



Original Article

Hospice palliative care article publications: An analysis of the Web of Science database from 1993 to 2013

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Abstract

Background: Academic publications are important for developing a medical specialty or discipline and improvements of quality of care. As hospice palliative care medicine is a rapidly growing medical specialty in Taiwan, this study aimed to analyze the hospice palliative care-related publications from 1993 through 2013 both worldwide and in Taiwan, by using the Web of Science database.

Methods: Academic articles published with topics including “hospice”, “palliative care”, “end of life care”, and “terminal care” were retrieved and analyzed from the Web of Science database, which includes documents published in Science Citation Index-Expanded and Social Science Citation Indexed journals from 1993 to 2013. Compound annual growth rates (CAGRs) were calculated to evaluate the trends of publications.

Results: There were a total of 27,788 documents published worldwide during the years 1993 to 2013. The top five most prolific countries/areas with published documents were the United States (11,419 documents, 41.09%), England (3620 documents, 13.03%), Canada (2428 documents, 8.74%), Germany (1598 documents, 5.75%), and Australia (1580 documents, 5.69%). Three hundred and ten documents (1.12%) were published from Taiwan, which ranks second among Asian countries (after Japan, with 594 documents, 2.14%) and 16th in the world. During this 21-year period, the number of hospice palliative care-related article publications increased rapidly. The worldwide CAGR for hospice palliative care publications during 1993 through 2013 was 12.9%. As for Taiwan, the CAGR for publications during 1999 through 2013 was 19.4%. The majority of these documents were submitted from universities or hospitals affiliated to universities.

Conclusion: The number of hospice palliative care-related publications increased rapidly from 1993 to 2013 in the world and in Taiwan; however, the number of publications from Taiwan is still far below those published in several other countries. Further research is needed to identify and try to reduce the barriers to hospice palliative care research and publication in Taiwan.

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Keywords: end of life care; hospice palliative care; publications; terminal care; Web of Science

Conflicts of interest: The authors declare that they have no conflicts of interest related to the subject matter or materials discussed in this article.

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1. Introduction

Academic publications are important for developing a medical specialty or discipline. Peer-reviewed literature provides an evidence-based support for clinical practice and the knowledge base for quality clinical care.^{1,2} Exploration of the bibliographic databases can not only examine the publication progression of a related medical specialty or discipline but also the publication patterns.³

Hospice palliative care entails multidisciplinary medical approaches aiming at relief of pain and distressing symptoms by identification, assessment, and treatment of pain, physical, psychosocial, and spiritual problems to support the best possible quality of life for patients with serious life-threatening illness, and their families.^{2,4} The multidisciplinary approaches of hospice palliative care provided across different medical and nonmedical professions have built distinct and complex knowledge on this topic and led to various practices around the world.³

In Taiwan, hospice palliative medicine is a young medical discipline. From years of effort in the hospice palliative movement, there are increasing numbers of hospice palliative beds in hospitals,⁵ and increasing utilization of hospital hospice bed and home hospice care in Taiwan.⁶ Many professionals, including clinical hospice palliative care providers and researchers in schools, have published their clinical practice and research results; however, there is no study exploring the patterns and characteristics of these published articles in Taiwan and in other countries.

The Web of Science (WoS) is a research database officially inaugurated in 2004 by the Thomson Scientific and Health Care Corporation. The WoS database contains not only the affiliations of all authors, but also provides the citation numbers of published articles. The WoS provides access to the Thomson Reuter's multidisciplinary databases of bibliographic information such as the Science Citation Index Expanded (SCI-E), the Social Sciences Citation Index (SSCI), the Arts and Humanities Citation Index, and the Journal Citation Report (JCR).^{7–9} The WoS is a powerful web interface providing access to the citation databases. The aim of this study was to analyze the hospice palliative care research publications worldwide from 1993 to 2013 by searching the WoS database.

2. Methods

The WoS database was accessed through the Taipei Veterans General Hospital Library website on December 1, 2014. In the first stage, publications in the SCI-E and SSCI with titles containing “hospice”, “palliative care”, “end of life care”, or “terminal care” were identified. Then, we refined document types limited to articles, letters, reviews, proceedings papers, editorial materials, and notes. Thereafter, we obtained the numbers of publications from different countries/areas worldwide by years, institutes that published these documents, WoS subject categories, and journals that published these documents. In the second stage, we refined the countries to the

top publishing countries in Asia, including Japan, Taiwan, South Korea, China, and India.

Results from the first and second stages were expressed by descriptive analyses. Compound annual growth rates (CAGRs) were calculated both worldwide and in Taiwan using the formula: $[(\text{article numbers in 2013}/\text{article numbers in 1993})^{1/\text{number of years}}] - 1$.

This study was exempted from review by the Institutional Review Board because we obtained its data from the public open domain of the Taipei Veterans General Hospital Library website.

3. Results

Searching by document types from the WoS database including articles, letters, reviews, proceedings papers, editorial materials, and notes published in SCI-E and SSCI journals, we found a total of 27,788 published documents with topics of hospice or palliative care, or end-of-life care or terminal care, worldwide during the time frame 1993–2013. The top 10 most prolific countries/areas publishing documents were the United States (11,419 documents, 41.09%), England (3620 documents, 13.03%), Canada (2428 documents, 8.74%), Germany (1598 documents, 5.75%), Australia (1580 documents, 5.69%), the Netherlands (1119 documents, 4.03%), Italy (1038 documents, 3.74%), France (998 documents, 3.59%), Spain (795 documents, 2.86%), and Sweden (750 documents, 2.70%). Table 1 lists the 10 most prolific countries worldwide from 1993 to 2013. For document types, articles were the most common publication type (22,167 articles, 79.77%), followed by reviews (2730 review articles, 9.82%), editorial materials (1859 papers, 6.69%), proceeding paper (1172 papers, 4.22%), and letters (993 letters, 3.57%). During 1993 to 2013, Taiwan published 310 documents (1.12%) and ranked 16th worldwide. In Asia, the top five countries publishing documents on hospice palliative care were Japan (594 documents, 2.14%), Taiwan (310 documents, 1.12%), China (306 documents, 1.10%), South Korea (282 documents, 1.02%), and India (165 documents, 0.59%) (Table 2). For published document types from Taiwan, articles were the most common publication type (291 articles, 93.87%), followed by reviews (12 review articles, 3.87%), and proceeding papers (6 papers, 1.94%).

Table 1
Top 10 most prolific countries publishing hospice palliative care-related articles, 1993 to 2013.

Country	Articles published	Percent (%)
USA	11,419	41.09
England	3620	13.03
Canada	2428	8.74
Germany	1598	5.75
Australia	1580	5.69
Netherlands	1119	4.03
Italy	1038	3.74
France	998	3.60
Spain	795	2.86
Sweden	750	2.70

Table 2
Top five most prolific countries publishing hospice palliative care-related articles in Asia, 1993 to 2013.

Country	Articles published	Percent (%)
Japan	594	2.14%
Taiwan	310	1.12%
China	306	1.10%
South Korea	282	1.02%
India	165	0.59%

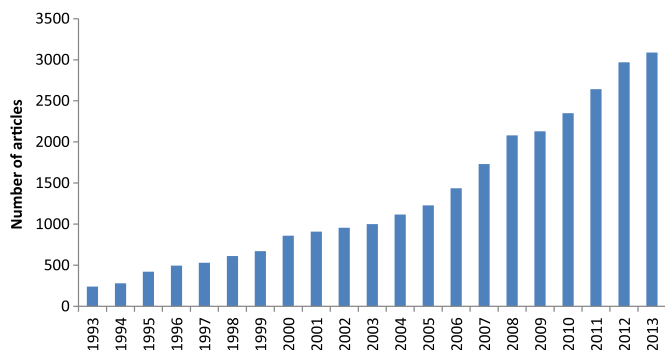


Fig. 1. Trend of annual total number of published hospice palliative care-related documents worldwide, 1993 to 2013.

There was an increasing trend in annual total document publication from 1993 to 2013 (Fig. 1), and the CAGR was 12.90% worldwide. For Taiwan, as there were no documents published during 1993 to 1995 and 1997 to 1998, we calculated the CAGR from 1999 to 2013. There was an increasing trend of document publication from 1999 to 2013, with a CAGR of 19.40% in Taiwan, whereas during the same period, the CAGR for worldwide hospice palliative care-related publications was 10.70%. During 1993 to 1999, 2000 to 2006, and 2007 to 2013, the worldwide article publication CAGRs were 15.82%, 7.60%, and 8.62%, respectively. For Taiwan, the publication CAGRs during 2000 to 2006 and 2007 to 2013, were 15.06% and 17.92%, respectively. As for other top publishing countries in Asia, we also found increasing trends of publication for Japan, China, and South Korea (Fig. 2).

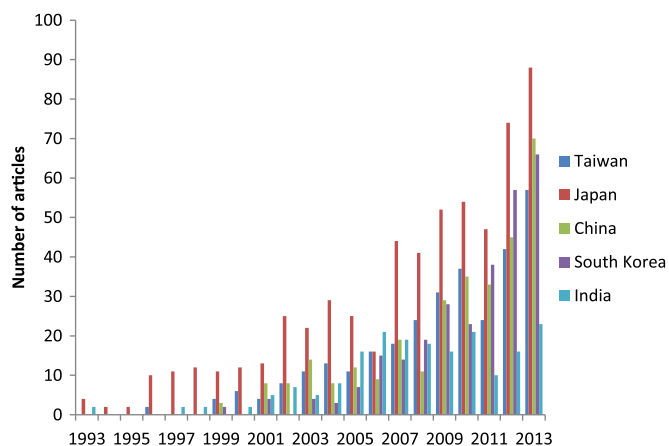


Fig. 2. Trends of hospice palliative care-related document publications among the top five countries in Asia, 1993 to 2013.

According to WoS subject categories, 27,788 documents were published in 232 categories. Among them, 7117 documents (25.61%) were published in the category of Health Care Sciences and Services, followed by the categories of Medicine, General and Internal (5882 documents, 21.17%), Oncology (4052 documents, 14.58%), Public Environmental Occupational Health (3214 documents, 11.57%), Nursing (2477 documents, 8.91%), Clinical Neurology (2143 documents, 7.71%), Health Policy Services (1612 documents, 5.80%), the Critical Care Medicine (1272 documents, 4.58%), Geriatrics and Gerontology (1040 documents, 3.74%), and Social Sciences Biomedical (1017 documents, 3.66%) (Table 3).

The top 10 journals publishing hospice palliative care-related documents were the Journal of Pain and Symptom Management (1324 documents, 4.77%), Palliative Medicine (1300 documents, 4.68%), Journal of Palliative Medicine (1259 documents, 4.53%), Supportive Care in Cancer (602 documents, 2.17%), Journal of Palliative Care (552 documents, 1.99%), American Journal of Hospice Palliative Medicine (427 documents, 1.54%), Critical Care Medicine (418 documents, 1.50%), Journal of Clinical Oncology (332 documents, 1.20%), Journal of the American Geriatrics Society (327 documents, 1.18%), and the British Medical Journal (245 documents, 0.88%) (Table 4). The top journals publishing hospice palliative care-related documents submitted from Taiwan were the Journal of Pain and Symptom Management (22 documents, 7.10%), Supportive Care in Cancer (20 documents, 6.45%), Cancer Nursing (16 documents, 5.16%), Journal of the Formosan Medical Association (13 documents, 4.19%), and Journal of Palliative Medicine (12 documents, 3.87%).

The top 10 institutions publishing hospice palliative care-related documents worldwide were Harvard University (574 documents, 2.07%), University of Toronto (513 documents, 1.85%), University of Washington (505 documents, 1.82%), University of California San Francisco (432 documents, 1.56%), King's College London (376 documents, 1.35%), Duke University (357 documents, 1.29%), University of Pittsburgh (338 documents, 1.22%), University of Alberta (314 documents, 1.13%), University of Pennsylvania (312 documents, 1.12%), and Yale University (268 documents,

Table 3
Top 10 categories of published hospice palliative care-related articles, 1993 to 2013.

WoS category	Articles published	Percent (%)
Health Care Sciences Services	7117	25.61
Medicine, General & Internal	5882	21.17
Oncology	4052	14.58
Public Environmental Occupational Health	3214	11.57
Nursing	2477	8.91
Clinical Neurology	2143	7.71
Health Policy Services	1612	5.80
Critical Care Medicine	1272	4.58
Geriatrics Gerontology	1040	3.74
Social Sciences Biomedical	1017	3.66

Table 4
Top 10 journals publishing hospice palliative care-related articles, 1993 to 2013.

Journal	Articles published	Percent (%)
Journal of Pain and Symptom Management	1324	4.77
Palliative Medicine	1300	4.68
Journal of Palliative Medicine	1259	4.53
Supportive Care in Cancer	602	2.17
Journal of Palliative Care	552	1.99
American Journal of Hospice Palliative Medicine	427	1.54
Critical Care Medicine	418	1.50
Journal of Clinical Oncology	332	1.20
Journal of the American Geriatrics Society	327	1.28
British Medical Journal	245	0.88

0.96%) (Table 5). In Taiwan, the top five institutions publishing hospice palliative care-related documents were National Taiwan University (84 documents, 27.10%), National Yang Ming University (71 documents, 22.90%), Chang Gung University (54 documents, 17.42%), National Taiwan University Hospital (46 documents, 14.84%), and Taipei Veterans General Hospital (34 documents, 10.97%) (Table 6).

4. Discussion

From 1993 to 2013, the United States was the most prolific country followed by England in terms of publishing hospice palliative care-related documents. The majority of documents were published in the Health Care Sciences and Services and General and Internal Medicine categories. There were increasing trends of hospice palliative care-related document publications worldwide, with a CAGR of 12.90%. In Taiwan, there was also an increasing trend of article publication from 1999 to 2013, with a CAGR of 19.40%, whereas for the same time frame, the worldwide CAGR was 10.70%. The majority of these documents were published by universities or hospitals affiliated to universities.

Academic publication is important for the development of a medical specialty or discipline and is also essential for the improvement of quality of care. In 2010, the Economist Intelligence Unit measured the current environment for end-of-life care services across 40 countries by using the Quality of

Table 5
Top 10 institutions publishing hospice palliative care-related articles, 1993–2013.

Institution	Articles published	Percent (%)
Harvard University	574	2.07
University of Toronto	513	1.85
University of Washington	505	1.82
University of California San Francisco	432	1.55
Kings College London	376	1.35
Duke University	357	1.29
University of Pittsburgh	338	1.22
University of Alberta	314	1.13
University of Pennsylvania	312	1.12
Yale University	268	0.96

Table 6
Top five institutions publishing hospice palliative care-related articles in Taiwan, 1993 to 2013.

Institution	Articles published	Percent (%)
National Taiwan University	84	27.10
National Yang-Ming University	71	22.90
Chang Gung University	54	17.42
National Taiwan University Hospital	46	14.84
Taipei Veterans General Hospital	34	10.97

Death Index across four categories, including Basic End-of-Life Healthcare Environment, Availability of End-of-Life Care, Cost of End-of-Life Care, and Quality of End-of-Life Care. For the overall score, the UK ranked first, Australia was second, the Netherlands seventh, Germany eighth, Canada and the United States tied at ninth place, France 12th, and Taiwan ranked 14th.¹⁰ In this study, we found that the most prolific countries/areas publishing hospice palliative care-related documents were also the top performing countries in the Quality of Death measurement according to the Economist Intelligence Unit in 2010. It seems that these countries or areas not only focused on research but also on improvement in hospice palliative care to help terminal patients have better quality of death. Furthermore, we found that during 1993 to 2013, 27,788 documents were published in 232 WoS subject categories. Establishing a hospice palliative care-specific category might be helpful for hospice palliative care-related research and publication.

We found that there were increasing trends of hospice palliative care-related publications during 1993 to 2013 both worldwide and in Taiwan. However, the document publication CAGRs fluctuated from 15.82% to 7.60% to 8.62% during 1993 to 1999, 2000 to 2006, and 2007 to 2013, respectively. For Taiwan, the publication CAGR increased from 15.06% to 17.92% during 2000 to 2006 and 2007 to 2013, respectively. The rising rates of publications in Taiwan may be related to regulation and revisions of the Hospice Palliative Act,¹¹ the hospice palliative care movements that motivated more professionals to become more dedicated to hospice palliative care and researches.

A recent study conducted in France revealed that the main barriers to research in palliative care included lack of time, patient issues, lack of methodological support, and financial limitations.¹² Our results showed that the majority of hospice palliative care-related articles were submitted from universities or hospitals affiliated with universities. This may be attributed to the fact that these institutions are responsible for clinical services, teaching, and research. These universities or hospitals may share clinical and research resources with each other, which, in collaboration, may lead to improvements both in hospice palliative care and academic performance.

The multidisciplinary care features of hospice palliative care and patients with different terminal illness receiving care via hospice palliative approaches contribute to the distinct and

complex knowledge of this discipline. Various research results from care provision for different terminal illness have been conducted or published around the world. Currently, the main study issues include hospice palliative care for terminal cancer, for noncancer terminal illness, development of hospice palliative care in the community, caregiver burdens, spiritual care, dignity, psychology and bereavement, place of death, policy, and economics.¹³

Our study had several limitations. First, we only included articles, letters, reviews, proceedings papers, editorial materials, and notes from SCI-E, SCI and SSCI journals. Second, we used the search key words “hospice”, “palliative care”, “end of life care”, and “terminal care,” which might not cover all hospice palliative care-related publications but should cover most such articles. Third, we did not read each paper and therefore could not know the contents of these articles for further analysis.

In conclusion, there were increasing trends of hospice palliative care-related documents published worldwide from 1993 to 2013 and for Taiwan from 1999 to 2013. However, the number of publications from Taiwan was far below those from Japan and several Western countries. The majority of these documents were submitted by universities or hospitals affiliated with universities both worldwide and in Taiwan. Further research is necessary to understand and try to reduce the barriers to hospice palliative care research and publications in Taiwan.

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