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Original Article

Identifying academic spam and recommendations for dealing with it: a literature review

Andrés Fernández-Ramos¹✉, Rubén Comas-Forgas², Blanca Rodríguez-Bravo¹

¹Department of Library & Information Science, University of León, Spain

afernr@unileon.es

orcid.org/0000-0002-6869-602X

²Institute of Educational Research and Innovation, University of the Balearic Islands, Spain

orcid.org/0000-0002-8885-753X

orcid.org/0000-0002-9476-7602

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Abstract

Objectives: To review the literature on spam emails that scholars receive; to identify the characteristics of such emails; to categorize their recurring features; to review the main recommendations for dealing with academic spam; to help consolidate the findings into a practical framework for researchers, mentors, and research offices; and to serve as a basis for developing a checklist for detecting academic spam.

Methods: Two databases, namely Scopus and Web of Science, were searched in December 2024 for empirical studies, each analysing at least 50 unsolicited emails received by researchers and presumably sent by potentially predatory journals, publishers, or conferences. The search yielded a total of 29 such studies, which were then analysed to identify and categorize two types of information: the items used for identifying or characterizing academic spam and the recommendations for dealing with it.

Results: A total of 33 items were related to the email itself, and 20 more referred to information about the journal, publisher, or conference – information that could be obtained only after consulting external sources to identify the sender. The first group of 33 items was divided into eight categories, such as ‘solicitation tactics and persuasion’, ‘editorial and peer-review claims’, or ‘misleading metrics and indexing claims’. The recommendations were diverse, but most addressed measures for (1) training in detecting predatory journals and academic spam, (2) raising awareness of the problem among researchers, and (3) developing and using tools to identify both academic spam and predatory journals and publishers.

Conclusion: Academic spam remains a threat to efficient and trustworthy scholarly communication. This review systematizes the most frequently reported indicators and countermeasures proposed across studies and provides an operational basis for awareness-raising, filtering practices, and institutional guidance.

Keywords:

Academic spam, predatory conferences, predatory journals, predatory publishers

Introduction

Unsolicited emails inviting researchers to submit manuscripts, join editorial boards, act as guest editors, or participate in conferences have become routine in academic life. Although some of these email messages originate from credible journals and conferences, many originate from entities that follow opaque or lax editorial procedures and overstate their visibility or coverage by indexing services. The effects of such emails extend beyond nuisance: time lost in screening such emails, decisions distorted by promises of speedy publication, and risk to reputation if research outputs are diverted to channels with substandard vetting. Over the past decade, empirical studies across fields have documented the scale of such communications, the features that most often distinguish them from legitimate outreach, and the implications for mentoring and institutional policy.¹⁻³ For example, studies involving monitoring of in-boxes of researchers report volumes ranging from hundreds of invitations over short observation windows (within weeks, for example) to more than 500 invitations over 1 year for a single early-career corresponding author, highlighting both the frequency and persistence of this phenomenon.¹⁻³

Across recent data sets, several signals seem to recur. A 28-day cross-sectional analysis in anaesthesiology recorded hundreds of solicitations and found that incorrect naming of recipients, obvious grammatical errors, and requests to submit manuscripts through email (instead of through a manuscript-tracking system) were strongly associated with high-risk messages.⁴ Similar patterns are reported in surgical training⁵ and in a 2025 report estimating that researchers may receive hundreds of largely off-topic solicitations a month.⁶ Earlier studies describe over-formal

salutations and flattery, promises of an unrealistically rapid editorial decision on submissions, claims about metrics such as impact factor that failed to survive independent verification, and limited information about peer review,^{1,3} and evidence from the field of nursing shows that some messages lack obvious cues, and supporting checklists and external verification – rather than intuition alone – are required to confirm that a given message is not genuine.²

Evidence from the information that dubious journals and conferences present to the public, and their evidently lax editorial controls, reinforce these concerns. Evidence from journals' public-facing information also supports these concerns. Reviews of journal websites have identified recurring anomalies among high-risk titles, such as unverifiable editorial-board listings and non-standard metrics presented as equivalents to established indicators.⁷ In addition, prospective studies have quantified steady volumes of invitations and the associated time costs.⁸ A detailed audit of journals' editorial and peer-review controls, based on submitting sham manuscripts to multiple high-risk outlets, shows that such content can be accepted, illustrating how lax procedures can enable dissemination of low-quality science.⁹ Discipline-specific commentaries and surveys in the fields of pharmacy, rehabilitation, and medicine echo these conclusions and note that publication pressures can make authors, especially early-career researchers, increasingly vulnerable.¹⁰⁻¹²

Invitations to questionable conferences entail similar risks. The invitations often advertise desirable locations, broad themes, and bundled 'special issues', but provide limited detail on programme committees, selection criteria, or indexing of the proceedings.^{3,13} Because attending a conference is expensive in terms

of both time and money and shapes a scholar's public profile, participating in dubious conferences can have substantial opportunity costs and may harm the reputations of those who participate in them.

The persistence of such invitations is due to the systems that drive rewards for academics and researchers. Quantity rather than quality of published outputs, and participation in conferences held at prestigious venues, increase the chances of promotion and success in obtaining funds, while rejection rates at established journals remain high. Entities that exploit these aspects often rely on bulk email marketing, use article-processing charges (APCs) or conference registration fees as primary sources of revenue, and are lax in terms of editorial checks (often omitting them altogether), creating downstream risks for authors, institutions, funders, and the public.^{2,7,8}

The literature of spam emails in academia converges on two complementary responses: screening at source (email level) and verification through authoritative sources.

Email-level indicators include scope–profile mismatch, generic or erroneous salutations (including incorrect names), poor grammar, promises of unusually rapid editorial decisions, requests to submit manuscripts through email rather than through a manuscript-tracking system, lack of a verifiable postal address or publisher identity, and flattering language not tied to specific expertise.^{1,2,4,5}

External verification includes confirming the affiliations of members of the editorial board and membership of the publisher of such recognized bodies as COPE (Committee on Publication Ethics) or EASE (European Association of Science Editors), examining editorial policies related to fees, stated peer-review procedures, and claims to being

indexed in the Web of Science, Scopus, or DOAJ.^{7,14} For conferences, verifying past programmes, indexing of conference proceedings, and links to learned societies is advised.^{3,13} Although such verification, or vetting, is discussed in many studies, the contribution of the present review is to consolidate the process into a structured, two-stage framework (email-level and verification through external sources), harmonize the heterogeneous terminology used across sources, and present the resulting checklist in an operational format that supports consistent decision-making and training.

Operational proposals are generally feasible. Because many invitations are off-topic, keyword filters and subject-area matching can filter most of the incoming emails before they reach their intended recipients.^{3,8,15} The high-specificity signals identified by Chander et al.⁴ can be encoded into rules for processing emails or for server-side filters, with periodic reviews to reduce the number of false positives. For example, observations in the fields of dentistry and orthodontics have identified repeated phrases (such as 'greetings of the day', 'submission by e-mail', and 'rapid publication') that can be used in automated screening and as examples for training.^{16,17} Education and institutional guidance are repeatedly recommended, particularly in doctoral and postdoctoral training.^{3,18}

At the same time, caution is warranted to avoid stigmatizing new journals or equating open access with poor quality. There is no single, universally accepted definition of a 'predatory' journal, and criteria continue to evolve to differentiate between emergent journals that are still building robust practices and entities that misrepresent core elements of scientific publishing.^{7,19} Recent guidance therefore emphasizes checks that are observable and auditable by authors and institutions (for example,

public identification of editors with verifiable affiliations, clear peer-review procedures, transparent fee policies, and claims to being indexed confirmable through primary sources). Additional evidence indicates that problematic outlets can also enter scientific databases or benefit from public funding, adding urgency to shared tools and institutional policies.^{12,20}

Although many studies involving monitoring in-boxes of researchers have been conducted in health-related fields, comparable concerns and patterns are also reported in other fields, indicating that the phenomenon is not confined to medicine.^{21,22} In summary, academic spam is a documented cross-disciplinary problem that consumes attention, introduces avoidable costs, and can erode trust in scientific communication. By organizing indicators of spam messages and taking countermeasures in the form of frequent and clear reporting in indexed journals, the present work aims to provide usable guidance to early-career researchers, supervisors, and research offices.^{1,3-5,8,13}

Accordingly, this review pursues two objectives: (1) to identify and synthesize email-level characteristics of academic spam reported in carefully chosen studies; categorize recurring features (such as mismatches between the domains of the journal that solicits submissions and those of the recipients, oddly phrased salutations and sloppy grammar, email as the channel of submission (instead of uploading to a manuscript-tracking system), promises of rapid decision, and dubious claims related to fees and indexing by reputable databases); and quantify their prevalence where data permit and (2) to assess and integrate evidence on countermeasures that include author training, in-box or server-level filtering rules, verification checks, and institutional policies; evaluate study quality; and consolidate these

findings into a practical framework (a checklist with implementation considerations) for researchers, mentors, and research offices.

Methods

To meet the study objectives, the authors reviewed empirical articles (studies) analysing unsolicited emails that could be considered academic spam to identify their characteristics. The sample comprised 29 articles drawn from a data set compiled for another manuscript by the authors, which is currently under peer review. To be eligible for inclusion in the present study, the articles had to examine unsolicited messages sent to researchers by potentially predatory journals, publishers, or conferences and to include at least 50 such messages (to ensure that the evidence base reflected analyses of a meaningful number of cases). However, no other restrictions – chronological, thematic, or geographical – were applied.

To identify such articles, the authors searched two databases, namely Scopus and Web of Science, in the last week of December 2024 using the following search equations: Scopus, TITLE-ABS-KEY(spam OR email OR mail) AND TITLE-ABS-KEY(predat*) and WoS, (spam OR email OR mail (Abstract)) AND predat* (Abstract). The search was limited to scientific articles in English. Once the records were retrieved from the searches, duplicates were eliminated, and the title and the abstract of each article were analysed to identify those that potentially met the inclusion criteria. Following this initial screening, the full text of the articles was accessed to identify those that would ultimately be included in the study if they met the inclusion criteria. Cohen's Kappa values to measure interrater reliability among the reviewers were high: $k = 0.79$ in the title and abstracts screening and $k = 0.88$ in the

full-text screening. A total of 29 articles were ultimately selected (Appendix 1). Figure 1 shows a PRISMA flow diagram of the process to select the articles.

The articles included in the review were analysed in depth to identify and systematize two types of information: the items used for identifying or characterizing academic spam and the recommendations to deal with it.

The items used for identifying or characterizing academic spam were extracted from each article included in the review. Descriptive items that did not represent potential characteristics of academic spam

were excluded (journal or conference title, types of articles published, etc.). A matrix was created comprising these items and the articles in which they appeared, allowing the authors to locate which items were found in which articles and to count the frequency of appearance of each item. The terms for the items were standardized, because many articles had used different expressions to refer to the same concept. Finally, these items were rephrased, changing, when necessary, from interrogative to affirmative (for example, the item ‘Is the journal’s peer-review process clearly described?’ was finally coded as ‘Hazy description of

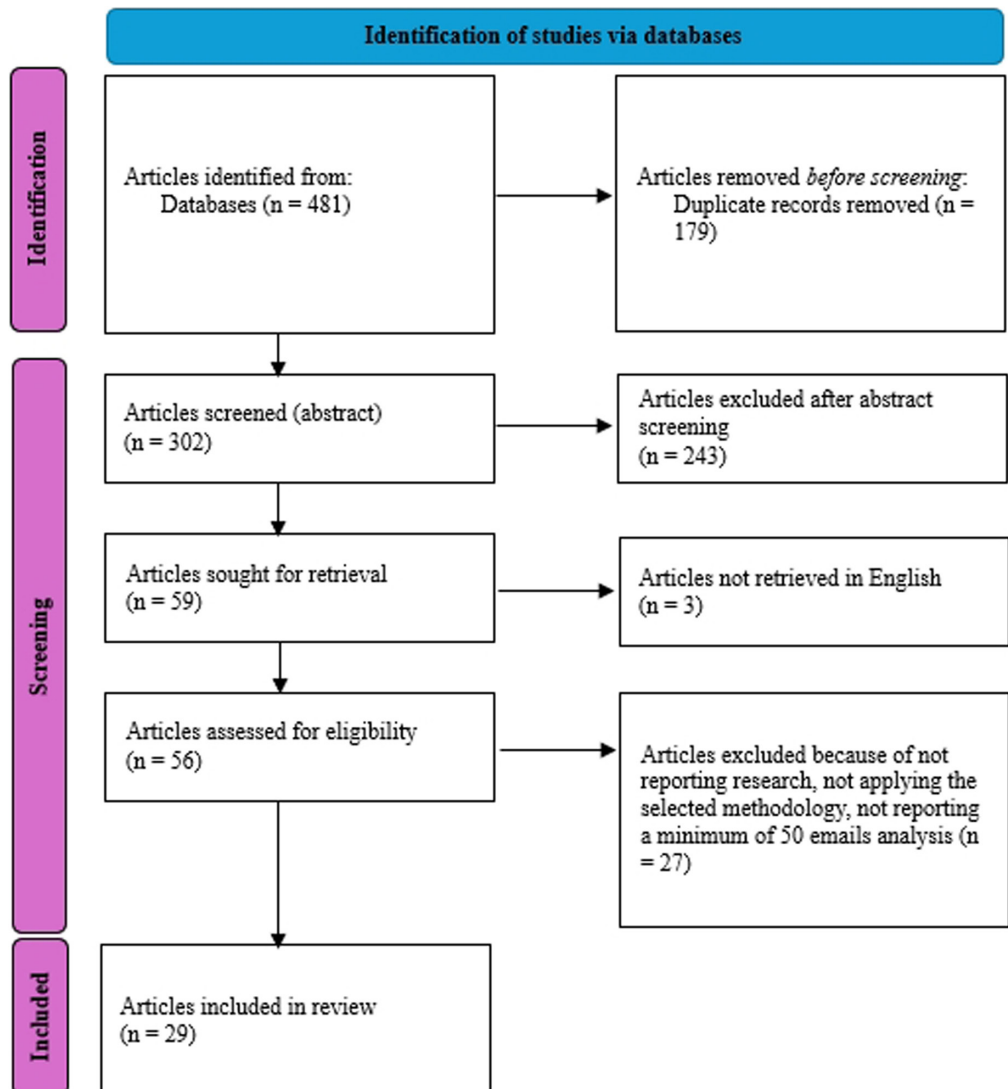


Figure 1. PRISMA flow diagram of the process used for selecting studies for the present review.

peer-review process'), so that they would appear as characteristics that could indicate academic spam.

The items identified in the checklists were classified into those that analysed the characteristics of the emails themselves (grammatical or spelling errors, references to the researcher's previous work, etc.) and those that referred to some characteristics of the journals, publishers, or conferences and required checking certain data from other sources (databases, the journal's website, etc.). The former, which were many, were subsequently grouped by their subject matter into eight categories.

Regarding the systematization of the recommendations proposed in these articles to deal with academic spam, a similar process was followed: the terms were standardized, a matrix was created comprising the recommendations and the articles in which they appeared, and the frequency of appearance of each recommendation was counted to identify the most recurrent recommendations.

Statistical analysis

The authors used descriptive statistics to summarize the evidence extracted from the 29 studies. For each article, the presence or absence of every reported indicator of academic spam and of every recommended countermeasure was coded and compiled into matrices (items × studies). Item labels were standardized across studies and the frequency (n) and percentage (%) of studies reporting each item were calculated. The indicators were organized into two categories, namely cues found within the email messages themselves and items that required consulting external sources.

Ethics

Ethical approval and informed consent were not required because this work is based

exclusively on an analysis of publicly available published literature and did not involve interaction with human participants, collection of identifiable personal data, or animal experimentation. Extracted information was handled and reported only in aggregate form.

Results

Screening at the email level

The analysis identified 33 items that marked email messages as academic spam, a decision that could be confirmed from the emails themselves. Table 1 shows these items grouped into eight categories and the frequency of each item. The frequency varied greatly, with a few items (such as 'claim Impact Factor or other metrics' or 'journal not related to the researcher speciality') appearing in more than half the articles and others appearing only in one or two articles. Each of these categories is discussed below.

The largest of the eight categories was 'Solicitation tactics and persuasion'. Academic spam often seeks to capture the attention of researchers by appealing to their ego.^{16,23} Flattering salutations, references to the recipient's 'valuable publications', or mentions of researchers' recently published papers were common tactics. Furthermore, messages in this category emphasized the importance of taking the email seriously, stating that it is not spam, that it is necessary to respond quickly, that they have contacted the researcher earlier, or that the message is confidential.

Another notable characteristic of academic spam, in the case of scientific journals, is that the messages often allude to certain advantages of the editorial process followed by the journal:²⁴ short time to publication, rapid peer review, and high acceptance rate. These features attract researchers, especially new

Table 1. Items to be checked in received emails

Category or item	Frequency
Solicitation tactics and persuasion	46
Flattering salutations or references to the recipient's 'valuable publications'	13
Urgency: 'need to act immediately'	10
Claims to have read the recipient's papers	9
A personalized salutation	7
Mention of the email not being spam	2
Friendly and responsive staff	1
Mention of 'improving scholarly writing ability'	1
Emphasis on confidentiality	1
Request to share the email with colleagues	1
'No prior response' mentioned	1
Editorial and peer-review claims	29
Invitation to become a member of the editorial board	11
Time taken for peer review indicated (usually unrealistically short)	10
Time taken to publish (also unrealistically short)	7
Claims of a high rate of acceptance	1
Identity and provenance	28
Generic name of the sender (not verifiable)	11
Claimed country of origin	8
Name of the city in which the journal is 'based'	7
Email sent from a free provider (Gmail, Hotmail, etc.)	2
Misleading metrics and claims of being indexed	27
Claims of Impact Factor or other metrics	19
Claim to being indexed in such reputable bibliographic databases as Scopus and PubMed	8
Scope and fit (topic or journal alignment)	25
Journal unrelated to the researcher's specialty or field	15
Extremely broad or general topics (conference or journal)	3
Claims to being global ('world', 'global', 'international', etc. in the title)	3
Journal name similar to the name(s) of other prestigious or reputable journal(s)	3
Combination of two or more unrelated fields in journal title	1
Financial inducements and business model	23
Discounts on publishing (APCs)	13
Claims of being open access	7
Low conference fees	2
Supply of journal or the article as hard copy	1
Spam behaviour and obstacles to opting out	19
Absence of a mechanism to unsubscribe	9
Mass mailing	8
Obstacles to blocking	2
Language quality	13
Sloppy grammar and spelling	13

researchers, who are under pressure to publish, and to publish quickly—the long time it takes some journals to respond to a submission, and to publish the article once accepted,

can tempt researchers to try their luck with some of these journals. Furthermore, it is common for some journals to invite the recipients not only to submit manuscripts

but also to become members of the editorial board of the journal.

The 'Misleading metrics and indexing claims' category includes two common claims made by some journals in an attempt to demonstrate their prestige: the coverage of the journal by some indexing services and some metrics of the journal's impact.²¹ Unfortunately, these claims are often false or manipulated. For example, some journals refer to an 'Impact Index' or a 'Universal Impact Factor' instead of the Journal Impact Factor as assigned by Clarivate Analytics (the publishers of *Journal Citation Reports*) to lead the recipient to believe that it is the same metric.

The 'Scope and fit (topic/journal alignment)' category includes fairly common characteristics of academic spam that are clear indicators of possible spam. First, and the most obvious, is the journal being unrelated to the researcher's speciality or field.¹⁶ In these cases, it is obvious that it is spam email and has been sent to a large number of researchers without making the effort to limit the recipients to those within that speciality or field. Other characteristics relate to the journal's unclear scope and the goal of trying to reach the largest possible number of researchers. Thus, common characteristics of academic spam include emails originating from journals with very broad and interdisciplinary topics that would cover any type of research; the inclusion in the title, whether for a conference or a journal, of terms that allude to its global scope ('world', 'global', 'international', etc.); or a suspicious combination of two unrelated fields of knowledge. Also included here are journals with names deliberately similar to those of prestigious journals so as to deceive the recipients of such emails.

Another group of characteristics is of those related to financial issues,^{23,25} mentioning that

the journal is open access, discounts on APCs or conference fees, or the promise of providing authors with hard copy. A priori, these characteristics alone do not necessarily indicate academic spam, but can raise a warning flag when found in combination with other characteristics.

The remaining three categories include characteristics typical of spam of any type, not necessarily academic spam (mass mailing, absence of a mechanism to unsubscribe, or other obstacles to blocking such emails),¹⁷ including spelling or other errors related to language,²³ or lack of any information to verify the sender (generic names or the use of free email services).¹⁷ All these characteristics can also be good indicators of academic spam or any other type of fraudulent emails.

External verification

Table 2 shows the 20 items corresponding to journal or publisher characteristics that are not observed in the emails and require external sources for verification, such as the journal's or the publisher's website and bibliographic databases. These items correspond mainly to the different aspects used in identifying predatory journals or publishers and that are commonly mentioned in specialized literature.^{13,18,26} Appearance in blacklists is usually the main indication of a predatory journal or publisher and the easiest way to identify them, although there has been some controversy regarding the use of blacklists, and further verification may be necessary. Lack of relevant information about the journal on its own website (editorial board, contact information, review process, channels for manuscript submission, ISSN, etc.), websites of dubious quality and with design or spelling errors, the journal's absence in reliable bibliographic databases, or a special emphasis on publication volume are all characteristics of predatory journals.

Table 2. Items to be checked externally

Item	Frequency
Inclusion in blacklists (Beall's or others)	14
Lack of full, verifiable contact information, including street address, on the journal's website	14
Costs to submit	14
Absence from reputable bibliographic databases such as Scopus and PubMed	13
Prominently displayed policy on fees payable by authors	12
Hazy description of peer-review process	9
Absence of a website	7
Absence of an ISSN	7
Year of commencement of journal	5
Broken links on journal's website	4
Number of issues published in a given year	3
Lack of membership of industry associations that vet their members (for example, DOAJ or the Open Access Scholarly Publishers Association)	2
Absence of information on editorial board	2
Absence of submission guidelines	2
Frequent publication	1
Website with WordPress	1
Absence of a manuscript management system	1
Low security level of website	1
Unprofessional conference headshots	1
Absence of links in social media	1

Recommendations

Table 3 lists the recommendations proposed in the articles included in this review to address the problem of academic spam. The recommendations were diverse, but the most notable were measures aimed at training to detect predatory journals and academic spam and at raising awareness among researchers

(items 1, 5, 7). With respect to training needs, the articles presented two perspectives. One is the researchers' lack of awareness of not only that predatory journals or journals with questionable practices as well as conferences should be avoided – because they are not appropriate channels for communicating research – but also of their very existence.

Table 3. Recommendations against predatory journals or conferences

Item	Frequency
1 Education about predatory journals, conferences, and publishers	18
2 Checklists to identify predatory journals, conferences, and publishers	9
3 Development of policies against publication in predatory journals by institutions and funders	8
4 Use of blacklists (Beall's) and white lists	7
5 Training on and supply of keys to identify academic spam through the main identifying characteristics of such emails	7
6 Checking for inclusion in WoS, Scopus, DOAJ, etc.	4
7 Academic integrity: holding authors responsible for their choices and the consequences of those choices (raise awareness)	4
8 Adding or improving software and filters to eliminate spam	3
9 Checking, by legitimate journals, of references and citations to predatory journals to eliminate such references and citations	1

The other is that even when researchers are aware of these questionable channels, it is still necessary to raise the researchers' awareness of the risks – to science, their discipline, and their reputation – of publishing in predatory journals or submitting their work to conferences of dubious reputation. The essential academic integrity with which scientists must conduct themselves implies that authors must be responsible for their choices and accept the consequences if they use questionable channels to communicate their research.

The articles also included measures aimed at developing and using tools to identify both academic spam and predatory journals and publishers (items 2, 4, 6, 8). Regarding academic spam, it is proposed to add and improve software and filters to eliminate spam. For example, the software should automatically delete emails with specific words in their subject line or in the body of the message or redirect these emails to the spam folder without deleting other messages. Regarding predatory journals, it has been suggested to develop a checklist to identify potential predatory journals using verifiable data such as the ISSN (only as an identifier and not as a guarantee of quality), track record and continuity, and details of the publisher, editor(s), scientific committee, etc. Initiatives that allow for verifying the legitimacy of a journal are also mentioned, such as the 'Think.Check.Submit' initiative. In this regard, the usefulness of checking that the journal in question is included in reputable databases (WoS, Scopus, DOAJ, etc.) or using existing lists of white and black journals or partial initiatives, often limited to disciplines or geographic areas, is also noted.

Other initiatives included a proposal to involve public authorities (item 3) who could develop policies aimed at detecting and sanctioning publication in these types of journals. The possibility of penalizing

spam financially was raised. Likewise, it was proposed that national and international legislation be developed to curb the proliferation of predatory journals and events. It was also mentioned that academic authorities and funders could discourage the use of predatory journals by withholding grants and academic promotions to those who publish in such journals.

Finally, the role that legitimate publishers can play in boycotting the use and citation of works published in predatory journals was also addressed (item 9). It is further indicated that the publishing industry could improve its communication methods to help readers distinguish legitimate journals from predatory journals.

Discussion

Academic spam has grown alongside the proliferation and increasing aggressiveness of predatory journals, publishers, and conferences that actively seek researchers' participation to sustain a profit-driven business. These messages are designed to mislead scholars into submitting work to such journals and conferences by promising unusually rapid publication and minimal editorial scrutiny, thereby bypassing the standards and safeguards of scholarly communication. In many cases, researchers are deceived and unaware that they are using an illegitimate shortcut; in others, authors knowingly publish in dubious journals as a result of the pressure to publish and the need to strengthen their CV. However, publishing in such journals²⁷ can damage authors' reputations and, more broadly, harm science itself by circulating low-quality or false findings that may be treated as credible, undermining trust in a discipline. An additional risk is that spam-driven submissions can contaminate the scholarly record when such outlets are mistakenly indexed, cited, or

used as part of meta-analyses and reviews, allowing unreliable work to influence future research and decisions.²⁸

Detecting academic spam, as with identifying predatory journals, is not a trivial matter. Although it may be simple in some cases, owing to clumsy writing or obvious signs that it is spam, in other cases it requires deeper probing. There are no infallible magic recipes, but it is possible to identify the main characteristics of academic spam or predatory journals, which will help the authors identify them. The authors can even list a series of red flags, which are very clear signs of spam. Recent guidance has operationalized this approach by proposing a set of twenty 'red flags' for predatory-journal phishing emails, illustrated with examples from real invitations.²⁹ Often, the email itself tells the authors that they are dealing with spam, whereas at other times, they must investigate the journal or conference that sent them the email, using specific criteria to identify predatory journals or conferences. Academic spam is just another type of spam that shares the same purpose – to deceive the recipient – and a series of characteristics that are common in this type of email: spelling errors, mass mailing, flattering salutations, difficulties in verifying the sender, etc. However, there are other characteristics that are specific to predatory journals, publishers, and conferences and have to do with the advantages of publishing in these journals, such as a high acceptance rate and faster reviews, which are generally very lax or missing altogether.

Recent advances in generative AI are likely to accelerate both the proliferation and sophistication of academic spam, because large language models (LLMs) can produce fluent, discipline-specific messages and scale personalization (for example, by accurately referencing the recipient researcher's publications or roles) at minimal

cost. In cybersecurity research, LLM-driven spear-phishing frameworks have been shown to generate highly readable and deceptive emails and iteratively refine them to evade detection.³⁰ Complementarily, evaluations of mainstream email services indicate that AI-generated phishing emails can bypass common spam filters, increasing the probability that such messages reach the intended recipients.^{30,31} Taken together, these developments suggest that 'surface cues' (such as awkward language or generic phrasing) may become less reliable over time, reinforcing the need to go beyond the text of the email to verification using external sources (for example by checks on the journal's provenance,³² coverage by indexing services, scrutiny of the publisher's identity, and editorial transparency) and for ongoing initiatives to increase awareness.

That the academic community is concerned about the problem of academic spam is evident in all the literature published on the subject, much of it aimed at quantifying spam and analyzing its characteristics. In this review, the authors sought to synthesize and systematize this information, identifying the items most commonly listed in the specialized literature to characterize academic spam. These results are intended to serve as a basis for developing a checklist to help detect academic spam, although evidence would be needed of the ability of each item to do so. As Cukier et al. indicated in their systematic review of checklists for identifying predatory journals, checklists must be useful and operational; that is, they must not simply list items to be taken into account, but must also offer information on how to interpret the results of applying the checklist (threshold values for the criteria), and they must be evidence-based.¹⁸

In practice, the training task translates into the need to convey the most common

characteristics of spam emails and predatory conferences and journals so that the intended target recipients can reject their offers. It is suggested that training on the risks of using predatory journals be incorporated into formal education and personnel selection processes. It is essential that graduates already possess a minimum level of knowledge that enables them to choose the appropriate channels to communicate their research, given the pressure on young researchers in the early stages of their careers to publish as much as possible and as quickly as possible. The articles analysed in the present review refer to the role that a university library can play in this training. However, it should be noted that there may be journals, publishers, or conferences that send emails that do not show any of the characteristics mentioned in this review. Furthermore, the boundaries between legitimate and fraudulent publications are often not very obvious, clear, or immutable, and it is not easy to classify a publisher or journal unequivocally as predatory.

Dealing with academic spam and predatory publications and conferences requires action on several fronts.²² On the one hand, researchers should be aware of predatory publishing practices and the detrimental effects of collaboration with such journals and publishers on science and society.¹⁷ To this end, it is important that researchers are trained to detect these types of journals and conferences and the emails they send to recruit researchers. It is necessary to understand the characteristics of predatory journals to identify them, and also to learn to recognize the emails they send to solicit manuscripts. Various tools (databases, blacklists, checklists) already exist that would be useful in this regard. Furthermore, it would be desirable for public authorities and academic institutions to act and to develop

reliable mechanisms to identify and, to the extent possible, sanction, such journals and conferences.

Academic spam remains a pervasive threat to efficient and trustworthy scholarly communication. This review consolidates the dispersed evidence into a practical, two-stage approach that distinguishes cues observable in the email itself from checks involving validation through external sources. By systematizing the most frequently reported indicators and countermeasures proposed across studies, the authors provide an operational basis for awareness-raising, filtering practices, and institutional guidance, particularly for early-career researchers and research support units. As deceptive messaging evolves, especially with generative AI, sustained verification and training will be essential.

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Appendix

Articles included in the study

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