Research culture of their host institution;	Perceptions of an unequal playing field; Lack of support for research activities post-award; Lack of career opportunities; Perceptions of gender inequality;
Kamper et al, 2022	Australia	Allied health professionals, physicians, and nurses	Quantitative	Asia Pacific Journal of Health Management	Desire to improve services and outcomes for patients; Resolve clinical problems;	Lack of time; The necessity to prioritize clinical duties;

Scarsini et al, 2022	Italy	Nurses	Literature review	Zdravstveno Varstvo	Nursing journal reading; Expert research team support; University and hospital partnerships; International cooperation;	Poor English knowledge; Technology and library availability and accessibility; Understaffing; Lack of time; Nursing culture characteristics; Lack of nursing leadership support; Scarce funding availability; Bureaucratic ethical committee process;
Chinn et al, 2023	UK	Nurses, medical and allied health professionals	Quantitative	BMC Health Services Research	Improving practice; Improving patients' experience/outcomes; New treatments; Career development; Retaining staff; Self-esteem;	Lack of time; Clinical workload; Pressure to reduce patient waiting times; Lack of funds; Backfill and capacity;
Hildebrand et al, 2023	Germany	Health professionals	Mixed-methods	European Journal of Trauma and Emergency Surgery	Personal motivation;Mentorship;Adequate training programs;	Time beside clinic; Financing; Personal; Bureaucracy; Lack of interest; Working hours act; Lack of research initiatives; Lack of infrastructure; Lack of local support; Legal framework;
Jensen et al, 2023	Norway	Nurses	Qualitative	Nursing Open	NA	Lack of awareness; Lack of knowledge; Priority of nursing research in nursing

						leadership; Absence of a culture of research;
Roberts et al, 2015	UK	Genito-urinary medicine clinic staff	Quantitative	International journal of STD & AIDS	Formal roles of encouragement and support; Feedback on the research contributions; Access to training;	Lack of training; Lack of support by leadership; Research not part of their work role;
Gilbert et al, 2016	UK	Clinicians	Qualitative	Physiotherapy	Well-designed time-management systems that recognize research activities; Organizational practices to free up time and headspace to engage with research; Recognition and awards; Mentoring and informal teaching;	Lack of dedicated time to be involved in research;
Moore et al, 2012	UK	Health Professionals	Qualitative	Nurse education today	Formal roles; Specific guidelines and procedures for research development and implementation; Access to training to develop research skills and confidence; Mentoring and informal teaching;	Weak or opaque governance and management infrastructure; Failure to recognize research contributions in job plans; Absence of information-sharing about research opportunities; Perception that research is a specialist activity and outside the domains of some health professions;
Boaz et al, 2015	UK	Clinicians	Literature review	BMJ Open	Specific guidelines and procedures for research development and implementation; Organizational leadership and	na

					culture which values and promotes research activity;	
French & Stavropoulou, 2016	UK	Nurses	Qualitative	BMC medical research methodology	Well-designed time-management systems that recognize research activities; Organizational leadership and culture which values and promotes research activity;	Insufficient support by leadership and associated lack of strategic planning for R&D at organizational level; Perception among health professionals that it can be difficult to work with research teams in academia; Concern that time demands on HP to deliver research tasks can be underestimated by research teams; Lack of knowledge and skills needed to do research;
Jowett et al, 2000	UK	General Practitioners	Qualitative	The British journal of general practice	Research-active partners; Protected time; Working in a larger practice;	Lack of time; Lack of staff to collect data; Lack of funding;
McNicholl et al, 2008	Ireland	Health Professionals	Qualitative	Journal of nursing management	Financial recognition through pay progression;	Perceived inability to influence practice through research; Perception among health professionals that it can be difficult to work with research teams in academia;
Snooks et al, 2009	UK	Health Professionals	Mixed-methods	Emergency medicine journal	Awareness mechanisms on opportunities for involvement in research and how HP can engage;	na

Cooke et al, 2015;	UK	Academics, NHS clinicians, and managers	Qualitative	Health Research Policy and Systems	Attainable fundings; Enabling research infrastructure - equipment, facilities, information infrastructure; Exposure to research training in early career stages; Access to training to develop research skills and confidence;	Divergent views among HP stakeholders about what topics are important to research; Concern that time demands on HP to deliver research tasks can be underestimated by research teams;
Mitchell et al, 2015	UK	Nurses and midwives	Mixed-methods	Nursing standard	Attainable fundings; Effective mechanisms for the dissemination of research findings;	na
Bacigalupo et al, 2006	UK	Primary care trust, general practice and social services	Quantitative	Primary Health Care Research & Development	Organizational practices to free up time and headspace to engage with research;	na
Evans et al, 2013	UK	Clinicians and research funders	Qualitative	Clinical medicine	Recognition and awards; Integration of research within clinical practice through the promotion of evidence-based practice and engagement with research in clinical decision making;	Weak or opaque governance and management infrastructure; Failure to recognize research contributions in job plans, appraisal systems and career pathways; Insufficient support by leadership and associated lack of strategic planning for R&D at organizational level; Lack of access to relevant training; Lack of dedicated time to be involved in research;
Awaisu & Alsalimy, 2015	UK, Australia and Canada	Pharmacists	Literature review	Research in social & administrative pharmacy: RSAP	Compelling narrative about the research;	Lack of access to relevant training

Akerjordet et al, 2012	Norway	Nurses	Quantitative	J Nurs Manag	Personal motivation; Research supervision;	Lack of confidence; Lack of designated time; Lack of interest; Lack of knowledge; Lack of research supervision and support;
Andrew et al, 2013	UK	Nurses	Qualitative	British journal of community nursing	Collaboration with other organizations and individuals with an active interest in research;	na
Lowrie et al, 2015	UK	Pharmacists	Qualitative	BMJ Open	na	Lack of clear leadership and definition of roles for HP within research projects;
Tinkler et al, 2018	UK	Nurses	Qualitative	J Adv Nurs	na	Lack of knowledge and skills needed to do research; Workload complexity;
Jansse et al, 2016	New Zealand	Physiotherapis	Mix-methods	Physiotherapy	Personal motivation;	Lack of confidence; Lack of competence; Lack of skills; Lack of experience;
Jones et al, 2016	USA	Physicians	Mix-methods	Acad Med	Research-motivated clinician; Personal motivation;	Lack of designated time for research; Lack of funding including incentives and failed grants; Lack of support including acceptance by colleagues, rewards and acknowledgement;
Elphinston and Pager, 2015	Australia	Psychologists	Quantitative	Australian Psychological Society	High research capacity; Leadership skills of psychologists in research;	Lack of designated time for research; Lack of funding including incentives and failed grants; Lack of organizational support; Perception that research not part of their work role;