Brazilian scientific articles on "Spirituality, Religion and Health"

Rodolfo F. Damiano[1], Lucas A. Costa[2], Marcos Túlio S. A. Viana[2], Alexander Moreira-Almeida[2], Alessandra L. G. Lucchetti[2], Giancarlo Lucchetti[2]

[1] *Pontifical Catholic University of São Paulo (PUCSP), Sorocaba, SP, Brazil.*
[2] *Federal University of Juiz de Fora (UFJF), School of Medicine, Juiz de Fora, MG, Brazil.*

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Abstract

Background: Studies on "Spirituality, religion and health" (R/S) have been increasing worldwide, including in Brazil. Mapping this production can help researchers to understand this field and also to identify gaps in the Brazilian R/S studies. **Objective:** To analyze the Brazilian scientific articles on "Religion, Spirituality and Health" available on the main electronic databases using a bibliometric approach. **Methods:** A comprehensive review of four major databases (PubMed, Scopus, BVS and Web of Science) was conducted. Three reviewers performed the data analysis. Off-topic articles, articles from Portugal, books and thesis were excluded. Articles were then classified by: Publication year, journal, Central focus in R/S, Academic Area, Main topic and Study Type. **Results:** From 3,963 articles found, 686 studies were included in the final analysis (320 had central focus on R/S). There was an increase of articles in the last decade (most observational), with predominance of mental health issues, and from journals in the field of psychiatry, public health and nursing. **Discussion:** This study enabled us to widen our understanding about how the field of "spirituality, religion and health" has been established and how this field is increasing in Brazil. These findings can help in the development of future Brazilian studies.

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Keywords: Spirituality, religion and medicine, bibliometrics, statistics and numerical data, publications.

Introduction

Although there is no consensual definition, spirituality can be described as "the personal quest for understanding answers to ultimate questions about life, about meaning and about relationship to the sacred or transcendent, which may (or may not) lead to or arise from the development of religious rituals and the formation of community". And religion may be defined as "an organized system of beliefs, practices, rituals, and symbols designed to facilitate closeness to the sacred or transcendent (God, higher power, or ultimate truth/reality)"[1,2].

Over the last decades, studies in the field of religion/spirituality (R/S) and health are growing substantially[3]. This growth has been widely seen throughout the world, with Brazil being one of the most significant countries with regard of this expansion[4]. In a recent PubMed bibliometric analysis[4], reviewing the last 15 years of publications in R/S field, authors found a three-fold increase in the number of articles from 1999 to 2013.

According to a recent systematic review[3], 80% of all studies in this field involve mental health studies. This relationship between spirituality and mental health has been widely demonstrated by many different authors over the years and all around the world[5-9], usually showing lower rates of drug use, lower prevalence of depression and suicidal attempts and better quality of life and well being. Likewise, there is also a relationship between R/S and physical health, such as less hospitalization, better coping with the disease, better treatment adherence, more acceptance of therapeutic measures, and lower mortality rates[10-12]. Although less frequent, there are also negative outcomes of some forms of religious involvement, such as extrinsic religiosity and negative religious coping[1,9].

In view of this evidence, R/S studies in health have progressively become a topic of interest for different academic and professional societies, groups and researchers all over the world[5]. Likewise, this content has been included in the curricula of many universities (90% of US medical schools, 59% of British medical schools and 40% in Brazil)[13,14]. In Brazil, a multicenter study with 3,630 medical students showed a large gap between high levels of students' desire to receive training in R/S and the actual low rates of medical training received on the topic[14]. Thus, reviewing publications in this area is also crucial to address the increasing demand of bibliographic resources on R/S among medical students and professionals.

Within this context, mapping the Brazilian production in this field, including the most common areas and lines of research, the type of articles, the evolution of the field over the years and the most relevant journals, can help researchers and clinicians to understand this field and also to identify gaps in the Brazilian R/S studies. However, even though we have identified some attempts to evaluate Brazilian R/S production[4,8], to our knowledge, there is no specific bibliometric analysis up to the present date.

Therefore, the present study aims to analyze Brazilian studies on "Religion, Spirituality and Health" available on the main electronic databases using a bibliometric approach. This will allow us to provide a wider panorama about how R/S in health have been scientifically studied throughout the decades and what are the main gaps and challenges in this field, fostering the development of further studies and creating new ideas of research in this area.

Methods

Data sources

A bibliometric analysis was carried out aiming to evaluate all Brazilian scientific articles related to "Spirituality, religion and health". A comprehensive review of four major electronic databases (PubMed/Medline, Scopus, Web of Science and BVS – "Biblioteca Virtual em Saúde") was conducted. BVS was chosen because it includes a lot of Brazilian articles and embraces some important Latin American databases, such as LILACS (Literatura Latino-Americana e do Caribe em Ciências da Saúde) and SciELO (Scientific Electronic Library Online). The Boolean expression "(Spirituality OR Spiritual OR Religion OR Religiousness OR Religiosity) AND (Brazil OR Portuguese)" was created to help the search in these databases.

Address for correspondence: Giancarlo Lucchetti. Federal University of Juiz de Fora, Brazil – School of Medicine. Av. Eugênio do Nascimento, s/n, Dom Bosco – 36038-330 – Juiz de Fora, MG, Brazil. Phone: (55 32) 2102-3848/Fax: (55 32) 2102-3848. E-mail: g.lucchetti@yahoo.com.br

Inclusion and exclusion criteria

The inclusion criteria were all articles (without date restrictions) evaluating or discussing the association between spirituality, religion, religiosity and spiritual/religious practices or interventions with health. The exclusion criteria were: articles without abstract and with inconclusive title, articles off-topic, articles from Portugal, articles not related to health and redundant publications.

Data extraction

The data extraction is detailed in Figure 1. Data was extracted from each database (May 31st 2015) and inserted into Excel spreadsheets. Then, we created only one Excel file with all the included databases. As we did not limit the period of analysis, all articles were checked and then included into the review. In this part, some repeated articles were excluded prior to send to review.

Three independent researchers did the review without any contact during the period of analysis. A meeting to discuss the criteria for inclusion and exclusion was held previously among all authors, including those who performed the review. A sheet with all established criteria was written and sent by email for all authors, guiding their review process.

Each reviewer first classified the articles as Included/Excluded, and if excluded, the Reason for Exclusion, as described in the previous section. The second analysis consisted of classifying the articles in other 5 areas: Author from a Brazilian institution (we considered any author position); if the article has the central focus in R/S; Academic area; Main topic; and Study type. The reason to classify again the author's country is to exclude any article that was wrongly selected to the second analysis.

In the end of analyzes, all included articles (excluding all articles without any author based in Brazil) were classified in the following variables: Year of Publication and Journal (both given by databases), Central focus (if R/S was the central focus of the manuscript. For example, some articles investigated several variables, including religion. However, this was not the focus of the manuscript), Academic Area, Main topic, and Study Type. All three reviewers did each analysis in separate files; therefore one of the three authors was selected to join all three outcomes in only one file to facilitate the consensus. This final Excel file was done joining all three outcomes for each article subsequently. Afterward, the same author reviewed this file trying to find a consensus for each variable of each article. For articles in which at least two out of three reviewers classified the same, the majority was selected. However, for articles in which there was no consensus, the final reviewer made the decision.

An observer intra-class correlation (ICC) was calculated for the first twenty-five articles in order to assure consistency (ICC = 0.72, confidence interval – CI 95% 0.42-0.88). Then, results were discussed between all authors. Another observer intra-class correlation was performed in the end of analyzes (2,440 articles), showing a high agreement rate (ICC = 0.83, CI 95%: 0.82-0.84).

After the final consensus was reached, a final Excel file was sent for all authors. The last stage of our study was to perform the last review and analyze all final data. The other authors who did not participate of the first classification were responsible for reviewing and statistical analyses. At this point, some articles were excluded because did not fill the inclusion criteria. Since we finished the analysis in the middle of 2015, all articles from the same year were withdrawn for not making a comparison across years possible. Then, descriptive statistic was done to analyze each studied variable.

Results

Figure 1 presents our data extraction based on the PRISMA Flowchart. In our first search using the boolean expression, we found 3,693 articles in all four databases (873 in PubMed, 696 in Web of Science, 793 in "Biblioteca Virtual de Saúde", and 1,331 in SCOPUS). In this step we excluded 1,253 repeated articles prior to send to the review. Then, 2440 articles were evaluated by three reviewers. After reaching a final consensus, 1,651 articles were excluded (360 with no abstract and inconclusive title; 470 off-topic or articles from Portugal; 568 not related to health; and 253 repeated articles). Then, 789 articles were included and sent to the last review.

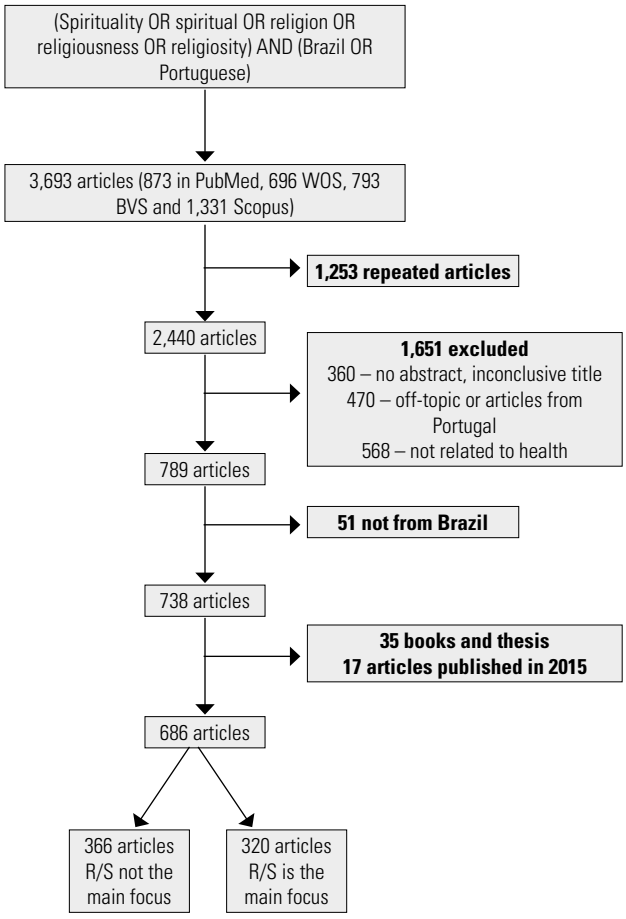


Figure 1. Flowchart of data collection.

At this point, 51 articles were excluded for not being from Brazil, and 35 books and thesis were also withdrawn. Moreover, 17 articles published in 2015 were excluded in order to make the analysis over years possible. Hence, 686 articles, corresponding to all Brazilian production related to "spirituality, religion and health", were included in the final analysis. From these, 320 out of 686 articles (46.6%) had R/S as the main focus (Table 1).

Table 1 also presents the evolution of R/S publications of Brazilian articles over the years. We found that the first publication was in 1973 and, since then, a slow increase in the number of articles over the years can be observed. It is noteworthy that there was an "explosion" of publications happening between 2003/2004, with 2004 having five times as much the amount of articles in R/S published in the previous year. This "explosion" of articles in 2003/2004 can also be seen in graphic 1, which reveals a constant increase in number until 2014, when we see a decrease, especially in articles with central focus in R/S.

Table 2 presents the Brazilian journals that most often published articles related to R/S and health. Concerning all articles related to R/S and health, "*Cadernos de Saúde Pública*" (a *Public Health Journal*) leads the production, followed by three nursing journals. Concerning only articles with central focus in R/S and health we found an important leading for "*Revista de Psiquiatria Clínica*"/*Archives of Clinical Psychiatry*, followed by a nursing journal and then by another psychiatry journal, showing a dominance of psychiatry journals in publications of articles with central focus in R/S and health.

Table 1. Brazilian articles related to "Spirituality and Health" published over the years

Year	No central focus in R/S	%	Central focus in R/S	%	Total	%
1973	0	0.0%	1	0.3%	1	0.1%
1978	1	0.3%	0	0.0%	1	0.1%
1980	1	0.3%	0	0.0%	1	0.1%
1985	1	0.3%	0	0.0%	1	0.1%
1988	1	0.3%	1	0.3%	2	0.3%
1989	3	0.8%	0	0.0%	3	0.4%
1990	1	0.3%	2	0.6%	3	0.4%
1991	1	0.3%	3	0.9%	4	0.6%
1992	3	0.8%	1	0.3%	4	0.6%
1993	0	0.0%	2	0.6%	2	0.3%
1994	1	0.3%	2	0.6%	3	0.4%
1995	0	0.0%	3	0.9%	3	0.4%
1996	2	0.5%	2	0.6%	4	0.6%
1997	2	0.5%	3	0.9%	5	0.7%
1998	0	0.0%	4	1.3%	4	0.6%
1999	1	0.3%	1	0.3%	2	0.3%
2000	3	0.8%	3	0.9%	6	0.9%
2001	2	0.5%	3	0.9%	5	0.7%
2002	5	1.4%	3	0.9%	8	1.2%
2003	1	0.3%	4	1.3%	5	0.7%
2004	18	4.9%	10	3.1%	28	4.1%
2005	10	2.7%	13	4.1%	23	3.4%
2006	20	5.5%	12	3.8%	32	4.7%
2007	26	7.1%	17	5.3%	43	6.3%
2008	47	12.8%	25	7.8%	72	10.5%
2009	18	4.9%	21	6.6%	39	5.7%
2010	27	7.4%	32	10.0%	59	8.6%
2011	35	9.6%	32	10.0%	67	9.8%
2012	43	11.7%	41	12.8%	84	12.2%
2013	42	11.5%	51	15.9%	93	13.6%
2014	51	13.9%	28	8.8%	79	11.5%
Total	366	100%	320	100%	686	100%

Table 3 shows the main academic areas of Brazilian studies related to R/S and Health. As we could predict, the main area is Psychiatry, leading both the total of studies and also studies with central focus in R/S. However, we also see an important amount of studies published in Public Health area, which holds the second place in both views. Considering only studies with Central focus in R/S, both Psychiatry and Public health areas correspond to almost 44% of all studies in Brazil. Nursing also represents an important amount, with 7% in the total of studies.

Concerning the Main Topics of studies (Table 4), there is a small difference between all articles and those that are focused in R/S and health. The five main topics when analyzing all articles are "Alcohol and/or Drug Use" (9.3%), "Quality of Life" (7.4%), "Sexuality" (3.8%), "HIV" (3.5%), and "Mental Disorders" (3.1%); however for articles focused in R/S the five main topics are "Alcohol and/or Drug Use" (7.8%), "Ayahuasca" (5.9%), "R/S Scales" (5.6%), "Health Education" (4.4%), and "Sexuality" (4.1%). Thus, "Alcohol and/or Drug Use" showed as being an important subject for R/S studies.

Finally, we evaluated the study type for each article. In the total R/S studies, the most common type of study was observational quantitative studies (Cross-sectionals, Cohort, and Case-Control Studies) (47.7%), followed by Qualitative Studies (32.6%); Narrative Reviews (12.7%); Editorial, Letter to Editor, Proceedings (3.3%); Systematic Reviews (2%); Quasi Experimental Studies (0.9%); and Clinical Trials (0.6%). Regarding only studies with Central Focus in R/S and Health, there was also a predominance of observational studies (Cross-sectionals, Cohort, Case-Control Studies) (37.8%) followed by Qualitative Studies (33.4%); Narrative Reviews (17.2%); Editorial, Letter to Editor, Proceedings (6.6%); Systematic Reviews (2.8%); Clinical Trials (1.3%); and Quasi Experimental Studies (0.9%).

Graphics 1A and 1B show the types of articles over the years. In Graphic 1A, looking for the total of articles, there is a constant relationship between each type, always with a predominance of quantitative (cross-sectional, cohort, case-control, trials) followed by qualitative studies. In Graphic 1B, analyzing only studies with central focus in R/S, there was a predominance of qualitative studies until the year of 2011. In 2012, an important increase in quantitative studies is observed followed by an important decrease in qualitative studies in 2014. This decrease in qualitative manuscripts helped the general drop in publication that we can see in Graphics 1A and 1B.

Table 2. Main publishers of Brazilian studies related to "Spirituality and Health"

Total			Central focus in R/S		
Journal	Nº	%	Journal	Nº	%
Cadernos de Saúde Pública	36	5.2%	*Archives of Clinical Psychiatry**	21	6.6%
Revista Brasileira de Enfermagem	34	4.9%	*Revista da Escola de Enfermagem da USP*	13	4.1%
Revista da Escola de Enfermagem da USP	34	4.9%	*Revista Brasileira de Psiquiatria*	12	3.8%
Revista Latino-Americana de Enfermagem	30	4.4%	*Revista Latino-Americana de Enfermagem*	12	3.8%
Ciência e Saúde Coletiva	25	3.6%	*Revista Brasileira de Enfermagem*	10	3.1%
*Archives of Clinical Psychiatry**	22	3.2%	*Ciência e Saúde Coletiva*	9	2.8%
Revista Brasileira de Psiquiatria	21	3.1%	*Jornal Brasileiro de Psiquiatria*	9	2.8%
Revista de Saúde Pública	20	2.9%	*Journal of Religion and Health*	9	2.8%
Jornal Brasileiro de Psiquiatria	18	2.6%	*História. Ciências. Saúde-Manguinhos*	8	2.5%
Revista Gaúcha de Enfermagem	16	2.3%	*Journal of Psychoactive Drugs*	6	1.9%
Revista de Saúde Pública	15	2.2%	*Revista de Saúde Pública*	5	1.6%
História. Ciências. Saúde-Manguinhos	10	1.5%	*Cadernos de Saúde Pública*	5	1.6%
Journal of Religion and Health	9	1.3%	*Arquivos Brasileiros de Cardiologia*	4	1.3%
Arquivos de Neuro-Psiquiatria	8	1.2%	*Journal of Psychoactive Drugs*	3	0.9%
Physis	8	1.2%	*Revista Brasil de Estudos de População*	3	0.9%
Revista da Associação Médica Brasileira	7	1.0%	*Sao Paulo Medical Journal*	3	0.9%
Revista de Pesquisa: Cuidado é Fundamental Online	7	1.0%	*Interface: Communication. Health. Education*	3	0.9%
Epilepsy and Behavior	6	0.9%	*Dynamics*	3	0.9%
Journal of Psychoactive Drugs	6	0.9%	*Psicologia em Estudo*	3	0.9%
Revista Enfermagem UERJ	6	0.9%	*Epilepsy and Behavior*	3	0.9%
Others	348	50.8%	*Others*	176	55.0%

* Formerly *Revista de Psiquiatria Clínica.*

Table 3. Academic areas of Brazilian studies related to "Spirituality and Health"

Total			Central focus in R/S		
Academic areas	Total	%	Academic areas	Total	%
Psychiatry	161	23.4%	Psychiatry	92	28.8%
Public/Collective Health	117	17.0%	Public/Collective Health	47	14.7%
Nursing	50	7.3%	General Medicine	19	5.9%
Geriatrics	34	4.9%	History	19	5.9%
Cancerology	29	4.2%	Nursing	16	5.0%
Epidemiology	28	4.1%	Sociology	12	3.8%
History	26	3.8%	Geriatrics	10	3.1%
General Medicine	25	3.6%	Anthropology	9	2.8%
Psychology	19	2.8%	Cancerology	9	2.8%
Palliative Care	17	2.5%	Education	8	2.5%
Neurology	17	2.5%	Ethics	8	2.5%
Obstetrics and Gynecology	17	2.5%	Nephrology	7	2.2%
Sociology	16	2.3%	Hematology	7	2.2%
Ethics	14	2.0%	Palliative Care	7	2.2%
Pediatrics	11	1.6%	Cardiology	6	1.9%
Anthropology	10	1.5%	Neurology	6	1.9%
Education	9	1.3%	Psychology	5	1.6%
Nephrology	9	1.3%	Epidemiology	4	1.3%
Maternal and Child Health	9	1.3%	Maternal and Child Health	3	0.9%
Cardiology	9	1.3%	Pediatrics	3	0.9%
Others	59	8.8%	Others	23	7.1%

Table 4. Main topics of Brazilian studies related to "Spirituality and Health"

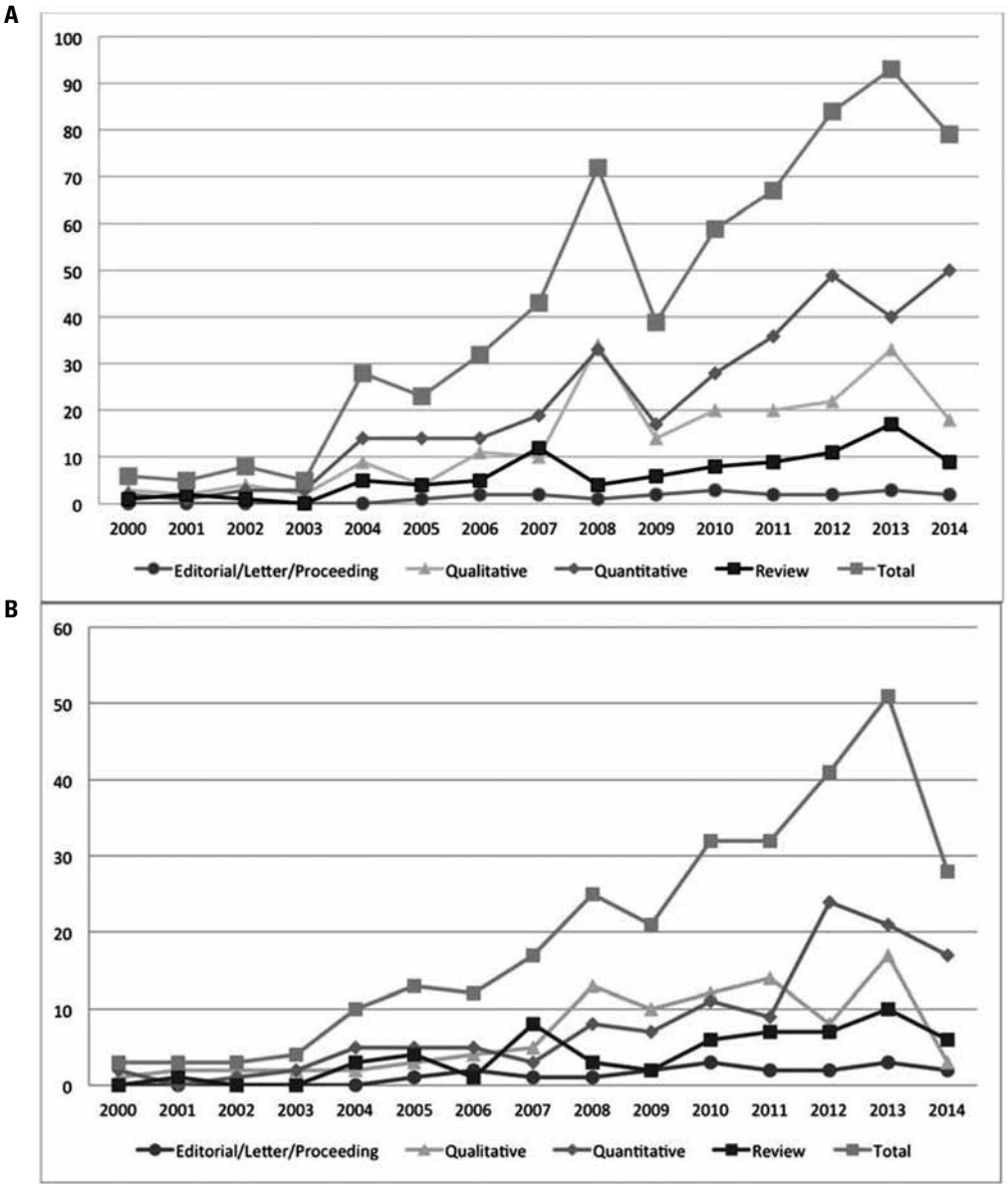
Total			Central focus in R/S		
Main topics	Total	%	Main topics	Total	%
Alcohol and/or drug use	64	9.3%	Alcohol and/or drug use	25	7.8%
Quality of Life	51	7.4%	Ayahuasca	19	5.9%
Sexuality	26	3.8%	R/S scales	18	5.6%
HIV	24	3.5%	Health Education	14	4.4%
Mental Disorders	21	3.1%	Sexuality	13	4.1%
Ayahuasca	19	2.8%	HIV	13	4.1%
Cancer	18	2.6%	Mental Health	12	3.8%
R/S scales	18	2.6%	Quality of Life	12	3.8%
Coping	15	2.2%	Jehovah's witnesses	10	3.1%
Health Education	15	2.2%	Spiritism	9	2.8%
Mental Health	13	1.9%	Coping	9	2.8%
Abortion	12	1.7%	Nursing	7	2.2%
Death an Dying	11	1.6%	Mental Disorders	7	2.2%
Epilepsy	10	1.5%	Death an Dying	7	2.2%
Tabagism	10	1.5%	Prayer	7	2.2%
Jehovah's witnesses	10	1.5%	Cancer	5	1.6%
Suicide	9	1.3%	Epilepsy	4	1.3%
Espiritism	9	1.3%	Hanseniasis	4	1.3%
Organ donation	9	1.3%	Mediumship	4	1.3%
Nursing	8	1.2%	RIME intervention	3	0.9%
Others	314	45.7%	Others	118	36.6%

Discussion

This bibliometrical study enabled us to widen our understanding about how the field of "spirituality, religion and health" has been established and how this field is increasing in Brazil, particularly in the last decade. We found a predominance of mental health issues, besides that most articles are observational and most journals are from the field of psychiatry, public health and nursing.

Our findings provide further evidence to other studies, which have found an increase in the publication of articles related to R/S and Health in the last decades[3,4,15]. Brazil, according to a recent analysis[4], is now the fifth greater publisher of articles in this area worldwide. However, to our knowledge, no other study has conducted a bibliometric analysis including only Brazilian manuscripts concerning R/S, and its variation over the years.

We found an impressive increase of articles related to R/S published in the last decade. In Brazil, the major leap started between 2003 and 2004, and kept almost constant until 2014, when had a decline. One possible explanation might be that in 2003, Brazil hosted an International Congress in Spirituality and Health with Dr. Harold G. Koenig (one of the most prominent researchers in this field) as a keynote speaker. This event brought a lot of media coverage, including important magazine and TV interviews[16]. Both facts could have helped to spread the research in this area.



Graphic 1. Different types of studies published over the years in "Spirituality and Health (S/H)" since 2000. **Graphic 1A:** total. **Graphic 1B:** central focus in "S/H"

Although the number of articles is important to establish any field of research, the study design is also important to consolidate it, particularly in the field of R/S, which is usually subjected to criticism and controversy[17,18]. Our findings reveal a great number of cross-sectionals, case-control and cohort studies, which is encouraging. Nevertheless, few studies were experimental (Quasi-experimental or Clinical Trials). Other articles have already investigated the influence of R/S in experimental studies showing promising outcomes[19,20]; therefore, we suggest that more studies using experimental protocols should be done in Brazil.

In relation to the academic area of these articles, we found a relevant trend with 30% of articles related with psychiatry and mental health, much less than the 80% found in a review of world publication on R/S and health[3]. This shows that in Brazil the interest seems to be more widespread in other academic areas. Public Health represents a significant amount of published articles, through epidemiological studies and nursing, through qualitative studies. However, it suggests the need of more studies in other medical and health related areas.

When talking about the main topics addressed by these articles, alcohol and/or drug use represents the most common issue, showing the importance of this subject in R/S field[21,22]. Noteworthy, ayahuasca appeared as the second most cited in articles with central focus in R/S. Possible explanations are the increase interest for this issue throughout the world, particularly in Brazil, where the religions that use ayahuasca in rituals were developed, and the crescent demand to understand the users and the neuropsychiatric effects of this plant[23]. R/S scales were in the third position (revealing some efforts to provide safe measures for these constructs, as noted by a previous systematic review)[24], followed by Health education in the forth place (showing an attempt to integrate R/S in higher education)[13].

Finally, due to the relevance of the mental health to the field of R/S and Health, some of the most prominent journals in this area were psychiatry journals. When analyzing only studies with central focus in R/S, the *Archives of Clinical Psychiatry*/former "*Revista de Psiquiatria Clínica*", is the leading journal in the total amount of articles. The relevance of *Archives of Clinical Psychiatry* has been

already discussed by other authors[15], stressing the essential role of this journal to the development of this area. Other journals are also important tools for the expansion of this subject, noting that some articles from public health journals usually measure spirituality/religiosity variables, but this is not the main focus of the study[25,26] and nursing journals usually are more likely to accept articles with qualitative data[27], which represent a great number of R/S publications.

Our study has some limitations. First, it is possible that some articles were not indexed in any of the electronic databases we have searched. However, by large, most relevant Brazilian academic papers are indexed in at least one of the searched databases. Moreover, trying to minimize this problem, we included BVS, which includes Lilacs (Literatura Latino-Americana e do Caribe em Ciências da Saúde) and SciELO (Scientific Electronic Library Online), the two most important databases for Brazilian papers. Second, it is possible that some R/S studies were not included due to a selection bias. In order to minimize this limitation, three reviewers assessed each article and their intra-class correlation was high. Third, there are some concerns regarding the incomplete data provided by some databases. We tried to minimize this problem searching for full-text versions of the articles.

Conclusion

The field of "Spirituality, Religiosity, and Health" is increasing throughout the world, with Brazil being one of the leading countries in this field of research. We found an increase of articles in the last decade, with a predominance of quantitative data, addressing mental health issues and published in Brazilian journals from the field of psychiatry, public health and nursing. These findings can help in the development of future studies in Brazil.

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Conflict of interest

The authors declare that they have no conflict of interest.

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