

Original articles

Health economics agenda in the 21st century - Analysis of research publication trends in health economics from 2000 to 2020

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Background

The aim of this study was to assess the bibliometric output related to health economics from 2000 to 2020.

Methods

Published papers that were indexed in Pubmed were enumerated and later stratified by regions.

Results

A declining publication trend was observed, with the most articles recorded in 2015, followed by a steady decline ever since. From 2015 to 2020, as many as 42 thousand articles less was published compared to the projected trend of growth recorded from 2000 to 2015. This decline was the strongest for articles related to Europe and the Americas, while articles related to Africa, Asia, and Australia were rising.

Conclusions

A steady decline of health economics research output was observed during the past five years, which was to a degree negated by the rising output from the low- and middle-income countries.

Understanding any research field often begins with a generalized search, where some of the first questions are often related to research publication output. Our fascination with this metric stems from the “publish or perish paradigm”,¹ regardless on the downsides of this approach.^{2,3} This kind of analysis enables not only broad insight, but can further describe trends useful in critical analysis of the research field.^{4,5}

Previous analysis of the field of health economics reported very favourable patterns, and suggested likely pathways of development, published in the January of 2016.⁶ However, the situation seems to have changed. During 2000-2020 there were just over a million articles indexed by PubMed (<https://pubmed.ncbi.nlm.nih.gov/>), which had utilized “health economics” as a keyword (search performed May 14, 2021). Breakdown according to year suggested an average value of over 50,000 articles annually, with the greatest number of all articles published in 2015 (Figure 1, grey bars; Table 1, published). Interestingly, the number of published articles seems to have declined afterwards, never again surpassing the peak in 2015. The situation becomes even clearer when these number are adjusted to the total number of articles indexed by PubMed, which was constantly rising, suggesting that the share of articles related to health economics was on a steady decline (Figure 1, black line). While health economics was mentioned in close to 7%

of all articles in 2000, this percentage had declined to only 3% in 2020. Although one might argue that 2020 is indeed a special case due to the COVID-19 pandemic, the decline is clearly seen even in the years preceding this. Actually, if we consider the years 2000-2015 as the referent ones, it is possible to calculate the projected number of articles in a linear projection model. Such a model has an R^2 of 0.99, and suggests that the predicted number of published articles during 2016-2020 should be slightly over 333 thousand articles, while only 291 thousand articles were published during this period. This means that the field of health economics had a net loss of over 42 thousand articles, just during these five years (Table 1, column *predicted*). The year 2020 is even more worrying, since by adding another keyword, COVID seems to deal an additional blow to the field; the removal of the COVID related articles from the 2020 count (by excluding the papers that also had this keyword), suggested the additional loss of 7600 articles, suggesting that the number of published articles that were not dealing with COVID had declined from slightly over 60 thousand in 2019 to 40 thousand in 2020, or a decline of 32%.

A more in-depth analysis with the two most common study types: the cost-effectiveness and the cost-benefit analysis, suggests minor deviations from the constant share (Figure 1, lower black lines). At the very least, it seems that the methodologically more demanding types of studies re-

Table 1. Number of published articles with the selected keywords

Year	PubMed, all articles	Key words: "health economics"						
		Published articles	Predicted number*	Africa	Asia	Europe	Australia	America
2000	532,505	35,720	35,247.4	884	1,620	7,622	941	16,394
2001	547,570	38,029	36,999.8	909	1,850	8,797	1,123	17,269
2002	565,383	38,184	38,752.2	902	1,899	8,221	1,236	17,745
2003	594,535	40,543	40,504.6	931	2,314	8,847	1,194	18,305
2004	639,708	42,508	42,257.0	1,007	2,483	8,976	1,403	19,202
2005	700,230	43,855	44,009.4	1,091	2,617	9,236	1,540	19,180
2006	749,775	45,997	45,761.8	1,138	2,758	10,110	1,658	19,140
2007	786,530	46,635	47,514.2	1,401	3,064	10,183	1,743	19,003
2008	836,935	48,543	49,266.6	1,363	3,296	10,438	1,824	19,028
2009	877,314	49,125	51,019.0	1,417	3,354	10,466	1,825	18,798
2010	941,689	52,890	52,771.4	1,706	3,684	11,404	2,159	20,273
2011	1,019,688	54,557	54,523.8	1,795	3,877	11,634	2,326	20,035
2012	1,088,565	57,031	56,276.2	1,968	4,231	12,330	2,390	20,330
2013	1,148,963	59,315	58,028.6	2,072	4,538	12,595	2,681	20,107
2014	1,203,220	62,644	59,781.0	2,571	4,774	13,437	3,306	20,844
2015	1,254,691	63,330	61,533.4	2,657	4,934	13,534	3,737	20,485
2016	1,280,920	61,760	63,285.8	2,681	4,989	12,440	3,844	19,952
2017	1,297,766	60,446	65,038.2	2,751	4,996	10,777	4,106	19,373
2018	1,338,297	60,582	66,790.6	2,926	5,605	10,291	4,389	18,702
2019	1,397,581	60,479	68,543.0	3,043	6,366	9,814	4,429	17,736
2020	1,617,691	48,495	70,295.4	2,700	5,428	7,036	3,384	13,051

*Based on the linear trend projection of the 2000-2015, used to predict the number of articles for 2016-2020

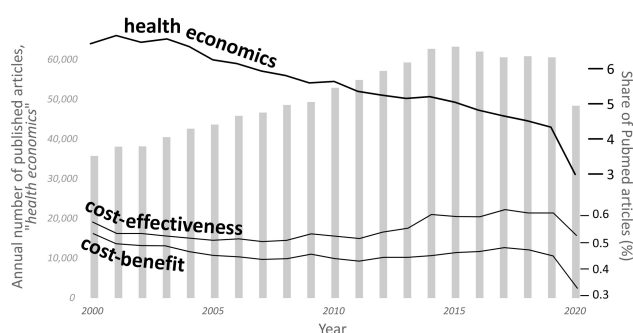


Figure 1. Comparison of the total number of articles with key words "health economics" (grey columns) and the rate of these articles, expressed as the share of total number of PubMed indexed publications in the same year (upper black line)

Lower two black lines denote similar ratios of articles with key words "cross-effective-ness" and "cost-benefit".

tained their constant share in the total number of published articles on PubMed, without an indication of the decline that was obvious for the entire field of health economics.

Although methodologically somewhat unreliable, the addition of the region as yet another keyword suggested that the number of articles related to Europe and America

were on a decline, while those related to Asia, Africa and Australia were substantially rising (Table 1).

What could be the reason for this stagnation and decline? Does this mean that we measured it all? Is there nothing more to evaluate? Hardly. If ever, we need health economics now, in the time of global pandemic crises, to assist and aid in decision-making process. What more, we need to substantially expand outreach to health economic studies, the use of evidence-based methods and aim for the best possible evidence. These tasks are very demanding, as they have roots in the improvements of the data collection process, health care organization and health systems, which are all almost daunting tasks on their own. This will become especially important in the post-COVID era,⁷⁻⁹ which will require substantial improvements in the way health care is being organized and managed, globally.

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OP is the sole author.

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