ISSN: 2149-2018

Applied Medical Research, 2021
VOL 8, NO. 1, PAGE 1 – 8
DOI: doi.org/10.47363/AMR/2021(8)204

REVIEW ARTICLE

Open Access

Saudi Medical Research Articles Published in Pseudo Journals: An Urgent Call for Action

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ABSTRACT

Research is needed if we want to carry out the demands of a rapidly changing world. In fact, research and education are closely linked to deliver the functions of a university. In recent decades, almost all universities expect their faculty members to maintain scholarly activities, including conducting research and publishing scholarly works. This pressure continues today with a paradigm shift among institutions from their previous emphasis on effective faculty contact with students as a criterion for success, to developing cultures of research and increase faculty research production. the researchers deemed it necessary to determine the frequency of medical research articles in Saudi Arabia published in pseudo journals. Likewise, researchers must be knowledgeable enough to discriminate between legitimate and predatory open access journal. It is in this context that this study is being undertaken.

Results: The report focuses on the total number of Saudi medical research articles published in pseudo journals from January to December 2018. Of the 3206 total articles identified and analized, 1531 (47.45%) articles were published in legitimate journals. However, 1675 (52.25%) research articles were published in 85 considered possible/probable pseudo journals. Majority of the identified authors were students (353), followed by medical residents (201), then interns (102) and physicians (42). The 604 were not clearly identified due to lack of authors' information.

Conclusion: The real existence and scope of predatory publishing must be discussed, debated and made known to the young researchers and should be encouraged to publish in peer-reviewed journals that follow the ethically accepted rules.

ARTICLE HISTORY

Received May 21, 2021
Accepted May 27, 2021
Published May 30, 2021

KEYWORDS

Journalism, Predatory journal, Pseudo-journal, Publication ethics

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Introduction

Research is needed if we want to carry out the demands of a rapidly changing world. In fact, research and education are closely linked to deliver the functions of a university. In recent decades, almost all universities expect their faculty members to maintain scholarly activities, including conducting research and publishing scholarly works. This pressure continues today with a paradigm shift among institutions from their previous emphasis on effective faculty contact with students as a criterion for success, to developing cultures of research and increase faculty research production [1].

Nationally and internationally, medical education is not isolated from this trend. It is witnessing numerous changes in the fields of curriculum, innovations in instructional methods, assessment, and issues related to accreditation. Specifically, at the national level, the increased interest in medical education is not only due to pressure from accreditation bodies, but also due to the rapid expansion in the number of medical schools to meet the demands of all stakeholders, including the community. Majority of these colleges have created departments of medical education or units to maintain and improve the quality of their educational activities. Consequently, this has created a great demand to look into research priorities in the field of medical education

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[2]. Medical students and medical practitioners, then, need to undertake, present and publish research papers as they now became mandatory requirements for graduation in most medical schools and completion of their fellowship and/ or consultancy trainings.

Indeed, the motivation to write a research paper might go beyond name, fame, money, and the desire to contribute to the body of knowledge; more importantly now, it is to enhance one's biodata in the job market or in getting promotions [3]. As per the "Medical Council of India (MCI) guidelines for appointments and promotions of medical teachers," research publication is an essential requirement [4]. Although the MCI has done so with a noble intention to improve the qualities of evidence-based teaching and also motivate medical teachers in research, the guidelines were taken up by many of us as a check for promotions and appointments ("publish or perish syndrome") [5].

Owing to the focus afforded by educational institutions to research dissemination as the core of research, publishing in high-quality peer-reviewed journals remains the prime metric of success for academicians, especially early career researchers focused on promotion and tenure [6]. This is because, the number of citations an article receives after its publication reflects its impact on the medical community in general or on a specialty in particular, which is also the basis for calculating the impact factor (IF) of a journal [7].

It can be noted that biomedical research production in KSA in last 5 years showed a clear linear increasing trend on a yearly basis. There was a slight decline (7%) initially in publications from 2008 to 2009. However, after that, there was a continuous rise. The increase was more noteworthy in 2010 and 2012 in which publications increased 22.9% and 23.6%, respectively [8].

The increased demand for research production and publication among academicians has led to the proliferation of predatory journals in pandemic proportions, which actively solicit manuscripts and charge publications fees without providing robust peer review and editorial services. The International Committee of Medical Journal Editors (ICMJE) is concerned by the growing number of entities that are advertising themselves as "scholarly medical journals" yet do not function as such. These "fake," "predatory," or "pseudo" journals misrepresent their peer-review and publication processes [9]

The term "predatory journals" was coined by Jeffrey Beall, a librarian from Colorado Denver [10]. Beall's "list of potential, possible, or probable predatory scholarly open-access journals" emerged in 2012 as his reaction to the Open Access (OA) publishing model that emerged as an alternative to the large publishing companies that controlled the vast share of the academic publishing market. OA model lets the authors to pay for the publication of their papers once they are peer-reviewed and accepted for publication—the so-called "author pays principle." However, despite all its obvious advantages, Beall disliked the OA and virtually blamed it for the rise of predatory publishing, calling OA model (especially, the so-called "golden OA") a failure [11].

Publication of research without proper scientific review is a detriment to society, can lead to unsafe/non-beneficial clinical practice, and in some cases may reward the conduct of unethical/ unscientific conduct such as plagiarism, falsified data, and image manipulation [12-14]. Predatory journals are motivated by financial gain, and are corrupting the communication of science [15]. Furthermore, their main victims are primarily institutions and researchers in low- and middle-income countries (LMICs) [16].

Hence, researchers must be knowledgeable enough to discriminate between legitimate and predatory open access journal. A recent commentary identified potential characteristics of predatory journals related to categories such as journal operations, editorial and peer review, manner of communication with authors, article processing charges, and ways of dissemination, indexing and archiving [17,18].

Because of the foregoing, the researchers deemed it necessary to determine the frequency of medical research articles in Saudi Arabia published in pseudo journals. Likewise, researchers must be knowledgeable enough to discriminate between legitimate and predatory open access journal. It is in this context that this study is being undertaken.

Results

Number of Research Articles Published in Pseudo Journals by Profession

The report focuses on the total number of Saudi medical research articles published in pseudo journals from January to December 2018. Of the 3206 total articles identified and analized, 1531 (47.45%) articles were published in legitimate journals (i.e., indexed in DOAJ, Scopus, Thompson Reuters Institute of Scientific Indexing (ISI), Ovid, Index Copernicus, and PubMed/ PMC). However, 1675 (52.25%) research articles were published in 85 considered possible/probable pseudo journals.

Bibliographic Indexing of Research Articles Published in Pseudo Journals

The 85 pseudo journals identified were not indexed in DOAJ, Scopus and Thompson Reuters Institute of Scientific Indexing (ISI), PubMed/PMC, except for the 12 articles from pseudo journals that were indexed in PubMed/PMC only. Eight of the pseudo journals claimed that they are indexed in DOAJ, and 15 claimed that they are indexed in Thompson Reuters ISI (e.g. using Thompson Reuters ID) although in reality, they were not.

The 83% of the pseudo journals where the articles published were noted to have 7-10 warning signs of being a possible and probable pseudo journal. The 11% have 4-6 warning signs; while the remaining 6% have 1-3 warning signs.

Duration of Waiting Time from Publication Submission to Acceptance

The 71% of the research articles took only 15-30 days while 18% for 30 to 60 days from submission to publication. The 8% took 15 to less than 15 days and the 3% of the articles took more

than 60 days.

Author Characteristics Published in Pseudo Journal

Majority of the identified authors were students (353), followed by medical residents (201), then interns (102) and physicians (42). The 604 were not clearly identified due to lack of authors' information (i.e. position and affiliation).

Warning Signs and their Ranking

Warning Signs" are characteristics or features that should increase one's suspicion that a journal is predatory. At the top of the list is item number 12 "it is difficult to identify articles published in the journal when searching Google Scholar or other databases (with recognition that new journals or those in low or middle income countries may face lags in indexing)." This is followed by item number 13 "information about author affiliations and/or contact information is not present in published articles, and "the journal publishes either an unusually small, unusually large, or markedly variable numbers of articles each year" (item number 6) as the third.

The next on the fourth rank is item number 5 "the journal website is not easily accessible in an internet search (which could be a problem in a legitimate journal in a low or middle income locale)," followed by items number 1 and 11 pertaining to "no information as to whether there are author fees in the Instructions for Authors" and "the publication fees are atypical for the scholarly publishing industry (much higher or much lower fees can both signal problems [with recognition that journals in low or middle income countries may have legitimately low fees])," respectively.

Other warning signs include peer review is not mentioned in the instructions for authors, little or no information is provided regarding the editor or editorial board, no location is listed for the journal offices, or location is very different than the location of the editors and editorial board, you or your colleagues have received formulaic e-mail solicitations for submissions that do not specify an interest in particular projects or areas that you are working on. Likewise, the promised routine turnaround times for review and publication are so rapid that they seem "too good to be true" and would be unlikely to encompass the time necessary for true peer review, and you do not receive a response to e-mail or telephone messages sent to the editor or journal office within a few days, the name of the journal is very similar to the name of a well-known, established journal with a good reputation and someone you know listed on the editorial board or journal staff, when you query them about the journal, is unaware of their supposed affiliation with the journal.

Reasons for Publication in Pseudo Journal

Phone interview was conducted on selected authors (n=50), that consists of 15 medical residents, 11 interns, 7 physicians. At the top of the list is the pressure to fulfill the Saudi Council requirements (i.e. 14/15 Residents, 8/11 Interns), for academic promotion (i.e. 5/7 Physicians), then the authors' desire to increase the number of publications (i.e. 6/7 physician, 7/11 interns), and for curriculum vitae (CV) enhancement (i.e. 6/7 physicians, 10/15 Residents, 5/11 interns).

Authors' Awareness in Publishing in Pseudo Journals

The 90% or 45 of the authors did not-recognized that they published a research article in a pseudo journal. The 6% or 3 of the authors are aware that the journal is a real journal but not a prestigious journal while only 4% or 2 who claimed that they are aware that they submitted their research article to a pseudo journal.

Any Problem Encountered Before and After Publishing in Pseudo Journals

In the pre-publication phase, the majority of 72% or 36/50 of the authors concerned about the article processing fees. The 14 out of 50 (28%) of the authors who submitted articles as requirements are honored by the Saudi Commission. Some of the author/s (3, 6%) decided to retract their published article and the requested retraction fee is expensive. Lastly, the 4% or 2 of the authors are anxious to re-submit the article in reputable or legitimate journal.

Discussion

Health research training has been recognized as an important component of medical education because the rapid expansion and progress in biomedical research is expected to transform medical care [19]. Likewise, research experience during medical school is strongly associated with postgraduate research initiatives [20,21]. and future career achievements in academic medicine [22].

Indeed, we cannot underestimate the role of research in complying with the requirement for graduation, promotion, recognition, and remuneration aspect. Being an important component in education and career advancement, medical practitioners are faced with the challenge of research production and publication while climbing up their career ladder. In their eagerness to achieve this goal, they resort to publish "consciously or unconsciously" in predatory or pseudo journals owing to its ease in the process of publication without recognizing the associated disadvantages.

Beall coined the word predatory journal, referring to those which do not aim to provide a platform for generating scientific evidence or to promote, preserve, and bring something new to the existing literature/evidence, but, the mission is to exploit the open-access (OA) model for their own profit [23]. "Predatory," because these entities prey on academicians for financial profit via article processing charges for open access articles, without meeting scholarly publishing standards [24]. Although predatory journals may claim to conduct peer review and mimic the structure of legitimate journals, they publish all or most submitted material without external peer review and do not follow standard policies advocated by organizations such as the World Association of Medical Editors (WAME), the Committee on Publication Ethics (COPE), the International Committee of Medical Journal Editors (ICMJE), and the Council of Science Editors (CSE) regarding issues such as archiving of journal content, management of potential conflicts of interest, handling of errata, and transparency

of journal processes and policies including fees. In the most egregious cases, they collect publication fees but the promised published articles never appear on the journal Web site [25]. In some cases, authors publishing in such journals are aware that the journals do not adhere to accepted standards but choose to publish in them anyway, hence they are not "prey." Therefore, "pseudo-journals" may be a more accurate name [26,27].

Günaydin and Dogan called predatory journals as "spamnals", which is a short term of spam journals, because of their method of communicating through spam e-mails [28]. The number of predatory OA journals has increased tremendously over the last few years and has caused difficulties for scholars and universities. In 2012, Beall predicted that the actual number of predatory journals to be around 4000, constitute a fourth of all OA journals [29]. This amount was predicted to be around 8000 active journals based on Shen and Bjork findings [30]. They estimated that the market of predatory publishing could be worth more than $74 million per year [31]

This paper expounds on the frequency of Saudi medical research articles published in pseudo journals including waiting time from submission to acceptance, the author characteristics, and reasons for publication, associated problems and the warning signs.

The swift move of Saudi Arabia to promote education and research in the country made it as of the most productive country producing adequate number of research publications, citations and holding the highest Hirsch index value among the Gulf Cooperation Council countries [32]. There were 103804 research papers/ research documents in all science and social sciences published in various global science journals during the period of 1996-2013 having an affiliation with Saudi Arabia like the Thomson Reuters Institute of Scientific Information (ISI) or Web of Science, and SCI-mago/ Scopus. In medicine the total number of research papers from Saudi Arabia are 16196, citable documents 14732, total citations 102827, citations per documents 6.36 and Hirsch index (h-index) is 92. However, in combined medical and allied health sciences the total number of research papers are 27246, citable documents 25416, total citations 181999, mean citations per documents 7.07 and mean h-index is 41.44. Furthermore, Saudi Arabia contributed 40797 research documents in ISI indexed journals only and also 151 research documents in highly reputable and towering science journals. Saudi Arabia's research performance in global medical sciences has markedly increased during the period 2006-2012 [33].

Together with this trend is also a linear increase in the number of biomedical researches in scientific journals in the kingdom such as The Annals of Saudi Medicine. It was launched as a venue to allow researchers to publish their scientific research; however, the statistics clearly showed that 66% of the accepted manuscripts originated from outside Saudi Arabia; namely: Turkey, India and China. This makes the journal to be more of a regional or continental medical journal. Articles originating from the West make only 3% of the accepted manuscripts for publication [34].

The increase in the demand for research productivity caused the mushrooming of bogus journals bringing threats to academic integrity and deceiving authors by promising fast review and prompt publishing, not only in the kingdom but all over the world. In 2014, a total of 21,817 articles were also published by 265 journals from Beall's list of predatory standalone journals in Iran. Likewise between January and March 2016, Iranian researchers have contributed to 1449 papers from 265 journals, being ranked as having the second largest contributor after India. Surprisingly, institutions with the highest share of publication in predatory journals are among the most reputable and well-known universities of the country [31].

Given the current publishing landscape, identifying such journals is important for authors, researchers, peer reviewers, and editors, because scientific work that is not properly vetted should not contribute to the scientific record [24]. In fact, the greatest challenge facing researchers, is to work out when journal solicitation comes from a credible publisher [35,36]. Initiatives do exist to make authors aware of these publishers. This includes Jeffrey Beall's list of "potential, possible, or probable" predatory publishers, and the Urology Green List, to name a few [37,38]. Unfortunately, there are still many predatory publishers that have not yet been identified and that continue to be difficult to distinguish from the credible ones. On the basis of 25 invitations for manuscript submission from predatory or fraudulent journals, Wahyudi (2017) had provided a generic structure to help new inexperienced upcoming researchers to help them in distinguishing predatory or fraudulent journals from legitimate ones [35].

With the proliferation of this phenomenon, one needs to determine the reasons for its existence. So, in the assessment of questionable publishing practices, five main drivers can be identified: ignorance, aggressive marketing, publish-or-perish, research assessment, and exclusion. At times, researchers are ignorant about peer-review, archiving, indexing, and the like and are often aggressively targeted by scientific journals' marketing campaigns urging them to publish their research in their journal offering ease of access to publishing, thus, becomes an alluring prospect in a career-driven world; especially, when considering the third point in this list, Publish-or-Perish. In order to advance their academic careers, researchers are now keenly aware of the need to include as many publications as possible on their CV, regardless of their individual merit [39].

While some blame lies with the researchers, it is perhaps more important to note that those in charge of assessing the merits of a scientific publication often fail to comply with their obligation to thoroughly ensure that the journal in which the research was published actually is of sufficient quality itself. Research assessment cannot be done only by looking at the number of publications of a researcher, or an impact factor of a journal, but must focus on the actual research [39].

Those managing or funding research need to re-think how they evaluate the research they govern. Research assessment can only be based on the actual content of the research, and not on any other metric, such as impact factor or number of publications. Institutions that issue mandates to publish the research they fund in open access should develop mechanisms to guide researchers

to assess the various publishing channels. Another aspect, closely related to the concept of research integrity, is publishing literacy. Knowing how and where to publish, and how to share then, must be an integral part of researcher's training [39].

This is because, the phenomenon of predatory publishing is growing and opinions on its effects are divided. Critics say that it is extremely damaging to the scientific record and must be stopped [40,41]. Others feel that, while problematic, predatory publishing is a transient state in publishing and will disappear or become obvious over time [42]. Although there may be conflicting views about predatory publishing, still, the fundamental problem of predatory journals seems to be that they collect an article-processing charges (APC) from authors without offering concomitant scholarly peer review (although many claim to) that is typical of legitimate journals Additionally, they do not appear to provide typical publishing services such as quality control, licensing, indexing, and perpetual content preservation and may not even be fully open access [43,44].

In today's world with cut-throat competition in professional field based on publication as criteria for promotion and increasing tenure of jobs, the rise in unethical publication through predatory journals may bring about lot dangers to the health of the public. The development of biomedical science relies on information, which young doctors and researchers retrieve from the Internet and majority of this information comes from researches published in Open access (OA) journals. But with the rise of OA predatory journals, we are living in the world where we can no longer blindly trust a scientific biomedical journal.

Thus, predatory journals act as loop holes and impart severe threat to medical science by publishing manuscripts with plagiarized or potentially fraudulent content which otherwise generally would not be published in a peer-reviewed journal [45]. Contrarily, several shortcomings of the publishers to meet the requirements of standards of scholarly journal like absent or weak peer-review system, lack of reliable archiving system for scientific articles, and lack of dissemination of these published works to deserving scientific community may cause loss of scientific data, funds, and hard work of genuine researchers [46].

Hence, researchers need to be prudent and knowledgeable enough to identify warning signs or evidence-based characteristics by which predatory journals may potentially be distinguished from presumed legitimate journals. This study revealed that the top three characteristics of a predatory journal are: "its difficulty to identify articles published in the journal when searching Google Scholar or other databases," then " the absence of author's contact information or affiliations in published articles, and "the journal publishes either an unusually small, unusually large, or markedly variable numbers of articles each year." New inexperienced upcoming researchers can then be guided by the generic structure devised by Wahyudi (2017) in distinguishing predatory or fraudulent journals from legitimate ones35 and also the characteristics of emails or invitations send by predatory or fraudulent journals [39].

This study noted that majority of the authors of publication are medical students followed interns, and physicians. A similar study was congruent with this study finding that those who publish in "predatory" journals are, for the most part, young and inexperienced researchers from developing countries. These are the professionals who still needs to climb up the professional ladder of success and make a name for themselves by publishing their researches – eventually for promotion and remuneration [47].

An understanding of the medical students' perceptions, attitudes and practices toward research is extremely important because this can lead to improvement of research practices among future physicians. In fact, researchers may have various reasons for attempting to publish and this study revealed that the top reason for doing so is in compliance with the requirements of Saudi Council, academic promotion, then the authors' desire to increase the number of publications, and for CV enhancement. Along this line, Al Ghamdi et al (2014) found out that the motives of the students behind conducting research during medical school included the following: research being mandatory in the curriculum, facilitating acceptance to a residency program, a positive achievement on their resume, fulfilling research interests, improving research skills, and attaining a research publication [48].

It is also worth noting that, even if research experience as a student does not lead to a career in academic medicine, the experience can help improve a student's skills in searching and critically appraising the medical literature and independent learning [49,50]. Such exposure to research as a student can also help identify future careers, establish important contacts and secure better residency positions. Given the many benefits of doing a research project as a student, not surprisingly, 97% of students included in an American study considered research a useful alternative to electives, 50 while Al Ghamdi et al (2014) noted that, 67.4% (116/172) agreed that research should be mandatory for all medical students [48].

Therefore, encouraging and involving undergraduate medical students in conducting research will lead to the development of their cognitive and professional abilities and will likely to promote their success [51,52]. Their engagement and participation in research activities will also likely promote the development of a ''culture'' of scientific medical research among them and will lead to the development of their research interest and skills after graduation [53]. Undergraduate medical students have shown an outstanding ability to initiate excellent researches, organize, and participate in national and international meetings and even develop students-led scientific journals [54]. Despite all recognized benefits of the research for undergraduate medical students, measures should be taken to overcome expected obstacles that could minimize their involvement. One of such is the pandemic palpable presence of predatory publishers and journals which do not only damage the essence of research and academic publishing, more so, it pose significant challenge and threat to health of the community. Hence, necessitates a "call for action."

Conclusion

The real existence and scope of predatory publishing must be discussed, debated and made known to the young researchers and should be encouraged to publish in peer-reviewed journals that follow the ethically accepted rules. Furthermore, stakeholders in research/ publishing should find ways to encourage some predatory publishers to become "clean" and accept the rules of the enterprise of research and publication, which in health sciences are intimately linked to evidence-based care and therapy. There should be a way to dialog. Health research is critically important and rogue publishers and predatory health journals must not be allowed to prosper [37,54]. With the proliferation of predatory journals, the task for ethical publishers, authors as well as institutions will obviously be enormous and will not be an easy one. They must continuously seek for ways to confront and even dialog with these predatory publishers. A collective action must be done to shut the inviting trap of dealing with fake publishers and journals or find some ways to positively and significantly reduce the menace [37,54].

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