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State of the art of research in the sector of thermalism, thalassotherapy and spa: A bibliometric analysis

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Abstract

Due to the importance that this type of tourism has gained in recent years, academic researchers of different knowledge areas have focused their interest on studying, deepening and analyzing this sector by following different approaches (economic, marketing, distribution, tourism, etc.). In this context, the objective of this study is to track scientific publications that deal with research in the field of thermalism, thalassotherapy and spas, which will reveal the current state of research in this sector and define approaches and areas of knowledge from which these studies have been addressed. Bibliometric analysis was used as the research methodology to meet this objective. The international databases Web of Science and Scopus are used to identify the scientific publications under study by choosing search terms, and to develop the database for analysis. The results highlight the importance of the Scopus database for the search of bibliographic material related to the subject under study by researchers. On the other hand, very few researchers have continued with this line of research, most of them have only published one article and very significant percentage of the articles are published in journals that are part of the "tourism journals" category. The analysis highlights the need to continue developing knowledge in a sector with great growth potential.

Keywords**:** thermalism, thalassotherapy, spa, bibliometric analysis.

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Introduction

Health tourism is today a sector with a great growth potential fostered by a new way of life and a change of mentality of society towards a culture of leisure and health (Martínez Moure, 2008), as well as, by population ageing (Pforr &

Locher, 2012:299). Recent research shows that in some regions and countries there has been a significant increase in the concern for citizens' health, so preventive activities for physical well-being and health in general have become the new tourism trend (Smith & Puczkó, 2010) experiencing a major upturn in the economies of many countries (García-Altes, 2005:265).

According to Didascalou *et al*. (2009:114) a single definition of health tourism cannot be given, but it can be determined that it mainly revolves around three key elements: a) lifestyle, b) the importance that a person gives to his health and c) the search for elements that allow him to contribute to improving his quality of life (health centres, spas, thermal centres, etc.). These authors state that there is no unanimous definition on health tourism that covers all the sectors that this type of tourism currently involves (Didascalou *et al*., 2009:113).

Authors such as Goodrich and Goodrich (1987:217) define health tourism as tourism whose purpose is to strengthen the tourist´s health through the use of facilities or services that allow for medical check-ups, participation in special diets, experimenting with herbal remedies or health practices in resorts or spas. However, with time and the changing demands, Ross (2001) states that this type of tourism is developed not only for the purpose of attending medical facilities (tourism associated with medical processes), but also groups those tourists who enjoy travelling to a thermal centre, spa or thalasso with the aim of receiving unconventional medical therapies. The most specific definition that can be found is that developed by Tabacchi (2010:116), which is any type of trip that the tourist makes in order to stay as healthy as possible and improve his lifestyle.

In this context, health resorts, thalassos and spas have the capacity to meet leisure, tourism and health care needs in one place. Tourists who come to these centres seek destinations that allow them to combine two of their needs, enjoying their leisure time (recreational side) and, on the other hand, taking care of both their body and mind health (therapeutic side). These two aspects are included in the offer provided by these centres, which unify the three concepts; leisure, tourism and health care. These establishments use water as the main resource in the treatments they provide, the difference between them being the type of water used. Thus, thermalism uses mineral-medicinal water treatments (for relaxation purposes and the application of medicinal treatments), thalassos use sea water and spas normal water.

On the other hand, it is worth highlighting the capacity of these centres to achieve the development of the territory and the local economy in which they operate (generally located in rural areas), creating employment and generating income (Martínez Moure, 2008; Quintela & Costa, 2015). In Japan, the country with the largest number of thermal establishments, an improvement of its health system is seen, with the integration of traditional medicine centres that make use of spas or health resorts. These centres not only help to meet the current needs and maintain the tradition and culture of the population, but have also contributed to the development of regions through the commercialization of rural spaces that have the climatic and geographical conditions allowing for the creation of new resources and the economic diversification of these areas (Tabayashi, 2010:121).

Due to the increasing importance of this type of tourism for the economy of countries, this research is proposed with the aim of analyzing and examining the scientific production developed in relation to thermalism, thalassotherapy and spa, in order to observe the evolution in the generation of knowledge and the impact that this process has within the scientific community (Rueda-Clausen Gómez *et al*., 2010).

The work methodology is based on the use of bibiliometric techniques that allow to analyse bibliographical material through descriptive/ quantitative statistics (Broadus, 1987) collected in the databases consulted for the study, Web of Science (WoS) by Thomas Reuters and Scopus (Elsevier Science).

The most relevant contribution that this research provides to the academic community

is the current state of research, together with an in-depth analysis of the research intensity in relation to thermalism, thalassotherapy and spas. Moreover, the approaches and areas of knowledge from which these studies are addressed are delimited, which enables to know which approaches or lines of research have not been addressed yet.

This research work is structured in four sections. After the introduction in which the area under study is contextualized, the methodology of work is presented. The third section presents the results obtained from the analysis. To conclude, the final section presents the results and limitations of the study.

Methodology

The methodological work is focused on the development of a bibliometric study of the literature generated regarding the "thermalism, thalassotherapy and spa" sector published in scientific journals indexed in the international databases WoS and Scopus. According to (Granda-Orive *et al*., 2013:2) this type of research relevance and validity depends to a great extent on the selected base and its capacity to cover the area of study. In this context, the choice is justified by its international coverage, and its indicators are relevant elements for the categorization of journals and researchers; JCR InCites Journal Citation Reports, in the case of WoS and SJR Scimago Journal Rank in the Scopus database. In this sense, Escalona *et al*. (2010) conclude that they have the required information to carry out in-depth bibliometric studies, like Archambault *et al*. (2009).

The analysis process followed integrates the use of descriptive-quantitative statistical techniques, which constitute a series of bibiliometric indicators (of production, dispersion, collaboration, etc.) that allow to delve into the structure and research dynamics followed so far by the scientific community (Palazó *et al*., 2015). These bibliometric indicators are numerical data that enable the analysis of diverse features of the scientific activity, linked both to the production and consumption of information and are based on the so-called "bibliometric laws", such as the law of exponential growth (Price, 1956), the productivity of authors (Lotka, 1926), the dispersion of scientific literature (Bradford, 1934), and of impact or visibility (Raisig 1960, Westbrook 1960, Garfield & Merton, 1979). These are based on statistically regular behaviours that over time have shown the different elements that make up the production and consumption of scientific information about an area of study.

In this sense, the use of both databases will allow the study to have broad coverage, and in order to overcome the limitation of the existence of correlation between both databases, the analysis of the level of overlap is performed.

In order to develop the database that will contain the articles, which the transversal descriptive analysis carried out is based on, the search of publications in both databases was developed, using the terms used in the studies of Sayili *et al*. (2007) and Bonfada *et al*. (2008), which were supplemented with additional terms to obtain a better reference of the subject analysed. The search terms were grouped into: "thermalism", "thalassotherapy" and "spa", which are listed in Table 1. The search for these terms was done in the title and keywords fields.

They were compiled and processed using Microsoft-Office Excel software for its analysis. It is made up of 380 articles published in Scopus and 66 articles in WoS.

Methodology of calculations

The bibliometrics indicators used in the study are included in the table 2.

On the other hand, when using two different databases in the bibliometric analysis, it is important to perform a study of the overlap and identification of indexed articles in both databases. This situation is considered as overlapping or cross-linking the information collected (Pulgarín *et al*., 2008: 338). The indicators used are the Meyer Index and the Traditional Overlapping (TO) and Relative Overlapping.

Meyer's index (Meyer *et al*., 1983), also known as relative index of peculiarity, allows to

Table 1. *Search terms in databases*

Thermalism	Thalassotherapy	Spa
Balneary	Thalassos	Wellness spas
Baths	Thalassotherapy centres	Urban spa
Health resorts	Marine baths	
Thermal centres	Sea water	
Thermal spa	Thalassotherapy	
Thermal resorts		
Spa resorts		
Spa		
Hot spring Thermalism		
Balneotherapy		
Mineral springs spas		
Balneary		

Source: Authors' own data

Table 2. *Search terms in databases*

Indicators of production, it is based on the count of scientific production and Scientific productivity is the number of publications produced by an author during a given period of time.

- Productivity per year: total number of articles published per year included in the study.
- Author productivity: number of articles signed by author.
- The authors' productivity index: IP= log N, where N= total of original documents.
- Co-authorship: papers that are produced by two or more authors in institutions inside and outside the country.
- Lotka index (decimal logarithm of the number of publications): it describes the frequency of publication by authors in any given field. The general formula says: $Y=C/X^n$ where X is the number of publications, Y the relative frequency of authors with X publications, and n and C are constants depending on the specific field (n≈2).
- Productivity by institutions: total number of articles produced by the institution which they belong to in the period of time studied.

Collaboration indicators, they are focused on the analysis of the relationships between the authors and the affiliations that have worked in a coordinated and joint way for the creation of the articles examined.

- Co-author index (number of signatures per paper): quotient between the number of authors and the number of articles.
- Index of institutional collaboration: quotient between the number of signatory centres and the number of articles.

compare the coverage of several databases on a given topic. This index analyses the existing overlap by determining the number of repetitions that the publication has among the selected databases (Abad *et al*., 1995:365).

The calculation of this index is established when giving a weight to each type of source, the primary sources will be those of greater weight since they are single (weight = 1), this weight will be reduced as the repetitions increase in relation to the amount of databases to be compared, so if the article is duplicated its weight = 0.5; tripled weight = 0.3 and so on.

$$\text{Meyer's index (MI)} = \frac{\sum Sources * Weight}{Total\ sources}$$

The result of this calculation establishes the singularity or particularity of the base, the higher the result, the greater the particularity of the base (Meyer *et al*., 1983:36).

With regard to overlap, Traditional Overlapping (TO) and Relative Overlapping are used. In contrast to the previous index, this calculation, in its algorithm creation, aims to take into account all the possible unions that two databases can have with each other (Gluck, 1990:50), so that the result that it provides establishes the percentage (%) of similarity that base A has within base B. The highest percentage will correspond to the greatest similarity between the results.

$$\% \text{ TO} = 100 * \left(\frac{|A \cap B|}{|A \cup B|} \right)$$

$$\% \text{ Overlapping in A} = 100 * \left(\frac{|A \cap B|}{|A|} \right),$$

$$\% \text{ Overlapping in B} = 100 * \left(\frac{|A \cap B|}{|B|} \right)$$

On the other hand, Relative Overlapping establishes the coverage that base A has on base B (Bearman & Kunberger, 1977:533); it calculates the overlap of one database in another one, taking into account the weight of overlapping documents with respect to those with a single presence.

Results

Productivity per years

The unit of analysis used is the article. It is observed that with respect to the subject of study, there is scientific production from 1929 to 2016 in the Scopus database, being very scarce and discontinuous until 1987 (45 articles in 58 years). In the WoS database, the first article was published in 1938 and only 4 articles were published until 2004. A total of 446 publications were identified in both databases, of which 85% (380 articles) are published in Scopus and only 15% (66 articles) in WoS. At the same time, it is observed that 2013 is the year with the highest production of articles related to this topic in Scopus and in WoS (Figure 1 and 2).

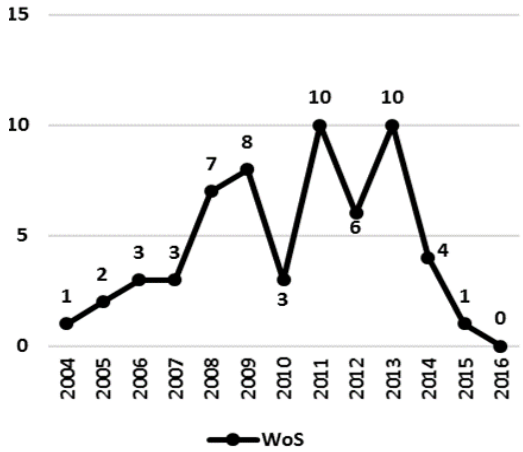

Figure 2. *Trend of publications in WoS*
Source: Authors' own data

Its distribution per years allowed to observe the research trend. There was a very slight gradual increase of the publications in Scopus from 2002 and in WoS from 2008, experiencing a significant decrease in 2014 and 2016 in both databases. However, the trend line (polynomial) in the Scopus database shows a moderate growth trend over the next 5 years.

On the other hand, most of the articles refer to the health resort subsector (359 of the 380

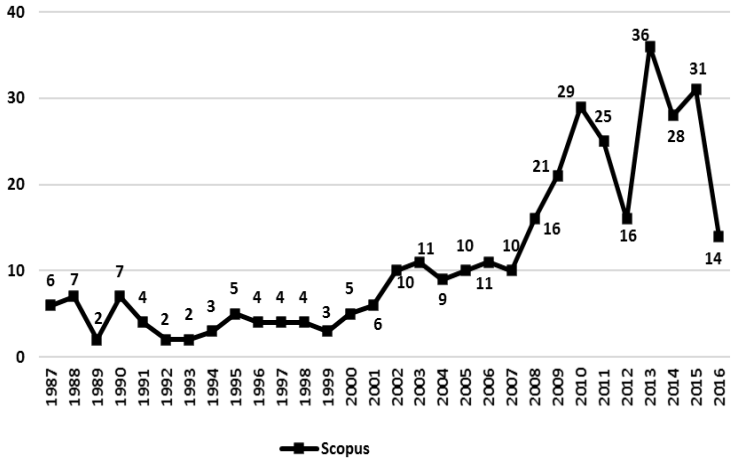

Figure 1. *Trend of publications in Scopus*
Source: Authors' own data

articles in Scopus and 58 of 66 in WoS), which shows that practically no studies have been conducted in the Spa and Thalassos subsectors.

Authoral and co-authorships Productivity

A total of 724 authors are identified, of whom approximately 94% have participated with only one article. Among the authors with the most publications are Kucukusta, D. with 5 publications in both Scopus and WoS (Table 3). The authors' productivity index is 1.11 in WoS and 1.09 in Scopus Lotka's Law on the distribution of authors according to their productivity, states that a few authors publish most of the relevant literature on a research topic, and they make up the most prolific group. Thus, the Lotka index (decimal logarithm of the number of publications) allows the authors to be grouped into three levels: (1) small producers, those with only one publication or productivity index equal to 0, (2) medium producers, those authors who have between 2 and 9 papers and the productivity index greater than 0 or less than 1 and (3) large producers with 10 or more papers and a productivity index equal to or greater than 1. All the authors listed in table 2 belong to the group of medium producers, which is made up of 43 authors; 680 authors with a single article are small producers and in this study area there are no large producers.

In addition, the networking was analysed by means of the co-authorship index or the number of signatures/papers in relation to the average number of authors per document, and it was determined that 2.27 authors work per article in WoS, whereas Scopus establishes 1.93 per paper (Table 4). In Scopus 50.2% work alone and 26.6% in WoS.

Productivity by type of institutions and country

Table 3. *Most productive authors*

Scopus			WoS		
Author	**Number of Articles**	**Lotka index**	**Author**	**Number of Articles**	**Lotka index**
Deniz Kucukusta	5	0.6990	Deniz Kucukusta	5	0.6990
Tamara Rátz	5	0.6990	Basak Denizci-Guillet	4	0.6021
Basak Denizci-Guillet	4	0.6021	Chung-Hsien Lin	3	0.4771
Gábor Michalkó	4	0.6021	Feng-Hsiang Chang	2	0.3010
Elisa Alén González	3	0.4771	Kaung-Hwa Chen	2	0.3010
Roxane Fabre	3	0.4771	Shun-Hsing Chen	2	0.3010
Brian King	3	0.4771	Cornelia Locher	2	0.3010
Cheng-Fei Lee	3	0.4771	Pablo Saz Peiro	2	0.3010

Source: Authors' own data

Table 4. *No. of co-authorships*

	Scopus		WoS	
	Number of articles	**Number of authorships**	**Number of articles**	**Number of authorships**
Articles with 1 author	198	198	20	40
Articles with 2 authors	94	188	20	20
Articles with 3 authors	50	150	16	48
Articles with 4 authors	23	92	8	32
Articles with more than 4 authors	15	106	2	10
Total	380	734	66	150

Source: Authors' own data

Another important element for the analysis is the institutional affiliation, which the authors belong to. 426 institutions were identified with different fields of action, with universities being the type of institution with the highest number of affiliations, accounting for 73.81% (62) in WoS and 68.96% (289) in Scopus. The University of Cadiz (Scopus) and Chung Hua University (WoS) have the highest number (Table 5).

Table 5. *Most productive institutions with authors and authorships*

Scopus			WoS		
Institution	**Authors**	**Authorships**	**Institution**	**Authors**	**Authorships**
University of Cádiz	13	13	Chung Hua University	5	5
University of California	8	9	Pennsylvania State University	5	7
University of Kentucky	8	9	Polytecnic University of Hong Kong	5	5
University of Bucharest	7	8	University of Gaziosmanpasa	4	4
University of Vigo	7	8	Medical University	4	4

Source: Authors' own data

Table 6. *Number of centres, authors and authorships by their country of affiliation*

Scopus				WoS			
Country	**Number of Centres**	**Authorships**	**Authors**	**Country**	**Number of Centres**	**Authorships**	**Authors**
U.S	57	104	97	Taiwan	16	33	28
United Kingdom	41	59	55	Spain	9	18	17
Japan	19	39	38	U.S	11	17	17
Spain	15	39	37	United Kingdom	8	10	10
Taiwan	19	42	37	Hong Kong	2	13	9
France	28	37	36	Poland	3	7	7
Canada	16	31	28	Turkey	2	6	6
Romania	10	31	27	Bulgaria	1	4	4
Poland	15	26	23	India	2	4	4
Italy	14	21	21	Italy	2	4	4
China	8	18	18	Japan	4	4	4
Germany	15	17	16	Czech Republic	2	4	4
Australia	9	18	16	Hungary	3	3	3
Hungary	11	26	16	Portugal	2	3	3
Turkey	9	16	16	Australia	2	4	2
Czech Republic	11	14	14	Canada	2	2	2
Slovenia	5	11	11	South Korea	1	2	2
Portugal	7	11	11	Norway	2	2	2
Russia	6	11	11	Switzerland	2	2	2
Greece	6	12	10	Austria	1	1	1
Netherlands	6	10	10	Belgium	1	1	1
Serbia	5	10	10	China	1	1	1
Hong Kong	2	19	9	Israel	0	1	1
Jordan	6	8	8	Romania	1	1	1
Malaysia	2	7	7	Singapore	1	1	1
Sweden	5	7	7	Sweden	1	1	1
Austria	3	5	5	Country not defined	0	1	1
South Korea	3	5	5				
Denmark	2	5	5				
Egypt	4	5	5				
Indonesia	2	4	4				
Belgium	3	4	3				

Croatia	3	3	3			
Finland	1	5	3			
Norway	3	3	3			
Switzerland	3	3	3			
Brazil	2	2	2			
Slovakia	1	2	2			
Estonia	1	2	2			
Iran	1	2	2			
Ireland	2	3	2			
Israel	1	3	2			
Lebanon	1	2	2			
New Zealand	1	2	2			
Albania	1	1	1			
Saudi Arabia	1	1	1			
Argentina	1	1	1			
Bosnia and Herzegovina	1	1	1			
The Savior	1	1	1			
United Arab Emirates	1	1	1			
India	1	2	1			
Kuwait	1	1	1			
Libya	1	1	1			
Macao	1	1	1			
Mexico	1	1	1			
Pakistan	1	1	1			
Singapore	1	1	1			
South Africa	1	1	1			
Thailand	1	1	1			
Ukraine	1	1	1			
Country not defined	0	13	11			
Total	400	734	671	82	150	138

Source: Authors' own data

In the country affiliation analysis (Table 6), the United States is identified as the leader with 97 authors, 104 authorships and 57 research centres within the Scopus base and Taiwan in WoS with 28 authors, 33 authorships and 16 research centres. At the same time, it is observed that Spain occupies (4th position in Scopus and 2nd position in WoS), being the best positioned Spanish-speaking country.

Journals

Continuing with the analysis, the areas and categories in which the databases organize these resources is examined. It is observed that they have a strong multidisciplinary character. Although the classification used by Scopus and WoS is not the same, there are many similarities in the classification areas that allow for the comparison between them and in this way, it is possible to identify the areas in which the majority of publications are grouped. First, there is *Social Sciences* with 57% of the articles in Scopus and 56% in WoS, followed by *Business, Management and Accounting / Business and Economics* with 34% in Scopus and 29% in WoS, which shows concordance between bases with reference to the areas in which most of the production is integrated. Other areas that were found were *Medicine, Enviromental Sciences, Biochemistry,* among others.

On the contrary, if we take into account the organization by categories, differences between the bases are observed. On the one hand, Scopus dominates *Geography*, *Planning and Development* with 24% of the articles and *Tourism, Leisure and Hospitality Management* with 16%; while in WoS *Hospitality, Leisure, Sport & Tourism* predominates with 53% followed by *Management* with 15%. Among the journals favoured for the publication of this

subject are *Bulletin de l'Academie Nationale de Medecine and Quality* - Access to Success in Scopus, journals which are considered non-tourism, while in WoS those that predominate are *Asia Pacific Journal of Tourism Research, International Journal of Hospitality Management and Tourism Management,* journals in the field of tourism (Table 7).

Additionally, of the 244 journals contained in the two bases, most of the articles were published in 73 of them, representing less than a third of the journals. If this phenomenon is analysed in each database, the concentration of articles follows the same distribution. In the case of Scopus, 228 articles were published by 71 journals (3.21 articles/journals) and in the case of WoS, 46 articles were published in 14 journals (3.29% articles/journals). This behaviour is known under the name of the Bradford Law, which states that a small number of journals contains most of the articles related to a specific subject (Bradford, 1934).

Although Bradford (1934) establishes a behaviour in the concentration of articles, there is a group of publications that constitute the nucleus of the subject, which can be

Table 7. *Journals with the highest number of articles*

Scopus				WoS			
Journals	**Number of Articles**	**%**	**Quartile**	**Journals**	**Number of Articles**	**%**	**Quartile**
Bulletin de l'Academie Nationale de Medecine	12	3.11	Q4	Tourism Management	6	9.09	Q1
Quality - Access to Success	10	2.59	Q2	Asia Pacific Journal of Tourism Research	5	7.58	Q2
Journal of Travel and Tourism Marketing	7	1.81	Q1	International Journal of Hospitality Management	5	7.58	Q1
Tourism Management	7	1.81	Q1	Current Issues in Tourism	4	6.06	Q2
Anthropology and Medicine	6	1.55	Q2	International Journal of Contemporary Hospitality Management	4	6.06	Q1
Cornell Hotel and Restaurant Administration Quarterly	6	1.55	--	Journal of Travel & Tourism Marketing	4	6.06	Q2
International Journal of Contemporary Hospitality Management	6	1.55	Q1				
Journal of Hospitality and Tourism Management	6	1.55	Q1				
Asia Pacific Journal of Tourism Research	5	1.30	Q1				
Britannia	5	1.30	Q3				
International Journal of Hospitality Management	5	1.30	Q1				
Journal of Vacation Marketing	5	1.30	Q1				
Annals of Public and Cooperative Economics	4	1.04	Q3				
Annals of Tourism Research	4	1.04	Q1				
Current Issues in Tourism	4	1.04	Q2				
Foldrajzi Ertesito	4	1.04	--				
Geographische Rundschau	4	1.04	--				
Human Geographies	4	1.04	Q3				
Tourism	4	1.04	Q3				
Tourismos	4	1.04	Q4				
In summary:	**Total Articles**	**% on total**		**In summary:**	**Total Articles**	**% on total**	
14 Journals with 3 articles	42	10.88		2 Journals with 3 articles	6	9.09	
37 Journals with 2 articles	74	19.17		6 Journals with 2 articles	12	18.18	
158 Journals with 1 article	158	40.93		20 Journals with 1 article	20	30.30	

Source: Authors' own data

established from the calculation of the Lorenz Curve. These curves establish that in both bases 17% of the journals contain 42% of the articles.

In relation to quality, taking into account the indices *SCImago Journal Rank* (SJR) of Scopus and JCR of WoS, we find that the publications on this topic are found in high-impact journals in WoS, all of which belong to quartile Q1 and Q2. In the case of Scopus, 47% of the journals are also classified in the Q1 quartile (Table 7).

Thematic Areas

The content analysis of the abstracts of the articles allows to identify the research lines or thematic areas followed by researchers (Table 8).

- ✓ *Tourism and Tourism Development:* in this thematic area, studies are carried out that address the opportunities for tourism exploitation of natural and thermal resources (Gilbert, 1939; Andrews *et al*., 1982; Cavaco, 1995; Deng, 2007; Morais & Lin, 2010; Kiss, 2015).
- ✓ *Health:* it brings together studies that show the effects and healing properties that thermal baths have on certain diseases and their direct association with alternative medicine (Knipschild & Kleijnen, 1990; Kazandjieva *et al*., 2008; Charlier & Chaineux, 2009; Mak *et al*. (2005).
- ✓ *History, Architecture and Archeology:* it groups the studies focused on determining the importance and the different uses baths and thermal springs had during the Roman and Greek times. Papers that address the historical relevance of the exploitation of these resources are also included (Dunbabin, 1989, Bérubé, 2003, Fodorean, 2012).
- ✓ *Environmental resources and land planning:* an area devoted to the study of the resources that the areas where there are thermal baths, thalassos or spas have, as well as the models for adequate planning of the resources that enable their sustainable use (Kozłowska-Szczęsna, 1984; Ishii & Shirasaka, 1988; Jha & Tewari, 2006; Papageorgiou & Duquenne, 2012; Juan & Lin, 2013).
- ✓ *Business Management*: (Hsieh*et al*., 2008, Chen *et al*., 2011).
- ✓ *Sociology*: it integrates the various studies that incorporate the use of medicinal-mineral waters in the practice and development of religious, artistic, and economic events (Richwald, *et al*., 1988; Herbert, 2009; Park & Reisinger, 2009).
- ✓ *Marketing*: it focuses on the approach of marketing strategies for companies providing thermal services, with the aim of analyzing the experiential value, customer satisfaction and loyalty to the thermal baths (Chang & Chen, 2011; Kraftova *et al*., 2011).
- ✓ *Quality Management*: it concentrates the publications focused on how to measure the quality and implementation of quality standards to improve the quality of the service provided (Snoj, 1995; Chen *et al*., 2013; Giritlioglu *et al*., 2014; Illing, 2015; Lo *et al*., 2015).

Table 8. *Thematic Areas*

	Scopus		WoS	
Area	**Number of Articles**	**%**	**Number of Articles**	**%**
Tourism and Tourist Development	99	26.05	25	37.88
Health	59	15.53	9	13.64
History, Architecture and Archeology	52	13.68	--	--
Environmental Resources and Land Planning	48	12.63	5	7.58
Business management	36	9.47	12	18.18
Sociology	28	7.37	--	--
Marketing	27	7.11	10	15.15
Economy	14	3.68	1	1.52
Quality management	12	3.16	4	6.06
Others (law, aesthetics ...)	5	1.32	--	--
Total	380	100	66	100

Source: Authors' own data

- ✓ *Economics*: it includes studies on financing processes for the improvement or implementation of facilities either through the use of funds from international or state agencies (Grzelak-Kostulska *et al*., 2015, Suchecka & Jaworska, 2015).

Finally, in *others*, we can find a small number of publications with a legislative approach, the use of establishments for aesthetic treatments and human resources, highlighting Katz and Gish (2015) in aesthetics, Anderssen (2016) in human resources and Sherry (1966) in legislation.

Overlap of Databases

The correlation analysis between both databases shows a linear correlation coefficient = 0.91. The results show that of the 446 articles, 354 (89%) are single, i.e. they only appear in one of the two databases, while 46 (11%) of the articles are shared or overlap between them, so they are categorized as duplicates. Taking into account the Meyer Index that determines the singularity of the bases, Scopus presents a greater index of singularity as it has a greater number of single documents with a MI = 0.89 while in WoS it is 0.11.

On the other hand, Traditional Overlapping (TO) between WoS and Scopus for articles was 11.5% of similarity between the bases. As for the percentage of Relative Overlapping that Scopus has with respect to WoS and vice versa, it is observed that only 12% of Scopus is covered by WoS, while on the contrary, 70% of WoS is covered by Scopus.

Conclusions

In this study, the use of bibliometric indicators has allowed an in-depth analysis from the quantitative and qualitative point of view of scientific production related to the "Thermalism, Thalassotherapy and Spa" sector in the two main international databases Scopus and WoS. The main contribution of this work is that it provides an overview of academic study in this sector.

The results show that most of the scientific production is published in the Scopus database. In addition, the analysis of the overlap between the two databases reveals that 70% of the publications found in WoS have been published in Scopus. Both results highlight the importance of this database when researchers carry out a bibliographic review on the subject.

The analysis of production per year shows moderate growth in the last 15 years and a slight growth trend is expected in the coming years. It should be noted that most of the publications use health resorts as a unit of study, with very few of them referring to Spas or Thalassos.

The analysis of productivity has allowed to observe that:

(1) Very few researchers have continued with this line of research, most of them have only published one article.

(2) Kucukusta, D. is the author with the most articles, in particular 5, related to this area of study, followed by Basak Denizci-Guillet with 4 articles. On the other hand, Marion Joppe, Henna Konu and Tommi Laukkanen are highlighted as the authors who do research in Spas.

(3) There is a tendency to work alone in the articles collected in the Scopus database (50.2%). However, in WoS it is reduced to 26%.

(4) The authors mainly belong to the University. The study confirms the worldwide leadership in this area of researchers belonging to University institutions of the United States, the United Kingdom, Japan and Spain. In the case of Japan, it is in the second position in the ranking developed by the Global Spa and Wellness Summit-GSWS (2013), according to the benefits obtained by this activity (11,687 million US dollars and 17,653 establishments), Spain is in the 10th position and the United States is in the 15th position. It should be noted that there are UK researchers that are not in this ranking and there are no researchers working on this topic in China, which ranks 1st or Germany in the 2nd position.

On the other hand, the analysis of the organization by categories of the journals in both databases shows a very significant percentage in the category that includes tourism journals. The Relative Quality Indexes (SJR and JCR) show that articles have been

published in high impact journals; In WoS all of them are in the Q1 and Q2 quartile and in the Scopus case 47% of the journals are also classified in the Q1 quartile.

Regarding the approach or thematic areas followed by researchers, the content analysis shows that the Tourism and Health approach, that is to say, "tourist and therapeutic exploitation" of natural and environmental resources is the most used, 26.05% and 15.53% respectively in Scopus, while in WoS 37.88% and 18.18%. Subjects in the initial phase of thermalism have also been found, such as the analysis of legislation in relation to this type of resources, the use of resources for aesthetic treatments and the importance of human resources in these establishments.

In this sense, the data show that it is necessary to continue advancing in the generation of knowledge in all the thematic areas identified, since the number of investigations in all of them is very small. Mention that it is necessary to address and open new lines of research that allow the growth of the sector to be supported with the generation of knowledge; business management of the establishments, economic-financial management of the activity, marketing used for the promotion of the sector and management of the quality of the establishment and the product offered (customer satisfaction).

To conclude, this study has limitations. The first one refers to the ambiguity or confusion depending on the geographical area of the terms used in the search. In this sense, for example the word Spa in Spain refers to establishments that use normal water in their treatments. However, for the English it is synonymous with a health resort, as for them a Spa uses mineral-medicinal waters. The second limitation comes from the indexing process. Authors do not always include the sector where the study is conducted in the search fields (title and keywords), therefore not identifying articles that may be relevant.

As a future line of research, it is considered important to expand the study considering other databases such as Scielo, Redalyc, Latindex, PROQUEST, Emerald and others, in order to have greater coverage.

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