A bibliometric analysis of acupuncture research in Taiwan from 1988 to 2017

Tsai-Feng Li, Yen-Ying Kung, Cheng-Hung Tsai, Shinn-Jang Hwang, Fang-Pey Chen

1. INTRODUCTION

Acupuncture is one of the forms of complementary and alternative medicine commonly categorized as a manipulative therapy.1 Due to its low cost, relative safety, prompt efficacy, and limited number of side effects, acupuncture has gained increasing popularity among patients worldwide and has been integrated into the primary health care systems of many countries.2,3 Acupuncture is believed to have originated in China and was thereafter continuously developed and codified in texts over the subsequent centuries, gradually becoming one of the standard therapies used in China and other parts of the world.4 The manipulation of acupuncture treatment consists of the insertion of thin needles into specific points on the body with the aim of rebalancing the Qi flow in the meridian system and restoring or balancing the inner organs. The methodology of acupuncture method is guided by oriental philosophical theories such as Yin-Yang duality, the five elements, and the Qi-blood circulation pathways (i.e., the meridian system).5 In modern times, acupuncture treatment consists of the insertion of thin needles into specific points on the body with the aim of rebalancing the Qi flow in the meridian system and restoring or balancing the inner organs. The highly cited articles discussed the possible pathways of acupuncture stimulation and efficacy, and received 1103 (15.2%) of the citations. The highly cited articles focused on the methods and devices, including thin needle insertion, electroacupuncture, auricular acupuncture, acupressure, cupping suction, and non-smoke moxibustion.6–9

Methods: Data on the scholarly literature from 1988 to 2017 were retrieved through Web of Science searches for the keywords acupunct*, acupoint*, electroacupunct*, electro-acupunct*, acupre*, auricular acupunc*, and auricular needle* in study titles.

Results: A total of 539 acupuncture-related articles published from 1988 to 2017 were identified and analyzed. The articles had an h-index of 58 and were cited in subsequent studies 7250 times, meaning that Taiwan ranked sixth in the production of such publications among countries/regions globally. Among those articles, 99 (18.4%) had no subsequent citations, six (1.1%) were highly cited (over 100 citations), and 141 (26.1%) were cited 4 to 10 times. The highly cited articles discussed the possible pathways of acupuncture stimulation and efficacy, and received 1103 (15.2%) of the citations.

Conclusion: The China Medical University in Taichung, Taiwan, was the most active educational institution in Taiwan in terms of acupuncture-related research. Professor Lin Jaung-Geng was the leading acupuncture-related researcher, having the most publications, citations, and the highest h-index value. These results provided a context for analyzing the strengths of the existing research and informing prospective strategies for future studies.

Keywords: Acupuncture; Bibliometric method; H-index; Traditional Chinese medicine; Web of Science
In summary, Taiwanese can easily and affordably receive clinical acupuncture treatments under the nation’s health insurance system. All of these conditions have resulted in the abundant utilization of acupuncture, as well as large amounts of acupuncture-related research, in Taiwan.

Bibliometrics, the application of mathematical and statistical analysis to publications, can be used to monitor the trends and others aspects of research regarding a given medical topic. Previous bibliometric studies, for example, have explored the trends in acupuncture publication activity by analyzing acupuncture-related articles indexed in the MEDLINE database and the Science Citation Index Expanded (SCI-E) database. However, an analysis of the citation impacts of acupuncture-related studies as well as the performance and trends in such research over the last few decades in Taiwan has not yet been reported.

This study thus aimed to analyze the studies on acupuncture published from 1988 to 2017, using a bibliographic analysis of articles indexed in the Web of Science, with citation data and the Hirsch index (h-index) being used as bibliometric tools to determine the performances of the research output.

2. METHODS

We analyzed any study related to the basic principles and/or applications of acupuncture. So, in this article, the term "acupuncture" refers to various forms of acupuncture, including manual acupuncture, electroacupuncture, auricular acupuncture, and acupoint pressure. The Web of Science is maintained by Thomson Scientific and plays a major role in the field of academic references, mainly due to its assignment of annual journal impact factors. For citation index studies and bibliometric research, the Web of Science is the preferred database and was thus used in this study. The data regarding the scholarly literature that was analyzed in this study were taken, however, from a number of databases, including the Web of Science, MEDLINE, BIOSIS Previews, KCI-Korean Journal, Russian Science Citation Index, and SciELO Citation Index databases. To identify documents on acupuncture, the keywords acupuncture*, acupuncture, electroacupuncture, auricular acupuncture, and acupoint were used to search title words that were retrieved.

We analyzed any study related to the basic principles and/or applications of acupuncture. So, in this article, the term "acupuncture" refers to various forms of acupuncture, including manual acupuncture, electroacupuncture, auricular acupuncture, and acupoint pressure. The Web of Science is maintained by Thomson Scientific and plays a major role in the field of academic references, mainly due to its assignment of annual journal impact factors. For citation index studies and bibliometric research, the Web of Science is the preferred database.

The number of documents published from 1988 to 2017, refined the country or territory to Taiwan, is noticeably reduced in the past 3 to 4 years (Fig. 1). For non-Asian countries, the annual number of published studies from China, South Korea, and Taiwan remained relatively consistent, whereas the number of studies from Japan over the past 5 to 6 years was noticeably reduced. For non-Asian countries, the annual number of published studies from China, South Korea, and Taiwan remained relatively consistent, whereas the number of studies from Japan over the past 5 to 6 years was noticeably reduced. For non-Asian countries, the annual number of published studies from China, South Korea, and Taiwan remained relatively consistent, whereas the number of studies from Japan over the past 5 to 6 years was noticeably reduced.

3. RESULTS

3.1. The performance of acupuncture-related publications in Taiwan

The number of documents published from 1988 to 2017 retrieved from all the databases in the ISI Web of Science using the methodology stated and without specifying any country was 20,650. After specifying the country of Taiwan, 539 documents were retrieved. Taiwan was the sixth most productive country overall (accounting for 2.6% of the 20,650 articles) with 7250 total papers (TP), an average of 13.45 CPP, and an h-index of 38 (ranking eighth among the 10 most productive countries in that regard). The leading countries in acupuncture research were the People’s Republic of China (with 4340 or 21.0% of the total articles), followed by the United States of America (2524 or 12.2%), South Korea (1182 or 5.7%), England (773 or 3.7%), and Germany (611 or 3.0%) (Table 1).

The USA had the highest h-index and total citation numbers, followed by England, China, and Germany. China published a large number of high-quality articles and was the most productive country overall, but it ranked ninth in terms of CPP. From China, 1162 of the articles were published in Chinese, and 617 of these articles were published by local journals in China in 2017, which is probably what led to China’s relatively low CPP rank.

The annual global productivity of acupuncture-related research increased steadily from the early 1990s, with a particular increase in the variety and amount of such research occurring from 2009 to 2010. In Asia specifically, the annual number of published studies from China, South Korea, and Taiwan remained relatively consistent, whereas the number of studies from Japan over the past 5 to 6 years was noticeably reduced.

3.2. Databases, types, languages, and research areas of the published acupuncture-related documents from Taiwan

Five hundred thirty-nine documents were retrieved from all of the databases of the ISI Web of Science, and the numbers of those documents found in each of the databases were 526 (97.59%) for the Web of Science database, 390 (72.36%) for the SCI Expanded database, and 390 (72.36%) for the KCI-Korean Journal database.

Table 1

<table>
<thead>
<tr>
<th>Countries/regions</th>
<th>TP (R)</th>
<th>% of total 20 650</th>
<th>SCP (R)</th>
<th>% of SCP</th>
<th>TC (R)</th>
<th>CPP (R)</th>
<th>CPY (R)</th>
<th>h-index (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China (mainland)</td>
<td>4340 (1)</td>
<td>21.0</td>
<td>3570 (1)</td>
<td>82.3 (4)</td>
<td>34 475 (2)</td>
<td>7.94 (9)</td>
<td>1112.10 (2)</td>
<td>63 (3)</td>
</tr>
<tr>
<td>USA</td>
<td>2524 (2)</td>
<td>12.2</td>
<td>1755 (2)</td>
<td>69.5 (7)</td>
<td>42 261 (1)</td>
<td>16.74 (4)</td>
<td>1363.26 (1)</td>
<td>92 (1)</td>
</tr>
<tr>
<td>South Korea</td>
<td>1182 (3)</td>
<td>5.7</td>
<td>925 (3)</td>
<td>78.3 (9)</td>
<td>11 870 (5)</td>
<td>10.04 (7)</td>
<td>423.93 (5)</td>
<td>48 (5)</td>
</tr>
<tr>
<td>England</td>
<td>773 (4)</td>
<td>3.7</td>
<td>496 (4)</td>
<td>64.2 (8)</td>
<td>15 710 (3)</td>
<td>20.32 (3)</td>
<td>523.67 (3)</td>
<td>65 (2)</td>
</tr>
<tr>
<td>Germany</td>
<td>611 (5)</td>
<td>3.0</td>
<td>370 (5)</td>
<td>61.4 (9)</td>
<td>13 006 (4)</td>
<td>21.29 (2)</td>
<td>464.50 (4)</td>
<td>58 (4)</td>
</tr>
<tr>
<td>Taiwan</td>
<td>539 (6)</td>
<td>2.6</td>
<td>450 (5)</td>
<td>83.5 (2)</td>
<td>7250 (6)</td>
<td>13.45 (4)</td>
<td>250.00 (6)</td>
<td>38 (8)</td>
</tr>
<tr>
<td>Japan</td>
<td>511 (7)</td>
<td>2.5</td>
<td>422 (6)</td>
<td>82.6 (9)</td>
<td>6614 (8)</td>
<td>12.94 (6)</td>
<td>213.35 (8)</td>
<td>39 (7)</td>
</tr>
<tr>
<td>Australia</td>
<td>347 (8)</td>
<td>1.7</td>
<td>205 (10)</td>
<td>59.1 (10)</td>
<td>2943 (9)</td>
<td>8.48 (8)</td>
<td>105.11 (9)</td>
<td>27 (9)</td>
</tr>
<tr>
<td>Brazil</td>
<td>340 (9)</td>
<td>1.6</td>
<td>307 (8)</td>
<td>90.3 (11)</td>
<td>1828 (10)</td>
<td>5.38 (10)</td>
<td>83.09 (10)</td>
<td>20 (10)</td>
</tr>
<tr>
<td>Sweden</td>
<td>288 (10)</td>
<td>1.6</td>
<td>207 (9)</td>
<td>71.9 (6)</td>
<td>6979 (7)</td>
<td>24.23 (1)</td>
<td>240.66 (7)</td>
<td>48 (5)</td>
</tr>
</tbody>
</table>

Equal numbers receive the same ranking number, and then a gap is left in the ranking numbers.

CPP = citations per paper; CPY = citations per year; h-index; R = rank; SCP = single country papers; TC = total citation; TP = total papers; % of SCP = percent of SCP of TP.

www.ejcmna.org
the MEDLINE database, 251 (46.57%) for the BIOSIS Previews database, and 6 (1.11%) for the KCI-Korean Journal Database. Most of the acupuncture documents from Taiwan were original articles (479, 88.87%), followed by others (207, 38.40%), clinical trials (155, 28.76%), review articles (48, 8.91%), and case reports (36, 6.68%). The primary language of the retrieved

**Fig. 1.** The growth in acupuncture-related publications from the top ten most productive countries/regions compared with the growth in global acupuncture-related research from 1988 to 2017. Each growth percentage indicates the number of publications per year over the total number of published acupuncture-related studies for the given region: (a) The top ten most productive countries/regions; (b) The Asian countries/regions in the top ten most productive countries/regions; (c) The non-Asian countries/regions in the top ten most productive countries/regions.
articles was English (538, 99.81%), followed by unspecified (5, 0.93%), Chinese (4, 0.74%), Thai (2, 0.37%), Korean (1, 0.19%), and French (1, 0.19%).

The research areas, or SCI subject categories, of the articles are listed in Table 2. Totals of 139 and 21 research areas were identified for the articles published globally and those published in Taiwan, respectively. The results showed that the acupuncture articles in the fields of integrative and complementary medicine, neurology, anesthesiology, and science and technology were generally more impressive in terms of having higher h-indices. Among these fields, the acupuncture publications from Taiwan maintained their ten positions. Meanwhile, Taiwan was also active in the relatively unpopular categories of acupuncture-related research, such as women's studies (3 of the total 17 articles or 17.64% of the total global publications), linguistics (1 of the total 7 articles or 14.3%), biotechnology applied microbiology (4 of the total 33 articles or 12.12%), and nursing (36 of the total 315 articles or 11.43%).

3.3. The number of citations and the most highly cited articles

As shown in Table 1, the total number of citations for the articles from Taiwan was 72,50, with the average number of citations per document being 13.45. From all of the databases in the SCI Web of Science, 9251 (44.8% of 9254 articles) of the articles published from 1988 to 2017 globally had no citations, including 1238 (13.4% of 9254 articles) and 847 (9.2% of 9234 articles) articles published in 2017 and 2016, respectively. Fifteen percent of the no-citation articles were published in the journal Zhongguo Zhen Jiu (“Chinese Acupuncture and Moxibustion”), a Chinese acupuncture journal that began publishing in 1981. About 6.8% of the no-citation articles were published in the journal Evidence-based Complementary and Alternative Medicine, which began publishing in 2004.

Table 2

<table>
<thead>
<tr>
<th>Research areas</th>
<th>Global TP</th>
<th>% of 20 650</th>
<th>Taiwan TP</th>
<th>% of 20 650</th>
<th>% of 539</th>
<th>Rank*</th>
<th>h-index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrative and complementary medicine</td>
<td>13,715</td>
<td>66.4</td>
<td>400</td>
<td>2.9</td>
<td>74.2</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>Neuroscience and neurology</td>
<td>7788</td>
<td>37.7</td>
<td>263</td>
<td>3.4</td>
<td>48.8</td>
<td>7</td>
<td>35</td>
</tr>
<tr>
<td>Anesthesiology</td>
<td>4223</td>
<td>20.5</td>
<td>215</td>
<td>3.4</td>
<td>39.0</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>General internal medicine</td>
<td>4150</td>
<td>20.1</td>
<td>151</td>
<td>3.1</td>
<td>28.0</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Health care services</td>
<td>3591</td>
<td>17.4</td>
<td>145</td>
<td>6.0</td>
<td>26.9</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>Pharmacology and pharmacy biochemistry</td>
<td>3088</td>
<td>15.0</td>
<td>141</td>
<td>3.6</td>
<td>26.2</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Biochemistry molecular biology</td>
<td>3068</td>
<td>14.9</td>
<td>128</td>
<td>3.6</td>
<td>23.7</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>Cardiovascular system and cardiology science</td>
<td>2665</td>
<td>12.9</td>
<td>113</td>
<td>4.2</td>
<td>21.0</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>Science technology other topics</td>
<td>2620</td>
<td>12.7</td>
<td>111</td>
<td>5.4</td>
<td>20.6</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>Behavioral sciences</td>
<td>2513</td>
<td>12.2</td>
<td>110</td>
<td>3.1</td>
<td>20.4</td>
<td>7</td>
<td>22</td>
</tr>
</tbody>
</table>

* Global rank in the numbers of such acupuncture-related publications.

www.ejcmra.org

4. DISCUSSION

This study analyzed the acupuncture-related documents from Taiwan from 1988 to 2017 in terms of their performance and citation impacts using bibliometric methods. The data were retrieved from the world’s scholarly literature found in all the databases accessed by Web of Science searches, in order to make sure that these indicators were analyzed more comprehensively.

Following the global trend in acupuncture-related research, the publication of acupuncture-related research in Taiwan was found to have grown year by year both in this study and other previous studies.18 The previous study from 2012 analyzed the acupuncture-related articles from Taiwan from 1988 to 2017. Citations received by these highly cited articles accounted for 1103 (15.2%) of the total citations.

3.4. Most active authors and the performances of different institutions in terms of acupuncture research

Professor Lin Jaung-Geng ranked first for researchers in Taiwan in terms of the number of publications with 109 articles (20.2% of 539 articles), in addition to having the most citations (1894, 26.1% of the total citations) and being ranked first in h-index (Table 4). Four of the top five most active authors work at China Medical University (CMU) in Taichung, Taiwan, while one works at the National Taipei University of Nursing and Health Science in Taipei, Taiwan.

Table 5 details the performances of the top five most productive institutions in Taiwan. According to Table 5, the CMU ranked first with 229 articles, followed by the Chang Gung Memorial Hospital and University with 78 articles and the National Taipei University (NTU) with 75 articles. Generally, of the top five most productive institutions, the number of acupuncture-related articles increased gradually, and there was a higher growth rate for CMU than for the other institutions in acupuncture-related research (Fig. 3).
last two countries in terms of single-country articles, with such studies accounting for 59.1% and 71.9% of their total publications, respectively (Fig. 1).

Table 2 shows that the global and Taiwan acupuncture-related articles were mainly published in the fields of integrative and complementary medicine, neuroscience and neurology, and anesthesiology. This analysis further indicated that pain, especially chronic pain, is the leading indicator for acupuncture-related studies with strong evidence-based approaches, as revealed in surveys from the United States and Europe. Furthermore, acupuncture neuroimaging research has identified a clear brain-based pathway for pain control and other acupuncture indications. Following the trend of global acupuncture-related research, nearly half of the acupuncture-related articles and the three most-cited articles from Taiwan were in the neuroscience research area (Tables 2 and 3).

From 1988 to 2017, 18.4% of the acupuncture-related articles from Taiwan had no citations, while the percentage of no-citation articles globally, in China, and the USA were 44.8%, 29.44%, and 29.7%, respectively. These results showed that the documents produced in Taiwan were relatively frequently cited. Citations received by the highly cited articles (i.e., those with over 100 citations) from Taiwan accounted for 1103 (15.2%) of the total citations, while the largest percentage of documents from Taiwan (141 or 26.1% of 539 articles) were cited 4 to 10 times (Fig. 2).

<table>
<thead>
<tr>
<th>Document</th>
<th>Journals</th>
<th>Year</th>
<th>Authors</th>
<th>TC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central nervous pathway for acupuncture stimulation: localization of process-</td>
<td>Radiology</td>
<td>1999</td>
<td>Wu, MT; Hsieh, JC; Xiong, J; Yang, CF; Pan, HB; Chen, YCI; Tsai, GC; Rosen, BR; Kwang, KK</td>
<td>318</td>
</tr>
<tr>
<td>Neuronal specificity of acupuncture response: a fMRI study with</td>
<td>Neuroimage</td>
<td>2002</td>
<td>Wu, MT; Sheen, JM; Chuang, KhS; Yang, PC; Chin, SL; Tsai, CY; Chen, CJ; Liao, JR; Lai, PH; Chu, KA; Pan, HB; Yang, CF</td>
<td>230</td>
</tr>
<tr>
<td>electroacupuncture</td>
<td>Neuroscience Letters</td>
<td>2001</td>
<td>Hsieh, JC; Tu, GH; Chen, FP; Chen, MC; Yeh, TC; Wu, YT; Liu, RS; Ho, LT</td>
<td>151</td>
</tr>
<tr>
<td>Activation of the hypothalamus characterizes the acupuncture stimulation</td>
<td>American Journal of Chinese Medicine</td>
<td>2008</td>
<td>Lin, JG; Chen, WL</td>
<td>149</td>
</tr>
<tr>
<td>at the analgesic point in human: a positron emission tomography study</td>
<td>Pain</td>
<td>2002</td>
<td>Lin, JG; Lob, MW; Wen, YR; Hsieh, CL; Tsai, SK; Sun, WZ</td>
<td>134</td>
</tr>
<tr>
<td>Acupuncture analgesia: a review of its mechanisms of actions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The effect of high and low frequency electroacupuncture in pain after lower</td>
<td>Journal of Clinical Oncology</td>
<td>2010</td>
<td>Crew, KD; Capodice, JL; Greenlee, H; Brafman, L; Fuentes, D; Awad, D; Tsai, WY; Hershcman, DL</td>
<td>121</td>
</tr>
<tr>
<td>abdominal surgery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Randomized, blinded, Sham-controlled trial of acupuncture for the manage-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ment of aromatase inhibitor-associated joint symptoms in women with</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>early-stage breast cancer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The two most-cited articles were related to the functional magnetic resonance imaging (fMRI) study of acupuncture mechanisms (Table 3). The third most-cited article used PET scanning to elucidate the role of the hypothalamus in mediating analgesic efficacy. Those scientists engaging in neuroimaging studies of acupuncture, such as Vitaly Napadow in the USA and Lijun Bai in China, cited these articles most frequently to support their own studies. At present, neuroimaging studies remain a hot topic for future investigations of clinically relevant outcomes associated with physiological responses to acupuncture stimulation.

The fourth and fifth most-cited articles from Taiwan discussed the pathways and mechanisms of acupuncture analgesia and were authored by Professor Lin Jaung-Geng from CMU. Founded in 1958, CMU was the first academic institution to provide both Chinese medicine and pharmacy programs to medical students in Taiwan. The Graduate Institute of Chinese Medical Science was set up in 1975, and a doctoral program has been provided since 1988. In 1989, they published their first two acupuncture-related articles in the American Journal of Acupuncture, and the Japanese Journal of Pharmacology. In 2005, CMU established the Graduate Institute of Acupuncture Science, the first specialized acupuncture research institute in Taiwan, which has been regarded as a major impetus for acupuncture research in Taiwan. Since then, CMU has remained the top producer of acupuncture-related research in Taiwan (Fig. 3).

In 1996, given the experiences of CMU, the school of Traditional Chinese Medicine at Chang Gung University (CGU) was established. However, the Chang Gung Memorial Hospital published its first acupuncture-related article in 1988 in the Journal of Urology. The predecessor of National Taiwan University was Taihoku (Taipei) Imperial University (TIU), which was founded by the Japanese government in 1928. After World War II and Taiwan's retrocession to Chinese Sovereignty in 1945, the school was reorganized and renamed “National Taiwan University (NTU).” While being the most prestigious university in Taiwan, NTU does not have a traditional medical institute/college. NTU has, however, participated in many acupuncture-related studies and published their first acupuncture article in 1988 in the field of animal science.

National Yang-Ming University (NYMU) and Taipei Veterans General Hospital (TVGH) are cooperative partners in TCM research, such that their acupuncture-related documents were counted together in this article. They introduced a master’s program in 1991 and a doctoral program in 1998. In 1992, NYMU published its first acupuncture-related article in the Journal of Urology. However, TVGH published its first acupuncture-related article in 1988 in the American Journal of Acupuncture, and published its first clinical study about needle fainting in 1990.

Taipei Medical University (TMU), also known as Taipei Medical College (TMC), was founded in 1960. No specific acupuncture research institute was established at the institution, but TMU did have a doctoral program in Chinese herbal medicine. TMU has three affiliated hospitals, which have departments of Chinese medicine and are actively engaged in the acupuncture-related research. They published their first acupuncture-related article in 2004 about the application of acupoints (sanfuji) in the American Journal of Chinese Medicine.
There were various limitations to this study. The Web of Science database began collecting citation information in 1988, and therefore articles published before 1988 were not included in the study. Moreover, while the Web of Science offers comprehensive biomedical literature databases, the numbers and citations of medical journals from various countries are still limited.

In conclusion, Taiwan has been active in the publication of acupuncture-related research, with the number of such publications increasing gradually over the years; however, researchers in Taiwan should engage in more international cooperation. The results of the present study provide a context for analyzing the strengths of existing acupuncture-related research and informing prospective strategies for further studies.

ACKNOWLEDGMENTS
The authors thank the Department of Family Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, for their support in terms of the statistical analyses.

REFERENCES