

Journal Pre-proof

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PII: S0168-8510(19)30308-2
DOI: <https://doi.org/10.1016/j.healthpol.2019.12.014>
Reference: HEAP 4196

To appear in: *Health policy*

Received Date: 3 May 2019
Revised Date: 17 September 2019
Accepted Date: 24 December 2019

Please cite this article as: Correia T, Gomes I, Nunes P, Dussault G, Health workforce monitoring in Portugal: does it support strategic planning and policy-making?, *Health policy* (2020), doi: <https://doi.org/10.1016/j.healthpol.2019.12.014>

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Highlights

- Health workforce monitoring is a precondition for strategic planning and policy-making
- More attention to workforce data quality, comparability and availability is required
- In Portugal the data is insufficient, not used and lacks analysis
- Recommendations to improve health workforce monitoring are offered

Abstract

The quality of the available information on Human Resources for Health (HRH) is critical to planning strategically the future workforce needs. This article aims to assess HRH monitoring in Portugal: the data availability, comparability and quality.

A scoping review of academic literature was conducted, which included 76 empirical studies. The content analysis was guided by the World Health Organization 'AAAQ framework' that covers availability, accessibility, acceptability and quality of the health workforce.

The analysis identified three types of problems affecting HRH monitoring in Portugal: insufficient data, the non-use of available data, and the general lack of analysis of the HRH situation. As a consequence, the data availability, comparability and quality is poor, and therefore HRH monitoring in Portugal makes strategic planning of the future health workforce difficult.

Recommendations to improve HRH monitoring include: 1) make data collection aligned with the standardized indicators and guidelines by the Joint Eurostat-OECD-World Health Organization questionnaire on Non-Monetary Health Care Statistics; 2) cover the whole workforce, which includes professions, sectors and services; 3) create a mechanism of permanent monitoring and analysis of HRH at the country level.

Keywords: scoping review; health workforce; monitoring; planning; Portugal

Introduction

Human resources for health (HRH) are recognized as a critical input of health systems for various reasons: their performance influences the effectiveness and efficiency of healthcare services; they have the capacity to influence users' lifestyles and well-being, and they are a precondition to achieve universal and equitable access to care [1]. They also account for a substantial proportion of health expenditures [2], which makes them highly vulnerable to cost-containment policies. Shortages of health workers and different types of imbalances (e.g. geographical, by services and skills-mix) are observed in most countries [3-5]. In the context of ageing populations, of the growth of the burden of non-communicable and chronic diseases, and of better informed and more demanding citizens, pressure is high on policy-makers to adopt measures that improve the capacity of the

health workforce to respond adequately to the new needs which these changes entail [6-7].

The strategic management of current and the planning of future workforce are a pre-requisite to effective reforms [8], and to do so, it is necessary have in place proper monitoring mechanisms. However, HRH monitoring continues to present significant weaknesses in most countries [9]. One is the lack of valid, reliable and comprehensive data. For instance, most indicators in OECD Health at a Glance reports only refer to physicians, nurses and occasionally to pharmacists [3]. Another challenge is the poor comparability of data due to differences in workforce composition, training, scopes of practice and work models. Comparisons are also difficult because some countries report figures of all registered professionals and others of only those in practice; some report the type of practice and others not (e.g. care delivery, teaching/research, management); and in some cases, medical residents are included in the active medical workforce, while in others they are considered as students [3]. A third weakness regards the quality of data. Although some countries have undertaken efforts to improve data collection and analysis [10], many have yet to do so. For instance, often HRH monitoring is wrongly narrowed down to training needs, while data on the composition of the workforce, and on recruitment and retention continues limited [9]. This weakness is even more important to acknowledge in the context of growing intra and inter-country mobility of health workers.

In spite of the initiatives by the WHO to increase the understanding on HRH, given their critical role to meet several Sustainable Development Goals, notably ensure healthy lives and well-being for all at all ages (SDG 3), education (SDG 4), gender equality (SDG 5) and decent work (SDG 8) [11, 29], the extent to which the availability, comparability and quality of data effectively improved needs to be assessed, as well as the limitations that may persist and possible solutions to address them.

This article reports the conclusions of a study that assessed HRH monitoring in Portugal; we use this case study to inform the debate on how better plan the health workforce. While each country has specific characteristics and therefore needs to find its own optimal way of managing its health labor market [12, 13], all face the same challenge of producing reliable and valid data in a timely manner to inform the process of strategic planning of its health workforce.

The structure of the article is as follows: we first present the research design, data collection and analysis, followed by the key findings and discussion. Lastly, building on this case study, we formulate recommendations aimed at informing policy-making.

Materials and methods

Design

The research question is to know the extent to which the procedures of HRH monitoring allow the strategic planning of workforce needs. Therefore, the objective is to assess the data availability, comparability and quality on HRH. A scoping review of the academic literature in Portugal was conducted with special attention to methodological procedures of data collection and analysis. This allowed mapping the main sources of information while finding gaps in the available evidence regarding certain topics [14]. The proper assessment of the data on HRH requires the in-depth understanding of health systems, processes of data collection and analysis and controversies in the national debates. Accordingly, the review was conducted in a single case study to better control the quality of the available information and possible biases when interpreting the results.

Data collection and analysis

The scoping review was conducted in three stages between December 2017 and January 2018. The first stage consisted of a preliminary search in the Pubmed, Scielo, Science Direct and Scopus databases, using the following key-words in the title and abstract: healthcare workforce, health workforce, healthcare personnel, human resources for health, healthcare workers and “recursos humanos em saúde”. The search was conducted independently by two researchers; one added ‘Portugal’ as a second key-word to the previous ones, and the other included ‘Portugal’ in all the key-words.

The second stage consisted in the full reading of the selected articles. The inclusion criterion was empirical studies reporting to Portugal between 2000 and 2017 (the search did not return eligible results prior to that year), and written in English, Portuguese or French.

The third stage consisted in excluding reviews and studies based only on quantitative secondary data from international databases. The final selection of articles was decided in team after removal of duplicated articles.

The content analysis was based on the World Health Organization ‘AAAQ framework’: Availability, Accessibility, Acceptability and Quality of health workers [15]. The researchers searched for indicators, key findings, sources of information and methods of measurement for each of these dimensions.

Results

Selected studies

As shown in figure 1, the two researchers identified respectively 148 and 95 studies meeting the first inclusion criterion. After applying the inclusion criterion of the second stage the number was reduced to 106 and 48 studies.

Insert Figure 1 about here

After the exclusion criterion of the third stage and removal of duplicated publications, the research team validated 76 studies (see the appendices).

Descriptive analysis

Nearly all studies (93.4%) were authored by academics based in Portugal, and nearly 50% were published in the follow-up of the 2008 economic crisis. Focus on the link between the crisis and HRH reflects the situation in the country during the financial assistance program that lasted between 2011 and 2014 when health workers were particularly targeted by policy decisions aimed to achieve immediate savings in the health sector (Table 1) [16].

Insert Table 1 about here

The selected studies gave more attention to the quality (50%) and the availability (47.4%) of HRH; 36.8% discussed their accessibility, and 27.6% their acceptability.

Analyses focused more on physicians (43.4%), nurses (34.2%), and to a lesser extent on pharmacists (18.4%). Little attention was given to health technicians (6.6%), diagnostic and therapeutic technicians (6.6%), technical (3.9%) and operational assistants (2.6%) (see a detailed description in table 2).

The studies used either secondary from national institutions or primary data (47.4% and 44.7% respectively), while 7.9% combined the two sources. As to the type of primary data, most studies used quantitative data (30.3%), but only 19.7% are on

representative samples. Qualitative data represented 19.7% of the studies, and only 2.6% used both quantitative and qualitative data. Regarding secondary data, the sources of information do not vary much among studies (e.g. Government of Portugal, Statistics of Portugal, Professional Councils, reports by official entities and independent observatories, and legislation).

Content analysis

Table 2 summarizes the evidence (dimensions and key findings) on the AAAQ framework, which is detailed below.

Insert Table 2 about here

a) Availability of HRH

The dimensions of the availability of HRH found in the review include the nominal count and relative weights of occupational groups, and data on entries and exists in the labor market. As regards the nominal count of HRH, except for pharmacists and dentists, the data only reports the number of registered professionals without specifying if they practice or not. Also, there is no data on those who are multi-employed. The number of practicing professionals is available only for the public sector, and these are assumed to be working full-time; there is little reliable information on professionals working in the private sector.

There is evidence that the pace of generational replacement has been slow in medicine, but adequate in the other professions. The stock of professionals grew continuously until the 2008 economic crisis, then decreased during the crisis, due to a mix

of early retirements, emigration and frozen recruitment. It started to rise again in the aftermath of the crisis, though with variations between professions.

Several limitations affecting the quality of data in the public sector are identified. One is that occupational groups, such as physiotherapists, occupational therapists, and other technicians, are aggregated into the single category of diagnostic and therapeutic technicians. Other categories, such as technical assistants and operational assistants also include a range of occupations not disaggregated. This makes difficult to assess specific training needs, and of numbers to recruit and of skills to acquire. Other professionals and workers who are not involved in clinical care delivery, such as managers or support staff are not counted. Another limitation is the absence of discussion on whether HRH counting should be on full-time equivalents or on hours effectively worked, or on both, which would facilitate the monitoring of absenteeism.

These limitations make the assessment of the availability of active HRH in the country problematic. For instance, professionals per population and professional/professional ratios (e.g. nurses per physician) use data on registered professionals, not on those in practice. It is therefore challenging to estimate future workforce needs as the baseline situation is not known.

The entry in the labor market is mainly through the public sector and after the completion of academic training in the country. Usually, professionals opt for work in the private sector at later stages of their careers although little evidence exists on these preferences. The number of professionals who graduated abroad is marginal; it is more common in oral medicine but yet is below 10% of dentists. In medicine, most graduates in foreign countries are Portuguese students who could not enter a school of medicine in Portugal and trained abroad in schools catering for foreigners, such as in Hungary, Romania, Slovakia, or Spain. Their number has increased in recent years as shown by the

number of applicants for specialty training that is superior to the number of national graduates. Otherwise, there is no monitoring of this phenomenon. There is also a small number of foreign general practitioners recruited to work in peripheral regions for periods of three years as part of bilateral agreements between Portugal and countries such as Cuba and Colombia. As to exits of the labor market, numbers of retirements are available for all professions, but not of those due to emigration and career abandonment. Mobility within the health sector (e.g. from clinical work to research or education or to the pharmaceutical industry) is not monitored either.

Overall, there is a lack of knowledge of flows in the labor market and of analysis of current and future needs of the various categories of HRH, which makes the planning of places in health education institutions random. Selected studies show that decisions, such as hiring back retired physicians in the public sector, or deciding on a *numerus clausus*, are made in an ad hoc manner and are not part of broader long-term strategies. It appears that in spite of its limitations, the available data is little used in the assessment and planning of workforce needs.

b) Accessibility to HRH

The findings on accessibility to HRH refer to primary, hospital, oral, pharmaceutical, palliative and long-term care. Geographical imbalances have persisted over time for all categories of HRH. This is in spite of reforms in primary care having included better career conditions and performance incentives for family physicians, an increase of the number of patients per physician, and the recruitment of foreign general practitioners to practice in peripheral regions. These changes were not sufficient as during the period of structural adjustment (2011-2014), hiring of new health workers was constrained by the conditionalities imposed by the lenders (International Monetary Fund, European Central

Bank, European Commission), which included restrictions to the replacement of retiring civil servants, including personnel of the National Health Service.

The persistence of these imbalances is also explained by the low number of family physicians and nurses, the low attractiveness of practice in peripheral less-populated regions and by the low nurse/physician ratio which limits the overall productivity of the workforce. The coexistence of management arrangements with different procedures and outcomes also limits the impact of reforms aimed to improve the accessibility to professionals (for instance, family health units generally perform better than other models but are only accessible to 60% of the population).

Public hospital care shows similar territorial concentration in urban areas and variable productivity. One possible explanation of performance variations is the decrease in the number of physicians and nurses after 2008 as many opted for early retirement, emigration or work in the private sector; no information on other HRH is available.

Accessibility in public services may also be affected by dual practice (i.e. practicing in more than one public and/or private provider), mainly of hospital staff, but this not monitored and no reliable data is available. There is no data on HRH in private hospitals.

Evidence on palliative and long-term care shows that the supply does not keep up with demand; information on the number of HRH working in the public and private sectors is also lacking. Access to dentists and oral care is almost exclusively in the private sector; as information is lacking, it is not possible to say if there are barriers to access, and if there are, whether they have an impact on health outcomes. Lastly, access to pharmacists also shows some geographical imbalances, but these are less pronounced than for the other health professionals.

Overall, there is no national-level strategy of recruitment and retention of HRH to address the issue of imbalanced accessibility; some incentives have been offered to attract personnel in public services in regions with shortages, but their effectiveness has not been evaluated. Also, there is no available information about selection and retention in the private sector.

c) Acceptability of HRH

Acceptability of HRH refers to the characteristics and ability of the workforce to treat everyone with dignity, create trust and enable or promote demand for services [15]; this implies that there is users' satisfaction with the contact with health workers, that the training of the latter and their work model are conducive to making them acceptable to their clients. Data show high levels of users' satisfaction in the public sector, while there is no information about the private one. There is no monitoring of satisfaction towards foreign general practitioners practicing in peripheral regions, but some case studies report that users' assessment is positive, in particular that these professionals communicate well and show concern with users' needs.

As regards training and skills acquisition, some studies report the need for academic curricula that enable the acquisition of skills to improve communication between professionals and with patients and to better understand the changing needs of the population. Whereas interdisciplinarity in academic curricula and professional practice is growing in many countries, it is still limited in Portugal.

The reviewed literature also mentions the need to rethink current work models in which there is skill overlapping, team work is lacking and decision-making is overly dependent on physicians. Plans to monitor users' needs lack in the public sector, while in the private there is no available information. The agreement on the need to adapt care

delivery to population needs contrasts with the lack of agreement on the most appropriate models of skill-mix to do that. The discussion of topics such as the expansion of scopes of practice for occupations like nurses or pharmacists, or what should be more efficient inter-professional ratios is only incipient in Portugal.

d) Quality of HRH

Quality of HRH refers to the competencies, skills, knowledge and behavior of the health worker as assessed according to professional norms and as perceived by users [15]. Dimensions and indicators found in the literature review related basically to training and practice, leadership, and labor, technical and human conditions. In Portugal, the quality of basic and post-graduate training in nursing and medicine is generally assessed as good, but there is no information on the other professions. There have been recommendations to review curricula to make them more responsive to the needs of the population, but no reform has been planned thus far, and there is no mandatory revalidation of qualifications.

The strategy of interprofessional training in undergraduate programs to overcome over-specialization and promote team work is discussed, but there is no implementation yet. Another issue has yet to get on the agenda, that of how future practitioners are selected at entry into training programs. The dominant method remains selection according to grades, which is a good predictor of academic performance, but not necessarily of the acquisition of competencies such as effective communication or cultural sensitivity [17].

There is also the specific case of health professionals in leadership positions whose management competencies are not evaluated nor their selection criteria is transparent. Case studies in primary health care show that the training in management of health professionals-leaders improves the quality of practitioners' practice. However, in

the public sector, there is a lack of transparency in the selection and in the evaluation of high and middle-level managers. Again, there is no information about leadership in the private sector.

Different types of employment status coexist in the public sector with variations in contract duration, weekly work hours, remuneration and other benefits. The introduction of pay-per-performance is mentioned (currently these conditions only apply to general practitioners in certain primary healthcare units). The characteristics of employment in the private sector are unknown. Multi-employment has been reported, although the number of professionals in this situation is unknown. Low professionals' satisfaction, burnout, and absenteeism are reported in case studies; these also have an impact on quality.

As a result of the 2008 economic crisis, physicians in the public sector reported more often than those in the private one the worsening of the quality of care due to lack of resources and increased management interference in clinical decision-making. Forms of violence (e.g. verbal, physical and sexual) against and among HRH are also reported in the public sector; no information about human and technical working conditions is available in the private sector.

Discussion

The literature review identified three major problems affecting HRH monitoring in Portugal: insufficient data, the non-use of available data, and the general lack of analysis of the HRH situation. The first two problems are of a political nature insofar as their resolution depends on the political actors themselves. The third one is of a scientific nature insofar as it is up to the academic debate to inform on how to properly monitor

HRH. As a consequence of these problems, it is fair to say that the data availability, comparability and quality is poor, and therefore HRH monitoring in Portugal makes strategic planning of the future health workforce difficult.

Insufficient data is a problem in many countries [8]. In Portugal, insufficient data is due to three reasons. One is the absence of, or incomplete data collection on practicing professionals, on multi-employment, and on emigration, which makes it virtually impossible to know the available workforce in the country. For example, in 2016, around 50% of registered nurses did not inform the Nursing Council on whether or not and on where they were practicing [18]. Also private sector provider organizations argue that confidentiality and respect of market competition justifies that they do not publish data on their workforce.

The second reason is the use of inappropriate categories (i.e. medicine, nursing, diagnostic and therapeutic technicians, health technicians, technical assistants and operational assistants), which does not distinguish between frontline and support staff and does not provide data on each occupational group which makes workforce planning difficult [19]. An example of aggregation of occupations which allows for covering multiple categories of clinical, administrative and support activities is provided by the work of Williams and Thomas in Ireland. They grouped fifteen health professions into the following categories: medical and dental care, nursing, social care, management and administrative, general support staff, and other patient and client care [20]. Whereas the clustering of health workers can take different forms in different countries, the important issue is to include all the professions and tasks directly and indirectly engaged in care delivery.

The third reason is the lack of comparable indicators between the public and private sectors, also among services, professional groups, and topics (e.g. violence against

and among professionals; labor conditions; leadership). Different institutions (e.g. Ministry of Health, Regional Health Authorities, Observatories, Professional Associations, unions, and so on) build their own databases and methodological procedures of analysis. As a result, there are subjects about which there is no consensus in the debate on HRH issues (e.g. fluxes of migration and retirement).

Regarding the non-use of the available data in decision-making, one example from the literature review is that the recognized need to adapt curricula to changing population needs has not been reflected in changes in work settings and training programs. Another example is that interventions to address the lack of access to health workers in peripheral zones were made on an ad-hoc basis to respond to immediate pressures and without their effects having been properly evaluated.

This absence of consideration of evidence and accompanying lack of planning need to be further analyzed to understand why these are absent from the HRH policy process. In fact, the idea that monitoring the evolution of the health workforce to ensure that it is fit-for-purpose and that it responds to the objectives of availability, accessibility, acceptability and quality, is not part of the political debate. Professional organizations, provider organizations, political decision-makers simply do not demand it.

The literature on health systems governance can help inform this debate. The argument is that the analysis needs to focus more on the way the different stakeholders influence policy formulation, implementation and assessment [21, 22]. This is particularly important in Portugal where medical corporatism and competition between the for-profit private sector and the National Health Service have been associated with the non-linearity between policy formulation and expected outcomes [23] (i.e. professionals bypassing reforms at the organizational level), and mismatched interests to overcome the dominant culture of ‘professional silos’ [24].

Lastly, the lack of analysis of the HRH situation by researchers and policy analysts limit the discussion on the quality of the existing indicators and which missing indicators would improve HRH monitoring. Existing studies have used different indicators and methodological procedures, which makes the comparison of results difficult. It is as if good practices from other countries regarding the choice of indicators have been simply ignored [25, 26].

Limitations

Our scoping review only included indexed articles, which leaves out of analysis other types of documents containing different findings. Nevertheless, a recent study [18] built on an extensive review of grey literature on Portugal reached similar conclusions than those found in the scoping review.

Conclusion

At the outset it was argued that the importance of HRH to health systems and the many challenges to make them available and prepared to meet population needs makes necessary proper monitoring procedures, without which the strategic planning of current and future workforce needs is virtually impossible.

The aim of our study was to assess the extent to which HRH monitoring has contributed to strategically plan current and future workforce needs. The analysis focused on the type and quality of data on HRH, and whether the data is likely to inform policy-making. The need to align policy-making with research evidence is recognized as potentially contributing to effective reforms. In Portugal, this has yet to be observed.

Testing the analysis in a single country sought to control biases in data collection and analysis. Similar studies should be conducted in other countries to demonstrate the

degree to which the problems identified here are specific or similar to those in other countries, and which recommendations are likely to improve the quality of HRH monitoring to better plan and assess workforce needs at the national level.

The most obvious recommendation is to require data collecting by organizations, such as professional councils, the Ministry of Health itself or other government agencies through standardized indicators following the guidelines of the Joint Eurostat-OECD-World Health Organization questionnaire on Non-Monetary Health Care Statistics [27]. Data collection should cover the whole workforce, which implies the setting up of mechanisms to bring private sector organizations to give access to information on their employees. Resistance is to be expected, if only because such information will reveal cases of dual practice and/or poor HRH management and leadership.

Another recommendation is to create a mechanism of permanent monitoring and analysis of the HRH situation, either at Ministry of Health level or in an independent agency or research institution to ensure the credibility of observations. Such a mechanism could have as its mission to inform policy-makers about HRH problems and to identify policy options to address them. On the longer term, the country can gradually implement National Health Workforce Accounts, as a tool to monitor the health workforce on a continuing basis [28].

Authors' contributions

TC conceptualized the study, coordinated the research team, took part in data analysis, wrote the original draft, reviewed and edited the final version of the manuscript

IG collected data, took part in data analysis, reviewed the final version of the manuscript

PN collected data, took part in data analysis, reviewed the final version of the manuscript

GD contributed to the study conceptualization, was involved in writing the original draft, reviewed and edited the final version of the manuscript

Declaration of interest

None to declare

Acknowledgments

We thank Marta Temido for her involvement in the research, notably in data collection and analysis. Her current role as Minister of Health of Portugal prevent her to take part in co-authorship.

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Figure 1 - Flow chart of scoping review

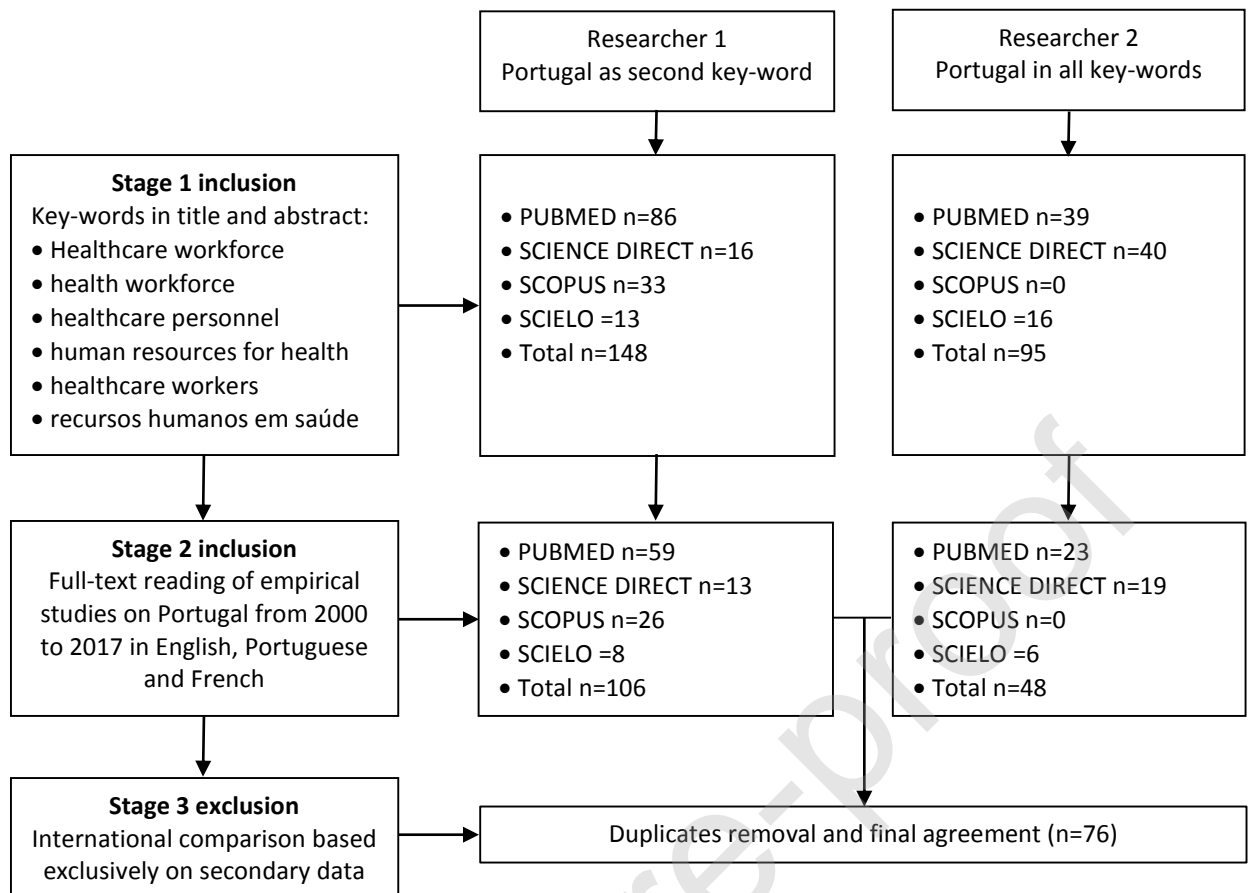


Table 1 – descriptive analysis

		N	%
Period of publications	Pre-crisis (2000-2009)	17	22.4
	During the crisis (2010-2014)	27	35.5
	Post-crisis (2015-2017)	32	42.1
	Total	76	100.0
Authors' affiliation	Portuguese institutions	71	93.4
	Foreign institutions	5	6.6
	Total	76	100.0
AAAQ framework (multiple choice possible)	Availability	36	47.4
	Accessibility	28	36.8
	Acceptability	21	27.6
	Quality	38	50.0
Professions (multiple choice possible)	Medicine (oral medicine included)	33	43.4
	Nursing	26	34.2
	Pharmacists	14	18.4
	Health technicians (sanitary engineering, laboratory and genetics, nutrition, psychology)	5	6.6
	Diagnostic and therapeutic technicians (diagnostic and therapeutic technical activities related to medical imaging, radiotherapy, clinical and biosynthetic physiology, therapy and rehabilitation, vision, hearing, oral health, orthoprotesia and public health)	5	6.6
	Technical assistants (clinical secretariat and other administrative duties)	3	3.9
	Operational assistants (less skilled workers devoted to support and/or manual procedures)	2	2.6
Sources of information	Primary data	34	44.7
	Secondary data	36	47.4
	Primary and secondary data	6	7.9
	Total	76	100.0
Type of primary data (only the 40 studies that use primary data)	Quantitative (representative samplings)	23 (15)	30.3 (19.7)
	Qualitative	15	19.7
	Quantitative and qualitative	2	2.6

Table 2 – Evidence on AAAQ framework

	Dimensions	Key findings
Availability	Nominal count of HRH	<ul style="list-style-type: none"> • Lack of data on practicing professionals (exception for pharmacists and dentists) and those who are not practicing but are available to do so • Several limitations affect the quality of information in the public sector • No centralized information in the private sector
	Relative weights of HRH	<ul style="list-style-type: none"> • Ratios are based on the licensed and not on the practicing professionals • Ratios tend to ignore other professions besides medicine, nursing, oral medicine and pharmacy • Lack of reflection on desirable targets to achieve according to the features of the health system
	Entry in the labor market	<ul style="list-style-type: none"> • Through the public sector and after the completion of academic training in the country • Working in the private sector tend to occur in later stages of professional life but no detailed information on individual preferences is given. • Few licensed professionals graduated abroad (e.g. immigrant dentists, foreign general practitioners with temporary contracts, and Portuguese medical students who seek to complete the medical residency) • Lack of planning and articulation among the labor market, health schools and migration policies • Immediate needs of workforce handled with ad hoc decisions that lack strategic planning
	Exit of the labor market	<ul style="list-style-type: none"> • Mainly through retirement in all professions • During the 2008 financial crisis, emigration reached a peak, notably among nurses, as well as early retirement
Accessibility	Primary care	<ul style="list-style-type: none"> • Ineffective policies to reduce territorial imbalances of general practitioners and nurses • Lack of information on other professional groups • Variations of productivity among different management arrangements
	Hospital care	<ul style="list-style-type: none"> • Ineffective policies to reduce territorial dispersion of HRH in general • Variations of productivity within the same management arrangements and specialties • The number of physicians and nurses lowered in the public sector during the 2008 financial crisis. No consistent data on other HRH and in the private sector
	Palliative and long-term care	<ul style="list-style-type: none"> • Growing services but insufficient to meet health needs. No consistent data on HRH in the public and private sectors
	Dentists and oral care	<ul style="list-style-type: none"> • Provision is almost exclusive in the private sector. No evidence on access and health outcomes
	Pharmacists	<ul style="list-style-type: none"> • Geographical imbalances are less pronounced than in other services
Acceptability	Users' satisfaction with HRH	<ul style="list-style-type: none"> • Professionals' skills and behaviors are well evaluated and meet users' expectations in the public sector • Lack of monitoring and evaluation of foreign general practitioners, although case studies suggest that they are perceived as 'culturally competent' • Lack of information on users' satisfaction in the private sector
	Training	<ul style="list-style-type: none"> • Academic curricula need to include more interdisciplinary approaches to improve team work and better meet the population's needs
	Work models	<ul style="list-style-type: none"> • Need of new work cultures despite the lack of consensus on the best options • Lack of plans in the public sector to monitor users' needs • Lack of information on interdisciplinary work models in the private sector
Quality	Training	<ul style="list-style-type: none"> • Good quality training in nursing and medicine. No information for other groups • No information on the effectiveness of academic curricula to meet health needs • No mandatory revalidation training for any HRH
	Practice	<ul style="list-style-type: none"> • Ad hoc and circumstantial tools of practice assessment in the public sector • Lack of recruiting and retention policies in the public sector • Lack of information on professional practice in the private sector
	Leadership	<ul style="list-style-type: none"> • Lack of evidence on impacts of management models and managers' profile in organizational outcomes in the public sector • Case studies show that the leaders' training in management affect positively practitioners

		<ul style="list-style-type: none"> • Low transparency and professionals' involvement in the selection and evaluation of managers in the public sector • Lack of information on leadership in the private sector
	Labor conditions	<ul style="list-style-type: none"> • Different typologies of employment in the public sector • Undetermined number of professionals in multi-employment • Need to revise careers in the public sector • Case studies report on professionals' satisfaction, burnout, absenteeism and incidence of diseases caused by work • Lack of information on labor conditions in the private sector
	Technical and human conditions	<ul style="list-style-type: none"> • Geographical imbalances in the availability of technologies • Limited team work and lack of professionals • Physicians in the public sector report the worsening of the quality of care due to the 2008 crisis • Case studies report on violence against and among HRH • Lack of information on technical and human conditions in the private sector