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Medical translation: a mapping of Brazilian dissertations and thesis written between 2002 – 2018

Tradução médica: um mapeamento de teses e dissertações produzidas de 2002 a 2018

Fábio Luiz Ferreira¹

Gleiton Malta²

Abstract:

This is a bibliometric mapping of studies conducted on medical translation in Brazil. The primary objective is to map master's, doctoral, and post-doctoral studies from 2002 to 2018, identifying the topics covered, the institutions, and the geographic regions in which they were carried out. The significance of the present study lies in the fact that it indicates regions and institutions, where research on medical translation is conducted, and reveals the regions in which this type of study is scarce. In both cases, the mapping can serve as a reference for researchers who are interested in this area of knowledge. In addition, the mapping can offer input for the implementation of public policies that encourage the development of studies in the area. Data were collected in three digital platforms, namely *Domínio Público*, *Biblioteca Digital de Teses e Dissertações*, and *Catálogo de Teses e Dissertações da CAPES*, by means of typing different keywords in Portuguese, in the search windows available. Of the 14 studies found, 28.6% were doctoral dissertations and 71.4% were master's theses. All of the studies were conducted in the southeastern and southern regions of Brazil. Cardiology and general biomedicine were the most frequent topics followed by anesthesiology, orthopedics, cardiovascular surgery, arterial hypertension, physiology, geriatrics, gerontology, nutrition, and pharmacy.

Keywords: translation studies, medical translation, bibliometric mapping

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Resumo:

Este artigo trata de um mapeamento bibliométrico dos estudos sobre tradução médica realizados no Brasil. O objetivo principal é mapear os estudos de mestrado, doutorado e pós-doutorado realizados no período de 2002 a 2018 e identificar suas afiliações teóricas, as instituições em que os estudos foram realizados e suas regiões geográficas. A pesquisa se mostra relevante por destacar regiões e instituições onde pesquisas na área de tradução de artigos médicos são conduzidas, além de revelar as regiões em que esse tipo de estudo é escasso. Em ambos os casos, o mapeamento pode servir de referência para pesquisadores que tenham interesse de pesquisa na área. Além disso, o mapeamento poder oferecer insumos para a implementação de políticas públicas que fomentem o desenvolvimento de estudos na área. Para a coleta dos dados, foram utilizadas três plataformas digitais, a saber: Domínio Público, Biblioteca Digital de Teses e Dissertações e o Catálogo de Teses e Dissertações da CAPES. Os trabalhos foram coletados a partir de diferentes palavras-chave em português. Dos 14 estudos encontrados, 28,6% eram teses de doutorado e 71,4% eram dissertações de mestrado. Todos os estudos encontrados foram realizados nas regiões sudeste e sul do Brasil. Cardiologia e biomedicina geral foram os tópicos mais frequentes seguidos de anestesiologia, ortopedia, cirurgia cardiovascular, hipertensão arterial, fisiologia, geriatria, gerontologia, nutrição e farmácia.

Palavras-chave: estudos da tradução, tradução médica, mapeamento bibliométrico.

1. Introduction

Research on translation studies is conducted in a variety of areas and range from pure to applied studies. Research possibilities in the field include different translation modalities such as literary, technical, scientific, and audiovisual translations as well as a range of topics. Research on translation processes, products, and functions have also contributed to the existing body of knowledge in the field.

Studies show that domain knowledge has an impact not only on the translation process, but also on the final product presented, that is, the translated text itself (Scardamalia & Bereiter, 1991; Da Silva, 2007). According to Scardamalia and Bereiter (1991), domain knowledge is the knowledge that individuals have about a specific area or field of interest. Thus, in abroad sense, in the case of translation studies, domain knowledge refers to all knowledge, skills,

and competencies related to how a text is translated and how it is likely to influence the end product. However, translators are frequently faced with texts from different areas. This seems to be especially true in the case of medical texts. In this context, knowledge of translation techniques and topics, plays an important part in both the translation process and product.

This study draws on the discipline of translation studies. It is one of the investigations conducted by the MapTrad research group¹ and falls within the Bibliometric Mapping in Translation Studies² line of research. Its primary objective is to map master's, doctoral, and post-doctoral studies on medical translation in Brazil, identifying the topics covered, the institutions, and the geographic regions of such studies. We believe that the mapping of translation studies can potentially help students and researchers – who are interested in working with the translation of texts in the medical field – choose study centers and lines of research as well as guide policies toward a better distribution of resources to the development of translation studies in Brazil.

The interdisciplinary nature of our research, i.e., its interface with the medical field, also justifies the need to promote studies like the present one. Hereinafter, the medical field will be referred to as domain knowledge. Studies show that domain knowledge impacts both the process and the translation product (Da Silva *at al.*, 2009; Da Silva & Silveira, 2017).

Research that seeks to map certain fields of translation domains has been undertaken before (Barcelos & Malta, 2020; Esqueda, 2020), with a view to contribute both to the dissemination of knowledge and to the identifying of the most and least studied topics. The mapping carried out in this paper seeks to do the same, that is, to identify the topics that generate the most interest from researchers in the field of translation studies in Brazil and reveal possible knowledge gaps.

This article is divided into 5 sections. Section 2 addresses the theoretical framework used in the study. Section 3 deals with information gathering and data collection. Sections 4 and 5 present and discuss the results, respectively.

2. Theoretical framework

¹Cf.: dgp.cnpq.br/dgp/espelhogrupo/2060501981311209

² Cf.: dgp.cnpq.br/dgp/espelholinha/2060501981311209772119

Bibliometric research

It is within the scope of Bibliometrics to monitor areas of knowledge by mapping new discoveries, fields studied, and knowledge gaps. In Brazil, metric studies related to information, including bibliometrics, date from the 1970s (Machado, 2007). At first, such studies were stimulated to promote the cataloguing of documents and information to offer an overview of the scientific output of the country. Over time, the term became more popular and the bibliometric method became an indicator of the development of academic and technological research in Brazil (Machado, 2007).

Another point, addressed by scholars on the subject, is the ability of bibliometrics to assess the productivity of research centers. It is important to measure and create evaluation parameters, to define priorities related to the allocation of public resources. Also, bibliometrics contributes to a better targeting of research in its most *stricto sensu*.

Bibliometrics studies the productivity of scientific and technological agents through the analysis of bibliographic sources and patents, the identification of relationships, organizational patterns, fads, critical points, trends, counterpoints, among other pieces of information relevant to both information management and processes of dissemination of scientific products. (Vasconcelos, 2014, p. 211, our translation)

Many studies have used bibliometric tools to measure the productivity of researchers in different disciplines (Ribeiro, 2017). As an example, the author mentions the areas of administration, tourism, and accounting. Bibliometry itself has already been the subject of a bibliometric study (Vasconcelos, 2014; Ribeiro, 2017).

One of the justifications for the use of bibliometrics is that it can be employed to cover long periods of production as well as to identify, spread, and make important information related to a variety of study areas salient (Ribeiro, 2017). Such characteristics also allow for the (re)designing of fields of activity, be them the most or the least prominent. In the case of translation studies, for example, research mapping contributes to the organization of

specialized texts, by giving an overview of research done on the translation of scientific articles in the medical field. Mapping is also useful for research funding agencies as it provides them with data that highlight the most and the least frequently studied topics. Another contribution of bibliometric research is the categorization of academic production according to its researchers, regions, and higher education institutions, which, in our case, could facilitate the search for researchers interested in the translation of medical texts.

Although some studies have already mapped research on translation studies in Brazil, there are still some gaps, as these studies did not have access to the tools available nowadays – such as digital repositories – due to technological limitations. Pagano and Vasconcellos (2003) and Alves and Vasconcellos (2016) are examples such studies. By presenting a methodology that has potential to pave the way for further studies in the area, this paper fills one of these gaps by identifying topics, fads, research centers, and researchers as well as by exploring sources that may have been little explored or remained unexplored so far.

Mapping, translation, and domain knowledge

James Stratton Holmes coined the term translation studies. When he published his mapping of the discipline (1972 - 1988), he helped both to organize the discipline and to expand its scope. After Holmes's map, translation studies started to have greater autonomy in relation to other disciplines – such as linguistics, literary studies, and cultural studies – and technical translation. This greater autonomy, in turn, granted the discipline its place as an object of theoretical, descriptive, and applied studies. However, because of the dynamic nature of the different interfaces that translating require, such as the use of corpus-based or corpus-driven approaches, a need to expand/modify the map was noted. In Brazil, for example, this expansion was proposed by Pagano and Vasconcellos (2003) and by Alves and Vasconcellos (2016).

Pagano and Vasconcellos (2003) proposed a Brazilian translation studies map using data – that covered the 1980s and 1990s – recorded in a CD-ROM called *Estudos da Tradução no Brasil* (Translation Studies in Brazil), which was released by the Anpoll Translation Studies working group. The information in the CD-ROM helped the authors identify translation studies undertaken by Brazilian universities at the master's, doctoral, and post-doctoral levels as well as compare such studies with those on the branches in Holme's map. The map that

resulted from Pagano and Vasconcellos' (2003) study sported the branch of theater (intersemiotic translation), which was not part of Holmes' 1972 - 1988 map.

Alves and Vasconcellos (2016), inspired by previous work in the field of bibliometrics, expanded Pagano and Vasconcellos' (2003) mapping further by relying on internet search engines that allowed greater access to scholarly works. Their study covered the period from 2006 to 2010 and used keywords in Portuguese as search terms on the *Domínio Público* website, just as Pagano and Vasconcellos (2003) did. The greatest difference between Alves and Vasconcellos' (2016) and Pagano and Vasconcellos' (2003) studies – besides the data sources – was a focus on finding translation studies with an interface in systemic functional linguistics and corpus linguistics. In both studies described above, the use of keywords proved to be detrimental to cataloging the fields of the works that were identified, as the titles and keywords often failed to represent the disciplinary field to which such works belonged. Because of that, there was no relationship between the topics addressed in the identified works and the keywords used in the searches. The discrepancy that exists between keywords and the object of research makes the cataloging, identification of theoretical affiliations, and insertion of works into the corresponding disciplinary field a major challenge for the mapping of translation studies.

The mapping described in this paper will add to the mappings being carried out by the University of Brasilia's search group MapTrad. Among such mappings we find the mapping of game translation/localization (Barcelos & Malta, 2020), didactics of translation, translation studies for children and adolescents, Spanish <=> Portuguese translation, and black feminist translated literature.

3. Methodology

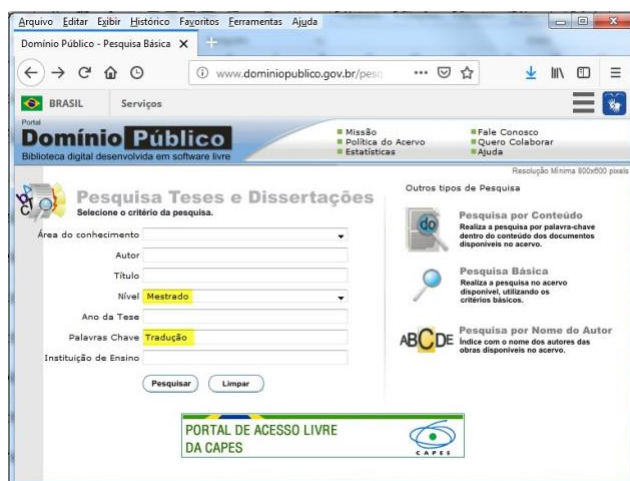
Following the method proposed by Alves and Vasconcellos (2016), which used the website www.dominiopublico.gov.br as data source, this paper set out to map studies on medical translation conducted in Brazil. The search for medical translation theses and dissertations completed in higher education institutions in Brazil, from 2002 to 2018, was done using keywords in Portuguese. Initially, we considered the period proposed by Alves and Vasconcellos (2016), which was from 2006-2016. These authors justified the initial year of searches with the enforcement of administrative regulation number 13/2006, which was

issued by the Brazilian governmental agency known as CAPES (Coordination for the Improvement of Higher Education Personnel). Such regulation dictated that all theses and dissertations completed in Brazil should be digitally available to the general public through the website *Domínio Público*³. However, as the searches we conducted revealed medical translation studies done prior to that initial date, we considered 2002-2018 as our research period.

The objective of the website www.dominiopublico.gov.br is to promote broad access to literary, artistic, and scientific works that are in the public domain or have had their publication duly authorized. Its home page features a basic search form that offers the user filters for different types of media (image, sound, text, and video). Other home page filters include category, author, title, and language. In addition to the basic search section, there is a specific section for dissertations and theses, which was used for our initial search. In this section, we first selected the filter *mestrado* (master) in the window *Nível* (level) and wrote *Tradução* (translation) in the window *Palavras-Chave* (keywords) (see Figure 1).

Figure 1 — Search page at

<http://www.dominiopublico.gov.br/pesquisa/PesquisaPeriodicoForm.jsp>



Source: <http://www.dominiopublico.gov.br>

The results obtained from the website were analyzed individually, to identify and select studies carried out in the area of medical translation. The selected studies were then organized

³ <http://www.dominiopublico.gov.br>

in an excel spreadsheet, which featured the columns year, title, institution, area of knowledge, type of study, and author. The same steps were followed for the filter *doutorado* (doctorate). The searches conducted using both the filters *mestrado* (master) and *doutorado* (doctorate) revealed that the website www.dominiopublico.gov.br, whose main objective is to make Brazilian research publicly available, is not a reliable source for data collection. This conclusion was reached because we identified works for the time period set for this study that were not included in the *Domínio Público* website.

To further verify the reliability of the portal, we carried out a search on Google.com by simultaneously entering the terms *dissertação*, *mestrado*, and *tradução médica* (thesis, master's, medical translation, respectively). Such search returned approximately 1,910,000 hits for master's thesis and 1,080,000 for doctorate dissertations. Some of the hits that met our selection criteria and were not found in our initial search, at www.dominiopublico.gov.br, were listed and searched for again, at the *Domínio Público* website. More specifically, we only searched again for the hits included in the first two pages of the Google search engine, because to search once more for all the hits that met our criteria – and were left out of our initial search in the *Domínio Público* website – would be too time-consuming. Such process identified master theses and doctorate dissertations, which were completed in the time period set for our study, that were not catalogued at the *Domínio Público* website. This mismatch motivated an expansion of the methodology proposed by Alves and Vasconcellos (2016), which was entering keywords at www.dominiopublico.gov.br only.

As a result, two other websites were included in our study, namely the websites *Biblioteca Digital de Teses e Dissertações* (BDTD; Digital Library of Dissertations and Theses)⁴ and *Catálogo de Teses e Dissertações da CAPES* (CAPES Dissertations and Theses Catalog)⁵. Both these websites aim to give access and visibility to Brazilian theses and dissertations. The BDTD website is maintained by the Brazilian Institute of Information in Science and Technology. On its homepage, the user finds a simplified keyword search window with four filter options, *todos os campos* (all fields), *título* (title), *autor* (author), and *assunto* (topic) (Figure 2) as well as an advanced search option with a greater variety of filters (Figure 3).

Figure 2 — BDTD simplified keyword search

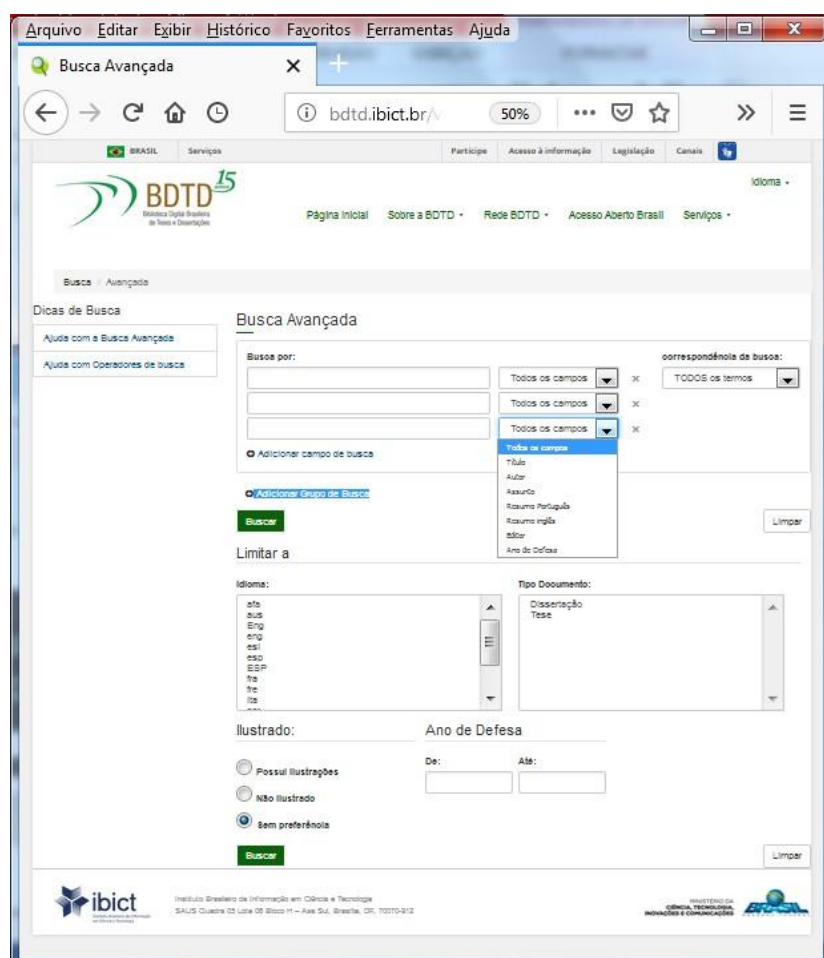
⁴ <http://bdtd.ibict.br/vufind/>

⁵ <http://catalogodeteses.capes.gov.br/catalogo-teses>



Source: <http://btdt.ibict.br/vufind/>

Figure 3 — BDTD advanced search fields



Source: <http://btdt.ibict.br/vufind/Search/Advanced>

The initial search on the BDTD website was carried out using the simplified keyword search window (Figure 2). The keyword *tradução* (translation) was typed in the search window, just as we did at the *Domínio Público* website. The search returned 4,849 theses and dissertations, a number which would make the individual selection of works impractical. Thus, we decided to run a more refined search. First, we typed the keywords *tradução médica* (medical translation). Then, we typed the keywords *tradução artigo científico* (scientific article translation). The results were analyzed individually and those that met the inclusion criteria were organized in the excel spreadsheet.

The *Catálogo de Teses e Dissertações da CAPES* (CAPES Catalog) website catalogs theses and dissertations completed in higher education institutions in Brazil, following the agency's administrative regulation number 13/2006. Its homepage has only one window for typing keywords and a search button. There are, apparently, no filters available. However, after a first search is conducted, the results page displays several filters for an advanced search. These filters allow the user to search by *tipo* (type), *ano* (year), *autor* (author), *orientador* (supervisor), *banca* (evaluation committee), *grande área de conhecimento* (major knowledge area), *área de conhecimento* (knowledge area), *área de avaliação* (evaluation area) *área de concentração* (area of expertise), *nome do programa* (graduate studies area), *instituição* (institution), and *biblioteca* (library). We started our search in the CAPES Catalog website with the keyword *tradução* (translation). As such action retrieved several thesis and dissertations that were of no interest for this study, we used the filters listed above to narrow down the list. We also ran a search with the keywords *tradução médica* (medical translation) and *tradução de artigos científicos* (translation of scientific articles) using some (or none) of the filters, as the filter options provided by the system varied according to the keywords used.

To further expand the methodology proposed by Alves and Vasconcellos (2016), we conducted a search using the authors' names – which were previously identified on *DomínioPúblico*, *BDTD*, and *Catálogo de Teses e Dissertações da CAPES* – to check which of these websites hosted the theses and dissertations included in our study. This step was important because an additional filter could reduce the possibility of selecting studies that did not meet the mapping inclusion criteria. Finally, to investigate the topics covered by these theses and dissertations, we downloaded the files and examined the abstracts. The results are shown in section 4.

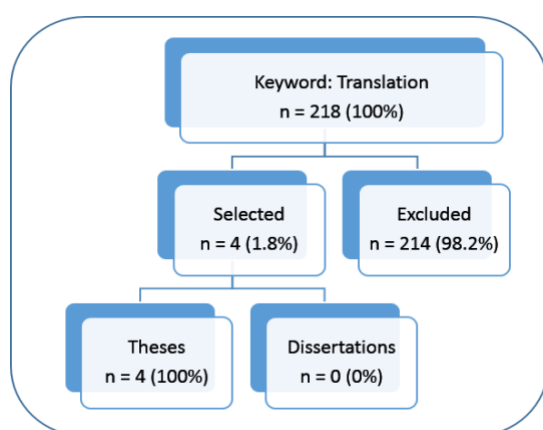
4. Results

The results we obtained by applying the methodology described in Section 3 are going to be presented individually, that is, per website. Then, they will be polled and analyzed before being discussed in the final section of this paper.

The Domínio Público Website

The search using the keyword *tradução* (translation) in the *Domínio Público* website retrieved 218 theses and dissertations. The analysis of each of the 218 titles revealed that only four of those were theses conducted in the field of medical translation. No dissertation on medical translation was found. Such findings were checked by the reading of each of the 218 abstracts. The flowchart, in Figure 4, summarizes the findings and shows that, although the keyword *tradução* (translation) produced 218 results, only four (1.8%) met our selection criteria.

Figure 4 — Search results from the *Domínio Público* website



Source: Elaborated by the authors

Out of the four theses identified in the *Domínio Público* website, two were completed in 2006 and two in 2009. Two of them were completed in the Federal University of Rio Grande do Sul (UFRGS), one at the São Paulo Catholic University (PUC/SP) and one at the Federal University of Santa Catarina (UFSC). The results are summarized in Table 1.

Table 1 — Medical translation studies found on the *Domínio Público* website

Year	Title	Institution	Area of knowledge	Type of study	Author
2006	Compostos nominais em língua alemã em medicina em tradução para o português	UFRGS	Letters	Thesis	Luciane Leipnitz
2006	Mapeamento macro e micro estrutural da retextualização de resumos on-line: estudo da transitividade de abstracts biomédicos	UFSC	Translation Studies	Thesis	Ariana Zanella
2009	Artigos médicos em inglês, publicados em periódicos do Brasil e do exterior: uma análise a partir de corpora comparáveis	PUC_SP	Applied Linguistics	Thesis	Ana Júlia Perroti-Garcia
2009	Colocações especializadas e komposita: um estudo contrastivo alemão-português na área de cardiologia	UFRGS	Letters	Thesis	Leonardo Zilio

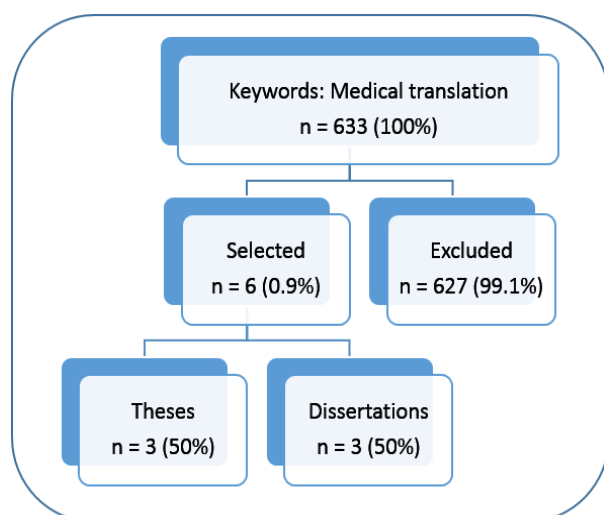
Source: Elaborated by the authors

Table 1 shows that the four studies were conducted by researchers of similar areas. Two of these studies were English-Portuguese translations and two were German-Portuguese translations. Interestingly, the two studies completed in UFRGS were German-Portuguese translations, revealing a possible influence of German in the south of Brazil.

Biblioteca Digital de Teses e Dissertações - BDTD

The search ran on the BDTD website, using the keyword *tradução* retrieved 4,849 thesis and dissertations. As this number proved to be impractical for the manual identification of studies that met our selection criteria, we decided to use the keywords *tradução médica* (medical translation). These keywords retrieved 633 studies (see Figure 5). Only six of them, three dissertations and three theses, met our selection criteria.

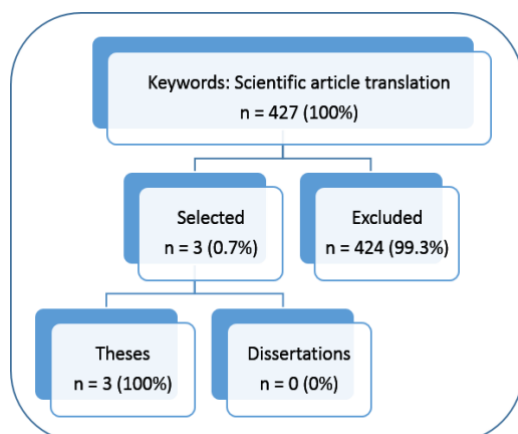
Figure 5 — Search results from the BDTD website using the keywords *tradução médica*



Source: Elaborated by the authors

To make sure that all the studies that interested us were identified, we performed another search on the BDTD website using the keywords *tradução artigos científicos* (translation scientific articles). This search retrieved 427 studies. This time, only three theses met our selection criteria. Figure 6 illustrates the results.

Figure 6 — Search results from the BDTD website using the keywords *tradução artigos científicos*



Source: Elaborated by the authors

Among the studies identified using the keywords *tradução artigos científicos* (translation scientific articles), all but one had been found in the previous search, which used the keywords *tradução médica* (medical translation). Thus, only seven studies, in total, were retrieved by the BDTD website. Information regarding their year, title, area of knowledge, institution, and author are given in Table 2.

Table 2 — Medical translation studies found on the BDTD website

Year	Title	Institution	Area of knowledge	Type of study	Author
2004	Glossary of compound terms in cardiology: a proposal of development	PUC_RIO	Letters	Thesis	Stela Maris Costalonga e Gandour
2006	Estudo em corpora de traduções e três glossários bilíngues nas subáreas de anestesiologia, cardiologia e ortopedia	UNESP/SJRP	Linguistics	Thesis	Paula Tavares Pinto Paiva
2009	Artigos médicos em inglês, publicados em periódicos do Brasil e do exterior: uma análise a partir de corpora comparáveis	PUC_SP	Applied Linguistics	Thesis	Ana Julia Perrotti-Garcia
2009	Uma investigação de traduções de textos da área médica sob a luz dos estudos da tradução baseados em corpus	UNESP/SJRP	Linguistics	Dissertation	Paula Tavares Pinto Paiva
2011	Normas tradutórias: o caso dos artigos científicos e suas condicionantes culturais	UERJ	Letters	Thesis	Simone Vieira Resende
2012	Análise crítica multilíngue da terminologia anatomomédica: proposições para uso	FAMERP	Health sciences	Dissertation	Alexandre Lins Werneck
2013	Proposta de ordem sequencial e criação de sistemas informáticos para extração terminológica bilíngue em corpora paralelos - inglês/português - com vistas à tradução de texto das ciências médicas	UFSC	Translation studies	Dissertation	Lautenai Antonio Bartholamei Junior

Source: Elaborated by the authors

Table 2 shows that the BDTD website retrieved more theses and dissertations than the *Domínio Público* website. Another point, that is worth noting in Table 2, is that a study conducted in the field of Health Sciences, rather than that of Language Studies, was found. Such finding provides further proof of the interdisciplinary nature of translation studies.

Catálogo de Teses e Dissertações da CAPES

In the *Catálogo de Teses e Dissertações da CAPES* website, three searches were conducted with three different keywords and filters. The first search was run with the keyword *tradução* (translation), the filters arts, human sciences, language studies, translation studies, linguistic studies, letters, classical letters, linguistics, linguistics and literature, medicine, and medicine I. This search retrieved only one dissertation. The second search used the keywords *tradução médica* (medical translation), the filters language studies, letters, linguistics, and linguistics and arts and retrieved four theses and two dissertations. Finally, the third search was performed using the keywords *tradução artigos científicos* (translation scientific articles), the filters human sciences, letters, letters and arts, linguistics, and linguistics and literature and retrieved three theses and one dissertation. However, the dissertation had already been retrieved during the second search. Thus, 10 studies met the selection criteria. More specifically, eight theses and two dissertations. The results are summarized in Table 3.

Table 3 — Medical translation studies found on the *Catálogo Capes* website

	Title	Institution	Area of knowledge	Type of study	Author
2002	A Tradução de resumos/abstracts de dissertações e teses da área médica	UNESP/SP	Linguistics	Thesis	Patrícia Dias Reis
2003	Proposta para a elaboração de um glossário de colocações na área médica - subárea hipertensão arterial	USP	Letters	Thesis	Rosa Maria Caporino Castanho
2004	Glossário de termos compostos em cardiologia: uma proposta de elaboração	PUC_RIO	Letters	Thesis	Stela Maris Costalonga e Gandour
2004	Marcadores textuais do artigo científico em comparação português-inglês	UFRGS	Letters	Thesis	Viviane Possamai
2005	Compostos em língua alemã em medicina: aspectos quantitativos, qualitativos e implicações para a tradução para o português	UFRGS	Letters	Thesis	Luciane Leipnitz
2006	Análise de um corpus de traduções da área médica	UNESP/SJRP	Linguistics	Thesis	Paula Tavares Pinto Paiva
2009	Colocações especializadas e komposita: um estudo contrastivo alemão-português na área de cardiologia	UFRGS	Letters	Thesis	Leonardo Zilio
2009	Uma investigação de traduções de textos da área médica sob a luz dos estudos da tradução baseados em corpus	UNESP/SJRP	Linguistics	Dissertation	Paula Tavares Pinto Paiva

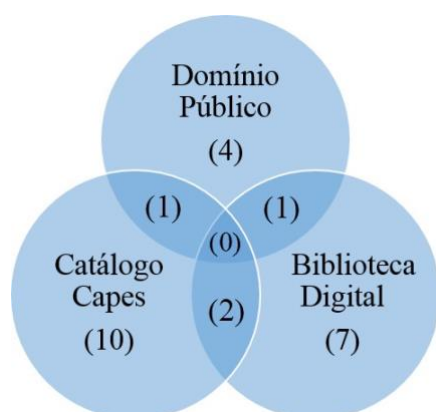
Year	Title	Institution	Area of knowledge	Type of study	Author
2011	Normas tradutórias: o caso dos artigos científicos e suas condicionantes culturais	UERJ	Letters	Thesis	Simone Vieira Resende
2016	Proficiência escrita em inglês especializado: estudo de corpus de abstracts em medicina, nutrição e farmácia	UFRGS	Letters	Dissertation	Ana Luiza Pires de Freitas

Source: Elaborated by the authors

Search by author

The next step was to compare the results of the searches conducted in the three websites. Such comparison allowed us to identify from which website each thesis and dissertation was and/or wasn't retrieved. None of the theses and dissertations retrieved was catalogued in all three websites (see Figure 7). To verify this finding, we ran yet another search using the titles of the theses and dissertations rather than keywords and filters.

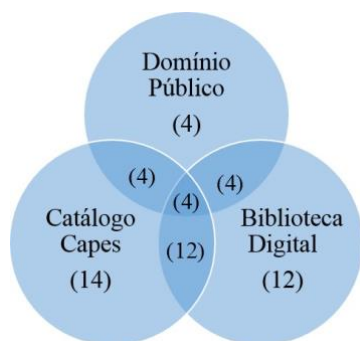
Figure 7 — Venn diagram with the number of theses and dissertations retrieved



Source: Elaborated by the authors

The analysis of the spreadsheet with the data collected so far revealed some inconsistencies. The titles of two theses retrieved from the *Catálogo de Teses e Dissertações da CAPES* were different from those found in the BDTD website. We assumed that the titles found in BDTD were the correct ones, as they matched the titles given in the documents containing the theses. Also, when we compared the data entered in the spreadsheet using author's names and publication years, we discovered that the title of a thesis was given in English in the BDTD website and in Portuguese in the *Catálogo de Teses e Dissertações da CAPES*. Figure 8 shows the results we obtained after all these inconsistencies were resolved.

Figure 8 — Corrected Venn diagram with the number of theses and dissertations retrieved



Source: Elaborated by the authors

Figure 8 shows that, contrary to our first findings (see Figure 7), the four theses catalogued in *Domínio Público* had also been catalogued on both the BDTD and the *Catálogo de Teses e Dissertações da CAPES* websites. It also makes it clear that the latter is the most accurate, as it catalogues all the theses and dissertations found both on the *Domínio Público* and the BDTD websites. Table 4, gives the title of all the theses and dissertations found as well as the websites from which they can be retrieved.

Table 4 — The websites where the theses and dissertations identified were catalogued

Title	Website		
	DP	BD	CC
A Tradução de resumos/abstracts de dissertações e de teses da área médica	No	No	Yes
Proposta para a elaboração de um glossário de colocações na área médica - subárea hipertensão arterial	No	No	Yes
Glossário de termos compostos em cardiologia: uma proposta de elaboração	No	Yes	Yes
Marcadores textuais do artigo científico em comparação português-inglês	No	Yes	Yes
Compostos nominais em língua alemã em medicina em tradução para o português	Yes	Yes	Yes
Mapeamento macro e micro estrutural da retextualização de resumos on-line: estudo da transitividade de abstracts biomédicos	Yes	Yes	Yes
Estudo em corpora de traduções e três glossários bilíngues nas subáreas de anesthesiologia, cardiologia e ortopedia	No	Yes	Yes
Colocações especializadas e komposita: um estudo contrastivo alemão-português na área de cardiologia	Yes	Yes	Yes
Artigos médicos em inglês, publicados em periódicos do Brasil e do exterior: uma análise a partir de corpora comparáveis	Yes	Yes	Yes
Uma investigação de traduções de textos da área médica sob a luz dos estudos da tradução baseados em corpus	No	Yes	Yes
Normas tradutórias: o caso dos artigos científicos e suas condicionantes culturais	No	Yes	Yes
Análise crítica multilíngue da terminologia anatomomédica: proposições para uso	No	Yes	Yes
Proposta de ordem sequencial e criação de sistemas informáticos para extração terminológica bilíngue em corpora paralelos - inglês/português - com vistas à tradução de texto das Ciências médicas	No	Yes	Yes
Proficiência escrita em inglês especializado: estudo de corpus de abstracts em medicina, nutrição e farmácia	No	Yes	Yes

Note: DP = Domínio Público; BD = Biblioteca Digital; CC = Catálogo Capes de Teses e Dissertações
Source: Elaborated by the authors

Despite the different keywords and filters used in the searches conducted on the three websites, the theses and dissertations retrieved from the BDTD and the *Catálogo de Teses e Dissertações da CAPES* were practically the same. The scarcity of theses and dissertations on the *Domínio Público* website seem to suggest lack of data feeding.

The final collection of theses and dissertations titles completed in higher education institutions in Brazil is given in Table 5. Such collection is a valuable source of data for other researchers interested in translation studies in the country, especially those interested in the translation of medical texts. It is also a reliable source for the analysis of the most investigated topics, which may reveal possible gaps in medical translation studies.

Table 5 — Final collection of theses and dissertations on medical translation completed in Brazil

Year	Title	Institution	Area of knowledge	Type of study	Author
2002	A Tradução de resumos/abstracts de dissertações e deteses da área médica	UNESP/SP	Linguistics	Thesis	Patrícia Dias Reis
2003	Proposta para a elaboração de um glossário de colocaçõesna área médica - subárea hipertensão arterial	USP	Letters	Thesis	Rosa Maria Caporino Castanho
2004	Glossário de termos compostos em cardiologia: uma proposta de elaboração	PUC_RIO	Letters	Thesis	Stela Maris Costalonga e Gandour
2004	Marcadores textuais do artigo científico em comparaçãoportuguês-inglês	UFRGS	Letters	Thesis	Viviane Possamai
2005	Compostos nominais em língua alemã em medicina emtradução para o português	UFRGS	Letters	Thesis	Luciane Leipnitz
2006	Mapeamento macro e micro estrutural da retextualizaçãode resumos on-line: estudo da transitividade de abstractsbiomédicos	UFSC	Translation Studies	Thesis	Ariana Zanella
2006	Estudo em corpora de traduções e três glossários bilíngues nas subáreas de anestesiologia, cardiologia e ortopedia	UNESP/SJRP	Linguistics	Thesis	Paula Tavares Pinto Paiva
2009	Colocações especializadas e komposita: um estudo	UFRGS	Letters	Thesis	Leonardo Zilio

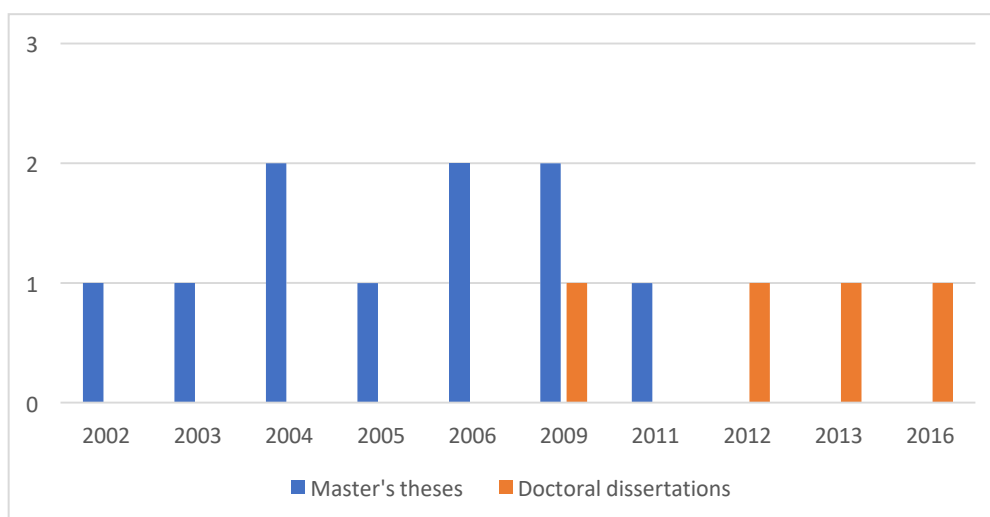
Year	Title	Institution	Area of knowledge	Type of study	Author
	contrastivo alemão-português na área de cardiologia				
2009	Artigos médicos em inglês, publicados em periódicos do Brasil e do exterior: uma análise a partir de corpora comparáveis	PUC/SP	Applied linguistics	Thesis	Ana Julia Perrotti-Garcia
2009	Uma investigação de traduções de textos da área médica sob a luz dos estudos da tradução baseados em corpus	UNESP/SJRP	Linguistics	Dissertation	Paula Tavares Pinto Paiva
2011	Normas tradutórias: o caso dos artigos científicos e suas condicionantes culturais	UERJ	Letters	Thesis	Simone Vieira Resende
2012	Análise crítica multilíngue da terminologia anatomomédica: proposições para uso	FAMERP	Health sciences	Dissertation	Alexandre Lins Werneck
2013	Proposta de ordem sequencial e criação de sistemas informáticos para extração terminológica bilíngue em corpora paralelos - inglês/português - com vistas à tradução de texto das Ciências médicas	UFSC	Translation studies	Dissertation	Lautenai Antonio Bartholamei Junior
2016	Proficiência escrita em inglês especializado: estudo de corpus de abstracts em medicina, nutrição e farmácia	UFRGS	Letters	Dissertation	Ana Luiza Pires de Freitas

Source: Elaborated by the authors

Overall results

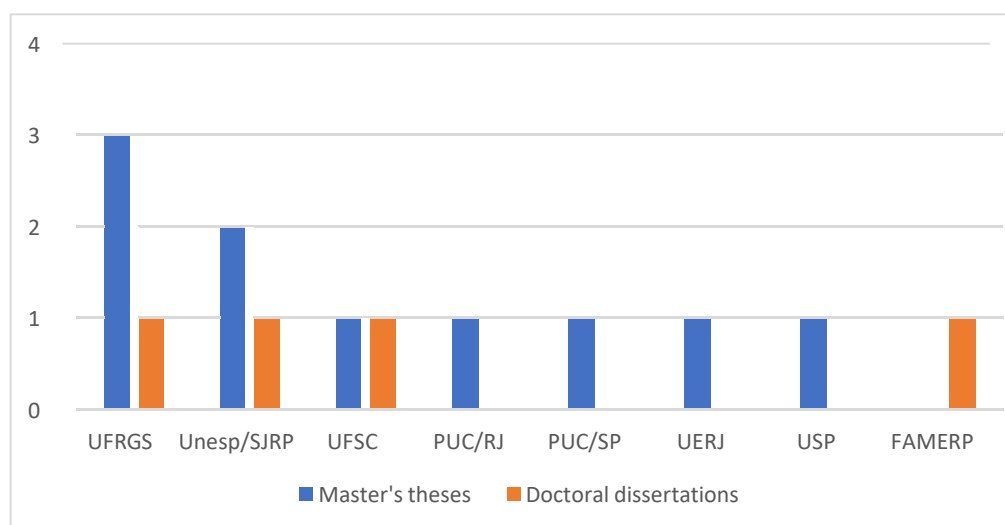
Among the 14 studies retrieved from the websites *Domínio Público*, BDTD and *Catálogo de Teses e Dissertações da CAPES*, four were dissertations (28.6%) and 10 were theses (71.4%). The first thesis was completed in 2002 and the last dissertation, in 2016, in an interval of 14 years. Two theses were retrieved for the year 2004, two for 2006, and two theses and one dissertation for 2009. Only one study was completed in the years 2002 (thesis), 2003 (thesis), 2005 (thesis), 2011 (thesis), 2012 (dissertation), 2013 (dissertation), and 2016 (dissertation), see Figure 9.

Figure 9 — Medical translation theses and Dissertations by year



Source: Elaborated by the authors

Rio Grande do Sul Federal University was the institution in which the majority of these studies were carried out, totaling three theses and one dissertation. Two theses and one dissertation were completed in São Paulo State University, in São José do Rio Preto. One thesis and one dissertation were defended in Santa Catarina Federal University. The remaining dissertations were completed in São Paulo University, Rio de Janeiro Catholic University, São Paulo Catholic University, Rio de Janeiro State University, and São José do Rio Preto Medical School. These findings are summarized in Figure 10.

Figure 10 — Medical translation theses and dissertations by institution

Source: Elaborated by the authors.

An analysis of the data presented in Figure 10 shows that all the medical translation theses and dissertations identified in this study were completed in institutions located in the southeastern and the south of Brazil. Also, only one dissertation was completed in a Medical School, rather than in the Department of Letters and Linguistic Studies of several other universities.

5. Discussion of findings

The websites used in the study

As described in the Introduction, the present study set out to replicate the method proposed by Alves and Vasconcellos (2016) for the mapping of medical translation studies theses and dissertations, written in Portuguese and completed in higher education institutions, in Brazil. In their study, the authors premise was that theses and dissertations had to be made available digitally at www.dominiopublico.gov.br, following Article 1 of CAPES administrative regulation 13/2006. However, upon reading the aforementioned Article we realized that administrative regulation 13/2006 does not specify a website, but rather provisions that the works must be “available to the public through the internet”. Also, our search revealed a thesis completed in 2002, before the initial date proposed by Alves and Vasconcellos (2016). For this reason – and taking into consideration that search engines are more robust nowadays

– we decided to set 2002 as our initial search period.

The reliability issue connected to the *Domínio Público* website was triggered by the identification of theses and dissertations completed within the period stipulated for this study, through the Google search engine, that were not catalogued on this website. We suppose that the absence of theses and dissertations on www.dominiopublico.gov.br is due to problems related to a lack of feeding and/or regular feeding of information.

The Google search engine alone proved not to be reliable as well, because of its lack of appropriate filters and the interference of users algorithms, which are mainly trained for commercial purposes and largely driven by paid advertisements. It can be argued that the Google search engine has an application specially designed for the search and identification of scholarly texts, namely Google Scholar. However, searches conducted through Google Scholar tend to retrieve texts from books and scientific articles, which are not the object of our analysis. These issues led us to conduct searches in two other Brazilian websites that were designed to catalogue theses and dissertations completed in Brazilian higher education institutions viz. www.bdttd.ibict.br/vufind/ (BDTD) and www.catalogodeteses.capes.gov.br/catalogo-teses/ (CAPES). The latter website had more theses and dissertations in its catalogue than the *Domínio Público* and the BDTD websites. However, the CAPES website was less user-friendly, as the filter options appear only after the keywords are entered and vary according to which keywords are entered. Such characteristics of the CAPES website make searches there more complicated and time-consuming.

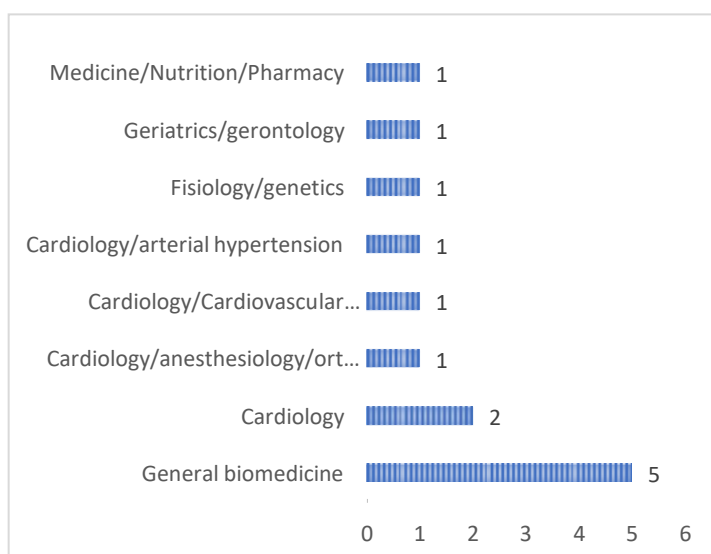
To solve all the issues described above we adapted and expanded Alves and Vasconcellos (2016) methodology. More specifically, we conducted searches on the websites *Domínio Público*, BDTD and CAPES using not only keywords, but also strings of keywords, a variety of filters, and author's names searches. These measures helped us both verify all the information retrieved and streamline the results, to avoid duplicating/missing information.

Topics covered in the studies on medical translation in Brazil

Of the 14 works retrieved from the websites described above, only one was not available in digital format for consultation (*A Tradução de Resumos/Abstracts de Dissertações e de Teses*

da Área Médica, Patrícia Dias Reis, 2002). In the remaining 13 studies examined, we found that all authors used corpus linguistics in different ways to carry out their research. This finding highlights the importance of this approach for the translation of specialized language texts, in our case medical translation. Regarding the type of corpus used, four studies used a comparable corpus to: (1) identify and verify patterns for expressions typically used in the development and textual organization of scientific articles, (2) analyze the use of the word *submit*, (3) investigate specialized collocations in cardiology texts, and (4) analyze lexical bundles in the field of health sciences (medicine, nutrition, and pharmacy). Five studies used a parallel corpus to: (1) produce a Portuguese-English glossary in the field of cardiology, (2) analyze the occurrence of compounds (*Komposita*) in German, (3) analyze how the retextualization of abstracts in the biomedical field takes place, (4) investigate textual markers revealing difficulties to the translator due to intercultural problems, and (5) search for candidates for terms in the biomedical field. Two studies used both parallel and comparable corpora to produce glossaries. The two remaining studies, a dissertation and a thesis, failed to provide information about the kind of corpus used in the abstract, an essential piece of information that should have been mentioned there. The dissertation used a corpus to analyze anatomical language and the thesis to produce a collocation glossary for texts on arterial hyperstension.

As already mentioned, we were not able to find one of the files for analysis. In terms of the sub-areas of medicine, cardiology and general biomedicine were the most frequent ones, each being the basis for five studies. Other sub-areas addressed in the theses and dissertations we identified were anesthesiology, orthopedics, cardiovascular surgery, arterial hypertension, physiology, geriatrics, gerontology, nutrition, and pharmacy. Figure 11 summarizes the results. The pair of languages used in the different studies were Portuguese-English (10 studies) and Portuguese-German (2 studies). One dissertation analyzed multilingual translation in Portuguese, Spanish, and English.

Figure 11 — Sub-areas of medicine

Source: Elaborated by the author.

Final remarks

One of the main findings of this study is the scarcity of theses and dissertations in the field of medical translation in Brazil. As it is an area that contributes a lot to the advancement of science, we expected it to be a promising area for translators and, as such, we expected to find many more studies in our searches than the ones we have actually found.

Also, the present work shows that there is no standardization in the cataloguing of studies by higher educational institutions on websites, despite CAPES administrative regulation 13/2006. Therefore, this study makes two important contributions to the field of translation studies: the mapping of theses and dissertations conducted in the field in Brazil and the finding that the websites, which host Brazilian scholarly works, should be standardized and regularly fed. The latter could be achieved through a revision of CAPES administrative regulation 13/2006, which would, in turn, contribute substantially to other mapping studies or bibliographic reviews in different areas.

Another finding that is important to point out – and which came as a by-product of our searches on the *Domínio Público*, BDTD, CAPES websites – is that translation, validation, and cultural adaptation of medical questionnaires is also a popular line of research.

However, these studies have been mostly conducted by health science scholars, rather than

translation studies researchers. This finding emphasizes the existing interdisciplinarity between applied linguistics and health sciences, that could be furthered by translation studies. To this end, we collected quantitative data in this regard and plan to conduct future studies on the role of translators in the composition of teams that develop/translate medical questionnaires.

All in all, we believe that the mapping presented here has two main practical applications: (1) help students and researchers, interested in working with medical translations, choose study centers and lines of research, and (2) guide possible policies for the distribution of resources aimed to develop translation studies in Brazil. Despite the limitations of the websites used and the complexity of the searches conducted here – which may have left out of the mapping presented here some theses and dissertations completed in Brazil in the established period for the study – we hope to encourage further robust research in the field. After all, medical translation is a field in which many translators are likely to act as authors, that is, many Brazilian doctors either write their articles in English or self-translate their manuscripts. This makes it a field where qualitative analysis, from the perspective of translation studies theories, is not only relevant but also necessary, as knowledge of the field and of the specific domain area can contribute to a better organization of the research and of the resources to be used.

Conflict of interest

(X) The authors declare they have no conflict of interest.

Credit Author Statement

We, Gleiton Malta Magalhães and Fábio Luiz Ferreira declare, for all due purposes, that we both participated in the study conceptualization, methodology, study design, formal analysis, funding acquisition, project administration and supervision, data curation, investigation, validation, and visualization, as well as the writing, reviewing and editing of the paper *Medical translation: a mapping of Brazilian dissertations and thesis written between 2002 to 2018* that was submitted and accepted by Revista DELTA. As such, we accept its final version and are responsible for all its aspects, including its accuracy and integrity.

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