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








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Global Landscape of the Attack of Predatory Journals in Oncology

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ABSTRACT

PURPOSE Open-access publishing expanded opportunities to give visibility to research results but was accompanied by the proliferation of predatory journals (PJs) that offer expedited publishing but potentially compromise the integrity of research and peer review. To our knowledge, to date, there is no comprehensive global study on the impact of PJs in the field of oncology.

MATERIALS AND METHODS A 29 question-based cross-sectional survey was developed to explore knowledge and practices of predatory publishing and analyzed using descriptive statistics and binary logistic regression.

RESULTS Four hundred and twenty-six complete responses to the survey were reported. Almost half of the responders reported feeling pressure to publish from supervisors, institutions, and funding and regulatory agencies. The majority of authors were contacted by PJs through email solicitations (67.8%), with fewer using social networks (31%). In total, 13.4% of the responders confirmed past publications on PJo, convinced by fast editorial decision time, low article-processing charges, limited peer review, and for the promise of academic boost in short time. Over half of the participants were not aware of PJo detection tools. We developed a multivariable model to understand the determinants to publish in PJs, showing a significant correlation of practicing oncology in low- and middle-income countries (LMICs) and predatory publishing (odds ratio [OR], 2.02 [95% CI, 1.01 to 4.03]; $P = .04$). Having previous experience in academic publishing was not protective (OR, 3.81 [95% CI, 1.06 to 13.62]; $P = .03$). Suggestions for interventions included educational workshops, increasing awareness through social networks, enhanced research funding in LMICs, surveillance by supervisors, and implementation of institutional actions against responsible parties.

CONCLUSION The prevalence of predatory publishing poses an alarming problem in the field of oncology, globally. Our survey identified actionable risk factors that may contribute to vulnerability to PJs and inform guidance to enhance research capacity broadly.

ACCOMPANYING CONTENT

[Data Supplement](#)

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INTRODUCTION

The British philosopher Henry Oldenburg (1619–1677) is largely considered the father of the modern peer review system of scientific literature.¹ As an editor and a founder of the *Philosophical Transactions of the Royal Society* in 1665, he dedicated his profession to implementing the policy of external review by experts for submitted manuscripts.^{1,2} The practice that he introduced was the beginning of academic peer review. However, the scholarly peer review practice has

only been consolidated more recently. For instance, *The Lancet* started to peer review the submissions only in 1976, despite having published since 1823.^{1,3} Nowadays, academic journals require peer review to maintain research independence, integrity, and credibility, pursuing the best standards for quality research.

Predatory journals (PJs) are based on write-only publishing practices that bypass or provide a light peer review by infringing publishing ethical standards through several

CONTEXT

Key Objective

This global survey-based study investigated the impact of predatory journals (PJs) in oncology, focusing on the awareness and practices of oncologists and cancer researchers, especially in low- and middle-income countries (LMICs).

Knowledge Generated

Factors such as accelerated editorial response times, reduced article-processing charges, streamlined peer review processes, and the prospect of rapid academic advancement are key drivers for submissions to PJs. Pressure to publish from supervisors, institutions, and funding and regulatory agencies are other factors that may explain publishing in PJs. PJs predominantly engage potential authors through email solicitations, with a considerable proportion of the respondent's lacking familiarity with tools essential for journal quality review. An association was found between practicing cancer research in LMICs and publishing in PJs.

Relevance

Our findings provide a rationale to build educational interventions targeting oncologists and cancer researchers in LMICs. It is hopeful that this will deliver actionable data to improve research integrity and guide policy development against predatory publishing.

different strategies. The practice of PJs is characterized by a low-quality peer review in the context of multiple concurrent low-quality practices. PJs commonly have no subject specificity and publish several types of scientific literature, across a broad spectrum of disciplines. In addition, PJs can have fictional editorial board members. As a result, the Pj practices generate confusion in the indexing and can result in misleading impact factors, based on citations captured across several, nonspecific disciplines. PJs are also characterized by a unique strategy to approach potential authors with repeated, unsolicited, and unwanted generic emails of invitation for publication, claiming certainty of publication, quick editorial processing, and often affordable fees. Many PJs choose sonorous, almost improvisational good-sounding journal names containing words (such as American, European, and International), or sounding like established, high-impact journals, aiming to attract the authors and reassure their suspicion.^{4,5} A remarkable number of for-profit open access (OA) PJs benefit from the publish or perish treadmill—that is an academic practice of reward based on the number of papers published, and not the quality of the research. PJs target authors with limited funding (perhaps, also those with poor training in research integrity), who are under pressure to publish for their academic promotion,^{6,7} predominantly early-career scientists from low- and middle-income countries (LMICs).⁸ Publishing in PJs can severely damage young researchers' careers as their work will be published without a proper peer review process and thus become not credible.⁹ Remarkably, PJs have developed malignant tactics to infiltrate reputable indexing databases such as PubMed/Medline, which makes their identification as predatory very challenging.¹⁰⁻¹³ Articles published in PJs also penetrate the evidentiary base to inform randomized and controlled clinical trials and systematic reviews,^{14,15} considerably harming patients' care, as

researchers use this evidence synthesis to provide medical practice guidelines. To our knowledge, to date, only one survey-based study has evaluated the Pj practice in Germany and Austria.¹⁶ To respond to the urgent need to study this issue and examine this damaging research practice globally across oncology specialties, we conducted a cross-sectional survey, aiming to investigate the extent and identify potential factors for publishing in PJs and also identify interventions to build educational programs to increase awareness of PJs.

MATERIALS AND METHODS

Survey Design

We designed a cross-sectional survey using Google Forms, comprising 29 questions written in English. We converted our research objectives into key topics through numerous discussions with co-authors to construct the survey. These topics were then formulated into a mix of closed-ended and open-ended questions. We aimed to make these questions specific, neutral, and clear, while avoiding complex language. The survey began with general questions, gradually progressing to more specific ones. A pilot review was conducted to detect any errors, following a thorough revision by a group of co-authors. The survey content was based on preliminary research from literature on strategies and approaches of PJs,¹⁶ on the tools to identify and prevent the threat, and expert inputs from the authors. The authors gathered a sample of emails of invitations from PJs, and key elements of the Pj attitudes were highlighted, to be incorporated in the survey questionnaire.

The survey design was focused on short questions to limit nonresponse bias (ie, patients who refuse to answer longer

questions are systematically different from responders) and also on multiple-choice responses to reduce acquiescence bias (ie, tendency to select a positive response option, eg, when the questions are all presented as binary). The binary transformation during data analysis was preplanned, as previously described.¹⁷ For some questions, we used open answer options to capture additional respondents' perspectives, thus reducing the effect of answer order bias simultaneously. To validate the questionnaire, co-authors were asked to complete the survey to detect any anomalies before its release in the home institutions of collaborators for distribution and data collection. Feedback was provided, as appropriate. The survey (Data Supplement, Appendix S1) was distributed based on a snowballing by email of the authors participating in this project. A mailing list of eligible respondents was compiled, starting from the core members of the ONCOLLEGE oncology care providers' network, and expanding in national and regional networks, based on an established approach for survey research in global oncology.^{18,19} Data collection occurred for 8 months, from July 1, 2021, to February 28, 2022. Additional information is provided in the Data Supplement (Appendix S2).

Ethical Approval and Consent to Participate

Data processing complies with the European Union General Data Protection Regulation (2016/679) for privacy; the data are presented as grouped results, to ensure no disclosure of the identity of the respondents. The survey also complies with the Moroccan legislation (Moroccan law for the protection of persons participating in biomedical research, accessed November 21, 2021), where the lead author (K.E.B.) practices. The study is exempted from ethical committee approval because it is a low-risk investigation as confirmed by a local ethical board review (Ref: 12/REC/23—Research Ethics Committee of the Polydisciplinary Faculty of Taroudant, Morocco). Additional information is provided in the Data Supplement (Appendix S2).

Data Analysis and Reporting

Data coding, extraction, and analysis were performed on Excel (Microsoft Office) and IBM SPSS Statistics 25 (SPSS, Chicago, IL). Descriptive statistics were used to report quantitative and categorical data as appropriate. Univariable analysis was used to explore the association of responders' characteristics and publication experience in PJs followed by a multivariable binary logistic regression adjusted for significant covariates and using a backward stepwise selection further to study risk factors of vulnerability of publishing in PJs. The goodness of fit of the logistic regression model was assessed using the Hosmer and Lemeshow. A CI calculated at 95% was considered during the analysis. Data were analyzed according to the two World Bank (WB) groups²⁰ (2022 data; high-income countries [HICs], and LMICs). Manuscript writing and reporting were

based on the Consensus-Based Checklist for Reporting of Survey Studies (CROSS).²¹

RESULTS

General Characteristics and Demographic Features of Study Participants

A description of the cohort of responders can be found in [Table 1](#). A total of 426 oncologists and cancer researchers participated in the online survey with a median age of 37 years (IQR, 11). The sex of respondents was equal (49.1% of male and 50.7% of female) with a male-to-female ratio of 0.97. When categorized into income groups, on the basis of the WB classification (2022 data) for the country where they practice, a significant proportion of participants were from LMICs (64.3%; n = 274), including lower-middle (36.2%; n = 154), upper-middle (24.4%; n = 104), low-income countries (3.8%; n = 16); providers from HICs were 35.2% (n = 150). On the basis of the country of origin versus country of practice, we estimated a percentage of emigration from LMICs to HICs of 9.4%. Additional information is provided in the Data Supplement (Appendix S2).

Perception of Participants of Academic Publishing and PJs

Of the participants, 77.1% (n = 328) were affiliated with institutions engaged in cancer research, and 78.6% (n = 335) had published in peer-reviewed journals ([Table 2](#)). Nearly all (93%; n = 395) claimed to verify journal quality and indexing before submitting their research for publication. Almost half reported feeling pressure to publish from supervisors, institutions, funding agencies, and regulations. When asked about their academic knowledge, 71.4% (n = 304) of participants said they had a basic understanding of PJs. The majority of authors had been contacted by PJs through email solicitations (67.8%; n = 289) or social networks (31%; n = 132). More than 90% (n = 395) of participants claimed to discard these types of invitations, but 13.4% (n = 57) had published at least once in a PJ. Indeed, 87.7% (n = 50) of this subgroup of participants who published in PJs were targeted by email solicitations, and 61.4% (n = 35) of them were under pressure to publish. Additionally, 73.7% (n = 314) of participants stated that PJs have not the same quality standards as compared with peer-reviewed journals. According to participants, PJs attract researchers for their fast decision time (36.38%; n = 155), low OA fees (20.42%; n = 87), absence of peer review (13.15%; n = 56), and aiming at an academic career boost in a shorter time (13.38%; n = 57). In fact, some researchers had published in PJs to fulfill academic requirements such as publishing a residency or PhD thesis (18.08%; n = 77) or to improve their career in hospitals (10.09%; n = 46), in addition to other reasons (Data Supplement, Fig S1).

TABLE 1. General Characteristics and Demographic Features of Participants

Features	No. (%)
Age	
Median (IQR)	11 (37)
Mean (\pm SD)	8.5 (38.54)
Sex	
Male	209 (49.1)
Female	216 (50.7)
Nonbinary	1 (0.2)
Academic degree	
MD	296 (69.5)
MD/PhD	73 (17.1)
PhD	42 (9.9)
Other	15 (3.5)
Current specialty	
Clinical oncology disciplines	276 (64.8)
Medical oncology	181 (42.5)
Radiation oncology	50 (11.7)
Hematology	29 (6.8)
Clinical oncology	14 (3.2)
Pediatric oncology	2 (0.5)
Surgical oncology	51 (12)
Oncology pharmacy/pharmacology	17 (4.8)
Cancer research (basic or translational sciences)	46 (10.8)
Other specialties	36 (8.5)
Type of participants' research area	
Clinical scientist	198 (46.5)
Basic scientist	38 (8.9)
Both	62 (14.6)
I practice mostly clinical work, not research	128 (30)
Current position	
Specialist doctor	231 (54.2)
Trainee (PhD student or resident physician)	81 (19)
Professor	55 (12.9)
Postdoctoral/research or clinical fellow	24 (5.6)
Full-time researcher	19 (4.5)
Other	16 (3.8)
Primary affiliation type	
Public sector	300 (70.4)
Private sector	65 (15.3)
Both	61 (14.3)
Country of origin	
Iraq	72 (16.9)
Morocco	62 (14.6)
Italy	44 (10.3)
Pakistan	23 (5.4)
Egypt	21 (4.9)
Mexico	17 (4)
Bangladesh	13 (3.1)
The United Kingdom	12 (2.8)
All other countries ^a	162 (38)

(continued in next column)

TABLE 1. General Characteristics and Demographic Features of Participants (continued)

Features	No. (%)
Income group of participants' country of origin ^b	
LMICs	314 (73.7)
Upper middle income	113 (26.5)
Lower middle income	173 (40.6)
Low income	28 (6.6)
HICs	112 (26.3)
Country of practice	
Iraq	71 (16.7)
Morocco	57 (13.4)
Italy	33 (7.7)
Egypt	21 (4.9)
Pakistan	20 (4.7)
The United Kingdom	19 (4.5)
Austria	15 (3.5)
Mexico	15 (3.5)
All other countries ^a	175 (41.1)
Income group of participants' country of practice ^b	
LMIC	274 (64.3)
Upper middle income	104 (24.4)
Lower middle income	154 (36.2)
Low income	16 (3.8)
HIC	150 (35.2)
Missing data	2 (0.5)

Abbreviations: HICs, high-income countries; LMICs, low- and middle-income countries; MD, medical doctorate; PhD, philosophy doctorate; SD, standard deviation.

^aDetailed list of countries can be found in the Data Supplement (Table S2).

^bBased on the World Bank classification (2022 data).²² Venezuela, previously classified as an upper middle-income country, was reclassified as a lower middle-income country.²³

Surprisingly, over half (51.6%; n = 220) of participants were not aware of online tools such as the Think Check Submit initiative and the Bealls' List to evaluate journal quality and identify PJos. According to them, PJos target scientists from LMICs because of poor knowledge of this phenomenon (51.88%; n = 221), attracted by affordable article processing charges (48.59%; n = 207), and fast publication process (46.24%; n = 197). Additionally, poor information on the importance of peer review (32.16%; n = 137) and low-quality research appeared to make scientists vulnerable to predatory publishing (Data Supplement, Fig S2). Ultimately, an important proportion of respondents (49.1%; n = 213) acknowledged that the quantity of publications is a significant factor in their ability to enhance their reputation and access better opportunities within their institutions. The majority of participants (91.5%; n = 390) emphasized the need to raise awareness among oncologists and cancer researchers about PJos.

TABLE 2. Perception of Participants of Academic Publishing and PJos

Survey Items/Variables	No. (%)
Involvement of respondents' affiliations in cancer research	
Yes	328 (77.1)
No	72 (16.7)
I do not know	13 (3.1)
I prefer not to answer	13 (3.1)
Publication records of participants in peer-reviewed journals	
Yes	335 (78.6)
No	91 (21.4)
Journal quality review (including indexing) before submission	
Yes	395 (92.7)
No	31 (7.3)
Pressure to publish from your supervisor, institution, research funding agencies, and related regulations	
Yes	206 (48.4)
No	173 (40.6)
I prefer not to answer	47 (11)
Basic knowledge on PJos	
Yes	304 (71.4)
No	122 (28.6)
Email solicitations	
Yes	289 (67.8)
No	137 (32.2)
Solicitations using social networks	
Yes	132 (31)
No	248 (58.2)
Missing data	46 (10.8)
Frequency of solicitations	
Every day	72 (16.9)
Every week	79 (18.5)
Monthly	43 (10.1)
Every 2-3 months	40 (9.4)
Every 6 months	26 (6.1)
Once a year	9 (2.1)
I do not know	132 (31)
I prefer not to answer	25 (5.9)
Response to solicitations	
No, I ignore their solicitations	395 (92.7)
Yes, I tell them that they are predatory	18 (4.2)
Yes, I send them my papers	13 (3.1)
Previous publications in PJos	
No, I have not published articles in a PJo	369 (86.6)
Yes, I have published articles knowing that it was predatory	52 (12.2)
Yes, but I did not know at the moment that it was predatory	5 (1.2)
Do you think that articles published in PJos have the same quality as those published in peer-reviewed journals?	
Yes	8 (1.9)
No	314 (73.7)
I do not know	93 (21.8)
I prefer not to answer	11 (2.6)

(continued in next column)

TABLE 2. Perception of Participants of Academic Publishing and PJos (continued)

Survey Items/Variables	No. (%)
Use of online tools (Think Check Submit and Bealls' list) to detect PJos	
Yes	121 (28.4)
No	85 (20)
This is the first time I am hearing about these tools	220 (51.6)
Institutions' conduct regarding access to better opportunities and reputation	
The number of publications affects directly	213 (49.1)
Quality of research is considered more important	97 (22.8)
I do not know	88 (20.7)
I prefer not to answer	28 (6.6)
Do you consider that scientists and oncologists should be alerted about PJos?	
Yes	390 (91.5)
No	14 (3.3)
I prefer not to answer	22 (5.2)

Abbreviation: PJo, predatory journal.

Predictive Factors of Publishing in PJos

We initially examined a set of covariates from the data set using univariable regression, to explore factors potentially associated with publication in a PJo and subsequently identified independent factors using a multivariable approach (Data Supplement, Table S1). The final model included two variables significantly associated with predatory publishing, as confirmed by the goodness-of-fit Hosmer and Lemeshow test ($P = .74$: good fitness of the model). Being an oncologist from an LMIC doubled the risk of publishing in PJos (odds ratio [OR], 2.02 [95% CI, 1.01 to 4.03]; $P = .04$). Then, having publishing experience was associated with an over three-time risk of publishing in PJos (OR, 3.81 [95% CI, 1.06 to 13.62]; $P = .03$).

DISCUSSION

In the past decade, there has been a considerable rise in new oncology journals publishing OA science, driven by the “publish or perish” culture. Consequently, predatory publishing has been a success story in terms of profits of OA in recent years, but not for the ethical conduct, and posing serious risks to scientific integrity. In our study, we aimed to examine predatory publishing practices among oncologists and cancer researchers and identify factors associated with this phenomenon to build recommendations and educational interventions to raise awareness and improve knowledge on PJos. According to survey participants, PJos target researchers from LMICs because of more limited awareness and for the affordable article processing charges and quicker publication process. A common characteristic

of PJos is their focus on researchers in LMICs^{24,25} who may receive insufficient training in publishing standards and feel compelled to publish because of the pressure they face, amid limited research funding and willingness to get recognition for their work. This is further supported by the evidence from our survey that demonstrated that being a practitioner in an LMIC increases the risk of publishing in PJs by two folds. Such a risk is in fact pronounced in researchers with more experience in publishing, pushed to do more and faster to keep or improve their careers, as shown in our multivariable model. Moreover, unaffordability of the current OA publishing model by most LMICs-resident researchers, despite facilitations adopted by some journals, is another barrier encouraging scientists to pursue cheaper OA options, with no peer review, namely the PJos. For instance, often only low-income based authors are eligible for partial waivers, and those located in lower-middle income or upper-middle income countries are subjected to pay exorbitant and unreasonably high article-processing charges.²⁶ Therefore, a significant solution to this issue is to develop a policy that recommends the availability of funding within the author's institution rather than relying on the WB classification as a new flexible waiver model,²⁷ to deliver a more equitable system of cancer research. Additionally, it is necessary to restructure the entire system of quality check of journals and their conduct, to end the misconduct of PJos. Targeting authors by email solicitations is a hallmark of PJos. This was also noticed in the responses of our participants. Undeniably, requests for submission using this approach²⁸ are common among PJos. In our study, email engagement was found to increase the risk of publishing in PJos, in the univariate model. This includes both solicitations using emails and social networks. However, these findings were not confirmed after adjustment for covariates on multivariable analysis and require more validations. Unexpectedly, participants with self-reported foundational understanding of PJos demonstrated a two-fold increase in the likelihood of publishing their work within these journals as shown by the univariable analysis. One can argue that having knowledge of the phenomenon may be post hoc, meaning that authors who had published in a PJos were educated only later on to the risks of such a conduct.^{29,30} For instance, we could not understand if authors incurring in PJos publications and then receiving specific education on the ethics of oncology research eventually persisted or refrained from PJos.

Our study also found that many participants were not aware of online tools to evaluate journal quality and identify PJos. Moreover, our statistical analysis found a trend toward significance of predatory publishing using these tools on multivariable model suggesting that other factors may interfere with the publishing attitudes. For instance, Beall's list, despite criticism, is still commonly utilized to categorize journals and publishers with predatory behavior.³¹ In addition, the online Think Check Submit tool is also beneficial to carefully identify the best journal to publish research.³² This system using quality assessment checklists is

especially important for authors in developing countries, where there is a need to enhance their chances of getting published while also maintaining their work has a positive impact on a global scale.³³

Over-reliance on quantity rather than the quality of research outputs is used to enhance international visibility and ranking of universities and institutions. This is another well-documented factor that can lead to a culture that values publish or perish over producing high-quality research that addresses important practice questions which may negatively affect the integrity of research findings.^{34,35} We observed a pressure to publish trend in our study as well, with participants indicating that the quantity of publications has a direct impact on access to better opportunities and reputation in their institutions, which may make them more vulnerable to publishing in PJos. The findings provided additional evidence that possessing publishing experience does not offer protection against predatory publishing—in fact, it does increase the risk that may regard those researchers with more pressure to publish. Our participants clearly stated that the quality of PJos publications is low compared with peer-reviewed journals. Indeed, articles published in PJos were recently reported to have little scientific impact.⁹ The PJos peer review system is compromised leading to the publication of low-quality research with issues in study design, data reporting, and ethics. Therefore, this situation poses a risk to patient outcomes. Particularly, the literature published in PJos infiltrates into indexing databases such as PubMed,¹¹ a widely used resource for actionable study findings in oncology. Thus, urgent global awareness is needed to address the hidden danger of PJos.

Various suggestions were proposed to improve the researchers' knowledge on PJos and find a remedy to the issue of research integrity, including educational interventions. Increasing awareness through implementing training by responsible parties seems to be the most desirable strategy. Indeed, accurate education on research ethics and integrity is a crucial aspect of training researchers and is necessary for legitimate publishing in academic research. Early exposure to this training among young oncologists is essential for developing strong research capacities and implementing policies that prevent serious deviations from international standards, such as predatory publishing. A recent study in Morocco led by one of the authors (K.E.B.) demonstrated that training using distance education is effective in improving the knowledge of young researchers on PJos.³⁶ In fact, delivering targeted education sessions on best publication practices using this approach to early-career investigators is encouraging^{36,37} with several advantages for LMICs encompassing its flexibility and affordability without travel and logistical restrictions in under-resourced settings.³⁸ In addition, the transition from face-to-face learning to online education has had a significant impact, particularly in terms of providing researchers from LMICs with access to high-quality training through webinars offered by quality research institutions and organizations.³⁹

Our study has various strengths and a number of limitations. To the best of our knowledge, this is the first survey to explore predatory publishing in oncology on a global scale. Our study encompassed participants from both LMICs and HICs, enabling a study of their perceptions and knowledge. The majority of participants had affiliations involved in cancer research which may provide accurate information on their publishing behavior on PJos. In addition, most participants in our survey were from medical specialties. Indeed, this category of researchers is the most affected by predatory publishing, as pushed by publish or perish attitudes.^{40,41} The field of health sciences has a high publication activity and significant demand for disseminating research outputs, making scientists more vulnerable to PJos. However, our findings are subject to different biases related to survey-based research, such as conformity bias. In addition, soliciting oncologists and cancer researchers

practicing in LMICs, who constituted the majority of respondents, may favor larger estimates of our conclusions. Therefore, careful interpretation of these findings is needed. Additional information is provided in the Data Supplement (Appendix S2).

In conclusion, the emergence and propagation of PJos are critical challenges in the field of oncology. The knowledge generated by our findings can be used to enhance quality research capacity by implementing initiatives that promote awareness and drive good publishing practices aligning with the strongest objectives of global oncology. Educational interventions including distance education hold the potential to offer free training to scientists for raising awareness about predatory publishing. Additional research that evaluates the economic impact of predatory publishing on health systems and research environments is awaited.

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PRIOR PRESENTATION

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DATA SHARING STATEMENT

The data set of this research is available upon reasonable requests.

AUTHOR CONTRIBUTIONS

Conception and design: Khalid El Bairy, Dario Trapani

Administrative support: Khalid El Bairy, Dario Trapani, Safa El Kefi

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REFERENCES

- Dutta Majumder P, Henry Oldenburg: The first journal editor. *Indian J Ophthalmol* 68:1253-1254, 2020
- Fyfe A, McDougall-Waters J, Moxham N: 350 years of scientific periodicals. *Notes Rec R Soc Lond* 69:227-239, 2015
- Chapelle FH: The history and practice of peer review. *Ground Water* 52:1, 2014
- Ruiter-Lopez L, Lopez-Leon S, Forero DA: Predatory journals: Do not judge journals by their Editorial Board Members. *Med Teach* 41:691-696, 2019
- El Bairi K, Al Jarroudi O, Afqir S: Practical tools and guidelines for young oncologists from resource-limited settings to publish excellence and advance their career. *JCO Glob Oncol* 10.1200/GO.21.00310
- Gasparyan AY, Nurmashev B, Voronov AA, et al: The pressure to publish more and the scope of predatory publishing activities. *J Korean Med Sci* 31:1874-1878, 2016
- Mills D, Inouye K: Problematizing 'predatory publishing': A systematic review of factors shaping publishing motives, decisions, and experiences. *Learn Publ* 34:89-104, 2020
- Forero DA, Oermann MH, Manca A, et al: Negative effects of "predatory" journals on global health research. *Ann Glob Health* 84:584-589, 2018
- Singh Chawla D: Predatory-journal papers have little scientific impact. *Nature* 10.1038/d41586-020-00031-6 [epub ahead of print on November 11, 2005]
- Cortegiani A, Manca A, Lalu M, et al: Inclusion of predatory journals in Scopus is inflating scholars' metrics and advancing careers. *Int J Public Health* 65:3-4, 2020
- Manca A, Cugusi L, Cortegiani A, et al: Predatory journals enter biomedical databases through public funding. *BMJ* 371:m4265, 2020
- Manca A, Moher D, Cugusi L, et al: How predatory journals leak into PubMed. *CMAJ* 190:E1042-E1045, 2018
- Duc NM, Hiep DV, Thong PM, et al: Predatory open access journals are indexed in reputable databases: A revisiting issue or an unsolved problem. *Med Arch* 74:318-322, 2020
- Hayden JA, Ellis J, Ogilvie R, et al: Meta-epidemiological study of publication integrity, and quality of conduct and reporting of randomized trials included in a systematic review of low back pain. *J Clin Epidemiol* 134:65-78, 2021
- Rice DB, Skidmore B, Cobey KD: Dealing with predatory journal articles captured in systematic reviews. *Syst Rev* 10:175, 2021
- Richtig G, Richtig E, Böhm A, et al: Awareness of predatory journals and open access among medical oncologists: Results of an online survey. *ESMO Open* 4:e000580, 2019
- El Bairi K, El Kadmiri N, Fourtassi M: Exploring scientific misconduct in Morocco based on an analysis of plagiarism perception in a cohort of 1,220 researchers and students. *Account Res* 31: 138-157, 2024
- Fundyus A, Sengar M, Lombe D, et al: Access to cancer medicines deemed essential by oncologists in 82 countries: An international, cross-sectional survey. *Lancet Oncol* 22:1367-1377, 2021
- Trapani D, Lengyel CG, Habeeb BS, et al: The global landscape of availability, accessibility and affordability of essential diagnostics and therapeutics for the management of HER2-positive breast cancer: The ONCOLLEGE-001 survey. *J Cancer Policy* 28:100285, 2021
- The World Bank. <https://www.worldbank.org>
- Sharma A, Minh Duc NT, Luu Lam Thang T, et al: A consensus-based checklist for reporting of survey studies (CROSS). *J Gen Intern Med* 36:3179-3187, 2021
- Hamadeh N, Van Rompaey C, Metreau E: New World Bank country classifications by income level: 2021-2022. *World Bank Blogs*, 2021. <https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2021-2022>
- Maldonado L, Olivo V: Is Venezuela still an upper-middle-income country? Estimating the GNI per capita for 2015-2021. *Inter-American Development Bank*, 2022. <https://publications.iadb.org/en/venezuela-still-upper-middle-income-country-estimating-gni-capita-2015-2021>
- Balehegn M: Increased publication in predatory journals by developing countries' institutions: What it entails? And what can be done? *Int Inf Libr Rev* 49:97-100, 2017
- Xia J, Harmon J, Connolly K, et al: Who publishes in "predatory" journals. *J Assn Inf Sci Tec*, 66: 1406-1417, 2014
- Newton CR: Research and open access from low- and middle-income countries. *Dev Med Child Neurol* 62:537, 2020
- El Bairi K: Flexible publishing models for authors from under-resourced settings: A call for a radical change, 2022. <https://socialsciences.nature.com/posts/flexible-publishing-models-for-authors-from-under-resourced-settings-a-call-for-a-radical-change>
- Clemons M, de Costa E Silva M, Joy AA, et al: Predatory invitations from journals: More than just a nuisance?. *Oncologist* 22:236-240, 2017
- Kruger J, Dunning D: Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *J Pers Soc Psychol* 77:1121-1134, 1999
- Mahmood K: Do people overestimate their information literacy skills? A systematic review of empirical evidence on the Dunning-Kruger Effect. *Commun Inf Lit* 10:199-213, 2016
- Strielkowski W: Setting new publishing standards after the Beall's list. *Int J Occup Environ Med* 9:108-110, 2018
- Cortegiani A, Shafer SL: "Think. Check. Submit." to avoid predatory publishing. *Crit Care* 22:300, 2018
- Pearson GS: Avoiding predatory journals with "Think. Check. Submit.". *J Am Psychiatr Nurses Assoc* 23:239-240, 2017
- Guraya SY, Norman RI, Khoshhal KI, et al: Publish or Perish mantra in the medical field: A systematic review of the reasons, consequences and remedies. *Pak J Med Sci* 32:1562-1567, 2016

35. van Dalen HP: How the publish-or-perish principle divides a science: The case of economists. *Scientometrics* 126:1675-1694, 2021
 36. El Bairi K, Fourtassi M, El Fatimy R, et al: Distance education as a tool to improve researchers' knowledge on predatory journals in countries with limited resources: The Moroccan experience. *Int J Educ Integr* 19:1, 2023
 37. Babb MN, Dingwall D: An education session developed in response to low health professional awareness of predatory journals. *J Can Health Libr Assoc* 40:99-110, 2019
 38. Naciri A, Radid M, Kharbach A, et al: E-learning in health professions education during the COVID-19 pandemic: A systematic review. *J Educ Eval Health Prof* 18:27, 2021
 39. Merritt C, Jack H, Mangezi W, et al: Positioning for success: Building capacity in academic competencies for early-career researchers in sub-Saharan Africa. *Glob Ment Health (Camb)* 6:e16, 2019
 40. Marina T, Sterligov I: Prevalence of potentially predatory publishing in Scopus on the country level. *Scientometrics* 126:5019-5077, 2021
 41. Shen C, Björk BC: Predatory' open access: A longitudinal study of article volumes and market characteristics. *BMC Med* 13:230, 2015
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