

# **Title:**

## **A Critical Appraisal of Predatory Journals in Pathology**

Yaman M. AlAhmad<sup>1#</sup>, Ibrahim Abdelhafez<sup>1#</sup>, Farhan S. Cyprian<sup>1</sup>, Faruk Skenderi<sup>2</sup>,  
Saghir Akhtar<sup>1</sup>, Semir Vranic<sup>1\*</sup>

<sup>1</sup> College of Medicine, Qatar University, Doha, Qatar

<sup>2</sup> Department of Pathology, Clinical Center, University of Sarajevo, Sarajevo, Bosnia and  
Herzegovina

# These authors contributed equally

### **\*Correspondence:**

Semir Vranic, MD, PhD

College of Medicine, Qatar University

2713 Doha, Qatar

E-mail: [svranic@qu.edu.qa](mailto:svranic@qu.edu.qa) or [semir.vranic@gmail.com](mailto:semir.vranic@gmail.com)

Phone: +974 4403 7873

# Abstract

Predatory or pseudo journals have recently come into focus due to their massive internet expansion and extensive spam email soliciting. Recent studies explored this urging problem in several biomedical disciplines. In the present study, we identified 69 potential predatory (pseudo) pathology journals that were contrasted to 89 legitimate pathology journals obtained from the major bibliographic databases. All potential predatory journals in pathology shared at least one of the features proposed by previous studies (e.g. a poor web-site integrity, submissions via email, unclear or ambiguous peer-review process, missing names of the editorial board members, missing or pending the journal ISSN). Twenty-one (30%) of the potential predatory pathology journals had misleading titles mimicking those of legitimate journals. Only one of the identified journals was listed in the Directory of Open Access journals whereas none (0%) was indexed in PubMed/MEDLINE or Web of Science, listed in the Committee on Publication Ethics nor have they had a legitimate impact factor in the Journal Citation Reports.

**Key words:** academic publishing – journals – predatory journals – legitimate journals – open access - pathology

# Introduction

Predatory or pseudo journals refer to journals that recruit articles through aggressive marketing and spam emails, promising quick, but not robust review and fast open-access (OA) publication, thus compromising scholarly publishing standards (1-4). Their key motive is a financial benefit via article processing charges (APCs) and other additional fees (1, 3, 4).

The number of OA journals has dramatically risen over the past fifteen years (5), reaching 11,376 journals, indexed in the Directory of Open Access Journals (DOAJ) in 2018 (available at <https://doaj.org>). This expansion was parallel to the increase in the number of predatory publishers from 18 in 2011 to more than 1100 in 2016 (6, 7). Predatory (pseudo) journals have become more prevalent than ever due to massive internet expansion and extensive spam email soliciting (2, 4, 8). These journals are thought to exert a negative impact on the science including biomedicine.

Since 2011, when Jeffrey Beall, an academic librarian from the University of Colorado Denver, posted his first list of potential predatory, OA publishers and journals (available at: <https://beallslist.weebly.com>), predatory journals have come into focus (3, 4).

Recent studies have highlighted the significant impact of potentially predatory journals in several biomedical fields including neuroscience/neurology, urology, emergency medicine, physical medicine, orthopedics, anesthesiology and pediatrics (9-11). These studies revealed that by October 2016 >10% of predatory journals in three biomedical fields were indexed in PubMed (12% for rehabilitation, 11.4% for

neurosciences, and 20.2% for neurology). By April 2017, these values increased to 23.7% for rehabilitation, 16.1% for neuroscience, and 24.7% for neurology, indicating that these journals evolved rapidly (6, 7). The study on emergency medicine revealed that almost half (25/55) of the OA journals were predatory journals (12). Furthermore, the study on urology found that (7/32) potential predatory journals, which were solicited to an academic urologist, were indexed in reputable databases including: Journal Citation Reports (JCR), Scimago Journal Rankings (SJR), and DOAJ (13). In contrast, a recent study of Kokol et al. exploring predatory journals in pediatrics revealed 26 such journals; however, none of them were indexed in PubMed, Scopus or Web of Science (9).

The role and presence of potential predatory journals in pathology have not been explored so far. In this study, these journals have been critically evaluated and were contrasted to the legitimate pathology journals.

## Materials and Methods

### *1. Journals Identification and Selection*

Between January and May 2018, Beall’s list of predatory journals served as an initial database of suspected journals related to pathology, as it was previously used in other studies (2, 7). The term “potential predatory” was only used after assessing each journal separately based on the recommended criteria that are summarized in Table 1 (2, 8). On the other hand, the major bibliographic databases were explored (PubMed/MEDLINE, PubMed Central (PMC), and Web of Science/Science Citation Index (Science Citation Index/Science Citation Index Expanded (SCI/SCIE)) to identify legitimate journals in pathology. The journal titles were retrieved using the following key words: anatomic pathology, cellular pathology, clinical pathology, cytopathology, diagnostic pathology, experimental pathology, histopathology, human pathology, immunopathology, medical pathology, molecular pathology, molecular biomarkers, neuropathology, pathology, and surgical pathology.

### *2. Data Collection (phase I)*

After collecting the available number of journals related to pathology, each journal was assessed based on, Clemson and colleagues’ criteria; its indexing status, clarity of peer-review process, availability of its archive, legitimacy of editorial board, the status of International Standard Serial Number (ISSN), emphasis on OA, and country of origin (8).

#### *2.1 Status of ISSN and country of origin*

To identify the journal's country of origin and the ISSN legitimacy of the suspected journals, the ISSN Portal service was used (available at <https://portal.issn.org>), which is an online database that provides information about the journal's resource and record including the country of origin.

## ***2.2 Amount of APCs***

In order to obtain the amount of requested APCs, each journal's web site was checked for the Creative Commons 'Attribution' License Non-Commercial (CC BY-NC) price. Furthermore, APCs of other currencies were converted to the US Dollar (USD) using the currency converter (available at <https://xe.com>).

## ***2.3 Emphasis on OA, legitimacy of editorial board, and clarity of peer-review process***

Journals that were promoting OA publishing modality on their websites' homepage, displaying phrases similar to "Promoting OA, Supports OA, Your Way To OA", were labeled under "emphasis on open-access". Editorial boards were reviewed in each journal and a missing editorial board was labeled. Unclear peer-review process was labeled under "ambiguous or unclear peer-review process".

## ***2.4 Website integrity, number of issues, and misleading titles***

For the website integrity, marking was based on presence of major design flaws, compatibility and language mistakes. "Unreal or small number of issues per year" was determined by comparing displayed number with the available number. To identify misleading journal names, a minimum of two identical words was required.

## ***2.5 Indexing status***

The indexing status displayed on the journal's website was appraised via both the National Library of Medicine's (NLM) catalog (available at <https://ncbi.nlm.nih.gov/nlmcatalog/>) and the DOAJ.

### ***3. Data Collection (phase 2)***

After obtaining preliminary data from phase 1 of the assessment, each journal was further investigated based on Shamseer and colleagues' criteria; aims and scope, journal name and publisher, home page integrity, contact information, indexing and impact factor, editorial processing and peer review, publication ethics and policies, and publication model and copyright (2). Since DOAJ indexing status, ISSN, APCs and misleading titles were obtained in phase 1, their findings were only reviewed.

#### ***3.1 Aims and scope, home page integrity, and contact information***

The aims and scope were investigated for inclusion of non-biomedical subjects. Spelling and/or grammar errors, distorted images, author-targeting homepage language, and non-journal affiliated emails, were all collected.

#### ***3.2 Editorial processing, and publication copyright, ethics and policies***

Presence of editor-in-chief, editorial board, submission system, peer review, retraction, copyright and plagiarism policies, and APC amount, were labeled accordingly.

#### ***3.3 Indexing and impact factor***

The status of each journal was checked in PubMed/Medline, Web of Science (SCI/SCIE), the World Association of Medical Editors (WAME) (available at <http://wame.org>), and the Committee on Publication Ethics (COPE) (available at

<https://publicationethics.org/members>). Additionally, the Index Copernicus value was also considered.

#### ***4. Statistical Analysis***

Shapiro–Wilk test and histogram were used to check for normality. The non-parametric, Mann-Whitney test was used to determine statistical significance of the APC means between OA legitimate and potential predatory journals. All analyses were performed using SPSS Statistics 25.0 for Windows (IBM, Armonk, NY, USA). Statistical significance was accepted at  $P < 0.05$ .



# Results

Of the total current publishers on Beall’s list (1196), 69 potential predatory journals were identified in the field of pathology (“the black list” journals). The journals’ titles and their respective publishers are shown in Table 2. Only one of the identified potential predatory journals in pathology (*Journal of Modern Human Pathology*) was indexed in the DOAJ. None of these journals were indexed in PubMed/MEDLINE, Web of Science (SCI/SCIE) nor listed in COPE or had a legitimate impact factor in the JCR (Clarivate Analytics) (“the white list” journals). Of note, 13 potential predatory journals in pathology had at minimum one of their articles archived in the PMC repository (following the policy of PMC as a digital repository archiving free full-text articles that had been published within the biomedical and life science journals). On the other hand, 89 legitimate journals were identified in the field of pathology and used for the comparison (listed in Table 3).

All potential predatory journals in pathology shared at least one common poor-quality characteristics: lack of web-site integrity (n = 21, 31%) vs. (n = 0% in OA legitimate), missing/pending ISSN number (n = 36, 52%) vs. (n = 0% in OA legitimate), unreal or small number of issues per year (n = 22, 32%) vs. (n = 3, 3% in OA legitimate), emphasis on OA policy (n = 40, 58%) vs. (n = 32, 38% in OA legitimate), missing editorial board (n = 20, 29%) vs. (n = 1, 1% in OA legitimate), and ambiguous or unclear peer-review process (n = 38, 55%) vs. (n = 12, 14% in OA legitimate). Moreover, the majority (77%) of potential predatory journals accepted manuscript submissions via email. Absence of retraction, plagiarism, and copyright policies were all characteristics of the suspected journals as shown in Table 4 and Figure 1.

Furthermore, 21 (30%) potential predatory journals had misleading titles, which resemble or appear to be tied to those of legitimate ones (see Table 5). In addition, 31% of the potential predatory journals were indexed in the databases that generate bogus impact factors (e.g. Index Copernicus, Cosmos Impact Factor, and J-Gate). More specifically, 19% of the potential predatory journals presented their Index Copernicus value, whereas only 4% of the legitimate journals presented this impact factor.

Eighty-three percent of the potential predatory journals displayed the required APCs on their web sites. The mean APC was significantly higher among the legitimate OA pathology journals in comparison with the predatory ones (US\$ 2837.6 vs. US\$ 814.3; range US\$ 550-4100 vs. US\$ 50-2700;  $p < 0.001$ ).

Out of the suspected journals with valid ISSN (33/69), the vast majority ( $n = 23$ , 70%) of the targeted journals were originated from the United States, followed by India ( $n = 4$ , 12%). The remaining journals were distributed among the United Kingdom ( $n = 3$ , 10%), Nigeria ( $n = 2$ , 6%), and the United Arab Emirates ( $n = 1$ , 3%).

## Discussion

The Internet has dramatically transformed academic publishing, most notably, due to the introduction of OA publishing (2-5). Recently, there has been a rapid rise of online journals described as ‘predatory’ (3, 4). Such journals actively solicit manuscripts and charge publication fees without providing a robust peer review and proper editorial services (e.g. copyediting and proofreading) (2-4, 8, 9). Yet, it is important to note that OA is not correlated with the legitimacy of the journal.

In the present study, the impact of potential predatory journals in pathology was explored. Similar to other biomedical fields, our data indicate a substantial burden of such journals in academic pathology. One of the important findings of our study is that none of the potential predatory journals in pathology has been indexed in the major bibliographic databases such as PubMed/MEDLINE and Web of Science nor listed in COPE. These results are in line with a recent study on such journals in pediatrics (9). However, the studies in other biomedical fields (neurology/neurosurgery, physical medicine and emergency medicine) revealed the substantial contamination (up to 25%) with such journals in the major bibliographic databases (7, 12, 13).

Despite having none of the potential predatory journals indexed in PubMed, it is not a predatory-free database (14, 15). PubMed indexing policies are less strict compared with MEDLINE (14). In fact, 98% of the legitimate journals in this study were indexed in PubMed, whereas 81% were in MEDLINE. This might explain how some predatory journals managed to leak into the PubMed database (14). Although MEDLINE and

PubMed are distinctively different databases, using the PubMed search engine queries both databases simultaneously (as well as PubMed Central).

Our study indicates that a substantial proportion (30%) of potential predatory journals in pathology may have similar names to the legitimate and renowned pathology journals (Table 5). In addition, predatory publishers usually send spam emails through which they invite authors to contribute to their journals and conferences promising a fast-track review and publishing (8). Summarized in Table 4 are the key characteristics of predatory journals/publishers (8), which may also guide the pathology researchers/scientists before deciding to submit an article to not well-known/unknown pathology journals (16).

Another strikingly distinct feature of potential predatory journals is APC (17). In line with previous studies in other medical disciplines, this study confirms that the mean of APC of potential predatory journals in pathology was significantly lower than that of legitimate OA journals in pathology (~US\$2837 vs. ~US\$814) (17). This marked difference along with “easy to publish” spam announcements might be a reason to attract some inexperienced and/or young academic pathologists to submit a paper to such journals.

Although the US and India were the countries of origin for the majority of the potential predatory journals, the methodology used in this paper provides better precision regarding the journal’s country of origin. In previous reports, Google Maps and 3D Street View were used predominantly to determine the journals and/or publishers’ country of origin based on the addresses displayed in their websites (7, 17). Such methodology is not

credible to assess the country of origin, simply, because any random address can be presented in their web sites.

Notwithstanding its implications, two limitations to this study are important to highlight. First, the use of Beall's list has been controversial as it was discontinued in 2017 and is consequently considered outdated (18, 19). Nevertheless, that list served as a start point given that each journal in our study was objectively appraised following the recommended criteria proposed by other researchers (8). Second, the Beall's list was criticized for being subjective as it was established and updated by a single person; however, several well-conducted studies have relied on the list as an accessible reference for predatory journals (2, 6, 7, 17, 18). Finally, it is worth mentioning that the removal of Beall's list led to the rise of new alternatives such as Cabell's Blacklist (20).

In conclusion, this study highlights a substantial burden of potential predatory journals in pathology. A significant proportion of such journals (30%) have name of resemblance to the legitimate pathology journals, which may pose another significant challenge and threat to the academic community within this medical discipline. This study may aid pathology researchers in their decision-making process when submitting manuscripts for publication. Based on the obtained data, authors should check the journal's status on PubMed/MEDLINE, Web of Science and DOAJ, as well as the previously proposed criteria, confirmed in this study, before submitting a manuscript to a pathology journal.

## Acknowledgment

This study was supported by the student grant number (#QUST-1-CMED-2018-10) provided by the College of Medicine, Qatar University. The preliminary data from the study were presented at the XXXII Congress of the International Academy of Pathology (IAP), October 2018, Amman, Jordan.

## Conflict of interest

Semir Vranic serves as an editor-in-chief of the *Bosnian Journal of Basic Medical Sciences* and a consulting editor for *Breast Cancer: Targets and Therapy*. Saghir Akhtar is an editor-in-chief of the *Journal of Drug Targeting*. Faruk Skenderi is a managing editor of the *Bosnian Journal of Basic Medical Sciences*. Other authors declare no competing interests.

# References

1. Clark J, Smith R. Firm action needed on predatory journals. *BMJ*. 2015;350:h210.
2. Shamseer L, Moher D, Maduekwe O, Turner L, Barbour V, Burch R, et al. Potential predatory and legitimate biomedical journals: can you tell the difference? A cross-sectional comparison. *BMC Med*. 2017;15(1):28.
3. Beall J. Predatory journals: Ban predators from the scientific record. *Nature*. 2016;534(7607):326.
4. Beall J. Predatory publishers are corrupting open access. *Nature*. 2012;489(7415):179.
5. Laakso M, Welling P, Bukvova H, Nyman L, Bjork BC, Hedlund T. The development of open access journal publishing from 1993 to 2009. *PLoS One*. 2011;6(6):e20961.
6. Manca A, Martinez G, Cugusi L, Dragone D, Mercurio G, Deriu F. Predatory Open Access in Rehabilitation. *Arch Phys Med Rehabil*. 2017;98(5):1051-6.
7. Manca A, Martinez G, Cugusi L, Dragone D, Dvir Z, Deriu F. The surge of predatory open-access in neurosciences and neurology. *Neuroscience*. 2017;353:166-73.
8. Clemons M, de Costa ESM, Joy AA, Cobey KD, Mazzarello S, Stober C, et al. Predatory Invitations from Journals: More Than Just a Nuisance? *The oncologist*. 2017;22(2):236-40.
9. Kokol P, Završnik J, Zlahtić B, Blazun Vosner H. Bibliometric characteristics of predatory journals in pediatrics. *Pediatr Res*. 2018.
10. Rupp M, Anastasopoulou L, Wintermeyer E, Malhaan D, El Khassawna T, Heiss C. Predatory journals: a major threat in orthopaedic research. *Int Orthop*. 2018.
11. Cortegiani A, Longhini F, Sanfilippo F, Raineri SM, Gregoret C, Giarratano A. Predatory Open-Access Publishing in Anesthesiology. *Anesth Analg*. 2018.
12. Hansoti B, Langdorf MI, Murphy LS. Discriminating Between Legitimate and Predatory Open Access Journals: Report from the International Federation for Emergency Medicine Research Committee. *The western journal of emergency medicine*. 2016;17(5):497-507.
13. Di Lena M, Nickel JC. Publish and perish: A urological perspective on predatory publications. *Can Urol Assoc J*. 2018.
14. Manca A, Moher D, Cugusi L, Dvir Z, Deriu F. How predatory journals leak into PubMed. *CMAJ*. 2018;190(35):E1042-E5.
15. Manca A, Cugusi L, Dvir Z, Deriu F. PubMed should raise the bar for journal inclusion. *Lancet*. 2017;390(10096):734-5.
16. Manca A, Cugusi L, Dragone D, Deriu F. Predatory journals: Prevention better than cure? *J Neurol Sci*. 2016;370:161.
17. Shen C, Bjork BC. 'Predatory' open access: a longitudinal study of article volumes and market characteristics. *BMC Med*. 2015;13:230.
18. Kurt S. Why do authors publish in predatory journals? *Learned Publishing*. 2018;31(2):141-7.
19. Singh Chawla D. The undercover academic keeping tabs on 'predatory' publishing. *Nature*. 2018;555(7697):422-3.
20. Strielkowski W. Predatory Publishing: What Are the Alternatives to Beall's List? *Am J Med*. 2018;131(4):333-4.

# Tables

**Table 1:** Features of potential predatory journal as proposed by Clemons et al. and

Shamseer et al. (2, 8)

	Features
1	Set up journal names and websites that resemble or appear to be tied to those of legitimate ones
2	Wide scope of interest covering biomedical and non-biomedical subjects
3	Having spelling and grammar mistakes in the website
4	Displayed images are usually distorted and fuzzy
5	The website homepage language targets authors
6	Stating plans for indexing in reputable databases such as PubMed, while emphasizing being indexed in Index Copernicus.
7	Unreal number of issues per year, missing or pending ISSN number
8	Absent and/or unclear peer-review process
9	Manuscripts are submitted via email
10	Fast publication is assured
11	Absence of retraction and/or copyright policies
12	Lack of journal archive and/or digital preservation of content.
13	Low APCs (Article Processing Charges)
14	Personalized spam emails targeting a variety of authors inviting them to contribute with short deadlines
15	The contact email is non-journal affiliated (e.g., @hotmail.com)



308

309

**Table 2:** A list of potential predatory journals in pathology (n = 69)

	Journal	Publisher
1	Academic Open Clinical Pathology Research Journal	Academic Knowledge and Research Publishing
2	Advanced Journal of Surgical Pathology	Advanced Scholars Journals
3	African Journal of Cellular Pathology	Clavenanum Press Nigeria Limited
4	Allied Journal of Clinical Pathology Research	Allied Academies
5	American Research Journal of Pathology	American Research Journals
6	Annals of Clinical Pathology Research	Remedy Publications
7	Annals of Clinical Pathology	JSciMed Central
8	Archives of Pathology and Clinical Research	Heighten Science Publications
9	Archives of Clinical Pathology	SciTechnol
10	Asian American Pathology Research Journal	Asian and American Research Publishing Group
11	Austin journal of clinical pathology	Austin Publishing Group
12	Austin Journal of Pathology & Laboratory Medicine	Austin Publishing Group
13	Journal of Clinical Pathology and Forensic Medicine	Academic Journals
14	BAOJ Pathology and Clinical Research	Bio Accent
15	British Open Journal of Pathology	British Open Research Publications
16	Canadian Open Clinical Pathology Journal	Canadian Research Publication
17	Case Reports in Clinical Pathology	Sciedu Press
18	Journal of Clinical and Diagnostic Pathology	Open Access Pub
19	International Journal of Clinical and Experimental Pathology	e-Century Publishing Corporation
20	Clinical and Diagnostic Pathology	Open Access Text (OAT, OA Text)
21	Journal of Clinical & Experimental Pathology	OMICS International

22	CRESSCO International Journal of Pathology	Cresco Online Publishing
23	Current Updates in Clinical Pathology	OPR Science
24	Developments in Clinical & Medical Pathology	Crimson Publishers
25	Diagnostic Pathology: Open Access	OMICS International
26	Donnish Journal of Clinical Pathology and Forensic Medicine	Donnish Journals
27	Eurasian Clinical Pathology Research Journal	Eurasian Research Publishing
28	European Open Clinical Pathology Journal	European Union Research Publishing
29	Global Scientific Research Journal of Pathology	Global Scientific Research Journals (GSR)
30	HSOA Journal of Pathology Clinical & Medical Research	Herald Scholarly Open Access
31	Immunochemistry & immunopathology	OMICS International
32	Integrative Clinical Pathology	Scient Open Access
33	International clinical pathology journal	MedCrave
34	International Journal of Clinical Pathology and Diagnosis	Gavin Publishers
35	International Journal of Clinical Pathology Research	Academic and Scientific Publishing
36	International Journal of Microbiology and Pathology	OMICS International
37	Journal of Speech Pathology & Therapy	OMICS International
38	International Journal of Pathology and Clinical Research	ClinMed International Library
39	International Journal of Pathology Research and Practice	Axis Journals
40	IP Journal of Diagnostic Pathology and Oncology	Innovative Publication
41	The open forensic science journal	Bentham Open
42	Journal of Cellular & Molecular Pathology	Insight Medical Publishing (IMedPub)

43	Journal of Clinical & Anatomic Pathology	JScholar Journals
44	Journal of Clinical & Experimental Pathology	OMICS International
45	Journal of Clinical Pathology and Cytology	Bio Accent
46	Journal of Immunopathology	Pulsus Group
47	Journal of Medical & Surgical Pathology	OMICS International
48	Journal of Medicine, Radiology, Pathology and Surgery	Incessant Nature Science Publishers (INSPublishers)
49	Journal of modern human pathology	NobleResearch
50	Journal of Molecular Biomarkers & Diagnosis	OMICS International
51	Journal of MPE Molecular Pathological Epidemiology	Insight Medical Publishing (IMedPub)
52	Journal of Pathology and Therapeutics	Sci Forschen
53	Pathology and Laboratory Medicine	Science Publishing Group
54	North American Open Clinical Pathology Research Journal	North American Research Publishing
55	North American Open Physiology & Pathophysiology Research Journal	North American Research Publishing
56	Open Journal of Pathology	Scientific Research Publishing (SCIRP)
57	Pathology and Laboratory Medicine - Open Journal (PLMOJ)	Openventio Publishers
58	Pathology Discovery	Herbert Open Access Journals
59	International Journal of Ophthalmic Pathology	SciTechnol
60	Recent Advances in Pathology & Laboratory Medicine (RAPL)	Advanced Research Publications
61	Reports in Disease Markers	OMICS International
62	Saudi Journal of Pathology and Microbiology	Scholars Middle East Publishers
63	Swift Journal of Clinical Pathology and Forensic Medicine	Swift Journals
64	The Internet Journal of Pathology	Internet Scientific Publications
65	TJPRC: Journal of Human Pathology &	Trans Stellar

	Research	
66	Universal Open Forensic Medicine and Pathology Journal	Adyan Academic Press
67	Universal Open Pathogens Journal	Adyan Academic Press
68	US Open Clinical Pathology Journal	American Research Publications
69	World journal of pathology	Narain Publishers Pvt. Ltd (NPPL)

310

311

312

**Table 3:** A list of Legitimate Journals in pathology (n = 89)

	Journal	Publisher
1	Academic Pathology	Sage Publications
2	Acta Neuropathologica	Springer
3	Advances in Anatomic Pathology	Lippincott Williams & Wilkins
4	Alzheimer Disease & Associated Disorders	Lippincott Williams & Wilkins
5	The American Journal of Clinical Pathology	Oxford Academic
6	The American Journal of Forensic Medicine and Pathology	Lippincott Williams & Wilkins
7	The American Journal of Pathology	Elsevier
8	The American Journal of Surgical Pathology	Wolters Kluwer Health
9	Analytical Cellular Pathology	Hindawi Publishing Corporation
10	Annales de Pathologie	Elsevier
11	Annals of Diagnostic Pathology	Elsevier
12	Annual Review of Pathology-Mechanisms of Disease	Annual Reviews
13	APMIS	Wiley
14	Applied Immunohistochemistry & Molecular Morphology	Lippincott Williams & Wilkins
15	Archives of Pathology & Laboratory Medicine	College of American Pathologists
16	BMC Clinical Pathology	BioMed Central
17	Brain Pathology	Wiley
18	Brain Tumor Pathology	Springer
19	Cancer Cytopathology	Wiley
20	Cardiovascular Pathology	Elsevier
21	Case Reports in Pathology	Hindawi Publishing Corporation
22	Cellular Oncology	Springer
23	Clinical Medicine Insights: Pathology	Sage Publications
24	Clinical Neuropathology	Dustri-Verlag
25	CytoJournal	Medknow Publications

26	Cytometry Part B: Clinical Cytometry	Wiley
27	Cytopathology	Wiley
28	Diagnostic Cytopathology	Wiley
29	Diagnostic Histopathology	Elsevier
30	Diagnostic Pathology	BioMed Central
31	Disease Markers	Hindawi Publishing Corporation
32	Disease Models & Mechanisms	Cambridge
33	Endocrine Pathology	Springer
34	Experimental and Molecular Pathology	Elsevier
35	Experimental and Toxicologic Pathology	Elsevier
36	Expert Review of Molecular Diagnostics	Taylor & Francis Online
37	Fetal and Pediatric Pathology	Taylor & Francis Online
38	Folia Neuropathologica	Termedia
39	Forensic Science Medicine and Pathology	Springer
40	Histology and Histopathology	Histology and Histopathology
41	Histopathology	Wiley
42	HLA	Wiley
43	Human Pathology	Elsevier
44	Human Pathology: Case Reports	Medknow Publications
45	Indian Journal of Pathology and Microbiology	Medknow Publications
46	International Journal of Experimental Pathology	Wiley
47	International Journal of Gynecological Pathology	Dan Pasquarello
48	International Journal of Immunopathology and Pharmacology	Biomedical Research Press
49	International Journal of Surgical Pathology	Sage Publications
50	ISRN Pathology	Hindawi Publishing Corporation
51	Journal of Clinical Pathology	BMJ Publishing Group
52	Journal of Comparative Pathology	Elsevier

53	Journal of Cutaneous Pathology	Wiley
54	Journal of Hematopathology	Springer
55	The Journal of Molecular Diagnostics	Elsevier
56	Journal of Neuropathology & Experimental Neurology	Oxford University Press
57	Journal of Oral Pathology & Medicine	Wiley
58	The Journal of Pathology	Wiley
59	Journal of Pathology and Translational Medicine	The Korean Society of Pathologists
60	Journal of Pathology Informatics	Medknow Publications
61	Journal of Toxicologic Pathology	Japanese Society of Toxicologic Pathology
62	Laboratory Investigation	Nature
63	Leprosy Review	Lepira
64	Malaysian Journal of Pathology	Academy of Medicine of Malaysia
65	Medical Molecular Morphology	Springer
66	Modern Pathology	Nature
67	Neuropathology	Wiley
68	Neuropathology and Applied Neurobiology	Wiley
69	Pathobiology	Karger Publishers
70	Der Pathologe	Springer
71	Pathologie Biologie	Elsevier
72	Pathology	Elsevier
73	Pathology & Oncology Research	Springer
74	Pathology and Laboratory Medicine International	Dove Press
75	Pathology International	Wiley
76	Pathology Research and Practice	Elsevier
77	Pathology Research International	Hindawi Publishing Corporation
78	Patologiâ	Elsevier
79	Pediatric and Developmental Pathology	Sage Publications

80	Polish Journal of Pathology	Termedia
81	Science & Justice	Elsevier
82	Seminars in Diagnostic Pathology	Elsevier
83	Seminars in Immunopathology	Springer
84	The Journal of Pathology: Clinical Research	Wiley
85	Tissue Antigens	Wiley
86	Toxicologic Pathology	Sage Publications
87	Ultrastructural Pathology	Taylor & Francis Online
88	Veterinary Pathology	Sage Publications
89	Virchows Archiv	Springer

313

314



**Table 4:** A comparison of key characteristics of potential predatory journals/publishers in pathology based on the criteria proposed by Shamseer et al. (2)

Criteria		Potential predatory* N = 69, n (%)	Legitimate* N = 85, n (%)
Aims and scope	Scope of interest:		
	a) Biomedical	65 (94)	82 (96)
	b) Biomedical & non-biomedical	2 (3)	3 (4)
Journal name and publisher	Title similar to legitimate journal	21 (30)	
Home page integrity	The website contains spelling and/or grammar errors	19 (28)	3 (4)
	Distorted and/or fuzzy images	17 (25)	2 (2)
	Type of users targeted by homepage language:		
	a) Author	46 (67)	67 (79)
	b) General	21 (30)	18 (21)
Contact information	The contact email address is non-journal affiliated (e.g., @hotmail.com)	9 (13)	2 (2)
Indexing and impact factor	Index Copernicus value	13 (19)	3 (4)
	PubMed indexed	0 (0)	83 (98)
	Medline indexed	0 (0)	69 (81)
	DOAJ indexed	1 (1)	19 (22)
	ISSN identified	33(48)	85 (100)
	WAME listed	0 (0)	1 (1)
	COPE listed	0 (0)	63 (74)
Editorial processing and peer review	Named editor-in-chief	34 (49)	84 (99)
	Named editorial board	49 (71)	84 (99)
	Description of manuscript handling process	27 (39)	82 (96)
	Submission system:		
	a) E-mail	53 (77)	0 (0)

	b) Journal submission system	45 (65)	85 (100)
	Rapid publication is promised	12 (17)	0 (0)
	States using peer-review	64 (93)	85 (100)
Publication ethics and policies	Lack of retraction policy	43 (62)	18 (21)
	Presence of plagiarism policy	40 (58)	79 (93)
Publication model and copyright	Digital preservation of content	42 (61)	85 (100)
	APC amount:		
	a) Stated	57 (83)	83 (98)
	b) Not found	10 (14)	2 (2)
	Retain copyright of published articles:		
	a) Stated	37 (54)	77 (91)
	b) Not found	30 (43)	8 (9)

\*Open access journals

317

318

319 **Table 5:** Potential predatory journals in pathology (n = 21) with names resembling/overlapping  
320 with those of the legitimate pathology journals

Predatory	Legitimate
1. Journal of Modern Human Pathology	Human Pathology
2. TJPRC: Journal of Human Pathology & Research	Modern Pathology American Journal of Pathology
3. Case Reports in Clinical Pathology	Case Reports in Pathology
4. International Journal of Pathology Research and Practice	Pathology Research and Practice Pathology and Oncology Research
5. Archives of Pathology and Microbiology	Archives of Pathology & Laboratory Medicine
6. Archives of Pathology and Clinical Research	
7. Pathology and Laboratory Medicine - Open Journal	
8. Diagnostic Pathology: Open Access	Diagnostic Pathology
9. Clinical and Diagnostic Pathology	
10. Journal of Clinical & Experimental Pathology	International Journal of Experimental Pathology
11. International Journal of Clinical and Experimental Pathology	
12. International Journal of Pathology and Clinical Research	The Journal of Pathology: Clinical Research
13. Open Journal of Pathology	Journal of Pathology
14. World Journal of Pathology	Pathology
15. Journal of Clinical & Anatomic Pathology	American Journal of Clinical Pathology
16. Reports in Disease Markers	Disease Markers
17. Case Reports in Clinical Pathology	Human Pathology: Case Reports

18. Journal of Medical & Surgical Pathology 19. Advanced Journal of Surgical Pathology	International Journal of Surgical Pathology
20. Austin journal of clinical pathology 21. US Open Clinical Pathology Journal	Journal of Clinical Pathology

321  
322  
323

## Figures

**Figure 1:** A comparison of quality characteristics among the pathology journals.

