Prioritize journals relevant to a clinical topic: A survey of US cardiologists about heart failure

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Abstract

To pinpoint automatically the best evidence for clinical decision-making, text-mining methods need to store all the full-text journal articles in a readable format and perform computations on them. The overwhelming number of journals and their copyright restrictions limit this. Hence, we surveyed 95 cardiologists randomly chosen across the US to obtain their subjective opinion on congestive heart failure (CHF) and identified the journals and other metrics necessary to automate the process.

Introduction and Background: To overcome the significant barrier of clinicians' lack of time in fully utilizing online health knowledge resources, we previously demonstrated the feasibility of automatically extracting relevant sentences from Medline abstracts[1]. However, much of the clinical information remains in the full-text body of the articles. The goal of this survey is to identify the top journals for heart failure. The survey results will be used to build a prototype clinical decision-making system for CHF prioritizing these journals and to develop a regression model to automatically prioritize the journals.

Participants and Methods: All the corresponding authors with emails in Medline abstracts with the Major MeSH Term – "Congestive Heart Failure" (about 1500) were invited to participate in the survey. The participants had to anonymously consent that they are cardiologists and well familiar with CHF. Of the 100 subjects that consented, 95 finished. A majority of them have been in practice for over 15 years and published more than 20 cardiology articles. We presented to them 59 randomly-ordered journals pre-selected by a team of 8 cardiologists at Mayo Clinic. They were asked to rate these journals by their value in information about CHF in a 1-5 scale (1=least value, 5=most value).

Results: The mean of the rating averages is 2.42 and the standard deviation is 0.71. The top-9 journals with their rating averages are in the below table. The lowest rating average is 1.58 (Basic research in cardiology). A participant suggested that we also consider Circulation: CV Quality and Outcomes, which was not in the original list.

The New England journal of medicine (4.35)	Circulation (4.26)	JACC (4.21)
JAMA (3.83)	Circulation. Heart failure (3.78)	Lancet (3.77)
JACC. Heart Failure (3.63)	European heart journal (3.25)	Annals of internal medicine (3.13)

Discussion and Conclusion: While these ratings will help us move forward in CHF, we will also be using them to build a machine-learning model to automate the process for other topics. A preliminary linear regression model achieves an accuracy of over 80% using widely available journal metrics such as impact factor, h-index, number of articles per year and total citations per year. However, other factors such as clinical relevance and open access of the articles in the journal might be better indicators than these typical bibliometrics[2]. Our participants ranked the factors in this order: clinical relevance (77%), impact factor (64%), study design (42%), human vs. animal research (41%), etc. All these factors need to be taken in consideration for extending this work to other clinical topics and for ranking individual articles.

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References

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