# Pooling Cross-border Human Resources in the Healthcare Sector

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## Abstract

The rising demands on healthcare providers, propelled by factors such as aging populations, pandemics, and austerity measures, have prompted a critical need for efficient resource utilization in the sector. Resource pooling emerges as a promising strategy, particularly across borders, yet its implementation faces multifaceted challenges. This article analyzes the under-explored nexus of cross-border human resource pooling in European healthcare systems, drawing from disparate strands of public administration, political science, and sociology literature. Through a problematizing review methodology, we synthesized insights from articles published between 2014 and 2024. Our analysis underscores the dearth of scientific literature on this topic and highlights the fragmented landscape within related research domains. While administrative hurdles, regulatory complexities, and national funding inconsistencies present barriers, the literature offers pathways for improvement. Streamlining administrative processes and fostering regulatory harmonization emerge as imperative steps toward unlocking the full potential of cross-border healthcare collaboration. This necessitates concerted actions at both national and supranational levels, alongside considerations of individual-level factors such as language proficiency. By integrating insights across various disciplinary lenses, this review advocates for a comprehensive understanding of cross-border human resource pooling in healthcare, underscoring the imperative for interdisciplinary and multi-level research on this topic.

## Keywords

Resource pooling, staff pooling, cross-border cooperation, cross-border mobility

## Introduction

Demands on healthcare providers are increasing exponentially. Aging populations, epidemics and pandemics, climate change, and armed conflicts, among other things, are exerting pressure on healthcare systems worldwide. The unpredictability of some of these factors (e.g. climate change and pandemics), makes it difficult to predict demand and plan for future healthcare provision (Boin et al., 2018; Kannampallil et al., 2011). At the same time, austerity measures adopted since the economic crisis and continuing to the present (Fagefors et al., 2022; Ifanti et al., 2013; Quaglio et al., 2013) are fast shrinking any budgetary slack healthcare systems may have once had. This is true for most healthcare systems in Europe. The most hard-hit European countries drastically cut public health expenditures, implemented hiring and salary freezes, and adopted user-charges on a range of services (Kakouli, 2013; Karanikolos et al., 2013). Others responded by reforming national healthcare system infrastructures, leading to hospital mergers and sharp declines in available beds across the continent (European Union, 2022). In short, the resources available to healthcare providers are diminishing even as demand for services are projected to increase. Increasing the efficiency of resource usage is an important strategy to meet this growing demands with less resources.

Resource pooling may help meet this required increase in efficiency (Fagefors et al., 2022; Song et al., 2020). Resource pooling allows healthcare providers to rapidly access needed resources during a crisis or other situation of high demand without having to stockpile or employ workforce on stand-by. One critical resource that can be pooled is staff. In border regions it makes sense to not interrupt pooling at national borders, because pooling is the most efficient when it covers larger areas (Cattani & Schmidt, 2005). In addition, by pooling across borders, healthcare systems leveraging neighbors' complementary strengths and needs, can help them turn a weakness into a strength. For example, in the case of the German Dutch border region, the German healthcare system is known to have a lot of overcapacity especially when it comes to intensive care (Blümel et al., 2020; OECD, 2023a), which makes it reliable but also expensive, whereas the privatized Dutch healthcare system has way less capacity but is more agile and flexible when it comes to new situations and is more mature in terms of digitalization (OECD, 2023b). Hence through collaboration, Dutch healthcare organizations can benefit from intensive care capacity, German ones from innovation and fast adaption.

Resource pooling across borders could be especially impactful for European border regions. About a third of Europeans live in border regions (Böhm & Kurowska-Pysz, 2019; Svensson,

2017) as these regions account for about 40 percent of the EU territory. In addition, European healthcare and labor regulations allow easier patient and staff mobility between countries than other world regions. Despite the known benefits of pooling and the vast expanse of territories that stand to benefit from these practices, resource pooling across borders is still rare in Europe, even as external conditions (e.g. pandemics) increasingly call for it (van Houtum & van der Velde, 2004), making this an appropriate moment to examine current knowledge on cross-border resource pooling and how it is impacted by organizational and legislative contexts.

Resource pooling across borders can be considered a form of cross-border cooperation (CBC). CBC allows regional entities to combine and jointly manage their limited resources so that they can capture benefits yielded through economies of scale (Sousa, 2013). This type of regional cooperation has been widely associated with the increased potential for innovation and economic development among local and regional partners (Nienaber & Wille, 2020). When pooling personnel is the focal point of such a cross-border cooperation, the advantages and challenges of labor mobility also come into play.

Even within borders and even within organizations, resource pooling can be complicated to implement. For example, organizations work with different procedures and sometimes routines are so internalized that they are hard to make explicit. When staff is supposed to be pooled, questions of labor law come to the plate as well: which organization is the formally responsible employer or how to deal with insurances in case mistakes happen (Dziuba-Ellis, 2006). These complications are further amplified in the context of CBC. Especially in the case of healthcare, which has until very recently considered to be under the sole purview of national governments and their regulations (McKee & Ruijter, 2024). Healthcare organizations interested in pooling resources across the border face significant legal and institutional hurdles. Despite these challenges, healthcare organizations are increasingly experimenting with cross-border resource pooling, especially in the advent of the Covid-19 pandemic (Spanier et al., 2021; Tromberg et al., 2020; Zapata et al., 2021).

Although there is so much practical overlap, the academic literatures on cross-border collaboration, labor mobility, and resource pooling hardly speak to each other and while ‘resource pooling’ is discussed in the (public) management und (public) human resource management literatures, ‘cross-border cooperation’ instead is a topic in political science, European studies and the governance literature, while ‘labor mobility’ is discussed in sociology. In addition, the healthcare systems and healthcare management literature tends to be treated as

a separate field, just loosely connected to public (human resource) management, usually not even considering more macro level approaches. We argue that this is problematic, because evidence from these different strands cannot interface and inspire each other. At the same time, based on their research traditions the 'resource pooling' body of the literature tends to focus on micro- and meso-level questions, whereas 'cross-border cooperation' focuses more on the macro-level context, making it difficult to recognize potential synergies. However, we argue that combining these different levels of analysis is essential to be able to understand comprehensively the effects and determinants of cross-border resource pooling (Jilke et al., 2019; A. S. Roberts, 2018).

The aim of this problematizing review (George et al., 2023), therefore, is to reach such a comprehensive level in the understanding of cross-border resource pooling in the healthcare sector. By synthesizing key insights from the literature on the described streams, we explore the experiences of public administrations and healthcare organizations in border regions and those of cross-border healthcare professionals. We screened and analyzed the literature available in Web of Science and PubMed related to these topics that was published in the last 10 years (2014-2024) and focuses on the European context. We followed the PRISMA methodology, leading to a dataset of 12 articles.

The size of our sample already suggests that the current state of literature is rather limited. If more literature is published about these topics articles might either use other terms, which already shows an even more problematic fragmentation in the field and/or might not focus on European cases. We also see that there is some overlap in the literatures of labor mobility and cross-border cooperation, at least when the later is focusing on cross-border utilization of personnel. However, resource pooling as a concept seems to not play a significant role in research about this phenomenon. On the content-level, our results suggest that although current obstacles limit cross-border pooling of human resources in healthcare, the literature offers insights into improving it. Addressing administrative burdens, regulatory complexities, and funding inconsistencies seems to be crucial for realizing the full potential of cross-border healthcare collaboration, necessitating concerted efforts at both national and supranational levels in a region. On the micro-level individual capacities can be focused on (e.g., individual ability to commute, language skills).

The organization of this paper is as follows. It will begin with a discussion of thematic areas touched by cross-border pooling of human resources. Next, the review approach is described,

including how the literature was identified, screened, and coded. We then present the findings of the reviewed papers sorting them into a macro-meso-micro-level framework. We also discuss more overall findings on the connectedness of research in this field. We conclude with discussing the implications and limitations of the study, and suggestions for further research.

## Getting to terms: cross-border cooperation, labor mobility and resource pooling

To varying extents, the literatures on healthcare and human resource management and on labor mobility in cross-border collaboration all touch on the subject of resource pooling. They offer diverse lenses on the same phenomenon, which we aim to integrate within this current work.

### *a. Cross-border cooperation*

Cross-border cooperation refers to collaborative efforts between neighboring regions or countries to address common challenges, exploit shared opportunities, and promote mutual development (Brunet-Jailly, 2022). It includes "any type of concerted action between public and/or private institutions of the border regions of two (or more) states" which are organized around the shared aim of "reinforcing the (good) neighborhood relations, solving common problems or managing jointly resources between communities through any co-operation mechanisms available" (Sousa, 2013, p. 673). CBC is not limited to collaboration between governments and public authorities but might also involve non-governmental organizations, businesses, and communities on both sides of the border. Cross-border cooperation aims to enhance economic, social, cultural, and environmental integration across borders while keeping the sovereignty and autonomy of each participating entity. Altogether, governments and organizations engage in CBC to raise the quality of life in border regions and these area's resilience to external shocks.

CBC can take place in any policy fields. In healthcare, CBC spans from partnerships on emergency (including ambulance services) or outpatient care (Böhm & Kurowska-Pysz, 2019) to collaborative public procurement (Espín et al., 2016). However, up until now, many of these efforts focus on moving patients and material and not professionals across the border (Ried & Marschall, 2016). Indeed, there is the need to extend current understanding of how medical professionals can be managed as a critical resource for cross-border healthcare cooperation. This is also reflected in the academic literature, where many studies on cross-border healthcare, approach the concept from the healthcare recipient point of view instead of thinking about the delivering stakeholders (Abbing, 2015; Legido-Quigley et al., 2011; van der Molen & Commers, 2013; Verra et al., 2016; Wismar, 2011).

Successful CBCs normally require the presence of a number of facilitating conditions including but not limited to well-functioning formal and informal networks, supportive governmental and non-governmental institutions, border enforcement histories (e.g. thick versus thin borders),

leadership, changing conditions (e.g. legal), organizational capacity and economic incentives (González-Gómez & Gualda, 2020; Hataley & Leuprecht, 2018; Nienaber & Wille, 2020). It remains to be seen which of these factors are salient for cross-border resource pooling, and which factors might be uniquely associated with this specific form of cross-border healthcare cooperation.

*b. Mobile Workforces*

Labor mobility in general refers to the ability of workers to move between different geographical locations, industries, occupations, or employers in search of employment opportunities or career advancement. It encompasses various forms of mobility, including commuting, migration, short-distance transmigration, temporary assignments, remote work, and international relocation (Dowlah, 2020a; Eliasson et al., 2003; Strüver, 2005; van Houtum & Gielis, 2006). For example, physician exchange programs facilitate temporary or permanent movement of doctors between countries to address healthcare workforce shortages or to facilitate knowledge exchange and skill transfer. Programs like the United States' J-1 Visa Waiver Program enable foreign physicians to work in underserved areas in exchange for a waiver of their home residency requirement. Similarly, organizations like Médecins Sans Frontières (Doctors Without Borders) deploy volunteer physicians from various countries to aid in regions affected by conflict, natural disasters, or public health emergencies.

More on the national, but still border traversing level, are the so-called travel nurses. American travel nurses, for example, are registered nurses who work temporary assignments in various healthcare facilities across the United States, typically through staffing agencies specializing in travel nursing placements. These nurses possess the flexibility to choose assignments allowing them to experience diverse clinical settings while addressing staffing needs in high-demand areas. For instance, a travel nurse from California might accept a short-term assignment in Texas to assist with staffing shortages in a busy urban hospital or opt for a longer assignment in a rural clinic to support underserved communities.

Because the European Union ensures free movement of labor within the external borders, workforce movement by European nationals is considered mobility, not migration (Dowlah, 2020b). More specifically, Directive 2005/36/EC facilitates the mobility of healthcare professionals by mandating mutual recognition agreements and directives aimed at harmonizing professional qualifications and standards. For example, a nurse from Romania may choose to work in Germany to access better employment opportunities or higher wages.

At the same time, they meet a demand which is not met by local labor supply. Hence, on an individual level mobility enables personal development and individual economic growth (Karacan, 2023; Wiesböck & Verwiebe, 2017). Simultaneously, mobility helps to address staffing shortages in regions or countries with high (temporary) demand for healthcare (Glinos, 2015).

Workforce mobility is influenced by factors such as economic conditions, labor market dynamics, technological advancements, policy frameworks, and individual preferences. For instance, familiarity with neighboring countries drives individual intentions to work abroad (Klatt, 2014; Knotter, 2014). In addition, it is found that compared to physicians, nurses are more mobile when they are young (Andreassen et al., 2017). A key factor contributing or hindering workforce mobility on the macro-level is occupational licensing (Shakya et al., 2022), which until now has not been harmonized for all occupations within the European Union (Capuano & Migali, 2017; Jesse, 2017). In addition, closed borders in general and in situations of crises (e.g., migration crisis, pandemics) put border-crossing workers under pressure by reducing their mobility literally, as for example seen during the Covid-19 pandemic (Kajta & Opiłowska, 2022). In the healthcare sector, where professionals are usually unable to work remotely on short notice, such a situation can drastically reduce labor mobility.

At the same time, for all the problems that it helps to solve labor mobility can generate new burdens for employers and national, regional, and local institutions. For instance, when professionals move for better working conditions or pay, they may leave workforce gaps in their own countries of origin, contributing to higher inequality in healthcare across the European Union (Glinos, 2015; Kaczmarczyk & Okolski, 2008). While not too many mobile workers work in staffing pools, their mobility is a key requirement for cross-border resource pooling, which may offer crucial lessons for its successful implementation.

*c. Resource Pooling*

Pooling involves the sharing or floating of resources within and across healthcare provider systems. The resources within a pool, which could be beds, medication, or staff, are flexibly allocated to the parts of the healthcare system in greatest need to mitigate the effects of variation in care demand and supply (Fagefors et al., 2020; Fagefors et al., 2022; Jiang et al., 2023; Qin et al., 2015). Pooling of staff or flexible deployment in healthcare involves allocating certain professionals to where their expertise and work are needed. In that, resource pooling helps to overcome geographical imbalances in healthcare systems and ensures accessibility of

healthcare related to reasonable travelling distances for patients (Dussault & Franceschini, 2006). It also prevents off-service-placement, e.g., within a hospital (Song et al., 2020). Hence, the underlying assumption is that travelling personnel are preferred over travelling patients.

Flexible deployment of healthcare professionals can be organized within or between healthcare organizations. Intra-organizational pooling usually implies that professionals float between different departments, hence need to be cross-trained to become experts in multiple areas and even generalists in their occupation (Straw, 2018). Pooling between different organizations usually means that professionals stick to their area of expertise but apply it in another organizational environment, requiring them to learn local procedures and familiarize with other organizational structures (Dziuba-Ellis, 2006; Essoussi & Ladet, 2009; Fahrenkopf et al., 2020; McDonald et al., 2019). When professionals float even between different countries, these differences might be significant. Also formal qualification needs to reach certain standards and related certificates have to be acknowledged (Costigliola, 2011; Johnson & Wolf, 2009).

In most cases, resource pooling in healthcare improves care delivery (Vanberkel et al., 2012) by increasing capacity during high demand periods, improving the quality of healthcare and patient safety, and yielding shorter wait times (Alvekrans et al., 2016; KC et al., 2020; Kuntz et al., 2015). This is particularly true in the case of cross-border resource pooling when needed labor and skills are available "on demand" (Bell et al., 2015; Brunet-Jailly, 2022). Pooling can also benefit medical professionals themselves. It may improve work conditions for medical professionals by decreasing their work time and improving work conditions (Hoffman & Sadovszky, 2018; D. Roberts, 2004; Fischer et al., forthcoming).

Despite the many benefits, pooling is not without its challenges. The rotating responsibilities may create new strains on personnel, which they may be unprepared to confront (Fagefors et al., 2022). Also, staff pools potentially increase costs (e.g., due to higher wages compensating for the higher flexibility or for more commuting, training needs but also because of coordination costs), they might also reduce productivity or quality of the work partly (especially when professionals are generalists rather than specialists or lack local knowledge and routines), and leadership and control gets more complex (Alonso-Echanove et al., 2003; Dall'Ora et al., 2022; Fagefors et al., 2022; Qin et al., 2015; Wright & Bretthauer, 2010).

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*d. Tying concepts together*

The definitions and discussions of the literatures around cross-border cooperation and cross-border healthcare, labor mobility and resource pooling show that there is some conceptual overlap (see figure 1) and that the concepts each employ a different perspective on the empirical phenomenon in question.

First, resource pooling can be one type of cross-border cooperation. However, cross-border cooperation encompasses much more other actions, such as learning from each other or implementing policy measures together. Also resource pooling, does not necessarily (and in practice in fact rather seldomly) take place across borders. However, border regions are particularly suited to have regional resource pools installed across the border, e.g. when a region shares an ambulance helicopter.

Labor mobility can result in cross-border cooperation and vice versa, for example when labor migrants develop cooperations with their home country and institutionalize them (labor mobility begets CBC) or when people are inspired to work in the cooperating country based on previous cooperation (CBC stimulates labor mobility). Also, cross-border cooperation can entail labor mobility, by for example enabling temporary assignments in the cooperating country.

Furthermore, resource pooling is an umbrella concept entailing many types of pools, staff pools are just one among them. If resource pooling is related to human resources however, there is a large overlap with the concept of labor mobility. As mobility does not necessarily imply international or geographical mobility but can also concern switches to other sectors, temporary assignments in other organizations etc. When staff is pooled, this staff is by definition mobile. Vice versa, labor mobility can encompass more than temporary assignments in float pools, but also permanent job changes. However, resource pooling might lead to more permanent job changes, when professionals recognize while working in a pool that they prefer another employer or work unit. Both concepts, however, do not necessarily imply an international dimension.

Figure 1 drafts the overlapping conceptual space of these concepts, showing that cross-border human resource pooling is a concept that is related to all three fields.

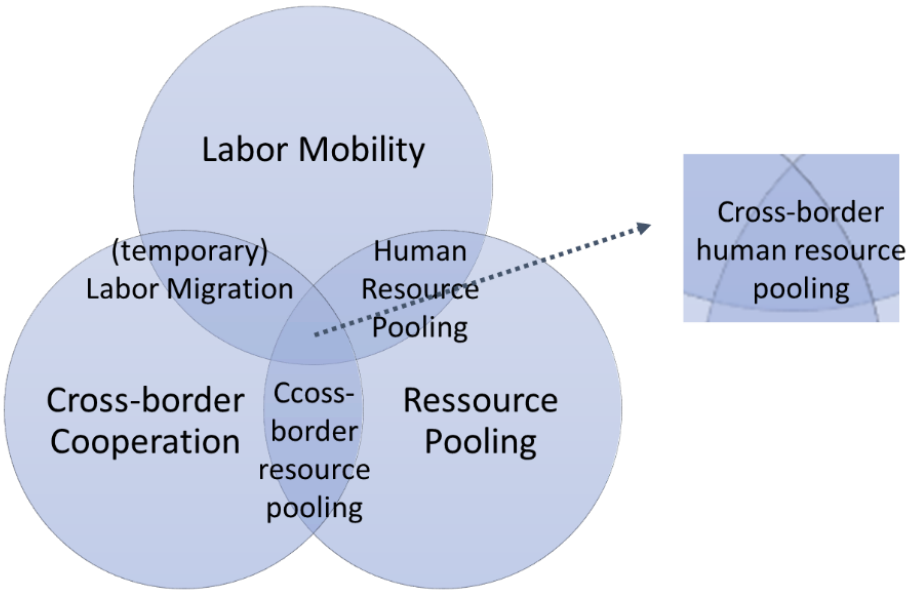


Figure 2: Conceptual overlap between the fields of labor mobility, cross-border cooperation and resource pooling

## Methods

This paper explores the experiences of public administrations and healthcare organizations in border regions and of cross-border healthcare professionals in order to understand the barriers and opportunities for cross-border resource pooling of healthcare personnel. Building on the conceptual discussion, the literature on healthcare and human resource management – with a particular focus on pooling – on the one hand and cross-border collaboration and labor mobility on the other. is analyzed.

### *a. Materials*

To find literature that was appropriate for this paper, which seeks to understand what the barriers and opportunities for cross-border pooling of healthcare personnel is, we leveraged the PRISMA approach (Sarkis-Onofre et al., 2021). PRISMA is commonly used to perform meta-analysis of scientific literature on a given topic. Researches use it to perform diverse types of reviews and it is considered to be reproduceable and transparent (Moher et al., 2009; Moher et al., 2015). As there is no literature on cross-border resource pooling, we elected to employ a problematizing review. Here employing PRISMA ensures that the selection of literature is systematic. A systematic approach is necessary given how broad the literature is. Figure 2 shows how many articles are returned by a keyword search of Web of Science and PubMed that was published in the last 10 years using the key words discussed in the conceptual chapter,

namely "*Cross-border" AND "Healthcare" AND "Mobility"*. A similar protocol was used with the search term "*Labor Mobility*" AND "*Doctors*" and "*Nurses*" in PubMed. The search ended on February 12th 2024. The initial search on Web of Science yielded 39 articles, the initial search on PubMed yielded 29.

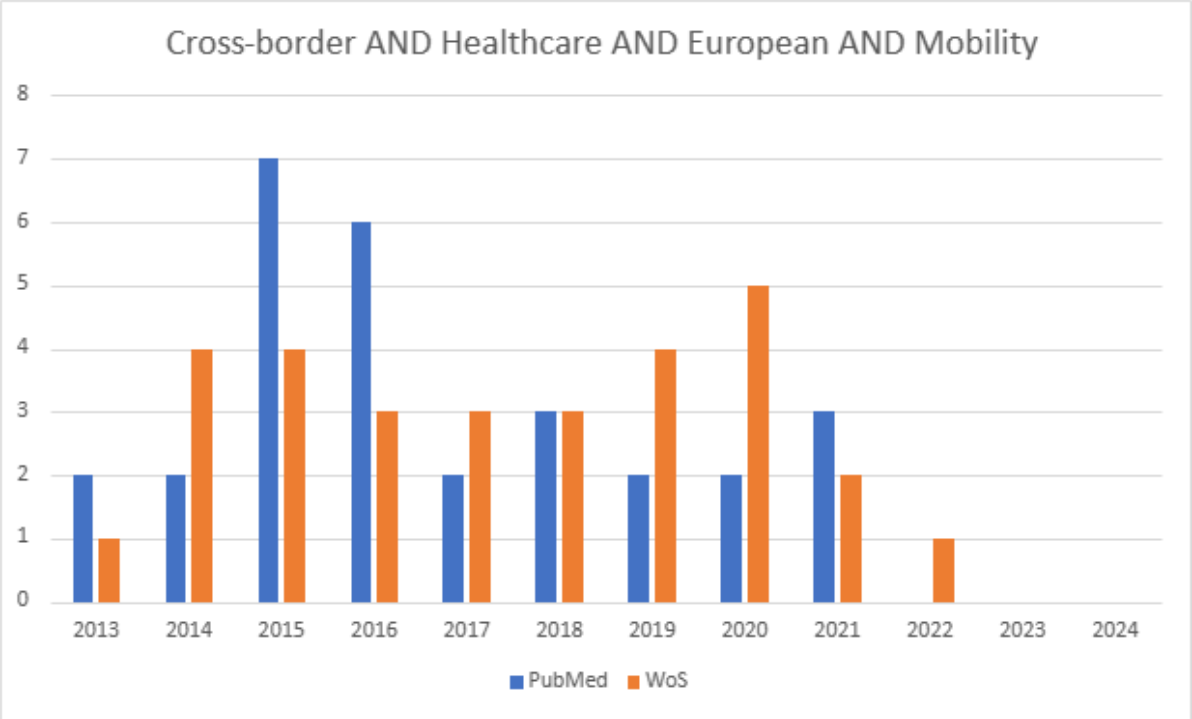


Figure 2: Frequency Distribution of Articles Recalled with Keyword Search: "Cross-border" AND "Healthcare" AND "European" AND "Mobility"

In a next step, articles were selected for inclusion from this larger pool of candidate articles. Articles that covered very specific aspects of healthcare were not included, this concerns also articles that studied the impact of the Covid-19 pandemic only. Additionally, articles that covered non-European initiatives were not included, because of the unique labor and healthcare regulations on the European level. This process resulted in 10 articles suitable for inclusion. 2 more articles were added from the search using the key terms related to labor mobility specifically. See figure 3 for a graphical representation of our screening and exclusion process. All included articles are also listed in table A1 in the appendix.

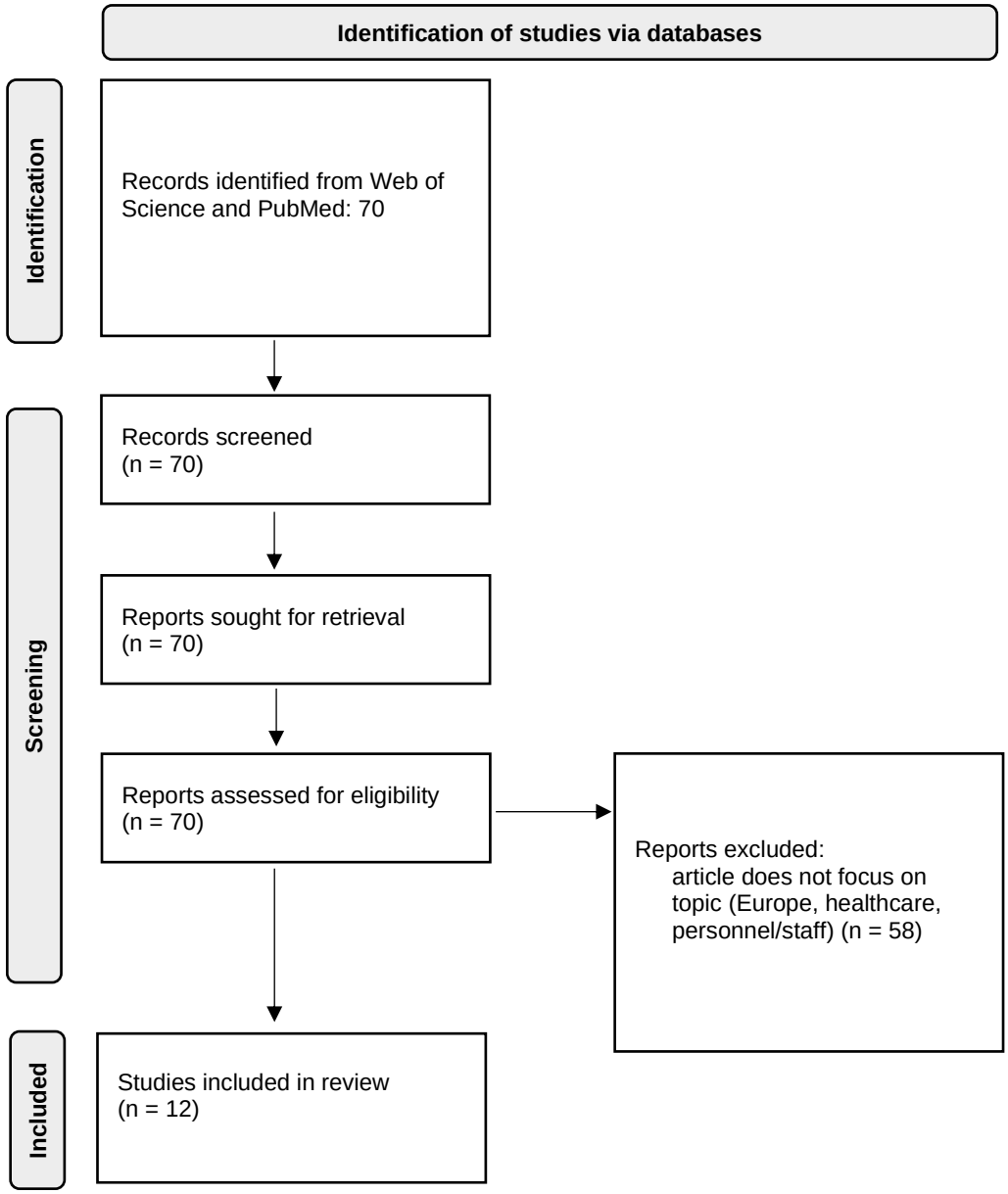


Figure 3: Identification, screening, and inclusion of relevant records (PRISMA scheme)

*b. Analysis*

We combine inductive and deductive approaches, thus we combined both open and closed coding logics in our content analysis. In a first step, the final sample of papers was coded deductively based on a coding scheme which was developed based on key themes emerging out of 2 review articles (Saaida & Qawasmi, 2023; Schmidt et al., 2022). Additional codes were iteratively being added en vivo during the coding process if information relevant to the research question that fell outside the previously established codes were deduced.

The coding scheme was been discussed and refined by the research team to ensure that it reflected the literature and the goals of the review. The full coding scheme, which follows the approach of Gioia et al. (2013) can be found in in Table A2 in the Appendix. Atlas.ti was used for coding.

## Findings

On the whole, this problematizing review suggests that patients and professionals alike benefit from cross-border healthcare, and could stand to benefit from resource pooling. The literature suggests that the challenges to cross-border human resource pooling are substantial and are primarily rooted in differences in how national healthcare systems are set up. Differences in how national healthcare systems train and certify staff can be a barrier, as is the different salary and information management systems. However, these barriers are not insurmountable. The literature also indicates some best practices and hints at potential solutions which can be categorized into macro -, meso-, and micro- level opportunities and challenges.

### a. *Macro-level opportunities and challenges for cross-border resource pooling*

Healthcare is considered a fundamental human right in the European Union, which means access to basic services are guaranteed to all EU citizens and legal residents (Santuari, 2022). Healthcare policy and governance, until recently, largely fell under the purview of national governments (McKee & Ruijter, 2024; Nordeng & Veggeland, 2020), and was minimally prioritized by the European Union (Ried & Mthiarschall, 2016). However, the European Union has increasingly invested in European healthcare policymaking, primarily as a means of complementing national health care policies. EU level policy making on healthcare stands on two pillars: patients rights ensured through the patients rights directive and the social security act, and worker mobility, also ensured through the mutual recognition of professional qualifications (see Table 1).

Table 1: Macro-level factors identified in the literature review

| Facilitating Conditions | Barriers | Pathways forward |
|---|---|---|
| • Social Security Act, (EC) No 883/2004.<br>• Patient's Rights Directive, directive 2011/24/EU<br>• Recognition of Professional Qualifications, Directive 2005/36/EC | • Costs for Member States<br>• Lack of Clarity<br>• Third Country Agreements | • System for sharing digital data<br>• Improved network governance and management<br>• Make local welfare systems more financially robust<br>• Create a more comprehensive legal framework |

1971's social security regulation provides EU citizens with medical coverage across Europe, supporting the free movement of labor (Legido-Quigley et al., 2011) a policy that was extended through (EC) No 883/2004. The harmonization or alignment of European social systems gave European citizens access to emergency care throughout the European Union and to some elective healthcare treatments (with prior permission), thereby enabling free movement in the European economic zone. Emphasis on affording European citizens high quality patient care intensified in the 1990s followed by the establishment of the Patients' Rights Directive (directive 2011/24/EU) was presented in July 2008. This directive established National Contact Points (NCPs) to provide patient information, mandated the reimbursement of costs, and established the rules on prior authorization. As a result of this harmonization, a greater harmonization of European healthcare systems started to develop (Nordeng & Veggeland, 2020). But these steps remain insufficient for establishing a full-fledged health union.

Recently, the ambition to more intensely harmonize European healthcare systems after the Covid-19 pandemic, is giving rise to greater support for a European Health Union (McKee & Ruijter, 2024), supported by the above mentioned legislative actions (Finotelli, 2021). Resource pooling is one of the actions potentiated by such a program, however, it must first overcome some hurdles. First, it is difficult to harmonize nation state healthcare systems. For instance, Martinsen and Schrapama (2021, p. 104) write:

> "Despite the legislative aim of the Patients' Rights Directive "to establish rules for facilitating access to safe and high-quality cross-border health care in the Union and to ensure patient mobility" (directive 2011/24/EU, recital 10), very few EU citizens make use of the directive. Only the Czech Republic, Estonia, Finland, Lithuania, the Netherlands, and Norway did not adopt a system for prior authorization."

While some countries like Germany seem able to easily align with European healthcare regulations like the Patient's directive with little political or administrative resistance (Nordeng & Veggeland, 2020), others have found it more challenging. For instance, Italy has expressed concerns about the financial burdens that may arise from their healthcare system's inability to compete with services from surrounding countries. These concerns incentivize them to adopt anti-cross border healthcare policy (Finotelli, 2021). Similarly previous work observes that Norway has found it difficult to restructure its heavily subsidized health system to a new one introducing "market mechanisms, free competition and consumer choice to play a significant role" (Nordeng & Veggeland, 2020).

Second, there is a risk of creating inequitable healthcare provision systems. Cross-border patients may find that they pay more than local residents for medical care, and others may have to pay upfront for services due to a lack of clarity about cross-border reimbursements. The inability to align may even lead to backlash against cross-border healthcare. This can happen, for instance, in cases where reimbursement amounts were unclear (Finotelli, 2021) or difficult to align (Nordeng & Veggeland, 2020). In their study of cross-border healthcare cooperation between Spain and Portugal, Amuedo-Dorantes et al. (2022) describe how Spanish officials introduced policies to limit cross-border medical care, because they are not fully compensated for all cross-border care by the Portuguese government for services rendered to Portuguese patients.

Yet another area of unanticipated challenge, which must be considered when designing resource pooling agreements, is pre-existing agreements with third countries, which may complicate other agreements with EU countries because there are even more systems to match up. This was the case in the Spain-Portugal region where patient mobility was affected by ongoing bilateral agreements between Spain and 20 countries including, Andorra, Brazil, Chile, Ecuador, Morocco, Peru, and Tunisia (Amuedo-Dorantes et al., 2022).

Although no explicit analyses related to employment of cross-border personnel in the healthcare sector, the literature on cross-border healthcare delivery indicates some pathways for promoting more intense cross-border healthcare cooperation, and ergo resource pooling. These are (1) developing a working digital information sharing system, (2) harmonization of training and accreditation of healthcare professionals; (3) more robust healthcare and welfare governance across the continent, (4) developing and establishing a more comprehensive Europe-wide legal framework (5) intensifying current levels of cooperation and coordination with existing networks like those of the WHO, and (6) improving administrative network development and

management (Leone et al., 2013; Martinsen & Schrama, 2021; McKee & Ruijter, 2024; Santuari, 2022). Martinsen and Schrama (2021, p. 113) also underline the importance of well-functioning administrative networks:

> "European Administrative Networks are important instruments in the toolbox of new forms of governance, dealing with rulemaking, rule monitoring, and rule enforcement. Operating beyond, but not above, the state, European networks of national administrative units allow for interaction and exchange to coordinate national responses to increased interaction across their borders."

Beyond legal frameworks, another key strategy through which the EU can be impactful is by providing financial support for cross border health cooperation. In general, funding supports the activities and aims of EU agencies and EU research to optimize public services. In some cases, however, there is insufficient funding to support planned actions and the level of funding is non-consensual between institutions and/or member states.

b. *Meso-level opportunities and challenges for cross-border resource pooling*

Healthcare cooperation is aimed at taking advantage of economies of scale on either side of the border. The literature on medical tourism suggests that patients are increasingly willing to travel in order to receive care (Bell et al., 2015), requiring hospitals and other providers to adapt to these new stream of patients. Indeed, private healthcare organizations jump on the opportunity to also market to foreigners (Finotelli, 2021; Frenz, 2019). As Finotelli (2021, p. 10) finds,

> "As the same interviewee remarked, the initiative did not focus on European patients already living in Spain, since 'this type of patient goes to the national healthcare system' (Spaincares, Manager, 06/06/2019). The Spanish private healthcare sector is instead interested in those patients who would move to Spain to receive the same treatment that they could not receive within a reasonable period in their home country."

However, the literature suggests that the administrative burden on healthcare organizations increases when they participate in cross-border healthcare cooperation (Beuken et al., 2020). For instance, healthcare systems may register patient information but do not match up across borders. Both the program and the information required do not align. Moreover, it is not easy to reconcile different systems with divergent professional norms, standards, protocols and practices (Amuedo-Dorantes et al., 2022; Leone et al., 2013; Nordeng & Veggeland, 2020). As Leone et al. (2013, p. 7) discuss,

> "Informants expressed high levels of satisfaction with the work of Spanish physicians though they noted the potential negative impact of language differences on the doctor-patient relationship, and the difficulty to harmonize titles and degrees (an issue which is

> disappearing with the implementation of the Bologna norms). The latter creates problems in assigning staff to a specific professional cadre, and at times creates situations in which persons with similar professional profiles and occupying the same position, receive different salaries."

Moreover, finding workers who are appropriately trained to navigate these situations is difficult, for the reasons given above. This situation is complicated further by the need to keep up with evolving national policies and standards.

One of the concerns that have been raised over the intensifying movement of patients medical professionals is inequity. Mobile patients who engage in medical tourism may be creating a two-tier healthcare system where those who can afford to travel far, receive better medical care than those who cannot. In contrast, mobile workforce leave patients behind in their countries of origin. Cross-border resource pooling potentially lessens the risk of inequitable resource distribution in European healthcare, because it refrains from permanent labor mobility and instead focusses on sharing personnel..

Organizations and their employees are learning how to deal with these challenges. Based on their experiences, the following best practices or advice has been specified:

- Enter into formal and binding agreements (Beuken et al., 2020)
- Hiring language staff or invest in translation (Beuken et al., 2020; Finotelli, 2021)
- Investing in process trainers and interdisciplinary, inter-cultural training (Beuken et al., 2020)
- Aligning where possible healthcare protocols (Beuken et al., 2020) and tailoring to a given context, when protocols cannot be aligned
- Adopting bottom up organizational policy and program design where professionals feel empowered (Beuken et al., 2020).

Table 2 lists the findings on the meso level.

Table 2: Meso-level factors identified in the literature review

| Facilitating Conditions | Barriers | Pathways forward |
|---|---|---|
| • Healthcare providers wanting to capture economic benefits (pull) | • Institutional mismatch<br>• Mismatch in national pricing/costing systems<br>• Public versus privatized healthcare | • Create formal binding agreements<br>• Language staff<br>• Standardized, interdisciplinary training<br>• Involve staff in program design |

### *c. Micro-level opportunities and challenges for cross-border resource pooling*

The literature suggests that cross-border healthcare collaboration is valued by patients, medical workers, and experts alike, indicating a supportive environment for cross-border resource pooling. Patients list the ability to access higher quality or unavailable healthcare interventions, to be seen by a specialist, or to receive healthcare sooner as reasons for valuing cross-border healthcare (Amuedo-Dorantes et al., 2022; Santuari, 2022). However, European patients express a preference for receiving treatment closer to home (European Union, 2022). In border regions, this speaks to a demand for cross-border healthcare, which affords patients quality healthcare and expertise from neighborhood countries, without the need to travel far.

It has been argued that cross-border resource pooling would offer professionals more opportunity for learning, greater flexibility, the ability to negotiate for better pay and participate in neighboring labor markets, while reducing stress and providing reassurances during periods of peak demand (Amuedo-Dorantes et al., 2022; Leone et al., 2013; Santuari, 2022). In their study of cross-border healthcare cooperation at the Spanish-Portuguese border, Leone et al. (2013, p. 8) find:

> "In our study, key informants stated that the benefits of employing professionals from across the border were much greater than the problems that they may entail, such as language differences or the difficulty to harmonize titles and degrees."

This proposition is largely in line with what is known about cross-border healthcare cooperation. Moreover, professionals involved in cross-border healthcare collaborations express that the experiences are largely positive (Beuken et al., 2020). However, as suggested in the literature on cross-border healthcare collaboration, it may involve challenges including increased administrative costs, language and cultural barriers, the complications of simultaneously navigating different healthcare systems, and potentially reduced personal and financial security. This can lead to less coherence and camaraderie between professionals from different sides of the borders. More importantly, it may increase the likelihood of error. Beuken et al. (2020, p. 6) quote medical professionals attesting that,

> "Since culture greatly affects a person's attitudes, subjective norms and perceived control, and, hence, their behaviour, cultural differences inevitably lead to different ideas about how to deal with certain situations, increasing chances of miscommunication. Cultural differences should thus be considered carefully in the process of designing and implementing strategies of support for cross-border handovers."

They further observe that,

> "Patient handover is a complex event that causes risks to patient safety when performed suboptimally. Information may be lost due to inefficient or nonexistent communication between healthcare professionals. Moreover, handover has been associated with inaccurate or delayed clinical assessment and diagnosis, medication errors, duplication of tests, increased length of stay, increased in-hospital complications and decreased patient satisfaction." (Beuken et al., 2020, p. 7)

Similar dynamics are expected to be salient for cross-border healthcare human resource pooling. The literature also offers clues about what best practices in cross-border resource pooling may be including, being clear about roles, responsibilities, and norms around work. Joint training sessions in intercultural settings; and frequent and routine face to face interactions (Beuken et al., 2020). It is also critically important that rewards and recognition for work are met equitably across borders (Leone et al., 2013). Table 3 summarizes the findings at the micro level.

Table 3: Micro-level factors identified in the literature review

| Facilitating Conditions | Barriers | Pathways forward |
|---|---|---|
| • Mobile workforce<br>• Patients desiring quicker/better/more extensive services<br>• Patients prefer to have healthcare closer to home | • Linguistic and cultural barriers<br>• Increased administrative costs to worker<br>• Reduced personal and financial stability<br>• Increased likelihood of error | • Clarity about roles, responsibilities and norms<br>• Equity in rewards and recognition |

d. Findings on the conceptual level

Although a common conceptual space was identified between the concepts of labor mobility, cross-border cooperation and resource pooling, namely cross-border human resource pooling (see figure 1), they are rarely jointly discussed in the literature. We could not find any literature specifically addressing cross-border human resource pooling, at least with our focus on healthcare and the European context. It was assumed that the European context would be actually beneficial related to this topic, enabling cross-border mobility from a regulatory angle. Similarly, the assumption was that healthcare is a good sector to take into consideration for this topic, because of common reference frames concerning qualifications and certifications within the EU.

However, also apart from the fact that the empirical phenomenon we are looking for rarely occurs (or at least is rarely analyzed in the scientific literature) due also to the factors discussed

above, the analysis also shows that the literatures are fragmented (see also Table A1). When electing to focus on cross-border, no resource pooling literature could be found. The concept of cross-border healthcare dominates the findings, but is weakly connected to the core of CBC research. While the labor mobility literature often uses terms like cross-border labor mobility, this also barely connects to CBC. These findings, although drawing from a relatively small sample, show that there is indeed no significant overlap between the different fields and therefore a need for more integration.

## Discussion

This problematizing review reveals that cross-border healthcare offers mutual benefits for both patients and professionals, with potential advantages in resource pooling. However, significant challenges hinder effective implementation, primarily arising from disparities in national healthcare systems. Differences in training, certification processes, payment methods, and information management systems present current barriers to cross-border human resource pooling. Despite these obstacles, the literature suggests avenues for improvement, indicating best practices and potential solutions at macro-, meso-, and micro-levels. The multi-level nature of European healthcare systems complicates regulatory and legal frameworks, emphasizing the need for greater harmonization to facilitate cross-border cooperation.

While resource pooling presents opportunities for synergy, issues such as administrative burdens, language barriers, and divergent professional norms necessitate careful consideration. Moreover, macro-level challenges, including discrepancies in healthcare regulations and cross-border reimbursement complexities, underscore the need for comprehensive solutions, such as enhanced digital information sharing systems and stronger governance frameworks. EU financial support plays a pivotal role in fostering cross-border cooperation, yet inconsistencies in funding allocation and insufficient resources remain significant hurdles to overcome. Overall, addressing these challenges requires concerted efforts at both national and supranational levels to realize the full potential of cross-border healthcare collaboration.

While we arrived at these findings on the macro, meso and micro level by deducing results from one literature stream, usually cross-border healthcare, to the resource pooling context, findings on the specific empirical phenomenon of cross-border human resource pooling remain scarce. That leads to several limitations and avenues for further research in the cross-border human resource pooling literature. First of all, within the European focus there is only a limited scope

of investigated cases, predominantly centered around the border regions of Spain/Portugal and Netherlands/Germany. Potential reasons for this focus on primarily two cases seem to be threefold: (1) the healthcare systems in the respective countries are sufficiently different (e.g. the major differences between Germany and the Netherlands pointed out in the introduction) and therefore can add to each other but the standards and financial set-up of the systems are sufficiently similar, so that the chances (temporary) labor migration happens in both directions is higher. (2) Languages in these borders regions are very similar, so that personnel can more easily switch between countries, because the neighboring language was already learnt in school or is so close to the mother tongue that adaption is easy. (2) European funding lines such as Interreg are very active in these areas and might have fostered cross-border regional development in these cases. However, the focus on these regions underscores a notable gap in the available literature, thereby restricting the generalizability of findings across diverse European contexts.

Second, the literature remains often very vague, in terms of what is actually pooled. Healthcare utilization patterns or processes are very broadly termed, such as "alternative methods", leaving open which exact professions and healthcare processes are affected. This underscores the need for more precise characterization of healthcare processes, behavior and related professions. Future research endeavors could thus benefit from a more nuanced terminology. Third, some important information is missing in many studies, to better understand the potential and challenges for cross-border human resource pooling. Primarily, the scarcity of detailed financial data hinders a comprehensive understanding of economic implications of cross-border pooling of human resources, largely attributed to the opacity of existing healthcare funding and procurement systems and uncertainties surrounding the impact of European regulations.

Our results also showed a missing interaction between conceptual perspectives on cross-border human resource pooling coming from different literatures and the parallelism of these literatures mirrors a scattered scientific field. This is problematic, because evidence can not build up and research eventually is inefficient, because it does not draw on earlier findings on the same empirical object, because other theoretical perspectives are overlooked. We also see, that this split in the field especially leads to the fact that cross-border cooperation or healthcare and labor mobility studies hardly touch micro-level and more management-related factors, such as monetary efficiency or individual motivation. Hence the literature is performing well in describing the macro-level context but lacks an individual perspective. However, this perception might also result from the fact that we focused on European cases here, hence the

context was very specifically defined. As a next step, the topic could be analyzed without such a geographic focus, potentially leading to differing results.

Due to the macro-level focus of the field, it is also hard for human resource management professionals to draw practical implications from the state of the literature. We therefore suggest that human resource management research takes up this challenge and that future studies analyze (healthcare) professionals perspectives, experiences and attitudes towards cross-border mobility and especially temporary pooling.

In addition, there is also clearly a need for a diversification in methodological approaches, to be able to triangulate findings and to provide a more comprehensive picture of cross-border healthcare (Beuken et al., 2020). At the moment studies rely mostly on qualitative research designs employing interviews to collect data. In future, this can be enriched by experimental and quantitative survey research to be able to more validly draw causal conclusions and more general conclusions in bigger samples. We also see a need for more comparative research instead of merely relying on case studies in single border regions, especially when the topic is stronger analyzed from a public management angle.

Last but not least and when referring to more disciplinary and methodological diversity, also a stronger legal focus would be useful in future. While we started from concepts going back to management, political science and sociology as mother disciplines to public administration, law was initially overseen. However, especially when analyzing macro-level factors, it got clear that regulation can turn into strong enablers and hindrances for cross-border resource pooling of personnel. A deeper exploration of legislative frameworks beyond the scope of available academic literature could unveil additional dimensions and ramifications of cross-border pooling and its concrete implementation. Further research has to dive deeper into these juridic contexts. However, a major constraint here will be the question of regional focus and related national regulation.

We focus on the policy field of healthcare in this research for particular reasons, primarily because of the strong need for the efficient use of resources due to the combination of increasing demands and decreasing capacities. In addition, health does not stop at national borders, as international pandemics show. At the same time, healthcare is also not too bound to national context, as for instance education or social work would be. However, lessons learned from this study transcend the healthcare field and can inform public (human resource) management and

policy making in a range of domains experiencing demand pressure, such as policing and safety, sustainability and energy, or infrastructure.

## Conclusion

This study set out to illuminate the academic landscape of cross-border healthcare, particularly focusing on the challenges and opportunities inherent in cross-border human resource pooling. The analysis underscores the mutual benefits for patients and professionals, emphasizing the potential advantages in resource pooling across borders. However, significant hurdles exist, stemming from disparities in national healthcare systems, including differences in training, certification processes, payment methods, and information management systems. Despite these challenges, the literature suggests various avenues for improvement, spanning macro-, meso-, and micro-level interventions. Harmonizing regulatory frameworks and enhancing digital information sharing systems emerge as crucial steps toward facilitating cross-border cooperation. Additionally, addressing administrative burdens, language barriers, and divergent professional norms requires careful consideration.

This problematizing review also highlights notable gaps in the existing literature, particularly the limited scope of investigated cases and vagueness in the characterization of pooled resources. These limitations call for further research efforts to provide a more nuanced understanding of cross-border human resource pooling. Moreover, the fragmented nature of the field, with limited interaction between conceptual perspectives and disciplinary boundaries, suggests a need for interdisciplinary collaboration and methodological diversification.

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## Appendix

Table A1: Articles included in analysis

| Author and Publication year | Title | Literature Stream |
|---|---|---|
| Amuedo-Dorantes et al., 2022 | Reforming the provision of cross-border medical care: Evidence from Spain | Cross-border cooperation |
| Beuken et al., 2020 | Going the extra mile — cross-border patient handover in a European border region: qualitative study of healthcare professionals' perspectives | Cross-border cooperation |
| Diesenreiter & Österle, 2021 | Patients as EU citizens? The implementation and corporatist stakeholders' perceptions of the EU cross-border health care directive in Austria | Cross-border cooperation |
| Finotelli, 2021 | Cross-border Healthcare in the EU: Welfare Burden or Market Opportunity? Evidence from the Spanish Experience | Cross-border cooperation |
| Frenz, 2019 | Introduction: Medical tourism or movement for healthcare? Reflections on (inter-)national cross-border mobility | Labor mobility |
| Leone et al., 2013 | Trends of cross-border mobility of physicians and nurses between Portugal and Spain | Labor mobility |
| Martinsen & Schrama, 2021 | Networked Health Care Governance in the European Union | Cross-border cooperation |
| McKee & Ruijter, 2024 | The path to a European Health Union | |
| Nabbe & Brand, 2021 | The European Health Union: European Union's Concern about Health for All. Concepts, Definition, and Scenarios | |
| Nordeng & Veggeland, 2020 | The implementation of European Union (EU) rules on cross-border care: moving towards convergence? | Cross-border cooperation |
| Pronk et al., 2023 | Grensoverschrijdende zorg: EU-burgers als patiënt (Cross-border healthcare: EU citizens as patients) | Cross-border cooperation |
| Santuari, 2022 | The European Union Directive on the application of patients' rights in cross-border healthcare. Could it be part of the Global Health Summit strategy? | Cross-border cooperation |

Table A2: Coding scheme

| **Aggregate dimension** | **Second order theme** | **First order code** | **How this is defined** | **Examples from coded articles** |
|---|---|---|---|---|
| EU Funding | Top Down | Growth friendly | (economic and fiscal) policies that are Growth friendly | "Funding is insufficient to support the planned European actions." (Nabbe & Brand, 2021) |
| EU Funding | Top Down | Cost effective | (economic and fiscal) policies that are Cost effective | |
| EU Funding | Top Down | Efficient | (economic and fiscal) policies that are Efficient | |
| EU Funding | Top Down | Other | | |
| | | | | |
| CBC | Health systems | | following the territory principle. open the system to flows of services, patients, service delivery, professionals, and funding [7,8]. CBHC collaborations (including those encouraging or facilitating patient mobility) apply different incentives, rules, and structures | "According to the Decree, and in contrast to past (and easier) procedures, European retirees had to make an explicit request for their Social Security Card in the corresponding Office of the Spanish Social Security System." (Finotelli, 2021) |
| EU legal competence | economic integration/internal market | | | "Freedom of movement in the European Union is inherent to EU citizenship and equal access to welfare." (Finotelli, 2021) |
| EU legal competence | fiscal sustainability | | Fiscal governance | "The report also pointed to the existence of a significant mismatch between Spain's expenditure for the healthcare assistance of EU citizens and the amounts that Spain had been reimbursed by the corresponding Member States (Tribunal de Cuentas, 2012)." (Finotelli, 2021) |

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| EU legal competence | social cohesion | | | Moreover, analysis not only shows how states deal with different types of non-labour-motivated mobility, but also suggests that different institutional constellations can make EU citizens less mobile than they are expected to be and jeopardize the organization of what has been called ‘a pan-European solidarity. (Finotelli, 2021) |
| Drivers of CBHC | supply side | | Exchange of healthcare staff for training, sharing of healthcare infrastructure, common investments in high-cost equipment, bilateral agreements on emergency care provision, | “Last but not least, so-called traditional approaches to medicine are transformed to suit new customers’ demands.” (Frenz, 2019) |
| Drivers of CBHC | demand side | | Lack of availability of domestic healthcare services, financial costs of healthcare services elsewhere, lack of expertise in one’s own country, familiarity with health care system | Most patients are from Germany, France and the United Kingdom; besides seeking cosmetic surgery and fertility assistance, they also pursue treatment for oncology, cardiology and orthopaedic surgery (Hanefeld et al., 2014) |
| Prerequisites to CBHC | | | An objective, local need, committed individuals, shared interests among partners, support from external actors, suitable governance structure | “To start with, public health should be separated from people’s specific economic and financial conditions.” (Santuari, 2022) |
| Types of CBHC | | | Initiatives referring to a collaboration in the case of extraordinary events (earthquake, fires, landslides) and may include ambulance deployment. Initiatives referring to collaboration in competency training or intercultural education for healthcare staff, | “a fixed collaboration between a Dutch and German clinical department whereby patients are referred to Germany for specialised treatment” (Beuken et al., 2020) |

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| | | | recruitment support, capacity building, professional exchanges.<br>Initiatives referring to collaboration in the field of telemedicine, standard care, second opinion visits, planned and unplanned care. | |
| Types of Cross-Border cooperation for PA | Intergovernmental cooperation | | Collaboration among government entities from different countries/regions | "EU citizens who choose to be treated according to the Directive must prepay for their treatment, which is reimbursed afterwards by their national institutions according to the rates established for the same treatment in the country of origin" (Finotelli, 2021) |
| Types of Cross-Border cooperation for PA | Transnational cooperation | | Collaboration among non-governmental entities such as civil society organizations, academic institutions and private companies. | "Consequently, patient handover: 'the transfer of information and professional responsibility and accountability between individuals and teams, within the overall system of care in a cross-border setting is common." (Beuken et al., 2020) |
| Types of Cross-Border cooperation for PA | Cross-sectorial cooperation | | Collaboration among entities from different sectors such as government, civil society and the private sector. | "To do this, they had to present an S1 certificate, which proved that they had healthcare insurance in the country of origin, issued by the Social Security Office of their country of origin, together with proof of their registration with the Spanish municipal registry (Padrón Municipal) as well as possession of a Foreign Residence Card (NIE)." (Finotelli, 2021) |

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| Challenges of managing CBC | | | Taxation, Labor laws, Environmental regulation, Intellectual property laws. Language, Culture, ideologies, political system.<br>Monitoring and evaluating success, managing resources and finances, establishing effective communication channels, difficulties identifying and communicating with relevant stakeholders. | "Cross-border healthcare is complex, increasingly frequent and causes potential risks for patient safety." (Beuken et al., 2020) |
| Factors that contribute to success or failure of CBC | | | The availability of financial and technical resources, political will and commitment, legal and regulatory barriers, trust and understanding, common framework, communication and collaboration, communication and coordination, clear goals and objectives, stakeholder engagement, effective leadership | "Many respondents mentioned the challenge that comes with incompatible digital systems. In the Netherlands, for instance, information transfer was digitalised, and documents were not printed for handover." (Beuken et al., 2020) |
| Solutions to overcome CBC challenges | | | | "Op Europees niveau zijn ontwikkelingen gaande om de uitwisseling van gezondheidsgegevens binnen de EU te vergemakkelijken, onder andere via een Europese ruimte voor gezondheidsgegevens ('European health data space')" (Pronk et al., 2023) |
| Public Administration has a role in CBHC | | | Engaging with stakeholders, promoting initiatives, providing training, capacity building, providing resources, providing support, showing leadership | "The analysis shows that retirement migration has been perceived as a state burden, yet patients' mobility has tended to be seen by the Spanish government as a market opportunity" (Finotelli, 2021) |

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| Reasons for professionals to work abroad | | | | "According to informants, there has been an immigration of Spanish physicians to Portugal for >10 years. Access to specialization, the availability of positions, better salaries, and better technical and organizational conditions (access to surgery rooms, team work, accredited institutions) were the main motivating factors for crossing the border" (Leone et al., 2013) |
| Suggestions for Further Research | | | | "Observational or ethnographic research into crossborder handovers would be suitable to study how professionals interact in practice." (Beuken et al., 2020) |
| Attitudes regarding Cross-Border Healthcare | | | | "While intra-EU patients seeking programmed healthcare assistance may be perceived as an opportunity for certain market sectors (for example, private clinics), the provision of non-programmed public healthcare assistance to EU retirees could rather be seen as a burden on national welfare states." (Finotelli, 2021) |