Revista Española de Documentación Científica
37(2), abril-junio 2014, e042
ISSN-L:0210-0614. doi: http://dx.doi.org/10.3989/redc.2014.2.1080

ESTUDIOS / *RESEARCH STUDIES*

Scientific impact of articles about the therapeutical application of Oriental body-mind practices (2006-2010)

Guillermo Torres-Casadó*, Miguel Villamón**, Máxima Bolaños-Pizarro***, Rafael Aleixandre-Benavent***

*Institut Nacional d'Educació Física de Catalunya-Lleida. Correo-e: gtcasado@comll.cat
**Departamento de Educación Física y Deportiva, Universitat de València. Correo-e: miguel.villamon@uv.es
***UISYS, Unidad de Información e Investigación Social y Sanitaria. Universitat de València-CSIC. IHMC López Piñero, Valencia.
Correo-e: maxima.bolanos@uv.es; rafael.aleixandre@uv.es

Received: 12-04-2013; 2nd version: 31-07-2013; Accepted: 06-11-2013.

Citation/Cómo citar este artículo: Torres-Casadó, G.; Villamón, M.; Bolaños-Pizarro, M.; Aleixandre-Benavent, R. (2014). Scientific impact in articles of the application of oriental body-mind therapy practices (2006-2010). *Revista Española de Documentación Científica*, 37(2):e042. doi: http://dx.doi.org/10.3989/redc.2014.2.1080

Abstract: Global research on mind-body therapies is analysed, by focussing on scholarly articles on three Eastern disciplines (yoga, tai chi and qi gong) and three procedures (meditation, breathing exercises and relaxation). The bibliographic research was done using the Scopus database. The search was limited to the biomedical areas and to the years 2006-2010. We have analysed 2,363 articles published by 959 different journals. They were written by 6,583 authors from 2,162 institutions in 65 countries. Indicators of scientific productivity and impact were calculated for institutions, countries and subject areas, and the collaboration between authors and institutions was also determined. We have observed a progressive increase of publications, especially on yoga and meditation, particularly from universities in the US, India and China with a marked concentration in the areas of internal medicine, mental health and oncology.

Keywords: Mind-Body therapies; bibliometrics; scientific productivity; yoga; meditation; qi gong, tai chi.

Impacto científico en los artículos sobre aplicaciones terapéuticas de las prácticas orientales cuerpo-mente (2006-2010)

Resumen: Se analiza la investigación mundial sobre terapias cuerpo-mente, a través de los artículos publicados en revistas científicas sobre tres disciplinas orientales: yoga, tai chi y qi gong, y tres prácticas o procedimientos: la meditación, los ejercicios respiratorios y la relajación. La búsqueda bibliográfica se realizó en la base de datos Scopus y se limitó a las áreas biomédicas y al periodo 2006-2010. Se examinaron 2.363 artículos de 959 revistas diferentes, publicados por 6.583 autores pertenecientes a 2.162 instituciones de 65 países. Se calcularon los indicadores de productividad e impacto científico de las instituciones, países y áreas temáticas, así como la colaboración entre autores e instituciones. Se observa un aumento progresivo de las publicaciones, especialmente sobre el yoga y la meditación, sobre todo de las universidades de los EE.UU., India y China con una marcada concentración en las áreas de medicina interna, salud mental y oncología.

Palabras clave: Terapias cuerpo-mente; bibliometría; productividad científica; yoga; meditación; qi gong; tai chi.

1. INTRODUCTION

Complementary and alternative medicine (CAM) is a biomedical area that has received increasing attention in recent years in the richest countries of the world, as revealed by Perdiguero and Tosal (2007), and the use of this area has increased in recent decades (Harris et al., 2012). Simultaneously, research on CAM has increased and acquired a remarkable degree of specialisation to explain and evaluate the clinical and preventive applications of this group of therapies (Danell, 2012, Wang et al., 2012). Clinical journals on CAM have become part of numerous documentary collections. Specific descriptors have been included in specialised thesauri and categories, and the subject areas of the CAM have been consolidated to rank the production in major biomedical databases such as Medline (NCBI, 2012) and Journal Citation Reports (ISI Web of Knowledge, 2012).

Yoga, tai chi and qi gong, are Eastern disciplines that use meditation, breathing exercises and relaxation as resources, and we refer to them in our study as *Oriental Mind Body Therapies* (OMBT). The three disciplines, as well as the three practices or procedures, are included by the National Center for Complementary and Alternative Medicine (NCCAM) as individualised techniques in the group of mind-body therapies used in CAM. NCCAM describes the group of body-mind therapies that are used as practices centred on the interactions among the brain, mind, body and behaviours, with the purpose of using the mind to act on bodily functions and have a positive impact on health (NCCAM, 2012).

This complex frame of relations, which have been integrated into a diverse group of postures and gentle sweeping motions of low energy expenditure, give these disciplines a privileged place in the prevention and treatment of chronic diseases and generate a number of mysteries from the point of view of basic investigation as applied to the field of medicine (Büssing et al., 2012; Jahnke et al., 2010; Yang, 2007).

Interest in the growing use of CAM in the countries in which scientific medicine has become increasingly developed, and the substantial growth of research in this area have not been accompanied by bibliometric studies. No studies have examined the particular mind-body therapies discussed in this article. Davis (2011) studied all of the journals devoted to CAM in the Journal Citation Reports (JCR) between 2000 and 2008. Fu et al. (2012a) considered specific areas and disciplines of herbal medicine or acupuncture in studies of traditional Chinese medicine. Some studies have analysed the use of CAM in specific diseases such as AIDS (Huber and Gullion, 2003) or have focused on specific areas such as yoga (Khalsa, 2004). The studies that are most similar to ours are those of Raschetti et al. (2005), who examined the scientific articles on CAM published during the period 1997-2002, and Fu et al. (2011, 2012b), who analysed the production of science, international collaboration and impact through citations. Therefore, it is appropriate to focus on the group of oriental mind-body techniques to show the most relevant data on the subject and the role of Spanish production in this field.

The aim of this study is to quantify, through bibliometric indicators, the scientific activity in the area of CAM during the period 2006-2010. The specific objectives are focused on an analysis of scientific productivity, impact of journals, institutions and countries, collaboration between authors and institutions and relationships of interdisciplinary thematic areas. The analysis focuses on three Eastern disciplines, i.e., yoga, tai chi and qi gong, and on three practices or procedures, i.e., meditation, breathing exercises and relaxation.

2. MATERIAL AND METHODS

Bibliographic search

The bibliographic search was performed in the Scopus platform produced by Elsevier, on April 1st 2011, for the five-year period 2006-2010. Scopus has been preferred as a source for obtaining references over Medline and WoS for several reasons that support the objectives of this study. First, Scopus includes a broader collection of biomedical journals covering all of those in Medline as well as journals that are not included in Medline or WoS (Falagas et al., 2008a; Baykoucheva, 2010). Second, Scopus includes the institutional affiliations of all the authors of the papers, while Medline only offers a single institution, which is recognised as the address for correspondence. According to Costas et al., (2008), this feature produced losses of up 30% in the count of institutions. Other authors, such as Amat and Yegros-Yegros (2011), suggest that Medline is not a reliable source of bibliometric analysis. Finally, Scopus provides information on the citations received by the collected works and, according to Falagas, provides approximately 20% more coverage in the analysis of citations than does WoS (Falagas et al., 2008a; Jiménez-Contreras, 2004; Granda-Orive et al., 2013).

The search profile was designed using Medical Subject Headings (MeSH), the thesaurus of Medline, because it allows for the identification of specific terms and descriptors related to the object of the study. Searches using MeSH terms were preferred based on the experiences of previous authors who compared different search strategies in several databases (Leydesdorff and Opthof, 2013; Lundberg et al., 2006; Leydesdorff and Bensman, 2009; Bornmann and Leydesdorff, 2011; Hicks and Wang, 2011). The following terms were used: Yoga, Tai Ji, Qi Gong, Meditation, Relaxation Therapy and Breathing Exercise. Three synonyms

were included in the search: Qigong, Kung and Tai Chi. All of the terms were associated with the Boolean operator OR.

To restrict the results to biomedical studies, the search was limited to the areas of Medicine, Biochemistry, Psychology, Health Professions, Nursing, Neuroscience, Pharmacology, Microbiology, Immunology and Multidisciplinary. Similarly, the search was restricted to the human species by using the keyword "humans" through the "Refine Results" option of Scopus.

The search was conducted on articles and reviews, as well as letters, notes and editorials. A total of 3,435 records were retrieved, and they were reviewed and evaluated individually to reduce documentary noise and eliminate the non-relevant results. Most of the deleted records contained a search term in the field *Index Key Words*, but reading their abstract indicated that the records had no relation to the subject matter. Finally, after 1,072 records were removed, we were left with a file consisting of 2,363 records with which we compiled a relational database in *Microsoft Access* and the self-developed software *Bibliometrics.*

Standardisation of the information of the records

The information provided by the records from the bibliographic database contained errors and variations in the names of the authors and their affiliated institutions. A preliminary standardisation process of these fields was conducted, which is indispensable for obtaining more rigorous results in bibliometric studies. To minimise the errors, all of the signatures of the authors were reviewed with the aim of unifying the records. Each author was assigned a unique signature.

The same process was conducted with the institutional affiliations due to variants in their names and particularly because numerous articles included the name of two organisational subdivisions at different hierarchical levels of the same institution (e.g., Department, Division, School, Hospital, Institute, University).

We also standardised the journals in which documents had been published to detect duplications. Repetitions were found arising from two causes. First, different journals appeared in different registers with two different ISSNs, one corresponding to the paper version and another corresponding to the electronic version. In addition, some journals appeared with two different titles because they had changed their name during our period of study.

Determination of bibliometric indicators

The scientific productivity indicators calculated were the total number of articles published in the period 2006-2010, the article distribution by year of publication and document type and the total number of articles per journal, institution, country of editing journals and subject areas. Moreover, because indicators of impact have determined the number of citations received by authors, institutions and articles, this analysis included the number of hot papers (in this case, documents with more than 50 citations), the impact factor of the journals in the JCR and the quartile in which they were included. The citation data were calculated from the documents in the Scopus database. The number of citations obtained reflects the content of the database on the search date (1 April 2011). We preferred to use the IF of JCR as an alternative to SJR because IF is a widespread indicator that has been established and used by both researchers and evaluators of research (Falagas et al., 2008b). Many researchers use IF because of the simple and understandable methodology used in its calculation (Falagas et al., 2008b; Rossner et al., 2007)

3. RESULTS

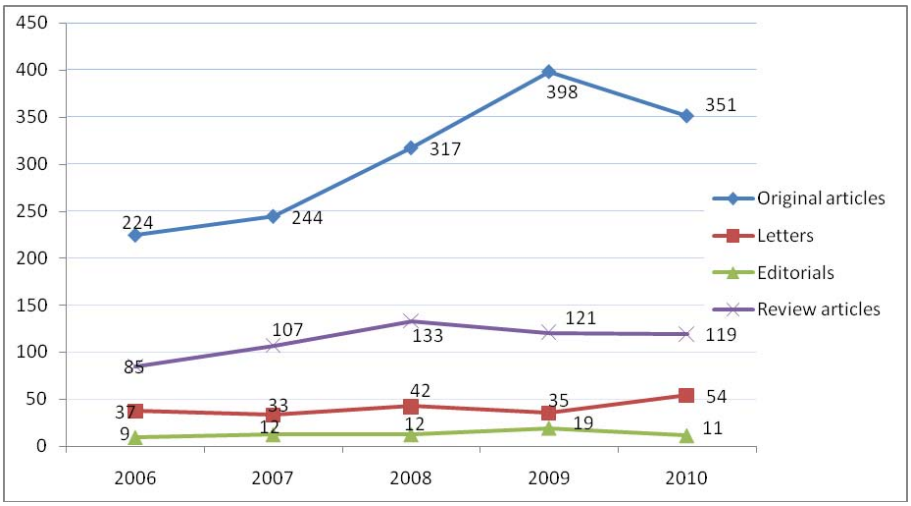
3.1. Annual evolution, type of articles, journals and languages

During the period 2006-2010, 2,363 articles were published about body-mind therapies. Of these articles, 1,534 (64.92%) were original articles, 565 (23.91%) were review articles, 201 (8.51%) were letters and 63 were (2.67%) editorials (figure 1).

The number of articles increased steadily from 2006 to 2010, especially the number of original articles, which rose from 224 in 2006 to 398 in 2009 and to 351 in 2010. Papers were published in a total of 959 different journals. A group of 34 journals published 10 or more articles (table 1); among these journals, the most productive were the *Journal of Alternative and Complementary Medicine* (n=99), *Explore: The Journal of Science and Healing* (n=42), *Cochrane Database of Systematic Reviews* (n=25) and *Complementary Therapies in Medicine* (n=24). These journals primarily belong to the following subject areas: Medicine general & internal (n=194 journals), Psychiatry (n=102), Neurosciences (n=64) and Oncology (n=53).In the area Integrative & complementary medicine (ICM), there are 27 journals. Regarding the country of publication, 52.09% of the papers belong to journals published in the US, 16.59% in the UK and 4.53% in the Netherlands. Spain stands out because of the small number of articles published on the topic of OMBT because only 30 records were identified, representing 1.26% of the total sample. In addition, these articles are scattered among different institutions, authors and regions, without a clear recognisable emerging research group in this area.

The *Journal of Alternative and Complementary Medicine* (n=507) leads the distribution of number of citations by title, followed by *Annals of Internal Medicine* (n=334), *Journal of Clinical Psychology* (n=275) and *Circulation* (n=252). The global

Figure 1. Annual evolution of published articles



distribution of citations is as follows: 23 journals received 100 or more citations, 102 journals received a single citation and 339 journals did not receive any citation in the period analysed. The relation of citations per article transforms the ranking again because it is headed by the *Annals of Internal Medicine* (c/a=167), followed by *Circulation* (c/a=126), *Assessment* (c/a=116) and *Cognitive Affective & Behavioral Neuroscience* (c/a=84). If the number of citations per article is considered only in journals that published at least 10 articles, the ranking is led by the *Journal of Clinical Psychology* (c/a=18.33), followed by *Alternative Therapies in Health and Medicine* (c/a=11.07) and *Behaviour Research and Therapy* (c/a=10.56).

In these more productive journals, the highest IF in the 2010 JCR was obtained by the *Cochrane Database of Systematic Reviews* (IF 6.186), followed by *Journal of Affective Disorders* (IF 3.740), *British Journal of Sports Medicine* (IF 3.545) and *Emotion* (IF 3.027). The highest impact factor was the one obtained by the *New England Journal of Medicine* (n=8 articles; IF 53.486), followed by *Lancet* (n=2; IF 33.633) and *Jama* (n=5; IF 30.011). A total of 334 journals had no IF in the 2010 JCR.

Of the 959 journals, 623 (72.37%) were included in the JCR. Of these journals,189 have published 548 papers and thus belong to the first quartile, and 179 journals have published 540 papers and belong to the second quartile. The journals of the first and second quartiles represent 59.07% of all journals in JCR and 38.38% of all journals included in the study.

Among the 20 first quartile journals with higher IF, the Medicine general & internal and Neurosciences areas predominated. Of the 24 journals in the ICM area, 11 are included in JCR, three of which are in the first quartile: *Alternative Medicine Review*, *Evidence-based Complementary and Alternative Medicine* and *BMC Complementary and Alternative Medicine*. The last two are part of the group of the most productive journals included in the study (Table I). The *Journal of Alternative and Complementary Medicine*, which is the most cited and productive journal in our study and has an IF of 1.498, ranks second in the second quartile.

3.2. Participating Countries

Table II shows the countries participating with more than 10 papers and citations. The US is in first place, with 34.73% of the articles and 54.61% of the citations, followed by the UK, with 8.85% of the articles and 9.65% of the citations and, with lower percentages, Germany and Australia, all with more than 100 published works. The Spanish contribution has been 39 papers (1.78%) and 129 citations (0.39%). The index of citations/article is also led by the United States (23.68), followed by Canada (23.53). In Spanish papers, this index is 3.31 citations per article.

3.3 Productivity and impact of institutions

The retrieved papers were signed by 2,162 different institutions in 65 different countries. Table III shows the 34 institutions with more than 15 published papers, which include Harvard Medical School (n=56), the US Department of Veterans Affairs (n=53), the University of Washington (n=42) and the University of California, Los Angeles (n=40). As can be observed, most of the centres are from the US. The first non-US institutions are Swami Vivekananda Yoga Anusandhana Samsthana University, India (n=38), and the University of Toronto, Canada (n=36).

Table I. Number of articles, citations, impact factor (IF), quartile and citations per article of the most productive journals

Journal	Subject Category	Country	Number of articles	% Articles	Number of citations	% Citations	IF	Quartile	Citations/article
Journal of Alternative and Complementary Medicine	Integrative & complementary medicine	US	99	4.19%	507	4.29%	1.498	2	5.12
Explore: The Journal of Science and Healing	Integrative & complementary medicine	US	42	1.78%	78	0.66%	0.795	4	1.86
Cochrane Database of Systematic Reviews	Medicine, general & internal	UK	25	1.06%	0	0%	6.186	1	0
Complementary Therapies in Medicine	Integrative & complementary medicine	UK	24	1.02%	133	1.13%	1.484	2	5.54
Focus on Alternative and Complementary Therapies	Integrative & complementary medicine	UK	23	0.97%	0	0%	-	-	0
Indian Journal of Physiology and Pharmacology	Physiology	India	23	0.97%	50	0.42%	-	-	2.17
Medicine and Sport Science	Medicine, general & internal	Switzerland	23	0.97%	82	0.69%	-	-	3.57
American Journal of Chinese Medicine	Integrative & complementary medicine; Medicine, general & internal	US	22	0.93%	105	0.89%	1.383	2	4.77
Integrative Cancer Therapies	Oncology; Integrative & complementary medicine	US	21	0.89%	115	0.97%	1.716	3	5.48
Bmc Complementary and Alternative Medicine	Integrative & complementary medicine	RU	18	0.76%	0	0.00%	2.195	1	0.00
Evidence-based Complementary and Alternative Medicine	Integrative & complementary medicine	RU	18	0.76%	143	1.21%	2.964	1	7.94
Journal of Bodywork and Movement Therapies	Integrative & complementary medicine; Public, environmental & occupational health; Orthopedics	US	17	0.72%	21	0.18%	-	-	1.24
MMW - Fortschritte der Medizin	Medicine, general & internal	Germany	17	0.72%	0	0%	-	-	0
Applied Psychophysiology Biofeedback	Psychology, clinical	US	16	0.68%	94	0.80%	1.346	3	5.88
Behaviour Research and Therapy	Psychology, clinical	RU	16	0.68%	169	1.43%	2.957	1	10.56
Alternative Therapies in Health and Medicine	Integrative & complementary medicine	US	15	0.63%	166	1.41%	1.215	3	11.07
Journal of Clinical Psychology	Psychology, clinical	US	15	0.63%	275	2.33%	1.612	2	18.33
Medical Hypotheses	Medicine, research & experimental	RU	15	0.63%	58	0.49%	1.389	3	3.87
Medical Science Monitor	Medicine, research & experimental	US	15	0.63%	81	0.69%	1.699	3	5.40
Archives of Physical Medicine and Rehabilitation	Rehabilitation; Sport sciences	US	14	0.59%	139	1.18%	2.254	1	9.93
Psycho-oncology	Oncology; Psychology	RU	14	0.59%	135	1.14%	2.874		9.64
Complementary Therapies in Clinical Practice	Integrative & complementary medicine; Public, environmental & occupational health; Nursing	Netherlands	12	0.51%	51	0.43%	-	-	4.25
Emotion	Psychology, experimental	US	12	0.51%	68	0.58%	3.027	1	5.67
Journal of the Society for Integrative Oncology	Integrative & complementary medicine; Oncology	Canada	11	0.47%	34	0.29%	-	-	3.09
Substance Abuse	Substance abuse	US	11	0.47%	21	0.18%	1.250	3	1.91
Advances in Mind-body Medicine	Medicine, general & internal; Psychiatry	US	10	0.42%	0	0%	-	-	0
British Journal of Sports Medicine	Sport sciences	RU	10	0.42%	33	0.28%	3.545	1	3.30
Epilepsy and Behavior	Behavioral sciences; Clinical neurology; Psychiatry	US	10	0.42%	36	0.30%	1.994	3	3.60
Holistic Nursing Practice	Nursing; Integrative & complementary medicine; Medicine, general & internal	US	10	0.42%	28	0.24%	-	-	2.80
Journal of Affective Disorders	Clinical neurology; Psychiatry	Netherlands	10	0.42%	101	0.85%	3.740	1	10.10
Journal of Clinical Nursing	Nursing	UK	10	0.42%	29	0.25%	1.228	2	2.90
Journal of Complementary and Integrative Medicine	Integrative & complementary medicine	US	10	0.42%	0	0%	-	-	0
Journal of Psychosomatic Research	Psychiatry	UK	10	0.42%	102	0.86%	2.842	2	10.20
Perceptual and Motor Skills	Psychology, experimental	US	10	0.42%	19	0.16%	0.492	4	1.90

Table II. Number of articles, Citations, and citations per article of the most productive countries

Country	Number of articles	% articles	Number of citations	% citations	Citations/article
US	761	34.73	18018	54.61	23.68
RU	194	8.85	3183	9.65	16.41
Germany	151	6.89	1304	3.95	8.64
Australia	103	4.70	1766	5.35	17.15
India	97	4.43	822	2.49	8.47
China	84	3.83	1024	3.10	12.19
Canada	83	3.79	1953	5.92	23.53
Italy	60	2.74	611	1.85	10.18
Taiwan	60	2.74	535	1.62	8.92
Netherlands	52	2.37	648	1.96	12.46
Japan	48	2.19	238	0.72	4.96
France	45	2.05	131	0.40	2.91
South Korea	43	1.96	272	0.82	6.33
Spain	39	1.78	129	0.39	3.31
Israel	31	1.41	167	0.51	5.39
Sweden	30	1.37	234	0.71	7.80
Turkey	24	1.10	124	0.38	5.17
Brazil	22	1.00	65	0.20	2.95
Poland	22	1.00	32	0.10	1.45
Switzerland	19	0.87	372	1.13	19.58
Norway	19	0.87	109	0.33	5.74
Belgium	18	0.82	177	0.54	9.83
New Zealand	15	0.68	162	0.49	10.80
Denmark	14	0.64	156	0.47	11.14
Austria	13	0.59	195	0.59	15.00
Thailand	12	0.55	72	0.22	6.00
Iran	10	0.46	23	0.07	2.30

Universities in the US also stand out by the number of citations received, including the US Department of Veterans Affairs (n=459), the University of California, San Diego (n=434), the University of California, Los Angeles (389) and Emory University (n=380). Among the non-US universities, two Canadian universities stand out: the University of Toronto (n=348) and the University of Calgary (n=340).

The index of citations/article in the most productive universities is led by the University of Calgary, Canada (c/a=20), followed by the University of California, San Diego (c/a=18.87) and the University of Massachusetts (c/a=15.58).

Regarding the number of institutions by paper, 41.35% of the papers were signed by a single institution, 27.51% by two and 12.78% by three. In 156 papers, no signatory institution was identified (6.64%). The average number of institutions by paper was 1.98 (SD=1.69).

3.4. Hot papers

Finally, we present the list of the 16 papers that received more than 50 citations during the five years analysed (table IV). The most frequently cited article (n=252 citations) was *Evidence-based guidelines for cardiovascular disease prevention in women*, published in 2007 in the journal *Circulation* by a large group of 33 authors from several US institutions, including the American Heart Association, the American Academy of Family Physicians, the American Medical Women's Association and the Centers for Disease Control and Prevention. The second most frequently cited article, which was published in 2007 in the *Annals of the Internal Medicine* (n=209), was led by Chou (Oregon Health & Science University, Portland, OR, USA) and has as partners the Clinical Efficacy Assessment Subcommittee of the American College of Physicians, the American College of Physicians and the American Pain Society Low Back Pain Guidelines Panel. In this case, the article presents clinical practice guidelines for the diagnosis and treatment of low back pain. The third article (n=194) was published in 2006 in the journal *Assessment* by a group of researchers from the University of Kentucky, entitled *Using Self-Report Assessment Methods to Explore Facets of Mindfulness*.

3.5. Subject areas

Table V shows the global distribution of articles by subject area and the number of journals in each area. The first place is for the Medicine general & internal area (MGI), with 450 papers

Table III. Number of articles, citations, and citations per article of the most productive institutions

Institution	Country	Number of articles	% articles	Citations	% citations	Citations/ article
Harvard Medical School	US	56	2.37%	316	2.68%	5.64
U.S. Department of Veterans Affairs	US	53	2.24%	459	3.89%	8.66
University of Washington	US	42	1.78%	280	2.37%	6.67
University of California Los Angeles	US	40	1.69%	389	3.29%	9.73
University of Pennsylvania	US	39	1.65%	357	3.02%	9.15
SwamiVivekananda Yoga Anusandhana Samsthana University	India	38	1.61%	202	1.71%	5.32
University of Toronto	Canada	36	1.52%	348	2.95%	9.67
University of California San Francisco	US	35	1.48%	336	2.84%	9.60
University of Texas	US	34	1.44%	115	0.97%	3.38
University of North Carolina	US	28	1.18%	305	2.58%	10.89
University of Sydney	Australia	28	1.18%	228	1.93%	8.14
Chinese University of Hong Kong	China	27	1.14%	101	0.85%	3.74
Universities of Exeter and Plymouth	RU	27	1.14%	158	1.34%	5.85
Emory University	US	25	1.06%	380	3.22%	15.20
University of Wisconsin	US	25	1.06%	268	2.27%	10.72
University of California San Diego	US	23	0.97%	434	3.67%	18.87
Columbia University	US	23	0.97%	93	0.79%	4.04
Stanford University	US	23	0.97%	225	1.90%	9.78
University of London	RU	22	0.93%	181	1.53%	8.23
Patanjali Yogpeeth	India	21	0.89%	43	0.36%	2.05
Duke University	US	20	0.85%	206	1.74%	10.30
University of British Columbia	Canada	20	0.85%	141	1.19%	7.05
University of Arizona	US	20	0.85%	130	1.10%	6.50
State University of New York	US	20	0.85%	92	0.78%	4.60
University of Pittsburgh	US	20	0.85%	143	1.21%	7.15
University of Massachusetts	US	19	0.80%	296	2.51%	15.58
Hong Kong Polytechnic University	China	19	0.80%	136	1.15%	7.16
Mayo Clinic, Rochester	US	19	0.80%	62	0.52%	3.26
Oregon Health and Science University	US	18	0.76%	269	2.28%	14.94
Istituto Di Ricovero e Cura a Carattere Scientifico (IRCCS)	Italy	18	0.76%	76	0.64%	4.22
University of New South Wales	Australia	18	0.76%	145	1.23%	8.06
University of Medicine and Dentistry of New Jersey	US	17	0.72%	192	1.63%	11.29
University of Melbourne	Australia	17	0.72%	152	1.29%	8.94
University of Calgary	Canada	17	0.72%	340	2.88%	20

(19.04%) and 194 journals (20.23%), followed by the ICM area, with 373 papers (15.79%) and 27 journals (2.82%). These are followed by the clinical areas of Psychiatry, Clinical psychology, Oncology, Rehabilitation and Neurology. Among the non-clinical areas, Nursing, Neurosciences and Public environmental and occupational health were notable, as were the non-biomedical areas of Sport sciences and various areas of psychology.

Table IV. Hot papers

Authors	Title	Source	Number of citations
Mosca L, Banka CL, Benjamin EJ, Berra K, Bushnell C, Dolor RJ, et al.	Evidence-based guidelines for cardiovascular disease prevention in women: 2007 update	*Circulation* 2007; 115:1481-501	252
Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, et al.	Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society	*Ann Intern Med* 2007; 147478-91	209
Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L	Using self-report assessment methods to explore facets of mindfulness	*Assessment* 2006; 13:27-45	194
Cahn BR, Polich J	Meditation states and traits: EEG, ERP, and neuroimaging studies	*Psychol Bull* 2006; 132:180-211	130
Chou R, Huffman LH; American Pain Society; American College of Physicians	Nonpharmacologic therapies for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline	*Ann Intern Med* 2007; 147:492-50	125
Shapiro SL, Carlson LE, Astin JA, Freedman B	Mechanisms of mindfulness	*J Clin Psychol* 2006; 62:373-86	114
Douglas G, Higgins B, Barnes N, Boyter A, Burge S, Cates C, et al.	British guideline on the management of asthma: A national clinical guideline	*Thorax* 2008; 63	85
Jha AP, Krompinger J, Baime MJ	Mindfulness training modifies subsystems of attention	*Cogn Affect Behav Neurosci* 2007; 7:109-19	84
Lutz A, Slagter HA, Dunne JD, Davidson RJ	Attention regulation and monitoring in meditation	*Trends Cogn Sci* 2008; 12:163-9	82
Brefczynski-Lewis JA, Lutz A, Schaefer HS, Levinson DB, Davidson RJ	Neural correlates of attentional expertise in long-term meditation practitioners	*Proc Natl Acad Sci USA* 2007; 104:11483-8	71
Farb NA, Segal ZV, Mayberg H, Bean J, McKeon D, Fatima Z, Anderson AK	Attending to the present: Mindfulness meditation reveals distinct neural modes of self-reference	*Soc Cogn Affect Neurosci* 2007; 2:313-22	70
Tang YY, Ma Y, Wang J, Fan Y, Feng S, Lu Q, Yu Q, Sui D, Rothbart MK, Fan M, Posner MI	Short-term meditation training improves attention and self-regulation	*Proc Natl Acad Sci USA* 2007;104:17152-6	66
Jain S, Shapiro SL, Swanick S, Roesch SC, Mills PJ, Bell I, Schwartz GE	A randomized controlled trial of mindfulness meditation versus relaxation training: effects on distress, positive states of mind, rumination, and distraction	*Ann Behav Med* 2007;33(1):11-21	65
Bowen S, Witkiewitz K, Dillworth TM, Chawla N, Simpson TL, Ostafin BD, Larimer ME, Blume AW, Parks GA, Marlatt GA	Mindfulness meditation and substance use in an incarcerated population	*Psychol Addict Behav* 2006;20:343-7	62
Grady, D	Management of menopausalsymptoms	*N Engl J Med* 2006; 355:2338-47	61
Carlson LE, Speca M, Faris P, Patel KD	One year pre-post intervention follow-up of psychological, immune, endocrine and blood pressure outcomes of mindfulness-based stress reduction (MBSR) in breast and prostate cancer outpatients	*Brain Behav Immun* 2007; 21(8):1038-49	61

3.6. Collaboration between authors and institutions

The annual evolution of authors per paper index over the period is shown in Figure 2. The index rose steadily during the 5-year study period, from 3.31 authors per paper in 2006 to 3.89 in 2010, although the trend stabilised in the last two years. The average number of authors per paper during the period was 3.65, with a standard deviation of 2.71.

Regarding institutional collaboration, most of the documents have been published as collaborations between institutions in the same country (n=1,142 papers, 48.33%), while collaborations between

Table V. Distribution by subject category and number of articles and journals

Subject category	Number of articles	% articles	Number of journals	% journals
Medicine, General & Internal	450	19.04	194	20.23
Integrative & Complementary Medicine	373	15.79	27	2.82
Psychiatry	250	10.58	102	10.64
Psychology, Clinical	149	6.31	44	4.59
Oncology	141	5.97	53	5.53
Nursing	135	5.71	52	5.42
Clinical Neurology	125	5.29	44	4.59
Rehabilitation	125	5.29	49	5.11
Neurosciences	120	5.08	64	6.67
Public, Environmental & Occupational Health	114	4.82	54	5.63
Geriatrics and Gerontology	80	3.39	33	3.44
Psychology	65	2.75	21	2.19
Sport Sciences	57	2.41	18	1.88
Obstetrics & Gynecology	54	2.29	28	2.92
Orthopedics	53	2.24	15	1.56
Rheumatology	48	2.03	22	2.29
Medicine, Research & Experimental	47	1.99	14	1.46
Cardiac & Cardiovascular Systems	46	1.95	24	2.50
Physiology	46	1.95	14	1.46
Health Care Sciences & Services	38	1.61	23	2.40
Psychology, Experimental	38	1.61	4	0.42
Pharmacology & Pharmacy	36	1.52	30	3.13
Pediatrics	35	1.48	28	2.92
Primary Health Care	34	1.44	12	1.25
Endocrinology & Metabolism	33	1.40	23	2.40
Anesthesiology	31	1.31	18	1.88
Respiratory System	29	1.23	18	1.88
Substance Abuse	29	1.23	13	1.36
Peripheral Vascular Disease	28	1.18	10	1.04
Psychology, Multidisciplinary	24	1.02	10	1.04
Surgery	22	0.93	20	2.09
Behavioral Sciences	21	0.89	9	0.94
Biochemistry & Molecular Biology	21	0.89	10	1.04
Otorhinolaryngology	21	0.89	15	1.56
Engineering, Biomedical	19	0.80	10	1.04
Immunology	17	0.72	12	1.25
Hematology	16	0.68	7	0.73
Urology & Nephrology	16	0.68	9	0.94
Nutrition and Dietetics	15	0.63	6	0.63
Gastroenterology & Hepatology	13	0.55	13	1.36
Health Policy & Services	13	0.55	9	0.94
Dermatology	11	0.47	10	1.04
Ophthalmology	11	0.47	8	0.83
Gerontology	10	0.42	6	0.63

institutions in different countries have produced 975 papers (41.26%). No type of collaboration was involved in 11.30% of the papers, i.e., these papers were signed by a single institution.

4. DISCUSSION

This study allowed us to quantify and characterise global research on OMBT published in biomedical journals and helped clarify the applications of OMBT in health and their place in contemporary medicine.

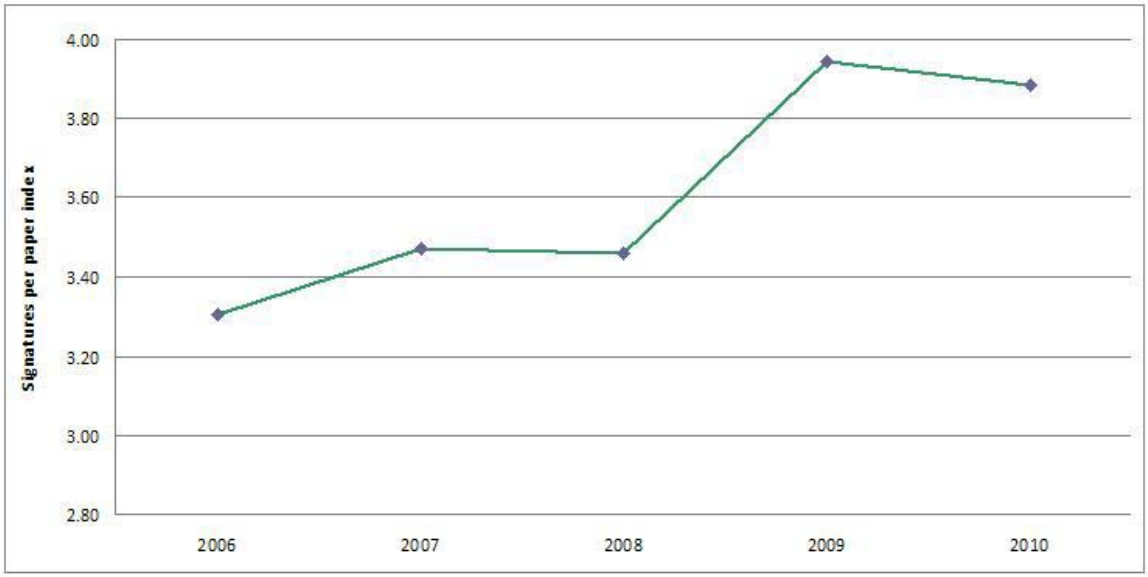
As we have shown, the number of articles increased progressively during the period under review, in line with the growth of biomedical research observed in CAM in other bibliometric studies (Danell and Danell, 2007; Danell, 2012; Fu, 2011; Han and Ho, 2011; Li et al., 2011; Wang et al., 2012). Particularly striking is the dispersion of publications in clinical journals from other subject areas, among them and predominantly, Medicine general & internal, Psychiatry, Neurosciences, Public health and Oncology, which suggests a great crosswise character in OMBT medical applications and a progressive penetration of these disciplines in contemporary medicine, as reflected in some of the most recent systematic reviews (Babbar et al., 2012; Meyer et al., 2012; Monshat and Castele, 2012; Ng et al., 2012; Schleicher et al., 2012; Vancampfort et al., 2012).

Additionally, 2.82% of all journals in which the papers were published belonged to the area of ICM, compared with 20.23% and 10.64% belonging to the areas of Medicine general & internal and Psychiatry, respectively. Equivalent studies on acupuncture follow this trend, and the number of publications in biomedical journals exceed those in the journals in the ICM area (Danell and Danell, 2011).

This datum could be explained by the short history of CAM within modern medicine. As stated by Whorton, the beginnings of the inclusion of CAM in contemporary medicine occurred around 1980 in the UK and around 1990 in the US (Whorton, 2006). Though Medline introduced this category of journals in 1975, journals such as the *Journal of Complementary and Alternative Medicine*, *Alternative Medicine Review*, *Complementary and Alternative Medicine* and *Evidence-based Complementary and Alternative Medicine*, published their first papers in 1995, 1996, 2000 and 2004, respectively (Danell and Danell, 2007; 2009). However, the first issue of *The American Journal of Chinese Medicine* was published in 1973. Meanwhile, journals in the subject area of Medicine general & internal often have long histories and have been incorporated into databases for a longer time span, such as the *New England Journal of Medicine*, *Lancet* and *Jama*, which have been published since the nineteenth century.

The slow and recent integration of OMBT into conventional medicine and the traditional interpretations of their effects on health, coming from paradigms that do not always follow the scientific method, can cause ignorance and reluctance to integrate OMBT into both clinical practice and scientific publication. These circumstances may explain both the small number of journals in the ICM area observed in our study and the fact that 339 journals contain papers that have

Figure 2. Annual evolution of authors per paper index



not received a single citation. These circumstances could also explain why the journal *Cochrane Database of Systematic Reviews*, which is the most productive in the Medicine general & internal area with 25 papers and an IF of 6.186, has not received any citation in Scopus. This phenomenon could possibly be explained by both the content of the papers, due to the abovementioned reasons, and their short history. Of the 25 reviews, 20 were published between 2008 and 2010 and 5 in 2007, and their topics relate to the application of relaxation techniques, tai chi, yoga, exercise and non-pharmacological treatments for different health problems. As noted, 339 journals received no citations, of which 139 were included in JCR; their IF were distributed from 0.034 to 21.952. Eighty-nine journals exceeded the IF value of 1.000. The great dispersion observed, in this case as related to IF, could be another reason for the lack of citations. Another factor to consider is the observed increase in publications during the last year of the present study, which means a shorter time of exposure.

The three journals with higher IF are the *New England Journal of Medicine* (IF 53.486), *Lancet* (IF 33.633) and *Jama* (IF 30.011), all of which belong to the Medicine general & internal area. Of the 27 journals in the ICM area, only 14 are included in JCR, and those with a higher IF are *Alternative Medicine Review* (IF 3.571), *Evidence-based Complementary and Alternative Medicine* (IF 2.964)*, BMC Complementary and Alternative Medicine* (IF 2.195) and the *Journal of Alternative and Complementary Medicine* (IF 1.498). Despite the relatively low IF of the journals in the ICM area, which can be explained in part by the abovementioned reasons, a remarkable degree of interest in OMBT can be observed in biomedical studies, considering that a total of 314 papers were published in 120 journals that did not belong to the ICM area and had an IF higher than that of *Alternative Medicine Review*, the journal with the highest IF in the ICM area.

Among the subject areas of the 34 most productive journals, four main groups can be distinguished. The most important is the area ICM, which included 342 of the 628 papers identified in these 34 journals. In the second group, there are the subject areas of medicine and oncology (Medicine general & internal; Medicine research & experimental; Oncology) (n=183). The third group includes journals in the areas of mental and behavioural disorders (Behavioral sciences; Psychiatry; Psychology clinical; Psychology experimental, Substance abuse) (n=134). In the fourth group, document production is dispersed among areas such as Nursing (n=32), Public, environmental & occupational health (n=29), Sport sciences (n=24) and Physiology (23). In this group of more productive journals, the tendencies observed in the analysis of all of the journals are reverted, with a concentration of articles in the ICM area that approximates those in the internal medicine, oncology and mental health areas. Articles about CAM published in journals from other medical specialties have been observed in other bibliometric studies (Danell and Danell, 2011; Han and Ho, 2011), and this is evidence of both the interdisciplinary nature of the area and the interactions of these specialties with ICM.

The most productive journal is the *Journal of Alternative and Complementary Medicine*, followed by *Explore*: *The Journal of Science and Healing*. The most cited papers in the most productive group belong to the *Journal of Alternative and Complementary Medicine* (507 citations), followed by the *Journal of Clinical Psychology* (275 citations).

In the same group and considering the IF of the journals in the area of ICM, behind the *Cochrane Database of Systematic Reviews*, there are the *Journal of Affective Disorders* and the *British Journal of Sports Medicine*. The largest number of citations per paper corresponds to the *Journal of Clinical Psychology* (18.33), followed by *Alternative Therapies in Health and Medicine* (11.07) and *Behaviour Research and Therapy* (10.56). The *Journal of Alternative and Complementary Medicine* is the most productive and most cited journal. However, in relation to other indicators such as the IF and citations per article, the journals in the area of ICM are dominated by the journals in the areas of medicine and psychology. More than half of the journals belong to the first and second quartiles of the JCR.

As in other areas of medicine, universities in the US lead the world production of articles, although in this case, some Asian institutions also stand out. This is explained by the oriental roots of the subjects studied and is the case in other bibliometric studies related to CAM (Fu, 2011; Han and Ho, 2011). Nevertheless, in a recent study published in the *American Journal of Chinese Medicine* (Li et al., 2011) the number of articles from Chinese authors has exceeded that of authors from United States since 2008. Among the US institutions the 51 centres that belong to the Consortium of Academic Health Centers for Integrative Medicine (CAHCIM, 2013) stand out. Harvard Medical School is the institution with the largest number of papers (n=56), followed by the US Department of Veterans Affairs (n=53), although the latter is ranked first in the number of citations (n=459). In short, the institutional production analysis suggests a complex net of interactions among centres, institutions and universities in the study of integrative medicine that is beyond the scope of the present study.

Regarding the *Hot Papers*, papers on meditation and yoga are distinguished by their content. Articles on meditation have received 57.71% of the total citations in this group, in which there are a notable number of papers on neuroscience that study the effects of meditation. Clinical guidelines related to cardiovascular risk, back pain, asthma

and an article on the management of menopausal symptoms received the remaining citations (42.28%). It is remarkable that all of the articles analysed contain a reference to the application of yoga in their therapeutical sections. The two most cited articles are two clinical guidelines: one of these articles concerns the prevention of cardiovascular disease in women, and the other discusses the diagnostic and treatment of back pain (citations=209).

Among the study's limitations, it should be noted that the articles on OMBT published in non-indexed journals in Scopus have not been considered, though this limitation is minimised by the extensive coverage of this database. However, given the prevalence of papers in English in Scopus, we might have omitted articles written by Eastern authors published in journals in other languages (Falagas et al., 2008). Furthermore, the existence of Eastern authors in a considerable number of the papers could have increased the existence of errors in the standardisation of author names and institutions, something that has been minimised through a careful process of standardisation. Another limitation that must be considered is that there has been an increase in the number of papers over the last three years; therefore, the possibility for these articles to be cited is lower, which could increase the number of papers that are not cited. Finally, the familiar limitations of IF, which have been discussed widely in the literature (Aleixandre-Benavent et al., 2007; Bordons and Zulueta, 1999; Bordons et al., 2002; Caballero-Uribe et al., 2006; González-Alcaide et al., 2012), should also be considered.

The most important conclusions are the following: a) there has been a progressive increase in the publications about OMBT in the biomedical area, which supports the scientific interest in OMBT, especially yoga and meditation; b) the papers from US universities predominate, and there is an outstanding participation of Indian and Chinese institutions; c) the papers are dispersed among a large number of biomedical journals, with a marked concentration occurring in the areas of internal medicine, mental health and oncology; and d) in the most productive group of journals, those belonging to the ICM area are publishing a greater number of documents. Future studies in this area could identify co-authorship networks and institutional collaborations, determine the health problems to which OMBT are applied and verify whether the current trends described in this study are maintained in forthcoming years.

5. ACKNOWLEDGEMENTS

We are thankful to the Medicine Department, University of Lleida, for their participation in the Research Project from which this study derives.

Source of support: The study was sponsored by National Institute of Physical Education of Catalonia (Programa de Promoció de la Recerca i de la Innovació Docent 2012). Role of the funding source: the writing of the manuscript (translation). Translated by American Journal Experts (ED53-CD6D-08CA-7BCC-CD4C).

Non-conflict of interest.

6. REFERENCES

Aleixandre-Benavent, R.; Valderrama-Zurián, J.C.; González-Alcaide, G. (2007). El factor de impacto de las revistas científicas: limitaciones e indicadores alternativos. *El profesional de la información,* vol. 16 (1), 4-11. http://dx.doi.org/10.3145/epi.2007.jan.01

Amat, C.B.; Yegros-Yegros, A. (2011). Medline no es una fuente fiable de análisis bibliométricos. *Anuario Thinkepi*, vol. 5, 223-229.

Babbar, S.; Parks-Savage, A.C.; Chauhan, S.P. (2012). Yoga during pregnancy: a review. *American Journal of Perinatology*, vol. 29 (6), 459-464. http://dx.doi.org/10.1055/s-0032-1304828

Baykoucheva, S. (2010). Selecting a Database for Drug Literature Retrieval: A Comparison of MEDLINE, Scopus, and Web of Science. *Science & Technology Libraries*, vol. 29, 276-288. http://dx.doi.org/10.1080/0194262X.2010.522946

Bensman, S. J.; Leydesdorff, L. (2009). Definition and Identification of Journals as Bibliographic and Subject Entities: Librarianship vs. ISI Journal Citation Reports (JCR) Methods and their Effect on Citation Measures. *Journal of the American Society for Information Science and Technology,* vol. 60 (6), 1097-1117. http://dx.doi.org/10.1002/asi.21020

Bordons, M.T.; Fernández, M.T.; Gómez, I. (2002). Advantages and limitations in the use of impact factor measures for the assessment of research performance in a peripheral country. *Scientometrics*, vol. 53 (2), 195-206. http://dx.doi.org/10.1023/A:1014800407876

Bordons, M.T.; Zulueta, M.A. (1999). Evaluación de la actividad científica a través de indicadores bibliométricos. *Revista española de cardiología*, vol. 52 (10), 790-800. http://dx.doi.org/10.1016/S0300-8932(99)75008-6

Bornmann, L.; Leydesdorff, L. (2011). Which cities produce excellent papers worldwide more than can be expected? A new mapping approach-using Google Maps-based on statistical significance testing. *Journal of the American Society for Information Science and Technology,* vol. 62 (10), 1954-1962. http://dx.doi.org/10.1002/asi.21611

Büssing, A.; Michalsen, A.; Khalsa, S.B.S.; Telles, S.; Sherman, K.J. (2012). Effects of Yoga on Mental and Physical Health: A Short Summary

of Reviews. *Evidence-Based Complementary and Alternative Medicine*, 7 pages. http://www.hindawi.com/journals/ecam/2012/165410 [Retrieved at: 22/09/2012]. http://dx.doi.org/10.1155/2012/165410

Caballero-Uribe, C.; Cuello, M.; Lubo, A.; Martínez, D.; Marriaga, A.; Ospino, F.; Palacio, S. (2006). El Factor de Impacto (FI) en la evaluación de las revistas biomédicas. *Salud Uninorte*, vol. 22 (2), 92-104.

CAHCIM. Consortium of Academic Health Centers for Integrative Medicine. http://www.imconsortium.org [Retrieved at: 9/01/2013].

Costas, R.; Moreno, L.; Bordons, M. (2008). Solapamiento y singularidad de MEDLINE, WoS e IME para el análisis de la actividad científica de una región en Ciencias de la Salud. *Revista Española de Documentación Científica*, vol. 31, (3), 327-343.

Danell, J.A.B. (2012). Representation and Negotiation of Complementary and Alternative Medicine: A Citation Context Analysis. *Science Communication*, vol. 34 (3), 299-333. http://dx.doi.org/10.1177/1075547011413140

Danell, J.A.B.; Danell, R. (2007). Spiritualised Medicine? A Bibliometric Study of Complementary and Alternative Medicine. *Proceedings 11th International Conference of the International Society for Scientometrics and Informetrics*, pp. 154-161. Madrid, España: CINDOC-CSIC.

Danell, J.A.B.; Danell, R. (2009). Publication activity in complementary and alternative medicine. *Scientometrics*, vol. 80 (2), 539-551. http://dx.doi.org/10.1007/s11192-008-2078-8

Danell, J.A.B.; Danell, R. (2011). Development of scientific publications on acupuncture. In: Saad, M. (editor), *Acupuncture: concepts and physiology*, pp. 219-234. Shanghai: InTech. http://www.intechopen.com/books/acupuncture-concepts-and-physiology/development-of-scientific-publications-on-acupuncture [Retrieved at: 4/07/2012].

Davis, M.A. (2011). An examination of CAM journals in the Journal Citation Reports. *Alternative Therapies in Health and Medicine*, vol. 17 (5), 38-42.

Falagas, M.E.; Pitsouni, E.I.; Malietzis, G.A.; Pappas, G. (2008a). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. *FASEB Journal*, vol. 22 (2), 338-342. http://dx.doi.org/10.1096/fj.07-9492LSF

Falagas, M.E.; Kouranos, V.D.; Arencibia-Jorge, R.; Karageorgopoulos, D.E. (2008b) Comparison of SCImago journal rank indicator with journal impact factor. *FASEB* Journal, vol. 22 (8), 2623-2628. http://dx.doi.org/10.1096/fj.08-107938

Fu, J.Y.; Zhang, X.; Zhao, Y.H.; Huang, M.H.; Chen, D.Z. (2011). Bibliometric analysis of complementary and alternative medicine research over three decades. *Scientometrics*, vol. 88 (2), 617-626. http://dx.doi.org/10.1007/s11192-011-0391-0

Fu, J.Y.; Zhang, X.; Zhao, Y.H.; Chen, D.Z.; Huang, M.H. (2012a). Global performance of traditional Chinese medicine over three decades. *Scientometrics*, vol. 90 (3), 945-958. http://dx.doi.org/10.1007/s11192-011-0521-8

Fu, J.Y.; Zhang, X.; Zhao, Y.H.; Tong, H.F.; Chen, D.Z.; Huang, M.H. (2012b). Scientific production and citation impact: a bibliometric analysis in acupuncture over three decades. *Scientometrics*, vol. 93 (3), 1061-1079. http://dx.doi.org/10.1007/s11192-012-0737-2

González-Alcaide, G.; Valderrama-Zurián, J.C.; Aleixandre-Benavent, R. (2012). The Impact Factor in non-English-speaking countries. *Scientometrics*, vol. 92 (2), 297-311. http://dx.doi.org/10.1007/s11192-012-0692-y

Granda-Orive, J.I.; Alonso-Arroyo, A.; García-Río, F.; Solano-Reina, S.; Jiménez-Ruiz, CA.; Aleixandre-Benavent R. (2013). Ciertas ventajas de Scopus sobre Web of Science en un análisis bibliométrico sobre tabaquismo. *Revista Española de Documentación Científica*, vol. 36, (2), e011. http://dx.doi.org/10.3989/redc.2013.2.941

Han, J.S.; Ho, Y.S. (2011). Global trends and performances of acupuncture research. *Neuroscience and Biobehavioral Reviews*, vol. 35 (3), 680-687. http://dx.doi.org/10.1016/j.neubiorev.2010.08.006

Harris, P.E.; Cooper, K.L.; Relton, C.; Thomas, K.J. (2012). Prevalence of complementary and alternative medicine (CAM) use by the general population: a systematic review and update. *International Journal of Clinical Practice*, vol. 66 (10), 924-939. http://dx.doi.org/10.1111/j.1742-1241.2012.02945.x

Hicks, D.; Wang, J. (2011). Coverage and overlap of the new social science and humanities journal lists. *Journal of the American Society for Information Science and Technology,* vol. 62 (2), 284-294. http://dx.doi.org/10.1002/asi.21458

Huber, JT; Gullion, J.S. (2003). Complementary and Alternative Medicine as Represented in the HIV/AIDS Body of Knowledge. A Bibliometric Analysis. Medical *Reference Services Quarterly*, vol. 22 (3), 23-32. http://dx.doi.org/10.1300/J115v22n03_03

ISI Web of Knowledge (2012). Journal Citation Reports. http://admin-apps.webofknowledge.com/JCR/JCR [Retrieved at: 4/07/2012].

Jahnke, R.; Larkey, L.; Rogers, C.; Etnier, J; Fang, L. (2010). A Comprehensive Review of Health Benefits of Qigong and Tai Chi. *American Journal of Health Promotion*, vol. 24 (6), e1-e25. http://dx.doi.org/10.4278/ajhp.081013-LIT-248

Jimenez-Contreras, E. (2004). La selección de la literatura científica en el ámbito biomédico: el factor de impacto. *Educación Médica*, vol.7 (supl. 2), 27-35.

Khalsa, SB. (2004). Yoga as a therapeutic intervention: a bibliometric analysis of published research studies. *Indian Journal of Physiology and Pharmacology*, vol. 48 (3), 269-85.

Leydesdorff, L; Opthof, T. (2013). Citation analysis with medical subject Headings (MeSH) using the Web of Knowledge: A new routine. *Journal of the American Society for Information Science and Technology*, vol. 64 (5), 1076-1080. http://dx.doi.org/10.1002/asi.22770

Li, X.Q.; Tao, K.M.; Zhou, Q.H.; Ling, C.Q. (2011). Scientific Publications from Mainland China, Taiwan, and Hong Kong in Integrative and Complementary Medicine Journals: A Ten-Year Literature Survey. *American Journal of Chinese Medicine*, vol. 39 (4), 639-649. http://dx.doi.org/10.1142/S0192415X11009081

Lundberg, J.; Fransson, A.; Brommels, M.; Skår, J.; Lundkvist, I. (2006). Is it better or just the same? Article identification strategies impact bibliometric assessments. *Scientometrics,* vol. 66 (1), 183-197. http://dx.doi.org/10.1007/s11192-006-0013-4

Meyer, H.B.; Katsman, A.; Sones, A.C.; Auerbach, D.E.; Ames, D.; Rubin, R.T. (2012). Yoga as an ancillary treatment for neurological and psychiatric disorders: a review. *Journal of Neuropsychiatry and Clinical Neurosciences*, vol. 24 (2), 152-64. http://dx.doi.org/10.1176/appi.neuropsych.11040090

Monshat, K.; Castele, D.J. (2012). Mindfullness training: an adjunctive role in the management of chronic illess? *Medical Journal of Australia*, vol. 196 (9), 569-571. http://dx.doi.org/10.5694/mja11.10974

NCBI. National Center for Biotechnology Information. http://www.ncbi.nlm.nih.gov [Retrieved at: 4/07/2012].

NCCAM. National Center for Complementary and Alternative Medicine. http://nccam.nih.gov/health/whatiscam [Retrieved at: 4/07/2012].

Ng, S.M.; Wang, C.W.; Ho, R.T.H.; Ziea, T.C.; Wong, V.C.W.; Chan, C.L.W. (2012). Tai chi exercise for patients with heart disease: a systematic review of controlled clinical trials. *Alternative Therapies in Health and Medicine*, vol. 18 (3), 16-22.

Perdiguero, E.; Tosal, B. (2007). Las medicinas alternativas y complementarias como recurso en los itinerarios terapéuticos de las mujeres: importancia en nuestro contexto. *Feminismo/s: revista del Centro de Estudios sobre la Mujer de la Universidad de Alicante*, vol. 10, 145-162.

Raschetti, R.; Menniti-Ippolito, F.; Forcella, E.; Bianchi, C. (2005). Complementary and Alternative Medicine in the Scientific Literature. *Journal of Alternative and Complementary Medicine*, vol. 11 (1), 209-212. http://dx.doi.org/10.1089/acm.2005.11.209

Rossner, M.; Van, E. H.; Hill, E. (2007). Show me the data. *Journal of Cell Biology*, vol. 179, 1091–1092. http://dx.doi.org/10.1083/jcb.200711140

Schleicher, M.M.; Wedam, L; Wu, G. (2012). Review of tai chi as an effective exercise on falls prevention in elderly. *Research in Sports Medicine*, vol. 20 (1), 37-58. Doi: 10.1080/15438627.2012.634697.

Vancampfort, D.; Vansteelandt, K.; Scheewe, T.; Probst, M.; Knapen, J.; De Herdt, A.; De Herdt, M. (2012). Yoga in schizophrenia: a systematic review of randomised controlled trials. *Acta Psychiatrica Scandinavica*, vol. 126 (1), 12-20. http://dx.doi.org/10.1111/j.1600-0447.2012.01865.x

Wang, C.Z.; He, H.; Wang, X.; Yuan, C.S. (2012). Trends in Scientific Publications of Chinese Medicine. *American Journal of Chinese Medicine*, vol. 40 (6), 1099-1108. http://dx.doi.org/10.1142/S0192415X12500814

Whorton, J. (2006). History of Complementary and Alternative Medicine. In: Cuellar, N.G. (editor) *Conversations in Comparative and Alternative Medicine*, pp. 2-3. Boston: Jones & Bartlett.

Yang, K. (2007). A Review of Yoga Programs for Four Leading Risk Factors of Chronic Diseases. *Evidence-Based Complementary and Alternative Medicine*, vol. 4 (4), 487-491. http://dx.doi.org/10.1093/ecam/nem154