

# BMJ Open A cross-sectional study of predatory publishing emails received by career development grant awardees

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## ABSTRACT

**Objective** To investigate the scope of academic spam emails (ASEs) among career development grant awardees and the factors associated with the amount of time spent addressing them.

**Design** A cross-sectional survey of career development grant investigators via an anonymous online survey was conducted. In addition to demographic and professional information, we asked investigators to report the number of ASEs received each day, how they determined whether these emails were spam and time they spent per day addressing them. We used bivariate analysis to assess factors associated with the amount of time spent on ASEs.

**Setting** An online survey sent via email on three separate occasions between November and December 2016.

**Participants** All National Institutes of Health career development awardees funded in the 2015 fiscal year.

**Main outcome measures** Factors associated with the amount of time spent addressing ASEs.

**Results** A total of 3492 surveys were emailed, of which 206 (5.9%) were returned as undeliverable and 96 (2.7%) reported an out-of-office message; our overall response rate was 22.3% (n=733). All respondents reported receiving ASEs, with the majority (54.4%) receiving between 1 and 10 per day and spending between 1 and 10 min each day evaluating them. The amount of time respondents reported spending on ASEs was associated with the number of peer-reviewed journal articles authored (p<0.001), a history of publishing in open access format (p<0.01), the total number of ASEs received (p<0.001) and a feeling of having missed opportunities due to ignoring these emails (p=0.04).

**Conclusions** ASEs are a common distraction for career development grantees that may impact faculty productivity. There is an urgent need to mitigate this growing problem.

## INTRODUCTION

In the last 10 years, a subset of 'predatory' publishers has been able to flourish within the \$10.5 billion per year market.<sup>1-4</sup> These predatory publishers send unsolicited emails that request manuscript submissions, offer rapid review and use publication fees (rather than traditional peer or editorial review) as criteria to accept articles.<sup>5-7</sup> As a result of this model, there have been documented instances of accepting flawed

## Strengths and limitations of this study

- This is the first study to describe the scope of academic spam emails and factors associated with time spent addressing them among career development grantees.
- The survey was distributed by email; thus, it could have been perceived as a spam email by recipients.
- The survey included only recipients of National Institutes of Health funding and did not include those who have applied for funding and were not successful.

manuscripts or fake editorial board members.<sup>8-11</sup> Because academic research faculty career success is often centred on their publication and funding record, their ability to obtain funding to conduct research is intimately linked to their success in publishing their work. Junior academic faculty are particularly focused on opportunities to publish, given the importance tied to their promotion. They may, therefore, be most susceptible to academic spam emails (ASEs) from predatory publishers, which contain unsolicited requests for publishing manuscripts, presentations at organisation meetings and memberships on editorial boards.

Previous studies have examined the quantity and quality of predatory publishers, as well as characteristics of authors who publish in them.<sup>10 12-19</sup> However, to our knowledge, no study has described the prevalence of this phenomenon among researchers early in their career or quantified the time spent on ASEs. Therefore, we sought to examine factors associated with the amount of time spent addressing ASEs by career development grantees.

## METHODS

### Study design and data source

We obtained the contact information for all National Institutes of Health (NIH) K awardees in the fiscal year of 2015 via a Freedom of Information Act request.

Information of federal grant awardees is a standard report issued by the NIH Freedom of Information Office that is available online.<sup>20</sup> We then created and emailed an online survey using Survey Monkey,<sup>21</sup> consisting of 14 questions to the correspondent/recipient on record of each K award.

The survey was conducted using a self-structured questionnaire, which was piloted among 10 faculty at Indiana University School of Medicine that were not current K awardees to assure clarity of questions and adequate response options. If a question was not clear or the answer choices were not sufficient, the survey was edited before it was sent to the next faculty member. This process was repeated until there were no additional feedback suggestions. Validity testing on the survey (prior to the surveys being sent to the study participants) was not done. The survey was sent a total of three times over a 2-month period (November–December) in 2016 to 3492 NIH K awardees. The email was generated from a valid, personal email account of one of the study investigators (TAW).

The survey requested information regarding basic demographic (eg, gender) and professional information (eg, academic job title, year of terminal degree and publication history). Survey respondents were also asked several questions about their experience with ASEs, which was described to survey respondents as an ‘unsolicited email requesting articles/editorial, conference presentations or editorial membership’. Subsequent questions asked respondents to report the number of ASEs they received daily, how they determined whether these emails were spam, the amount of time spent on these emails, whether their email account had a spam filter and if they ever felt like they missed opportunities due to ignoring these emails.

### Data analysis

We summarised responses to survey questions using descriptive statistics and then assessed factors associated with the daily amount of time spent on these emails (recategorised as none, 1–10 min and >10 min) using  $\chi^2$  bivariate analysis. We removed respondents with missing data (n=68) or who replied ‘not sure’ (n=4) to the question about time spent daily addressing ASEs from the bivariate analysis. Respondents removed from this analysis were less likely to have more than 20 publications but otherwise did not differ from those included in the sample by key study variables. All analysis was done using SAS V.9.4.

### Patient and public involvement

For this study, there was no patient involvement; however, we collected data through a survey of NIH grantees available from a public database.<sup>20</sup>

## RESULTS

A total of 3492 surveys were emailed, of which 206 (5.9%) were immediately returned as undeliverable; 96 (2.7%)

of these 3286 emails had an out-of-office message automatically in response to the enquiry. Of the emails sent and received successfully, 733 (22.3%) surveys were completed by the end of the study period and were used for final analysis. A slight majority were women (n=399, 54.4%). Over two-thirds (65.5%) of the respondents were assistant professors working at an academic centre; most (71.9%) received their NIH K award funding in the 4 years preceding the survey (table 1).

With respect to the number of ASEs received each day, every respondent reported receiving at least one ASE in the previous week (data not shown). Over half (54.5%) reported receiving between 1 and 10 ASEs per day, 30.6% reported receiving between 11 and 20 emails per day, and 14.1% reported receiving more than 20 emails per day (table 1). When asked how much time was spent on these emails in a day, 80% of the respondents reported spending at least some amount of time during the day addressing these emails, with 63% of the respondents reporting spending between 1 and 10 min of their day reading, sorting and determining what to do with potential ASEs. The methods of how they determined an email to be academic spam were diverse, with an unknown journal name being the most frequently described method (82% of the respondents). More than a one-third of the respondents (31%) reported that they had responded to an ASE in the past.

On bivariate analysis, when examining variables associated with the amount of time spent on ASEs in a day (table 2), we found that neither gender (p=0.37) nor academic job title (p=0.36) was associated with the time spent addressing ASEs. Interestingly, the time spent on emails was also not associated with reporting having a SPAM filter (p=0.99).

However, there was an inverse association (p<0.001) with the number of academic publications reported and the time spent addressing these emails, such that faculty with fewer publications reported spending more time per day reading potential ASEs and assessing their legitimacy. Among faculty with 10 or fewer publications, 87.5% spent between 1 and 10 min assessing these emails compared with those with 11–20 publications (80.8%) and >20 (56.8%) publications, respectively. More than a quarter of the respondents with >20 publications spent no time assessing these emails compared with 0% of respondents with fewer publications. There was also an association between the number of potential ASEs received in a day and the time spent on them (p<0.001). Specifically, respondents who received more than 20 ASEs per day were more likely to report spending more than 10 min/day on these emails than respondents who received fewer emails.

Finally, we assessed whether respondents felt they might have missed opportunities in the past because they mistakenly assumed legitimate emails were academic spam. We found that respondents who were concerned about missed opportunities were almost twice as likely to spend at least 10 min of their day assessing these emails

**Table 1** Description of survey respondents\*

Variable	Total n (%)
Total responses	733 (100)
Demographics and professional information	
Gender	
Female	399 (54.4)
Male	322 (43.9)
Other/prefer not to answer	12 (1.6)
Academic job title (n=731)	
Assistant professor	479 (65.5)
Associate professor	120 (16.4)
Professor	49 (6.7)
Non-tenure track	57 (7.8)
Other	26 (3.6)
First year to receive NIH funding (n=729)	
2011–2016	524 (71.9)
2010–2000	169 (23.3)
Prior to 2000	36 (4.9)
Number of academic publications (n=732)	
1–10	55 (7.5)
11–20	181 (24.7)
>20	496 (67.8)
Previously published in open access format (n=730)	
Yes	489 (67.0)
No	195 (26.7)
Not sure	46 (6.3)
Year terminal degree was obtained (n=729)	
2010–2016	137 (18.8)
2005–2009	307 (42.1)
2000–2004	202 (27.7)
Prior to 2000	83 (11.4)
Spam filter on email (n=729)	
Yes	651 (89.3)
No	36 (4.9)
Not sure	42 (5.8)
Experience with academic spam emails	
Estimated number of academic spam emails/day (n=724)	
1–10	398 (54.5)
11–20	223 (30.6)
>20	103 (14.1)
Not sure	6 (0.8)
Time spent per day reading/sorting academic spam emails (n=665)	
None, delete them all without reading	132 (19.9)
1–10 min	419 (63.0)
11–20 min	89 (13.4)
>20 min	21 (3.2)

Continued

**Table 1** Continued

Variable	Total n (%)
Not sure	4 (0.6)
History of responding to academic spam email (n=729)	
Yes	226 (31.0)
No	503 (69.0)
Concern of missed opportunities (n=731)	
Yes	58 (7.9)
No	575 (78.7)
Not sure	98 (13.4)
Methods used to deem emails academic spam†	
Consider them all spam	274 (37.4)
Ask a colleague	123 (16.8)
Typos in text/name	398 (54.5)
Don't recognise journal	601 (82.0)
Address listed is not in the USA	308 (42.0)
Requesting fee to publish	313 (42.7)
Consult the Internet	239 (32.6)

\*Percentages may not sum to 100 due to rounding; total n differs if a question was left blank.

†Respondents were instructed to select all that apply.  
NIH, National Institutes of Health.

than those who were not concerned (24.3% vs 12.8%,  $p=0.04$ ).

## DISCUSSION

This study sought to examine the scope of ASEs among NIH career development awardees and factors associated with the amount of daily time spent addressing them. We found that receiving ASEs was pervasive in this population. In fact, everyone who responded to the survey reported receiving academic spam, precluding us from examining demographic and job-related factors associated with the receipt of these emails. In addition, 80% of the respondents reported using time during their day to address these emails.

We examined demographic and job-related factors in relation to the amount of time respondents spent addressing the emails in any given day. Neither gender, academic rank nor having a spam filter affected the time spent addressing these emails, but faculty with <20 publications and who felt like they might be missing opportunities did report spending more time addressing these emails than their counterparts. More than 30% of the respondents who felt that they might have missed opportunities for publication, presentation or editorial service because they ignored an ASE reported spending more than 10 min every day reading and sorting academic spam. This suggests that academic faculty who are junior and/or who feel pressure to publish might be most susceptible to these types of predatory solicitations. In

**Table 2** Factors associated with time spent on emails

	Time spent on academic spam emails per day (%)			P value
	None	1–10 min	>10 min	
Demographics and professional information				
Gender				0.37
Female	19.9	66.0	14.0	
Male	20.1	60.4	19.5	
Other/prefer not to answer	16.7	58.3	25.0	
Academic job title				
Assistant professor	19.5	65.4	15.1	0.36
Associate professor	20.7	57.8	21.6	
Professor	28.6	51.0	20.4	
Non-tenure track	17.4	65.2	17.4	
Other	10.5	79.0	10.5	
Number of academic publications				
1–0	0.0	87.5	12.5	<0.001
11–20	0.0	80.8	19.2	
>20	26.9	56.8	16.3	
Previously published in open access format				
Yes	23.7	67.5	8.9	0.01
No	19.7	61.7	18.6	
Not sure	9.3	65.1	25.6	
Spam filter on email				
No	19.9	63.1	17.0	0.99
Yes	20.7	65.5	13.8	
Not sure	20.0	65.0	15.0	
Experience with academic spam emails				
Estimated number of academic spam emails per day				
1–10	20.3	72.9	6.8	<0.001
11–20	20.3	58.0	21.7	
>20	18.6	40.2	41.2	
Not sure	0.0	100.0	0.0	
Concern for missed opportunities				
No	21.3	63.8	14.9	0.04
Yes	14.3	55.4	30.4	
Not sure	15.9	65.9	18.2	

addition, the more ASEs received in a day was associated with more time spent addressing them.

While our study was focused on career development grantees who are generally in the early stages of their career, the burden of ASEs is not limited to these faculty. In 2017, a study found that even senior faculty are affected by ASEs, making the case that efforts to control this phenomenon are needed throughout academia.<sup>16</sup> Therefore, whatever interventions or efforts are undertaken to combat this problem will need to include faculty at all stages and not just new or junior faculty.

As the number of journals and publishers continue to rise, we can expect the number of emails to do so as well. Given the focus of faculty to publish, it is likely that they will continue to spend time reading these emails to determine whether they are legitimate or not, when they could be working on projects, manuscripts and grant proposals. Knowing that ASEs will likely not stop may indicate that faculty should be given an additional piece of training and resources to determine whether or not to respond to unsolicited emails or any easy way to report them to help identify the senders as spam in the future.



Academic institutions could decide to value publications in predatory journals differently (in terms of promotion criteria) and thus deter faculty from pursuing those opportunities, although that could be viewed as impacting academic freedom.<sup>22</sup> Additional research exploring how pervasive publication within these journals is occurring among academicians is under way; however, the larger question of how academia will perceive and evaluate these publications within the promotion and tenure setting is yet to be answered.<sup>23–25</sup>

Our study has some limitations. First, we used the contact information for grant awardees provided by the NIH and did not determine individual contact information based on awardees' names and institutions separately. Thus, some email addresses were not working or valid at the time of our survey and may have represented an institutional contact and not the awardee themselves. Furthermore, our study sample was those with funded NIH grants, not including those that may have applied but were not funded. Second, there is a chance that our emailed survey was viewed by recipients as spam itself and was possibly ignored or deleted without a response. We used a valid personal email address with a survey link in the body of the email to solicit respondents, but that also prohibited us from knowing who had completed the survey already or who to follow-up with directly for not completing the survey. Third, the overall response rate was 22%, and we did not require any question on the survey to be answered and thus had some missing data. However, respondents removed from the sample for missing data did not systematically differ from those included, except that they reported having fewer publications. This likely produced conservative results in our bivariate analysis.

Nonetheless, our study quantifies the burden of time faculty spend addressing ASEs as career development grantees and can provide groundwork for further studies examining the burden of ASEs among faculty. There are efforts under way to help researchers choose the right journal for their research, which includes deciphering predatory journals from others.<sup>18 24 26–31</sup> Furthermore, efforts at the university level to help improve email filters to block unsolicited emails can be refined and improved, given a majority of our respondents had spam filters in place that permitted these emails to be delivered. This may present challenges as to how to discern ASEs from other emails; however, certain patterns to emails or sender addresses could be used to flag these within a larger system. From a larger system perspective, the publishing industry can build on their current communications to help differentiate from predatory journals for the receivers.

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**Data sharing statement** The survey, statistical code and dataset are available by request to the corresponding author, TAW.

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