

## Management of health residency programs: a scoping review

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ARTICLE REVIEW

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**Abstract** *This scoping review aimed to comprehensively map various facets of managing Health Residency Programs, considering all actors and adopting the guidelines established by the JBI. Databases comprised LILACS and MEDLINE via PubMed, SCOPUS, EMBASE, CINAHL with full text, academic source or EBSCO, and Web of Science, among others. A total of 17,114 documents were identified, with 32 articles related to the management of Health Residency Programs included after duplicate removal and title, abstract, and full article reading. The management categories listed in this study resulted from mapping the analyzed articles. Highlighted aspects of people management include recruitment, resident selection, and preceptor training. Regarding organization, the emphasized aspects encompass structuring and reorganizing communication within the residency program and challenges associated with organizing activities.*

**Key words** *Management, Medical residency, Multidisciplinary residency, Health residency program*

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## Introduction

Health Residency Programs (HRP) are fundamental in training and developing health professionals. These programs use a practical, immersive approach to help professionals develop clinical skills and acquire specialized knowledge, promoting responsible and ethical professional practice. HRP have shown a pedagogical and political potential to transform health practices and develop communication, teamwork, quality management, problem-solving, and comprehensive health care<sup>1,2</sup>. This has resulted in more than 100% growth in the number of medical residents in Brazil in recent years<sup>3</sup>.

However, these programs are unequally distributed nationwide and present high idleness rates<sup>3,4</sup>. Some factors should be considered to overcome this situation, such as the capacity of HRP and partner institutions, grant awarding, information system quality, and administrative procedures<sup>4</sup>.

Health Professional Residency Program (HPRP), established in Brazil in 2005, and Medical Residencies, established 24 years before<sup>5,6</sup>, face challenges. Different factors can affect the offer of uni- or multi-professional HRP in the 15 areas involved. These include a lack of resources to maintain the institutions, precarious health services, work overload, and lack of financial incentives for preceptorship and management learning.

Further, HRP can highlight healthcare limitations and potentials<sup>7</sup>. Thus, this scoping review aimed to map some aspects of HRP management considering all actors involved: residents, preceptors, tutors, supervisors, coordinators, and directors. Key management aspects include the roles and actors in charge: planning, organization, people management, communication management, budget management, direction, and coordination<sup>8</sup>.

Studies have analyzed the management of HRP that are considered *lato sensu* graduate programs. An article published in 1985 analyzed if actors such as program coordinators, supervisors, and preceptors were aware of their responsibilities and if the HRP were planned to provide proper resident training<sup>9</sup>.

Some studies in the United States highlighted resident selection aspects that could be improved<sup>10,11</sup>. The need for strategies to increase the number of medical residency vacancies in Brazil is also evidenced<sup>12</sup>. Educational support and human and material resources are also required in HRP<sup>13</sup>.

Current studies have reported complex coordination between Medical Residency Programs (MRP) management, residents, and other healthcare professionals<sup>14</sup>. Moreover, they have reported interest in aspects that can affect HPRP qualification, such as work overload and the need for more excellent investment in the valorization actions and training for preceptors<sup>15</sup>.

Many of these issues still need clarification, primarily due to the recent growth of residency programs in Brazil. Therefore, this scoping review mapped literature on HRP management based on these issues<sup>16</sup>. It included studies conducted in Brazil and abroad to broaden the understanding of the phenomenon studied. However, as there may be different HRP regulations and models in other countries, this review did not compare study contexts or residency characteristics between countries.

## Method

This scoping review was conducted according to the JBI<sup>16</sup> guidelines, which helped outline the main concepts, clarify research areas, and identify knowledge gaps. Methodological procedures included nine steps: 1) definition and alignment of the objective and review question; 2) development of the inclusion criteria and adjustment with the objective and review question; 3) description of the search strategy, selection, data extraction, and evidence presentation; 4) evidence identification; 5) evidence selection; 6) evidence extraction; 7) evidence analysis; 8) results presentation; and 9) results verification, summarization, and report.

First, the review question “What is involved in managing HRP considering the actors that are part of it?” was structured based on the acronym PCC (population, concept, and context). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) checklist was used to ensure wording quality and clarity<sup>17</sup>. The search protocol was assigned a Digital Object Identifier in the Open Science Framework database – <https://doi.org/10.17605/OSF.IO/UDWKN>.

The PCC acronym was used to establish the inclusion criteria. The population included HRP residents, preceptors, tutors, coordinators, and directors. The concept included studies on fundamental management aspects regarding the following roles and the respective actors in charge of them<sup>8</sup>:

- . Planning – plan what should be done and the methods that should be used to achieve the proposed objective;

- . Organization – establish a formal structure of authority, with subdivisions organized, defined, and coordinated to achieve the proposed objective;

- . People management– all roles involving hiring and training people and maintaining an appropriate work environment;

- . Direction involves continuous decision-making and incorporating specific and general orders and instructions. This actor is the leader of the organization;

- . Coordination – interrelate different parts of organizational work;

- . Communication management (reporting) – keep senior managers informed of what is happening in the organization and informs the communication manager and other team members (subordinates) using records, research, and supervision;

- . Budget management – carrying out financial management, considering everything related to tax planning, accounting, and control involved in the budget.

All roles should be presented as nouns (e.g., budget management instead of managing the budget) to refer to management aspects without affecting the properties of each one. Finally, the context included management aspects, considering the HRP period as a formal *lato sensu* graduate program often conducted in teaching hospitals.

This scoping review included classic articles, articles corrected and republished, newspaper articles, historical articles, journal introduction articles, bibliographies, letters, editorials, comparative studies, evaluation studies, validation studies, observational studies, periodic indexes, legislation, books and documents, electronic supplementary materials, personal narratives, news, pre-publications, government publications, case reports, reviews, systematic reviews, scientific integrity reviews, technical reports, theses, and dissertations. Fully available qualitative or quantitative studies were considered if their research question met the objectives of this scoping review. All studies found during the search period were considered, with no language or time limit criteria.

The data were collected following a three-step search strategy. The first step was an initial search limited to the JBI Evidence Synthesis, Prospero, OSF, PubMed, and Cochrane to identify articles

on the subject. Words contained in the titles and abstracts of relevant articles and the indexing terms used to describe the articles were used to develop a complete search strategy for PubMed, which was adapted to the other databases. The strategy included the following terms:

((“Internship and Residency”[mh] OR “Internship and Residency”[tiab] OR Residencies[-tiab] OR Residency[tiab] OR “House Staff”[tiab] OR Medical Residenc\*[tiab] OR “Residency and Internship”[tiab] OR “Internship, Nonmedical”[mh] OR Non Medical Internship\*[tiab] OR Non-Medical Internship\*[tiab] OR Non-Medical Residencies\*[tiab] OR Nonmedical Residenc\*[tiab] OR “In-service teaching”[tiab] OR “Education-service”[tiab] OR “service education”[tiab] OR multiprofessional resident\*[tiab] OR Integrated multiprofessional residence[-tiab] OR Multiprofessional residence\*[tiab] OR multi-professional health residence\*[tiab]) AND (“Health Management”[tiab] OR “Management Capacity”[tiab] OR “Organizational Capacity”[-tiab] OR “Organization and Administration”[-tiab] OR Administration[tiab] OR “Administration and Organization”[tiab] OR “Administrative Coordination”[tiab] OR Administrative[tiab] OR Supervision[tiab] OR “Health Planning”[mh] OR “Health and Welfare Planning”[tiab] OR “Practice Management, Medical”[mh] OR “Medical Practice Management”[tiab] OR “practice management instruction”[tiab] OR “practice management curriculum”[tiab] OR “management curriculum”[tiab])) AND (resident\*[tiab] OR “Preceptorship”[mh] OR preceptor\*[tiab] OR tutor[tiab] OR supervisor\*[tiab] OR coordinator\*[tiab] OR director[tiab] OR Clinical Mentoring[tiab] OR Clinical Practicum[tiab] OR Clinical Supervision[tiab]).

The second step was a database search, which began on November 11, 2022. A librarian experienced in review studies helped plan all search strategies. The third step was to analyze the references of the included articles to select additional studies meeting the inclusion criteria.

The databases searched were the Latin American and Caribbean Literature in Health Sciences (LILACS), IBECIS, BDENF, BINACIS, SES-SP, ColecionaSUS, CUMED, BBO, RHS, SMS-SP, Cid-Saude, PREPRINT-MEDRXIV, PREPRINT-SCIELO via Virtual Health Library (VHL) regional portal, Medical Literature and Retrieval System Online (MEDLINE) via PubMed, and Cochrane Library. The SCOPUS and EMBASE (Elsevier), Academic Search Premier, CINAHL with Full Text and academic source or EBSCO, Web of

Science Core Collection, ERIC or Education Resources Information Center, PubMed Central or NLM, and Scientific Electronic Library Online (SciELO) were searched via the periodical portal of the Coordination for the Improvement of Higher Education Personnel (CAPES).

The studies were grouped in the Endnote reference manager (Clarivate Analytics, PA, USA), duplicates were excluded, and the remaining articles were imported into the free version of the Rayyan software (Qatar Computing Research Institute)<sup>18</sup>, an application developed for systematic reviews that allows blind article selection and conflict resolution. After pilot testing, two pairs of independent reviewers selected the titles and abstracts. In case of disagreement, an expert reviewer established a consensus. After selection by titles and abstracts, potentially eligible studies were downloaded for full reading. The authors of articles not fully available were contacted, and those that were not made available were disregarded. At this stage, the articles were selected by the pairs of reviewers and subsequently included in the synoptic table.

Data extraction was also conducted by a pair of independent reviewers previously trained by the librarian who specialized in scoping reviews. The researchers developed an extraction tool to record the data in a Microsoft Excel spreadsheet based on the extraction instrument provided by the JBI. All relevant data were inserted in a synoptic table, including title; author; periodical or annals; year of publication; language; bibliographic reference; objectives; population; context and whether the study was on MRP or HPRP; countries where the study was conducted; concept, management aspects (planning, organization, people management, direction, coordination, communication management, and budget management) present in the study; main results; and study contributions to HRP management.

Result analysis and synthesis were presented as graphs and tables, followed by a narrative summary highlighting the evidence found. Aspects related to HRP management were emphasized and correlated to the results and objectives of the review. According to the method used, methodological quality assessment is not required in scoping reviews<sup>16</sup>.

## Results

A total of 17,114 documents were selected. After excluding 5,563 duplicates, the titles and abstracts of 11,551 manuscripts were analyzed, with 11,124 being excluded for not meeting the inclusion criteria. Thus, 427 documents were eligible for full reading, of which 319 were fully available for download. After reading, 83 manuscripts were included for data extraction, of which 54 were excluded for not being related to HRP management, resulting in 29 manuscripts in the review.

At this step, the references of the 29 documents were analyzed. Subsequently, 12 manuscripts (title and abstract) were extracted and analyzed, with six documents being excluded. Subsequently, five articles were downloaded for full reading, and only three were considered relevant for the analysis. Thus, 32 articles were included in the review and underwent data extraction and categorization. The selection and inclusion process is described in Figure 1.

Considering the year of publication, five (15.6%) articles were published in 2018, four (12.5%) in 2017, and two (6.25%) in 1998, 2001, 2006, 2009, 2012, and 2016. Only one (3.12%) article was published in 1986, 1999, 2000, 2002, 2007, 2010, 2013, 2014, 2019, 2021, and 2022. Of the 32 studies, seven (22%) were qualitative, 11 (34%) were quantitative, and one (3%) was mixed, with 13 (41%) articles not describing the method used or not presenting a methods section.

As for the residency actors identified in the studies, 13 (40.62%) studies were on directors, nine (28.12%) on residents, six (18.75%) on coordinators, three (9.37%) on supervisors, three (9.37%) on preceptors, and one (3.12%) on tutors.

Study contexts were also mapped, with 27 (84.37%) publications on MRP, three (9.37%) on HPRP, and two (6.25%) on both. Furthermore, 18 (56.25%) studies included HRP in teaching hospitals, eight (25%) in Family and Community Medicine, and three (9.37%) in general settings. Only one (3.12%) study was carried out with Hospital and Community Medicine Residency Programs, and two (6.25%) did not specify.

As for management aspects, people management was analyzed in 14 publications (43.75%), followed by organization, with 11 publications (34.37%); budget management, with 10 (31.25%); planning, with nine (28.12%); coordination, with five (15.62%); communication management, with five (15.62%); and direction, with two (6.25%).

The mapping of HRP actors and management aspects showed that residents were the most mentioned aspect in studies on organization. This was followed by planning and people management, preceptors in people management and organization, and directors in studies on people management, planning, and organization (Figure 2).

Chart 1 presents subcategories related to management aspects in this scoping review, further analyzed in the discussion section.

Most studies on people management were conducted in the United States and focused on MRP, with discussions on resident recruitment and selection and supervisor qualification. In Brazil, the discussion included MRP and HPRP, concentrating on hiring preceptors and their roles and qualifications. Work overload and accumulation of roles were analyzed in the medical and professional areas in the United States and Brazil.

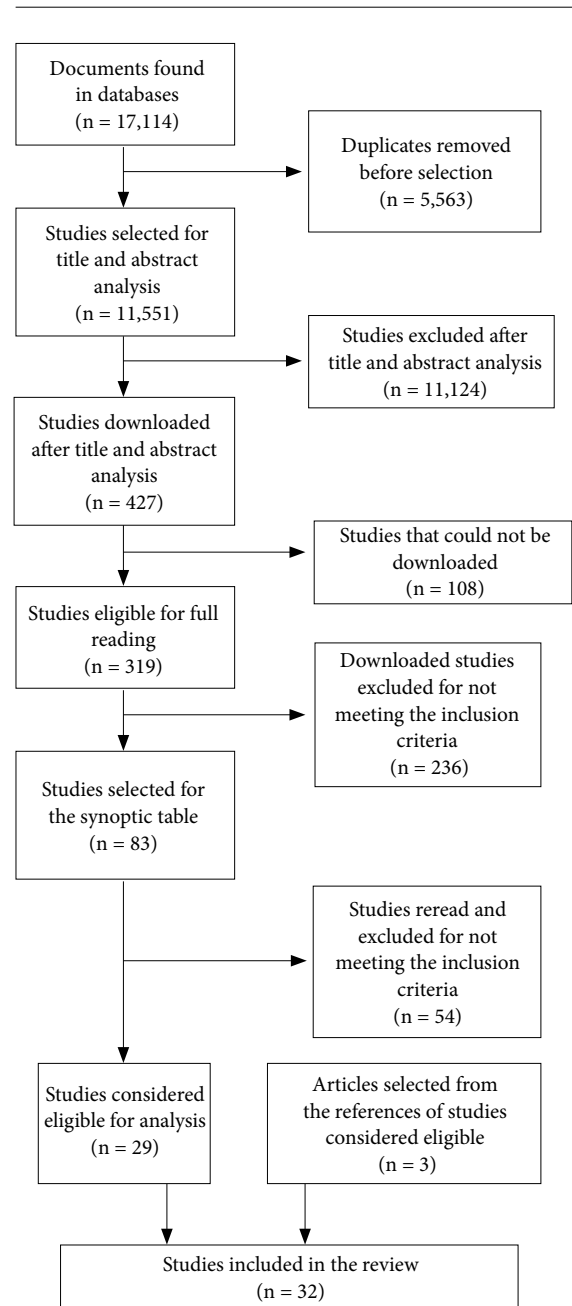
As for organization, aspects related to defining positions and reorganizing communication in MRP were analyzed in the United States. In Brazil, the discussion covers both areas, including factors related to standardizing the concept of residence actors and challenges in organizing activities. As for planning, all studies analyzed MRP. In Brazil, the studies analyzed government support, initiatives to value the faculty and support for implementing new HRP.

## Discussion

The 32 analyzed articles included topics related to people management, planning, organization, budget management, coordination, communication, direction, and subcategories closely linked to these aspects presented in the above section.

As for people management and resident recruitment, a study in the United States shows that the program director plays a fundamental role in ensuring resident satisfaction, including meetings with residents to monitor their evaluations and progress<sup>19</sup>. Additionally, interactions between current residents and applicants during interviews can influence the applicants' preference for a particular program<sup>21</sup>.

As for resident selection, collecting preliminary data on the applicants is recommended, adequately disseminating information about the program and allocating enough time for interviews<sup>10</sup>. Application forms and interview techniques should be standardized to improve the se-



**Figure 1.** Flowchart of article search and selection for the scoping review.

Source: Authors, adapted from Tricco *et al.* (2018)<sup>17</sup>.

lection process. However, interviews and letters of recommendation are subjective and non-standardized resources, highlighting the need to structure these aspects<sup>11</sup>.

The identification of strategies for creating more HRP vacancies demonstrated the importance of qualified preceptors to increase resident satisfaction, ensuring their permanence in the program, including partnerships between centers of excellence in health and the Ministry of Health<sup>12</sup>. Preceptors performs several roles, from observing resident performance to supporting tutors regarding teaching issues<sup>19</sup>.

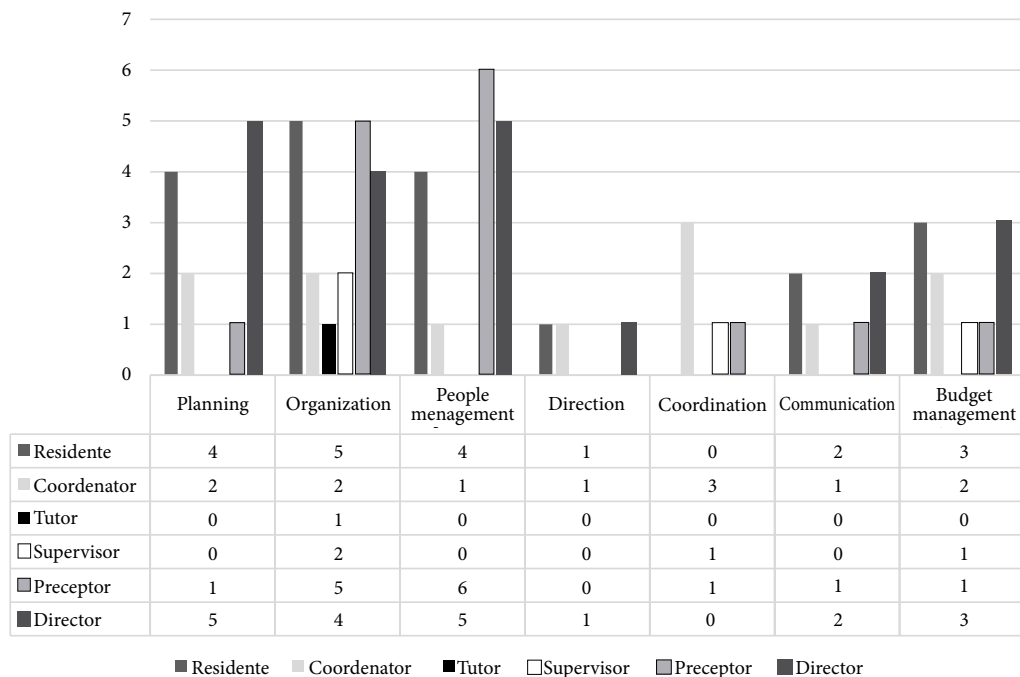
There were also some challenges, such as supervisors without prior medical education knowledge at the graduate level<sup>25</sup>. As for preceptors, challenges included a lack of a clear understanding of their roles and work overload. To overcome these challenges, their responsibilities should be better defined, with work overload control, fair remuneration, and training investments implemented, mainly in the area of education<sup>15,26</sup>.

The literature on residents' perceptions suggests coordination difficulties between managers, residents, and preceptors, including the involvement of these actors with other hospital employees and practice settings. These issues should be addressed by including managers in program monitoring and evaluation meetings and improving preceptors' training and support<sup>24</sup>.

The analysis of organizational aspects reveals factors such as supervisors in positions with outdated descriptions<sup>25</sup>. It also shows the importance of adaptation, effective coordination, standardization of roles, and investments in actions to value professionals involved in the HRP. Chief residents are central to information management but require adequate training and supervision by experienced professionals. It is essential to include them in decision-making on practical issues such as working hour adjustments<sup>29,32</sup>.

The articles also showed the need to standardize the concepts of tutor, preceptor, and supervisor. There is no standard definition of the roles of tutors and preceptors<sup>30,31</sup>. Their roles improve program organization and medical training, improving health provision to the population. Some organizational challenges were identified, such as a lack of coordination and mediation between health services and residents, which shows the need for continuously improving medical training programs<sup>14</sup>.

Financial planning and program structure should also be considered. A study identified that the structure of a program involves educational support, human and material resources, and administrative responsibilities assigned by the



**Figure 2.** Management aspects by HRP actors.

Source: Authors.

**Chart 1.** Subcategories related to management aspects.

<b>People management</b>				
<b>Subcategories</b>	<b>Related elements</b>	<b>Authors</b>	<b>Country</b>	<b>Context</b>
Resident recruitment	Role of the director in recruitment	Whitehouse (1998) <sup>19</sup> ; Go et al. (2012) <sup>20</sup>	United States	MRP
	Application form	Evarts (2006) <sup>10</sup>		
Resident selection	Interviews	Evarts (2006) <sup>10</sup> ; Nallasamy et al. (2010) <sup>11</sup> ; Brummond et al. (2013) <sup>21</sup>		
	Letters of recommendation	Nallasamy et al. (2010) <sup>11</sup>		
	Role of the preceptor in resident selection	Whitehouse (1998) <sup>19</sup>		
	Role of the coordinator in resident selection	Gardner et al. (2018) <sup>22</sup>		
Preceptors hiring	Proportional preceptors hiring	Justino et al. (2016) <sup>23</sup>	Brazil	
Qualification of preceptors	Preceptor training	Justino et al. (2016) <sup>23</sup> ; Pinho et al. (2018) <sup>24</sup> ; Storti et al. (2017) <sup>12</sup>	Brazil	MRP and HPRP
Qualification of supervisors	Hiring supervisors without prior medical education knowledge at the graduate level	Feist et al. (2017) <sup>25</sup>	United States	MRP
Role of the preceptor	Preceptors with no clear understanding of their roles	Antunes (2016) <sup>26</sup>	Brazil	HPRP
	Role of preceptors in HRP	Truong (2012) <sup>27</sup> ; Garcia et al. (2018) <sup>28</sup>	Canada	
Work overload and accumulation of roles	Accumulation of preceptor and coordinator roles	Feist et al. (2017) <sup>25</sup> ; Garcia et al. (2018) <sup>28</sup>	United States and Brazil	MRP
	Preceptors and coordinators with work overload and burnout	Feist et al. (2017) <sup>25</sup> ; Pacheco et al. (2022) <sup>15</sup>	United States and Brazil	MRP and HPRP
<b>Organization</b>				
<b>Subcategories</b>	<b>Related elements</b>	<b>Sources</b>	<b>Country</b>	<b>Context</b>
Definition of jobs and roles	Outdated and inaccurate job descriptions	Feist et al. (2017) <sup>25</sup>	United States	MRP
Reorganization of HRP communication aspects	Creation of a website to facilitate document availability, development of information channel manuals	Fassler et al. (2000) <sup>29</sup>		
Standardization of the concept of residence actors	Definition of tutor, preceptor, and supervisor roles	Botti et al. (2007) <sup>30</sup> ; Melo et al. (2014) <sup>31</sup>	Brazil	MRP and HPRP
Chief resident role	Information management	Colenda (1986) <sup>32</sup>	United States	MRP
Challenges in organizing HRP activities	Absence of a coordinator	Costa et al. (2021) <sup>14</sup>	Brazil	

it continues

**Quadro 1.** Subcategorias identificadas para os aspectos de gestão.

<b>Planning</b>				
<b>Subcategories</b>	<b>Related elements</b>	<b>Sources</b>	<b>Country</b>	<b>Context</b>
HRP structure	Educational support, human and material resources	Harris et al. (2009) <sup>13</sup>	United States	MRP
Government support	Municipal responsibilities	Sarti et al. (2018) <sup>33</sup>	Brazil	
MRP implementation support	Role of supervisory institutions	Sarti et al. (2018) <sup>33</sup> ; Chaundhry (2009) <sup>34</sup>	United States and Brazil	
Initiatives to value the healthcare teaching staff	Implementation of policies to value preceptors	Garcia et al. (2018) <sup>28</sup>	Brazil	
Resident involvement	Participation of residents in administrative activities as a positive action	Faneite (1998) <sup>35</sup>	Venezuela	
Financial planning	Consider different aspects to achieve HRP financial stability in the short and long term.	Pauwels et al. (2018) <sup>36</sup>	United States	
Support tools	Internet application that helps identify flaws in the residency program	Civetta et al. (2001) <sup>37</sup>		
<b>Budget management</b>				
<b>Subcategories</b>	<b>Related elements</b>	<b>Sources</b>	<b>Country</b>	<b>Context</b>
HRP costs	Resident recruitment costs	Brummond et al. (2013) <sup>21</sup>	United States	MRP
	Resident selection costs	Gardner et al. (2018) <sup>22</sup>		
	Resident training costs	Pauwels et al. (2018) <sup>36</sup> ; Franzini et al. (1999) <sup>38</sup>		
Budget control	Data records and information about the value of residency training	Blewett et al. (2001) <sup>39</sup>		
Saving resources	Reduced number of residency programs and vacancies	DeMarco et al. (2017) <sup>40</sup> ; Lauer et al. (2019) <sup>41</sup>		
<b>Direction</b>				
<b>Subcategories</b>	<b>Related elements</b>	<b>Sources</b>	<b>Country</b>	<b>Context</b>
Support for HRP management	Electronic tools to support HRP management	Afrin et al. (2006) <sup>42</sup>	United States	MRP
<b>Coordination</b>				
<b>Subcategories</b>	<b>Related elements</b>	<b>Sources</b>	<b>Country</b>	<b>Context</b>
Role of the HRP coordinator	Defining the role of the coordinator	Stuckelman et al. (2017) <sup>43</sup>	United States	MRP
<b>Communication</b>				
<b>Subcategories</b>	<b>Related elements</b>	<b>Sources</b>	<b>Country</b>	<b>Context</b>
Communication between HRP actors	Communication between preceptors and tutors	Garcia et al. (2018) <sup>28</sup>	Brazil	MRP
Communication support tools	Benefits of an electronic communication tool for residence actors	Afrin et al. (2006) <sup>42</sup> ; Fortin et al. (2002) <sup>44</sup>	United States	

Source: Authors.



director<sup>13</sup>. Supervisory institutions and program coordinators are critical in HRP implementation and management. Municipal responsibilities include managing the health services where the residents work, supporting program coordination, assessing the program, and implementing policies to define the role of residents in health care<sup>33</sup>.

Preceptors are responsible for assessing and guiding residents and tutors, participating in resident selection processes, and updating the residency manual and program curriculum. Conversely, preceptors accumulate the roles of supporting the coordinator and performing administrative, teaching, and evaluation tasks. Thus, preceptor valorization policies should be implemented to ensure their permanence in the program<sup>28</sup>.

Financial resources required to support programs should include short-term solutions and the acknowledgment of the long life cycle of residents, ranging from recruiting to years of training<sup>36</sup>. Although short-term funding can cover initial HRP costs, the capacity of these programs to maintain long-term financial stability has often been underestimated<sup>36</sup>. The assessment of the usefulness of an internet application in planning and communication in a residency program in the United States showed that it helped identify flaws in the HRP and find solutions<sup>37</sup>.

Studies on HRP budget management presented significant results. In the United States, recruiting residents has a mean cost of USD 148,000, with a mean cost of USD 1,042 per interview<sup>21</sup>. The size of the program is essential in determining the total recruitment cost. Additionally, another study showed that these programs allocate significant financial resources and time to select residents<sup>22</sup>.

A study on residency training costs in primary care specialties with high outpatient costs and limited patient care revenues conducted in Washington, USA, showed the need for federal funding in medical graduate programs and for developing the primary care workforce. The importance of understanding HRP funding to inform policy decisions at federal, state, and municipal levels has also been emphasized<sup>36</sup>.

Documents and discussions about medical education costs showed the need for reliable and more accurate data on medical residency training costs<sup>39</sup>. This can be calculated by comparing instructional expenses; that is, costs with faculty and resident time directly related to teaching, and clinical care and supervision revenues gen-

erated by residents, can be considered replacement cost<sup>38</sup>. A study with medical residents in the United States revealed that revenues generated by clinical and educational services provided by junior residents did not exceed the cost of resources used to teach them<sup>38</sup>. As for senior residents, the replacement cost was 26% higher than the instructional cost<sup>38</sup>.

An analysis of the financial risk of MRP certified by the Accreditation Council for Graduate Medical Education (ACGME) in the United States and the possibility of saving resources by reducing residency vacancies showed no correlation between reducing the number of residents and reducing program costs<sup>40</sup>. Although excluding smaller HRP could save USD 5.6 million in administrative and teaching costs, it would not be a viable proposal for affecting more than 50% of the programs classified as less comprehensive<sup>40</sup>.

An online management and communication system assessed the residency program, residents, and preceptors, supporting decision-making by HRP direction<sup>42</sup>. The role of the coordination is to understand and facilitate the program's compliance with accreditation, institution, and medical specialty requirements<sup>43</sup>. The accreditation system requires complex management skills not provided in training and support provided to the coordinators<sup>22</sup>.

Effective communication between preceptors and tutors results in successful internships<sup>28</sup>. A report on the implementation of an electronic management tool identified that the generated data improve the communication between residency actors, including professors and residents. This takes place by making electronic data available and freely accessible to residency actors<sup>42</sup>, with resident satisfaction with the tool being related to the easy assessment by their preceptor<sup>42</sup>.

## Conclusion

This scoping review mapped HRP management aspects, particularly highlighting people management, organization aspects, financial and structural planning, the need to readjust communication, information management, and the challenges associated with activity organization in this context. The synthesis of these results helps understand residency management and incentives for continuous research in the area.

However, this review could not deepen discussions on some HRP management aspects due to the limited number of studies meeting its

inclusion criteria. Thus, future studies on PRS management should analyze three aspects. First, they should include the analysis of local contexts and the structure of each program in different countries, considering regional differences that may influence the programs; second, they should compare potentialities and vulnerabilities in managing international and national residency programs; and third, the roles of residency actors

should be further investigated, and HPRP management should be explored.

Practical implications include implementing a professional development policy for residency actors, primarily for preceptors. Another critical factor is improving structure of the programs, which range from conditions related to resident recruitment to the availability of human or material resources.

## Collaborations

CF Lima: conception, data curation, formal analysis, investigation, methodology, writing, software. DM Teixeira: conception, data curation, formal analysis, investigation, methodology, writing, software, review. FPA Manso: conception, formal analysis, methodology, supervision and validation, project administration. AR Silva: software, methodology, formal analysis. VA Souza: software, methodology, formal analysis. AV Naghettini: conception, methodology, software, review, supervision and validation, project administration. HCC Neves: conception, methodology, supervision, project administration. CV Borges Junior: funding acquisition, project administration.

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