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Review Article

Publication analysis on insomnia: how much has been done in the past two decades?

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ABSTRACT

Insomnia has been a rising public concern in recent years. As one example of a multidisciplinary topic, the theme of insomnia research has gradually shifted over time; however, there is very little quantitative characterization of the research trends in insomnia. The current study aims to quantitatively analyze trends in insomnia publications for the past 20 years. We retrospectively analyzed insomnia-related publications retrieved from PubMed and Google Scholar between 1994 and from a number of different perspectives. We investigated the major areas of research focus for insomnia, journal characteristics, as well as trends in clinical management and treatment modalities. The resulting 5841 publications presented an exponential growth trend over the past two decades, with mean annual growth rates at nearly 10% for each publication type. Analysis of major research focuses indicated that depression, hypnotics and sedatives, questionnaires, and polysomnography are the most common topics at present. Furthermore, we found that while studies on drug therapy and adverse effects decreased in the most recent five years, the greatest expansion of insomnia publications were in the areas of cognitive behavioral therapy for insomnia (CBT-I) and alternative therapies. Collectively, insomnia publications present a continuous trend of increase. While sedative and hypnotic drugs dominated the treatment of insomnia, nonpharmacological therapies may have great potential for advancement in future years. Future research effort is warranted for novel tools and clinical trials, especially on insomnia treatments with inadequate evidence or not-yet-clear efficacy and side effects.

1. Introduction

Sleep medicine has been emerging with more public concerns over the past quarter century, which involves multidisciplinary fields of specialists, including pulmonology, neurology, cardiology, otolaryngology, psychology, psychiatry, endocrinology, geriatrics, pediatrics, dentistry, physiology, pharmacology, and even alternative medicine. Among a wide variety of sleep disorders, insomnia is a particular example that heavily involves multidisciplinary efforts. Insomnia is highly prevalent in clinical practice, independently or comorbidly with another medical or psychiatric disorder [1], and its management usually involves clinicians or specialists from various academic backgrounds.

Since the number of academic publications is often considered as a trend of research interest and public attention at a given point in time [2–4], it is worth knowing the publication trends in sleep-related topics [5]. The biomedical literature is growing at a double-exponential pace [6], and it was reported that during the 1974–2004 period, sleep literature had increased fourfold, whereas overall total biomedical publications had only doubled [7]. Despite the large amount of sleep-related literature that has been published, the trend and focus of sleep research has been underdiscussed. Only a limited number of publication analyses have focused on specific sleep disorders, such as obstructive sleep apnea [8,9], and the research trend of insomnia remains underexplored.

Bibliometrics is a set of methods used to quantitatively analyze academic literature [4], and is useful in revealing historical development [2] and quantitative trends of publications [3]. The present

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study aims to quantitatively analyze trends in insomnia publications, in order to describe changes in the volume of insomnia-related research and to identify major research topics and treatment modalities over the past two decades. In this article, the following specific questions regarding insomnia will be addressed: What are major research focuses of insomnia? What journals publish insomnia research? What are the trends of demographic and clinical characteristics, and treatment modalities of insomnia research?

2. Methods

2.1. Search tools

PubMed was used for literature retrieval in this study. PubMed is a free resource that is developed and maintained by the National Center for Biotechnology Information, at the U.S. National Library of Medicine, located at the National Institutes of Health. PubMed was chosen because it has been the major search tool for scholars in the medical field. Early in 2009, PubMed was reported as receiving nearly 5 million queries each day by users worldwide [10]. Such access to publications keeps scholars updated and helps them to make discoveries in their own fields [11].

To analyze the trend and impact of certain topics of insomnia research, we used Google Scholar for citations and h-index analysis, which combines an assessment of both quantity of papers and their quality (including impact, or citations to these papers) [12]. Google Scholar-based metrics show strong correlations with the traditional Journal Impact Factors, which particularly benefit academic individuals publishing in sources that are not covered by the Institute for Scientific Information (ISI) [13]. Google Scholar and the h-index have been evaluated and used in many studies in the recent past [14–17].

This is a review article and does not involve a research protocol requiring approval by the relevant institutional review board or ethics committee.

2.2. Search strategies

To retrieve articles from PubMed, all literature searches were performed in March 2014, and further confirmed with the guidance of a professional medical librarian. To identify insomnia publications, an advanced search was set as MeSH term and publication date, for example, (insomnia[MeSH Terms]) AND ("1994/01/01"[Date – Publication] : "2013/12/31"[Date – Publication]). The total numbers of publications in each year were recorded from 1994 to 2013. Similar searches were then performed with filters for article types and text availability to specify the numbers of journal articles, clinical trials, randomized controlled trials (RCTs), or reviews, as well as the numbers of available full text or free full text articles. The past 20 years were grouped in 5-year increments to indicate trends via mean publication numbers. The annual growth rate (AGR) of publications was calculated as (Current Year Total – Previous Year Total)/Previous Year Total. The productivity index was calculated to compare the individual growth trend according to its baseline at year 1994, defined as (Current Year Total – 1994 Total)/1994 Total.

All data were retrieved using PubMed's XML export function. Major information was extracted including the years of publication, titles of articles, journal names and their ISO abbreviations, languages, and article types. The XML file was processed by a customized software, and all results were manually checked by the authors. MeSH terms, MeSH major topics, and MeSH subheadings were also included for further analyses. In PubMed, MeSH terms are arranged hierarchically by subject categories with more specific terms arranged beneath broader terms. Applying the MeSH vocabulary ensures that articles are uniformly and systemically indexed by research topic, regardless of the keywords provided by the authors [18]. Therefore, it became possible to analyze the major topics in each article and to see the change of focus through the years. In addition, the top 20 journals ranked by the total numbers of insomnia publications over the entire study period (1994–2013) were reported. Furthermore, to study the impact of pharmacological and nonpharmacological treatment of insomnia, we used the terms identified in PubMed literature analyses as the search terms in Google Scholar to determine the citations normalized by the age of publication and h-index.

2.3. Statistical analyses

SPSS 19.0 (IBM SPSS Statistics) software was used for statistical analyses. Descriptive statistics were reported as mean ± standard deviation. Differences in the publication number across each 5-year group were assessed by one-way analysis of variance. Exponential regression was applied to assess the publication trends. A p value of <0.05 was considered statistically significant in analyses of variance or regression models.

3. Results

3.1. Quantity of insomnia publications

In PubMed, we used "insomnia" as the main search term using the "exploded" feature (insomnia[MeSH Terms]) AND ("1994"[Date – Publication] : "2013"[Date – Publication]). Results revealed 5841 publications, including 5382 (92.1%) journal articles, composed of 1026 (17.6%) clinical trials, 716 (12.3%) RCTs, and 242 (4.1%) multicenter studies. Among them, only 25 (0.4%) articles were phase I, II, III, or IV clinical trials. There were 446 (7.6%) case reports, 1176 (20.1%) reviews, 237 (4.1%) systematic reviews, and 55 (0.9%) meta-analyses. Among all, 4603 (78.8%) were full-text available, and 1232 (21.1%) were open-access. Table A1 in the Appendix shows the numbers of each type of literature in each 5-year period. Analyses of variance show that the number of publications was significantly different across each 5-year period and also among different journal types. The number of insomnia publications (Fig. 1a) showed an exponential trend and increased more than four times in the past two decades, whereas the general biomedical publications only doubled (Fig. 1b). Fig. 1c shows the trends of insomnia research by publication types.

3.2. Main research focus of insomnia publications

Table 1 shows the top 20 descriptors (ie, keywords) that appeared in retrieved articles. Top rankings included publications on depression-related issues, hypnotic/sedatives, use of questionnaires, and polysomnography. Table A2 in the Appendix shows the top 10 categories of insomnia research in each 5-year period. It is noteworthy that articles on drug therapy dropped from 46.3% in the first five years to 29.6% in the most recent five years. Similarly, the percentage of publications focusing on adverse effects also decreased significantly. Expansion of insomnia publications was seen mostly in the area of psychology/psychotherapy and other nonpharmacological therapies. The focus on epidemiology and insomnia complications also drew more attention, with increasing trends in publications in the most recent 10 years. Other common research topics, such as physiology, etiology, diagnosis,

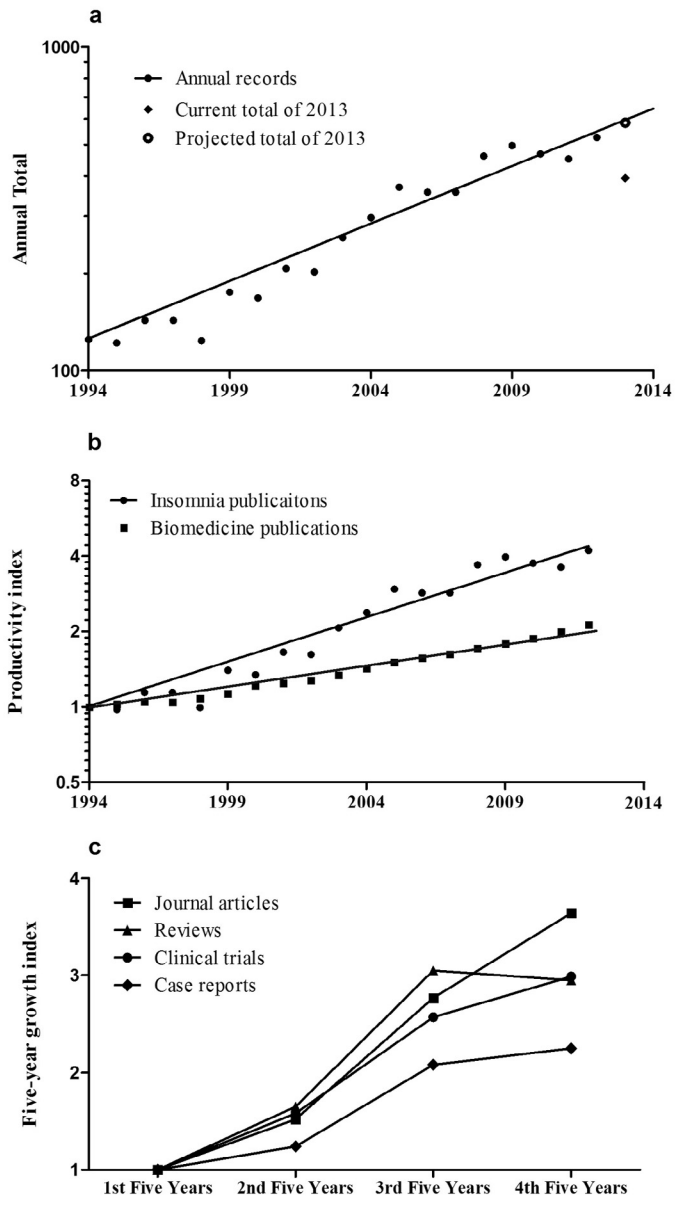

Fig. 1. Trends of insomnia research in log-linear scales. (a) Growth of insomnia publications and 2014 projection based on regression model. (b) Productivity index between insomnia publications and all medical publications. (c) Increasing trends of common publication types.

and physiopathology, were found to have consistent trends over time.

3.3. Journal analysis

Seven journals out of the top 20 were sleep specialized, whereas other journals that included the most insomnia-related publications were from the fields of psychiatry, psychosomatics, geriatrics, clinical medicine, neurology/neurosciences, behavioral sciences, alternative medicine, and psychopharmacology (Table A3 in the Appendix). Among specialized journals about sleep medicine, the top journals that included insomnia publications were *Sleep*, *Sleep Medicine*, and *Journal of Clinical Sleep Medicine*. Top non-sleep-specialized journals included *Journal of Clinical Psychiatry*, *Journal of Psychosomatic Research*, and *Journal of the American Geriatrics Society*.

Table 1
Overall ranking of research focus of insomnia in the past 20 years.

Rank	Descriptor	Record of occurrence in publications	% of total
1	Depression/depressive disorder	1077	18.44%
2	Hypnotics and sedatives	1048	17.94%
3	Questionnaires	972	16.64%
4	Polysomnography	840	14.38%
5	Psychology/psychotherapy	590	10.10%
6	Risk factors	557	9.54%
7	Anxiety/anxiety disorder	529	9.06%
8	Prevalence	475	8.13%
9	Comorbidity	446	7.64%
10	Circadian rhythm	410	7.02%
11	Quality of life	395	6.76%
12	Cognitive therapy*	386	6.61%
13	Chronic disease	386	6.61%
14	Sleep stages	351	6.01%
15	Wakefulness	342	5.86%
16	Antidepressive agents	311	5.32%
17	Fatigue	294	5.03%
18	Benzodiazepines	288	4.93%
19	Psychiatric status rating scales	286	4.90%
20	Melatonin	272	4.66%

CBT-I, cognitive behavioral therapy for insomnia.
* "Cognitive therapy" is an independent term in PubMed, but some of CBT-I articles were counted under this term when cognitive therapy was specifically mentioned.

3.4. Demographic and clinical characteristics of populations in the insomnia literature

Fig. 2 illustrates the annual publication coverage by age of study populations. Seven age groups across the lifespan were defined as follows: infants (birth to 2–3 months), preschool children (2–5 years), children (6–12 years), adolescents (13–18 years), adults (19–44 years), middle aged adults (45–64 years), and aged adults (65 years and above). Articles that involved more than one age group of subjects were included in the total number of all corresponding age groups. In total, the adult and middle-aged adult groups were studied the most, with 2607 and 2583 articles, respectively, followed by the aged adult group, with 1856 articles. In contrast, fewer insomnia studies were found to have reported on infants, children, and adolescents.

In addition to the publication data mined through PubMed, we defined three broad categories regarding the current insomnia approaches (pharmacological treatments, nonpharmacological treatments, and alternative therapies), to search in Google Scholar. We used "insomnia" and the name of each treatment modality (shown in Table 2) as search terms, and recorded numbers of citations by age and h-index for each 5-year period as indicators of

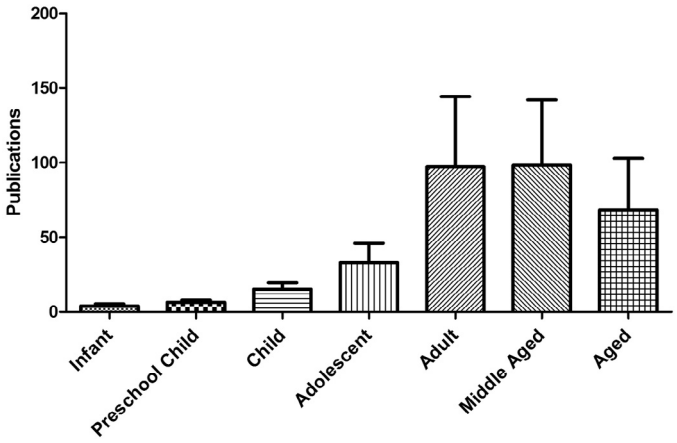

Fig. 2. Annual output of insomnia literature, broken out by different age groups.

Table 2
Impact of papers on insomnia treatment (1994–2013).

Treatment	First 5 years (1994–1998) Citations (h-index)	Second 5 years (1999–2003) Citations (h-index)	Third 5 years (2004–2008) Citations (h-index)	Fourth 5 years (2009–2013) Citations (h-index)
Pharmacological treatment				
Barbiturates	96.6 (4)	205.5 (7)	328.9 (9)	153.1 (7)
Benzodiazepines	265.6 (8)	534.4 (12)	652.7 (15)	481.6 (10)
Z-drugs	119.2 (5)	178.7 (6)	356.7 (11)	137.8 (6)
Other medications/drugs				
Melatonin agonist drugs	93.6 (5)	131.2 (5)	421.5 (12)	341.8 (8)
Sedating antidepressant drugs	97.9 (5)	102.7 (6)	204.1 (8)	152.4 (5)
Sedating antipsychotic drugs	3.3 (1)	16.7 (2)	88.7 (6)	56.7 (4)
Antihistamine drugs	77.1 (4)	101.4 (5)	309.0 (9)	184.1 (7)
Anticonvulsant drug	108.3 (5)	185.3 (8)	253.5 (9)	286.6 (8)
Adrenergic agonists	143.2 (5)	249.3 (7)	257.0 (8)	188.2 (7)
Orexin receptor antagonists	0 (0)	18.8 (2)	101.6 (5)	365.8 (10)
Nonpharmacological treatment				
Sleep hygiene education	52.2 (3)	247.8 (9)	548.8 (13)	368.8 (10)
Stimulus control	266.2 (7)	557.0 (13)	693.7 (15)	439.3 (11)
Sleep restriction therapy	186.4 (6)	290.1 (7)	504.5 (13)	314.9 (9)
Relaxation training	256.3 (7)	433.5 (11)	649.7 (14)	358.5 (11)
Biofeedback	195.4 (7)	337.6 (9)	409.5 (11)	113.3 (6)
Light therapy	226.9 (5)	295.9 (9)	564.5 (13)	509.4 (10)
Cognitive therapy	638.6 (11)	804.6 (15)	932.8 (16)	1292.9 (13)
Cognitive-behavioral therapy for insomnia (CBT-I)	507.5 (11)	721.4 (14)	923.1 (15)	541.3 (14)
Brief behavioral treatment for insomnia (BBT-I)	0 (0)	22.0 (2)	107.8 (6)	282.3 (9)
Alternative therapy				
Acupuncture	84.4 (5)	84.2 (5)	201.6 (7)	174.4 (6)
Herbal/ natural remedy	286.3 (9)	581.1 (14)	447.6 (11)	156.1 (6)
Aerobic exercise	246.3 (7)	564.2 (10)	493.5 (11)	283.4 (9)
Tai chi/qigong/yoga	31.6 (3)	76.1 (5)	495.7 (8)	172.6 (7)
Music therapy	100.7 (3)	120.4 (6)	223.2 (9)	212.0 (6)

impact. The top 2 treatment modalities, in terms of citations and h-index, were benzodiazepines and cognitive behavioral therapy for insomnia (CBT-I). Orexin receptor antagonists in pharmacological treatment and brief behavioral treatment for insomnia (BBT-I) are relatively new approaches proposed in recent years. Alternative therapies were reported and cited less often than the other two categories.

4. Discussion

Insomnia involves multidisciplinary fields of research. In recent years, advances have been made in the understanding of insomnia and its treatment options [19]. However, the breakdown of disciplinary boundaries makes it more difficult for scientists or clinicians to reconcile all of the publications relevant to their research [6]. Our results indicate that both pharmacological and nonpharmacological treatment for insomnia may have great potential for advancement in future years. Although sedative and hypnotic drugs dominated insomnia treatment for a long time, nonpharmacological therapies such as cognitive behavioral therapy have attracted considerable attention in recent years, for the benefits of reducing dosage and side effects of medication and providing alternative options. In addition, the treatment efficacy and clinical outcome were not equally established for insomnia treatment modalities. Currently, only benzodiazepines and CBT-I are supported by the best empirical evidence [1], whereas very little evidence supports the efficacy of other treatments [20].

Pharmacological treatment usually involves benzodiazepines, nonbenzodiazepines (such as Z-drugs), and other drugs including melatonin, antidepressants, antipsychotics, antihistamines, anticonvulsants, adrenergic agonists, or orexin receptor antagonists. Although benzodiazepine receptor agonists (BzRA) have been a mainstay of pharmacotherapy for insomnia [21,22], the present analysis (Table 2) shows that studies on orexin receptor antagonists, melatonin agonists, and anticonvulsants (such as gabapentin) for treating insomnia have attracted considerable attention in the most recent five years.

The development of new drugs for insomnia is mostly based on the new application of existing drugs. Psychiatric medications such as antidepressants, antipsychotics, and anticonvulsants are commonly prescribed by physicians for the off-label use of improving sleep quality [23]. Since sleep disorders are highly associated with depression [22,24], the use of sedating antidepressants including trazodone, tricyclic antidepressants, mirtazapine, agomelatine, and nefazodone has been studied in insomniac patients with depression. Notably, the popularity of antidepressants, antipsychotics, and anticonvulsants in the treatment of insomnia is not supported by a large number of well-controlled studies [23,25].

The rising trend in the pathophysiology of insomnia helps to target insomnia treatment, with recent examples including orexin receptor antagonists, 5HT2A serotonin receptor antagonists, melatonin receptor agonists, and H_3 histamine receptor antagonists [26]. The orexin system mainly promotes arousal; orexin antagonists have the potential to selectively promote sleep [27–30] and have fewer side effects [22]. Melatonin agonist drugs (eg, melatonin [31–35], ramelteon [36–40]) and antihistamine drugs (eg, diphenhydramine) [27–30] have also been studied extensively in recent years [41].

Although development and clinical trials for new medications are not popular for insomnia, a number of alternative remedies, especially over-the-counter products, have emerged on the market, including tryptophan, valerian, kava, Jamaican dogwood, hops, California poppy, St John's wort, alcohol-based preparations, muscle relaxants, and others [22]. However, there are very few or even no data to prove their efficacy and safety [42].

The present results indicate that although studies on drug therapy and adverse effects decreased in the past five years, the greatest expansion of insomnia publications has been in the area of psychology/psychotherapy and other therapies, including CBT-I and alternative therapies. CBT-I combines five major components of nonpharmacological treatment of insomnia, including stimulus control, sleep restriction (also known as sleep consolidation or bed restriction), relaxation techniques, cognitive therapy, and sleep hygiene education [43]. The therapeutic effects of CBT-I has been shown to be similar to or greater than those seen with hypnotic drugs [43]. Furthermore, unlike hypnotics, which are often troubled by dependence, withdrawal, and rebound effects [44–46], CBT-I may have better maintenance effects after cessation of therapy [43,47,48]. CBT-I has been used in clinical settings conducted by psychologists and physicians. Other innovative methods of performing CBT-I have been reported, such as telephone consultations, online sessions, group therapy, and self-help approaches. More recently, BBT-I, a four-session approach, has been developed and may provide a short and efficient treatment option for insomnia [49–53].

Although pharmacological and cognitive behavioral therapies have become mainstream in insomnia therapy, side effects of hypnotics and difficulty in accessing CBT-I still limit their use in clinical practice, and alternative therapies for insomnia still have a role in the general population [19]. Furthermore, aside from self-help strategies such as reading or relaxation, our literature search shows that the most frequently studied alternative treatments are herbal medicine and acupuncture. Few studies in academic research focus on traditional exercises (eg, Tai-Chi and yoga) or music therapy, despite their popularity among the general public.

There are several limitations to this study. There are other databases available for bibliometric studies, such as Web of Science, Scopus, Embase, PsychNet, and CINAHL. After weighing the advantages and disadvantages of these databases, PubMed was chosen mainly for its biomedical focus, inclusion of numerous journals and articles, and timely updates. In addition, the delay of very recent publications makes it impossible to trace all sources, especially those articles that are not yet indexed by MeSH. Finally, certain non-English-language journals may not be included in the PubMed database. These are common limitations to publication studies, however [54–57].

In conclusion, insomnia publications have shown a growing trend over the past 20 years, with a remarkable explosive growth in the most recent years. However, insomnia research still faces great challenges. One issue is that reviews comprised more than 20% of the total literature, whereas clinical trials comprised less than 20% of all publications, and phase I–IV trials are relatively scarce. This observation suggests that the increase in publications may not be accompanied by an equivalent increase in the growth of academic and scientific impact. Overall, a substantial research effort is warranted for developing novel research tools and conducting longitudinal studies of randomized clinical trials. There are also demands for future studies on insomnia treatments with inadequate evidence or not-yet-clear efficacy and side effects.

Conflict of interest

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this article.

The ICMJE Uniform Disclosure Form for Potential Conflicts of Interest associated with this article can be viewed by clicking on the following link: http://dx.doi.org/10.1016/j.sleep.2014.12.028.

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Appendix

Table A1 Insomnia publications in PubMed for every 5-year interval examined.

Article type and availability	First 5 years (1994–1998)	Second 5 years (1999–2003)	Third 5 years (2003–2008)	Fourth 5 years (2009–2013)	*p*	Mean annual growth rate
All publications	131.4 ± 10.6	202 ± 35.5	367.8 ± 59.1	467.0 ± 49.8	<0.001	9.3%
Journal articles	120.6 ± 6.7	183.0 ± 31.6	334.2 ± 55.4	438.6 ± 47.1	<0.001	9.0%
Reviews	27.2 ± 3.2	44.8 ± 14.1	83.0 ± 6.2	80.2 ± 20.7	<0.001	9.1%
Case reports	14.2 ± 2.7	17.6 ± 3.5	29.6 ± 6.7	32.0 ± 8.4	<0.001	8.1%
Clinical trial	25.2 ± 2.6	39.8 ± 9.3	64.8 ± 12.9	75.4 ± 9.0	<0.001	8.6%
RCTs	15.8 ± 2.5	23.6 ± 7.6	50.6 ± 8.7	65.8 ± 14.8	<0.001	7.8%
Full text available	57.4 ± 18.4	138.4 ± 45.8	301.8 ± 72.9	423.0 ± 40.9	<0.001	14.8%
Open access	7.2 ± 4.8	22.6 ± 9.1	69.4 ± 43.4	147.2 ± 28.4	<0.001	52.2%

RCTs, randomized controlled trials.
Data are means ± standard deviations of annual numbers over each 5-year period with the exception of *p* values and mean annual growth rates.
Annual growth rate (AGR) of publications was calculated as (current year total – previous year total)/previous year total.

Table A2 Top 10 areas of publication research focus in each 5-year period examined.

	First 5 years (1994–1998)	Second 5 years (1999–2003)	Third 5 years (2003–2008)	Fourth 5 years (2009–2013)	Overall (1994–2013)
1	Drug therapy (46.27%)	Drug therapy (38.12%)	Drug therapy (36.81%)	Psychology (32.25%)	Drug therapy (35.23%)
2	Psychology (29.38%)	Etiology (28.42%)	Diagnosis (30.89%)	Drug therapy (29.64%)	Psychology (29.65%)
3	Adverse effects (25.72%)	Diagnosis (26.73%)	Epidemiology (29.36%)	Epidemiology (29.16%)	Diagnosis (26.42%)
4	Etiology (24.05%)	Psychology (26.34%)	Psychology (28.28%)	Complications (26.64%)	Epidemiology (26.11%)
5	Diagnosis (22.37%)	Therapy (24.55%)	Therapy (25.29%)	Diagnosis (23.90%)	Therapy (23.99%)
6	Therapy (19.94%)	Adverse effects (22.57%)	Etiology (24.31%)	Therapy (23.85%)	Etiology (23.78%)
7	Physiology (18.57%)	Physiology (20.89%)	Adverse effects (20.94%)	Physiopathology (21.50%)	Complications (22.02%)
8	Drug effects (17.66%)	Complications (20.69%)	Complications (19.25%)	Etiology (21.28%)	Adverse effects (19.88%)
9	Physiopathology (17.35%)	Epidemiology (20.20%)	Physiopathology (18.54%)	Physiology (19.66%)	Physiopathology (19.12%)
10	Complications (15.37%)	Physiopathology (15.84%)	Physiology (16.97%)	Adverse effects (16.23%)	Physiology (18.90%)

Table A3 Top 20 journals that publish insomnia articles.

	Journal title	Abbreviation	Journal country/territory	Records	%	2012 IF	5-Year IF
1	Sleep	Sleep	United States	400	6.85%	5.100	6.175
2	Sleep Medicine	Sleep Med	Netherlands	245	4.19%	3.487	3.926
3	Journal of Clinical Sleep Medicine	J Clin Sleep Med	United States	135	2.31%	2.928	NA
4	The Journal of Clinical Psychiatry	J Clin Psychiatry	United States	128	2.19%	5.812	5.639
5	Journal of Sleep Research	J Sleep Res	England	111	1.90%	3.043	3.813
6	Sleep Medicine Reviews	Sleep Med Rev	Netherlands	93	1.59%	8.681	8.26
7	Journal of Psychosomatic Research	J Psychosom Res	England	86	1.47%	3.268	3.608
8	Behavioral Sleep Medicine	Behav Sleep Med	United States	79	1.35%	0.01125	NA
9	Journal of The American Geriatrics Society	J Am Geriatr Soc	United States	50	0.86%	3.978	4.625
10	Nihon Rinsho/Japanese Journal of Clinical Medicine	Nippon Rinsho	Japan	44	0.75%	NA	NA
11	Psychiatry and Clinical Neurosciences	Psychiatry Clin Neurosci	Japan	42	0.72%	NA	NA
12	Behaviour Research and Therapy	Behav Res Ther	England	41	0.70%	3.471	4.158
13	Neurology	Neurology	United States	36	0.62%	8.249	8.397
14	MMW – Fortschritte der Medizin	MMW Fortschr Med	Germany	35	0.60%	NA	NA
15	The American Journal of Psychiatry	Am J Psychiatry	United States	34	0.58%	14.721	14.396
16	Journal of Traditional Chinese Medicine	J Tradit Chin Med	China	34	0.58%	0.589	NA
17	Sleep and Breathing	Sleep Breath	Germany	33	0.56%	2.256	2.258
18	Journal of the American Medical Association	JAMA	United States	32	0.55%	NA	NA
19	Psychosomatic Medicine	Psychosom Med	United States	32	0.55%	4.077	4.803
20	Journal of Psychopharmacology	J Psychopharmacol	England	31	0.53%	3.374	3.441

NA, not available.

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