The Challenges of Publishing on Health Informatics in Developing Countries

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Summary

The Journal of Health Informatics in Developing Countries was established to meet a perceived need for Health Informaticians in developing countries to be able to share the results of their research in an affordable and easy-to-access online publication. The journal was developed using the open source platform "Open Journal System," and has now published 67 articles across 13 issues. A collaborative editorial approach has been established to address the problems of limited research budgets, difficulties with translating to English and other problems specific to authors from developing countries. The journal faces many challenges including ensuring future financial sustainability and inclusion in journal indexing systems. However, the continuing support of an international body of Associate Editors and Editorial Board Members has enabled a wide range of useful and informative health informatics research to be disseminated across the developing world.

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Background

Health Informaticians in developing countries around the world are struggling to implement new clinical information systems in resource poor, high demand healthcare environments [1]. Although rapid advances are being made in the uptake and use of new technology [2], there are limited opportunities for informaticians to share best practice and for researchers in these areas to have the results of their projects published and reviewed by the international research community. Although there have been many positive developments in Open Access publishing [3] there are still hurdles to overcome such as high submission fees, difficulty translating manuscripts to English and the smaller sample sizes that result from financial constraints on studies undertaken in resource poor environments [4].

Medical journals editors have recognized that publishing healthcare research from developing countries is a significant issue that requires attention. Lancet Editor Richard Horton, reporting on a survey of Lancet editorial advisors, commented that these barriers combine to constitute a publication bias in favor of the "North" and at the expense of the "South" [5]. In 2002, then BMJ Editor Richard Smith reported that only 10 percent of all health related research is conducted in the developing world and research that is able to be conducted is often not published due to biases within a publishing industry largely located in the developed world [6].

Method

In early 2007, one of the authors (MM) decided to address this issue by establishing a new Open Access journal called The Journal of Health Informatics in Developing Countries (www.jhidc.org). Embarking upon this initiative needed a number of considerations. First was the production of the journal (its process and costs). Second was to appropriately market the journal so as to seek and attract article submissions from health informaticians in developing countries. Third, and the most important as well as the most challenging once the journal is up and running, was ensuring quality.

The journal was set up so as to be free to publish in and free to access, the sole purpose being to disseminate health informatics knowledge and experiences in and of developing countries. With no generation of funds from either publishing or accessing, its sustainability relied on the goodwill of the editorial team and the peer reviewing community. The long-term plan for the journal was to generate income to be able to sustainably run the journal preferably through tapping on resources and funds from academic institutions and international organizations rather than by charging the authors or readers for publication or for accessing the articles.

The production of the journal was facilitated by the use of an existing and popular platform called "Open Journal System". The system was already in use by other Open Access journals [7] and was felt to be stable and user-friendly enough to both set up the journal as well as to publish the articles online though a semi-automated method. One of the other authors (CP) hosted the journal on his UNIX-based server and the journal was set up by joint effort.

Marketing was undertaken by promoting the journal through on-line medical professional communities and health informatics associations such as IMIA. A number of news items and blog posts from these organizations resulted in the journal becoming known around the world in a relatively short space of time. The online nature of the journal, facilitated by the use of the Open Journal System platform, further helped in making it easily reachable through online search engines.

As mentioned, ensuring quality is the biggest challenge for the journal. One of the objectives of this journal was to provide a platform to researchers who typically do not get that chance to publish due to English language or Western system barriers. A two-tier system was therefore put in place whereby initially an internal evaluation was undertaken to review and provide initial feedback to the authors (if the article got accepted in the initial review) for improving the article. Subsequently, a formal blinded peer review was carried out. For this, an Editorial Team was set up which included an Editor-in-Chief, Associate Editors, and Editorial Board Members from around the world.

The Editorial team was augmented with peer-reviewers identified through a network of health informaticians within the field who have expressed interest in participating in the review process. During the peer-review process, more weight is placed on the relevance of the work in improving

health informatics research in the developing world. Perhaps some of the work published may be criticized for not being generalizable to other developing countries, too focused, or not adding to new knowledge to the health informatics field in general. However, the goal of the journal is to provide a voice for the work being done in the developing world, which we believe is advancing the field as we see how applications, tools, and systems primarily developed in the developed world are being implemented in the developing world. The challenges, issues, and lessons learned from this experience add a rich set of information that can be viewed as advancement to the field.

Results

Since its first issue in 2007, the Journal has now published 13 issues with 67 articles and has received 91 citations. The journal was submitted for Medline indexing in 2010, but fell short of meeting the requirements. The journal has been resubmitted for Medline indexing in 2013 after an improvement in the number of citations.

The journal accepts approximately 60% of all papers submitted. The reasons for rejection commonly include: not being relevant; epidemiological research (with no focus around health information systems); those that are overly technical in nature; or research undertaken in developed countries. Regardless of the submission outcome, the editorial team often provides extensive feedback to enable the authors to improve the paper and will generally encourage the authors to resubmit rejected papers once they have been revised.

Over the years the number of submissions from different countries to the JHIDC has increased. Today, the journal has published articles from Nigeria, Mozambique, Tanzania, Zanzibar, Mauritius, Rwanda, Kenya, Fiji Islands, Ethiopia, Pakistan, Sri Lanka, India, Saudi Arabia, Iran, Malaysia, Egypt, Philippines, Tajikistan, and Trinidad and Tobago. Many of these articles were done in collaboration with developed countries, primarily, Norway, followed by New Zealand, the UK and the United States of America. However, the journal has received the least submissions from South America and none from Central America (▶Table 1). Other papers have also been published from countries such as Canada, England, New Zealand and the USA where the articles share their experiences in health informatics and the potential benefits to the developing world (▶Table 2).

Topics covered by the journal have primarily focused on the deployment, use, and challenges faced with electronic medical records [8, 9, 10] and mobile health technologies [11, 12]. Other topics published include postgraduate health informatics training, surveillance studies, data standards and interoperability, health libraries, and health information websites. Furthermore, range of research methodologies used in the developing world has been published. The research methods include literature reviews, case studies, surveys, participatory, epidemiological, modeling, prototyping, spatial analysis, conceptual papers, and comparative studies.

Discussion

The journal faces a number of challenges as it builds its reputation in the health informatics research community. The quality of submissions is low by international standards due to a wide variety of factors but including: authors without English language skills; poor study design and implementation due to resource constraints; lack of indexing; lack of thorough referencing due to limited access to closed access literature; and a general disconnectedness from the best practice in informatics globally.

These challenges are gradually being addressed by the journal. A collaborative peer-review and editorial process is being established that relies on volunteers to enhance the papers accepted for submission by extensive copy-editing and feedback to improve readability and highlight the need to reference existing literature where it exists.

In terms of content, more of a theme-based approach that focuses on particular issues that are relevant to the developing world may be pursued by the journal in future. Special topics around mobile technologies and EMR implementation issues and challenges may have their own special JHIDC issues especially comparative studies between Asian, African, and South American experi-

ences around EMR implementation. The journal would like to encourage more submissions from the developing world as to increase the range of topics that could be shared across this important, yet neglected, area of the world.

Another significant challenge faced by the journal is trying to keep it financially stable while not being seen as an obstacle to authors in the developing world who may be limited in their ability to pay publication fees. In 2012, the journal introduced a publication fee of USD 300 once the paper has been accepted for publication. This fee was added to improve the services of the JHIDC to recuperate some of the administrative costs that have been generally paid by the editorial board. Those in developing countries with limited financial resources are usually given a waiver or reduction in the fee. Countries in the upper income parts of the developing world (e.g., Malaysia, Iran, or Saudi Arabia) and authors from Western countries doing work in the developed world have generally paid the fee.

Conclusion

As evidenced by the number of submissions and publications, the JHIDC has identified an unmet need in the international health informatics research community. The challenges it faces are great and the reliance on the goodwill of editors and peer-reviewers may not be sustainable in the long term. As the acceptance and drive for online open access journals continues to rise [3], an ongoing increase in publication rate and access of articles is expected. This points towards the need for improved scientific writing capabilities, one solution for which is to develop and deliver quality educational modules on writing and appraisal of scientific papers targeted specifically at developing countries, through online distance learning modules.

Nevertheless, our experience to date is that the desire of researchers and practitioners in developing countries to share their knowledge and experience is being met by the desire of the peer review board to assist in this process by contributing their time and energies to raise the quality of the submission to approach international standards.

The combined ethos of the Open Source software movement that enabled the development of the OJS platform and the Open Access approach to publishing has enabled an exemplar of how to move academic publishing forward to open up routes to publication for authors in resource constrained settings.

We anticipate that the journal will continue to encourage quality submissions from the developing world. However, from our experience, we believe that open access journals need stable financial support and to be indexed in PubMed, SCOPUS and other major indexing systems. An ISI Thomson Reuters impact factor assignment is an important first step that would make a significant difference in increasing the number of submission in general, and more specifically, the number of high quality submissions.

Readers may remember the Methods of Information in Medicine editorial that prompted the establishment of Applied Clinical Informatics [13]. The authors of this editorial hope that it will, in a similar vein, encourage informaticians in developing countries to submit their research and help participate in the collaborative peer-review process that will enable JHIDC to follow in the footsteps of ACI.

Conflict of Interest Statement
This is to confirm that no human subjects were involved in the project. Furthermore, there are no conflicts of interest besides the authors of this paper are the editors of the journal.

Table 1 Author and Article by country

Author Country	Authors	Collaboration with Developed Country
Africa		
Nigeria	8	1 UK, 1 Norway
Kenya	4	1, USA
Tanzania	4	3 Norway, 1 New Zealand
Zanzibar	3	2 Norway
Mauritius	3	
Ethiopia	2	1 Netherlands and Norway
Mozambique	2	1 Norway, 1 USA
Rwanda	1	1 Belgium
South Africa	1	
Asia		
India	5	
Malaysia	4	
Pakistan	3	
Sri lanka	3	1 Australia
Bangladesh	1	
Fiji Islands	1	
Tajikistan	1	1 Norway
Philippines		
Vietnam	1	1 USA
Middle East		
Saudi Arabia	4	
Iran	3	
Egypt	1	
South America		
Brazil	1	1 Norway and Netherlands
Trinidad and Tobago	1	

Author Country	Number of Articles
New Zealand	4
UK	3
USA	1
Canada	1

Table 2 Developed Country Articles on Health Informatics in Developing Countries

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