



## Regular article

## Predatory journals: Who publishes in them and why?

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## ABSTRACT

This sequential explanatory mixed-methods study investigated where predatory/fake journals (PFJs) are founded, which countries' researchers publish more frequently in PFJs, the identity of the editors of PFJs, why researchers publish in PFJs, and what factors encourage such publications. A survey and semi-structured follow-up interviews were used to collect data. The results indicate that the majority of PFJs are located in developing countries; 119 journals provided incorrect postal addresses; the greatest number of researchers who published in PFJs are from India, Nigeria, and Turkey, suggesting that most of the publications in PFJs are submitted by researchers in developing countries; the interviewed Turkish researchers submitted their articles to PFJs in pursuit of rapid academic promotion; the incentive allowance system encourages researchers to publish in PFJs; and the well-known "publish-or-perish" pressure and unawareness are other potential factors that drive participants to submit their papers to PFJs.

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## 1. Introduction

One of the most significant characteristics of science is its devotion to the systematic collection of data through scientific means. Science is universal; thus, dissemination of scientific findings and data is an important step in the advancement of science. Scientific journals play a vital role in sharing the data collected through scientific methods and the results of their analysis with academia and the global community. Scientific journals endeavor to ensure the systematic development, originality, trustworthiness, and accuracy of the scientific studies submitted through an editorial and peer review processes. The quality of these processes also reflects the overall quality of the scientific knowledge produced in an end product (Labbé & Labbé, 2013).

Although most journals fulfill the aforementioned function relatively effectively, usually through double-blind review, so-called scientific journals have been observed that consider irrelevant factors rather than conduct proper editorial and peer review processes (Kurt, 2018; Xia et al., 2015). These journals, which present themselves as highly scientific publications, have become a threat to the science (Beall, 2016a, 2016b). These predatory/fake journals (PFJs) promise rapid, unsubstantiated peer review, leading to a short timeline to publication; they also tend to have a fake foundation or management addresses and fake editors and reviewers (Beall, 2015; Gutierrez, Beall, & Forero, 2015; Jalalian & Mahboobi, 2014; Kurt, 2018; Xia et al., 2015). Such PFJs have further claimed that they are indexed by prestigious indices and have high impact factors (Beall, 2016a, 2016b; Eriksson & Helgesson, 2017; Masten & Ashcraft, 2016; Roberts, 2016; Van Nuland & Rogers, 2017; Ward, 2016).

Unfortunately, PFJs, will publish any type of study to make a profit, with little regard for scientific concerns (Berger & Cirasella, 2015; Bohannon, 2013; Shen & Björk, 2015). Much worse, some scholars are inclined to publish in these journals (Butler, 2013; Clark & Smith, 2015; Demir, 2018c; Pamukcu-Gunaydin & Dogan, 2015; Pickler et al., 2015). As a result

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of a demand–supply imbalance, PFJs have mushroomed in a short period of time and become the new Trojan horses of academia. Over the last 2 decades, the number of Trojan horses has increased so quickly that distinguishing them from legitimate publications has become highly challenging (Eisen, 2013; Simón, 2016). However, based on a set of established criteria, Jeffrey Beall compiled a regularly updated list of such journals (Beall, 2015, 2016a; Beall, 2016b, 2018). Last updated in late 2017, 1099 PFJs published by 1163 publishers have made the list (Beall, 2018).

The negative effects of these journals on the science world have reached such high levels that many studies have been conducted to examine various topics regarding the characteristics of PFJs, including how to distinguish them and who publishes in them (e.g., Anderson, 2012; Bartholomew, 2014; Beall, 2010, 2014; Bohannon, 2013; Poynder, 2013; Sorokowski, Kulczycki, Sorokowska, & Pisanski, 2017; Xia et al., 2015). Fighting against these journals has been suggested (Mehrpour & Khajavi, 2014; Pickler et al., 2015), and editors of prestigious journals have published guidelines to avoid them (Cartwright, 2016; Clark & Smith, 2015; Darbyshire, McKenna, Lee, & East, 2017; Fernandez-Llimos, 2014; Lewis & Wulster-Radcliffe, 2014; Owens, 2015).

Some studies have attempted to determine the place of publication and basic characteristics of PFJs (Bohannon, 2013; Djuric, 2015; Gasparyan, Yessirkepov, Diyanova, & Kitas, 2015; Jalalian & Mahboobi, 2014; Kozak, Iefremova, & Hartley, 2016; Nelson & Huffman, 2015; Shen & Björk, 2015; Simón, 2016; Sipka, 2012; Švab & Makivić, 2015; Truth, 2012), whereas others have investigated why researchers publish in these journals (e.g., Arunachalam, 2006; Kurt, 2018; Lukić et al., 2014; Shaw, 2013; Xia et al., 2015).

The few studies that have examined topics such as the location of publication, editor country of origin, and, most important, reasons why researchers publish in the journals on Beall's list, suffer major limitations. First, the studies have neither examined all the journals on this list nor where the domain is hosted along with the corresponding IPs to determine the actual location. Second, the studies made assumptions based on interviews with only third parties rather than directly interviewing researchers publishing in these journals. Due to such reasons, further study has been suggested (e.g., Crawford, 2014b; Anderson, 2015). Therefore, focusing on those who publishes in PFJs could function as a major step in narrowing the research gap in this area. This study aims to investigate who mostly publishes in PFJs and what their reasons are based on a particular subset of the participants (Turkish researchers only). To achieve the aim, this study adopts a sequential explanatory mixed-methods research design and aims to find in-depth answers to the following questions:

- a) What are the foundation and administration locations of the PFJs on Beall's standalone journals list?
- b) Which countries' researchers publish more frequently in PFJs?
- c) Who are the editors of PFJs?
- d) Why do Turkish researchers publish in these journals? What factors draw researchers to PFJs?

### 1.1. Related research

Studies on PFJs have attempted to determine the place of publication and characteristics of researchers publishing in such journals. For example, Kurt (2018) randomly chose 50 journals from Beall's list, and 300 articles in these journals were examined. The results indicated that these journals were mostly located in developing countries rather than in developed countries, as commonly claimed, and mostly researchers from developing countries published in these journals (Lukić et al., 2014; Truth, 2012). Xia et al. (2015) randomly chose seven PFJs, and articles in these journals were examined. Their results demonstrated that researchers publishing in these journals were mostly young, inexperienced scholars from universities in developing countries. Similarly, Truth (2012) indicated that these journals publish in accordance with a “pay big, publish fast” policy. Simón (2016) found that mostly researchers from developing countries, like Turkey, Botswana, Jordan, Malaysia, Pakistan, Saudi Arabia, and—especially—Nigeria publish in PFJs. This finding has also been supported by other studies (Nwagwu, 2015; Omobowale, Akanle, Adeniran, & Adegboyega, 2014; Raghavan et al., 2014).

Studies have also been conducted to unearth the reasons for publication. For example, Lukić et al. (2014) claimed that young and inexperienced researchers might publish in such journals to publish fast and rapidly win academic titles, but Arunachalam (2006) stated that researchers insufficiently qualified to publish in journals indexed in quality indices might have tended to publish in these journals. According to Arunachalam (2006), another possibility is that researchers who attempt to publish in SSCI/SCI/AHCI indices but have failed, might have submitted their manuscripts to PFJs. Others have argued that young scholars might be inclined to publish in PFJs because they feel the pressure of “publish-or-perish” and the anxiety to increase the number of publications in a short time (Kolata, 2013; Roberts, 2016; Shaw, 2013).

The literature on publishing in PFJs has suggested other reasons for this unethical behavior. For example, Xia (2015) and Xia et al. (2015) have associated such publications with the wider academic culture researchers affiliate with. They have argued that the reason why young researchers publish in such journals is linked to the academic culture and sociocultural environment in universities in developing countries. By contrast, Kurt (2018) stressed the impact of individual factors by claiming that researchers might publish in these journals because of reasons such as social identity threat, unawareness, high pressure, and insufficient research proficiency. In addition, Demir (2018c) stated that researchers who publish in PFJs, intentionally or unintentionally, are paid an academic allowance per publication. He asserted that the number increased to 506 (from 49, a statistic calculated for the 2 years before the introduction of the incentive allowance payment system) within the 2 years after the incentive allowance was introduced. In other words, the incentive allowance has increased the number of publications in PFJs up to 129%. According to Simón (2016), Nigeria is one of the leading countries of origin for

researchers publishing in PFJs. The literature has reported that Nigeria generally considers the number of publications as more important than their quality and financially rewarded researchers for publications in such journals (Adomi & Mordi, 2003; Mordi, 2002). Thus, as asserted by some in the literature, material incentives aimed at incentivizing researchers to publish encourage publishing in PFJs (Mouton & Valentine, 2017; Pyne, 2017).

Studies have also focused on peer review and editorial processes in PFJs. For example, Bohannon (2013) examined of 300 journals and revealed that more than half accepted publications to make a profit without peer and/or editorial reviews. Similar results have indicated that many PFJs suffer from poor review processes (Anderson, 2012; Poynder, 2013), and some researchers have claimed that those who publish in these journals harm the science world and damage their reputation or that of their institutions (Gasparyan et al., 2015; Knudson, 2014).

Several studies have suggested that most of these journals are located in underdeveloped countries, whereas the related literature has often suggested that researchers from developed countries publish in these journals. Moreover, a claim has often been made that most of the editors of these journals are fake. However, such findings require empirical testing at a larger scale than has been performed.

## 2. Method

### 2.1. Research design

This study adopted a sequential explanatory mixed-methods research design to investigate the characteristics of all the journals included on Beall's list of standalone journals, in particular, those with accessible websites, along with the websites of the researchers publishing in these journals and why they publish in these journals. To this end, initially, all journals in the standalone journals list (832 journals) were examined quantitatively, and the researchers who published in PFJs in 2017 were identified. Subsequently, the participants were interviewed to determine why they publish in these journals. In the qualitative strand, based on the quantitative data, the interview participants were recruited, and qualitative data were collected and analyzed. The research process can be symbolized as QUAN→qual (Morse, 1991). The research process is illustrated in Fig. 1.

### 2.2. Quantitative dataset

#### 2.2.1. Identification of journals

Many webpages list PFJs, for example, Stop Predatory Journals, Cabell's New Predatory Journal Blacklist, and Beall's. The standalone journals list published by Jeffrey Beall might be the most commonly cited in the literature. However, a serious criticism of Beall's list is its reliability. For instance, some researchers have claimed that examples of high-quality international journals are on this list (2014b, Crawford, 2014a; Emery, 2013). Furthermore, Berger and Cirasella (2015) noted that Beall failed to consider that less famous and reliable journals have published flawed, questionable, or poor quality articles. They also argued that Beall was biased against open access journals due to cultural background (Anderson, 2015; Berger & Cirasella, 2015; Crawford, 2014a).

Researchers have also argued that the criteria used by Beall to determine whether a journal is a PFJ were not adequately explained and inherently confusing (Berger & Cirasella, 2015; Crawford, 2014b). Beall's list has also been criticized for not using rigorous data collection techniques; therefore, some of the data was confusing (Berger & Cirasella, 2015; Crawford, 2014b). Beall's list is actually a blog that has been discontinued, which precludes arguing about its reliability (Crawford, 2014a). Despite such limitations, this study, like similar studies (e.g., Shen & Bjork 2015, Kurt, 2018; Xia et al., 2015), examined the journals on Beall's list. As of January 4, 2018, the list contained 1099 titles. Of those, 267 were observed to have inactive websites; thus, this study examined 832 journals.

#### 2.2.2. Identification of journal locations

The website of each of the 832 PFJs was reviewed, and their contact addresses were determined by using the information provided. The domain of each journal was checked at <http://whois.domaintools.com>. However, this assessment may not be sufficiently reliable to make decisions based solely on these results. For example, a journal administered in India that declares its contact address on the webpage as India can obtain its website domain from a server based in another country.

Important considerations include the country where the domain is hosted and the IP from which the journal's FTP system updates and installations are made. To verify this information, the domain query (<http://whois.domaintools.com/>) and IP update and installation query were conducted for each journal at <https://intodns.com/> and <https://tools.keycdn.com/geo>. This process helped determine whether a journal has made a valid declaration. Of the 832 journals in the sample, 97 did not declare a contact addresses; thus, 735 remained for this examination.

#### 2.2.3. Identification of journal editors

The editor of each journal was determined based on the declaration on the web page of the journal. The identities of the editors were verified by conducting additional search queries on Google Scholar and institutional websites. The identities of 17 editors were unclear; thus, these editors were sent a note to their institutional email addresses requesting information regarding whether they were the editor of Journal X. Eleven editors responded positively to this query, and six failed to do so;

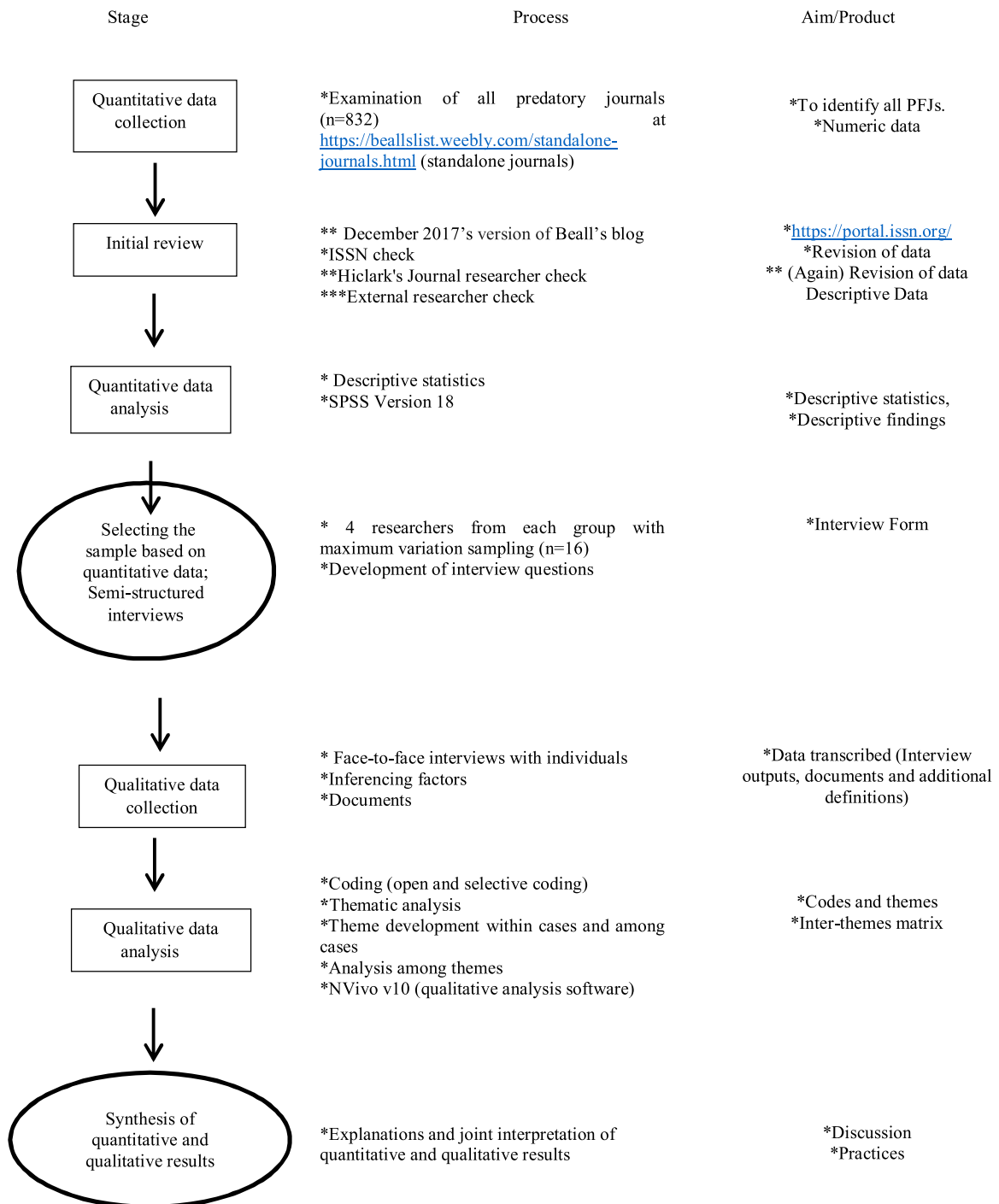


Fig. 1. Diagram of the sequential mixed design of this study.

for this reason, these journals were excluded from the study. Rather than determining the nationality of journal editors, the country in which their workplace was located was considered. To verify editors' names, surnames, and relevant information, these data were cross-checked with those on the websites of the institutions to which the editors reportedly belonged.

#### 2.2.4. Identification of researchers publishing in these journals

All the articles published in 2017 in these 832 journals were examined, that is, 24,840 articles from 832 journals. In each article published in these journals, the characteristics of all the authors were identified based on the contact addresses

provide. However, oftentimes, no biodata for the second and third authors were available; for this reason, the contact address given by the first author was considered for each article. Although rare, author biodata was considered, or in cases where first author information was unavailable, second or third author information was included in the dataset. Because determining the nationality of the authors was not possible, the country under the address of the communication was accepted as the country of origin of the article published. For each article, an initial attempt was made to determine the gender of the first author. However, this approach was abandoned because the same name was used for both women and men in many countries.

A cross-check of names and email addresses revealed that some authors published more than once in the same or different journals in 2017: 24,840 articles were published in 832 journals in 2017, and 22,764 researchers were listed as the first authors of these articles.

#### 2.2.5. Country of publication

Country location of PFJs were categorized as “developed” or “developing,” based on criteria provided by the [International Monetary Fund \(2018\)](#). There is no general agreement on which countries should be labelled as “developing” or “developed.” However, one of the most well-known criteria is that a country with a significant level of industrial activity and where residents generally have higher incomes is commonly considered developed. Although a number of criteria determine a country’s status, for this study, gross domestic product (GDP) per capita ([Investopedia, 2016](#)) was used as the sole indicator. That is, countries with a GDP per capita of \$20,000 were considered underdeveloped, and those with greater than US\$ 20,000 were considered developed. For example, Spain was considered a developed country because its GDP per capita was US\$ 32,560, and Malaysia was considered developing because its GDP was US\$ 11,240.

### 2.3. Qualitative study group

This study used a sequential explanatory mixed-methods design. Therefore, the qualitative study group was recruited based on quantitative data, as recommended by [Creswell and Plano Clark \(2011\)](#). That is, the quantitative results informed the qualitative sampling procedures.

An invitation to participate in a Skype interview was emailed to 2310 authors who published in PFJs in 2017. However, the rate of response was only 9%. Responses were received from 207 potential participants, and a number of those were auto-responses. The remainder were interested in the identity of this researcher and the purpose of the study. Only six authors agreed to participate in an online interview. Of those, few appeared online at the prearranged time of the interview; some sent emails of apology, stating they would be unable to participate in the interview due to unexpected schedule changes. A decision was made that Turkey (the home country of the researcher) could be a fruitful location to recruit participants; this supposition was borne out as 16 participants were located there through maximum variation sampling. The group comprised researchers from eight universities in Turkey who had published in PFJs in 2017. An attempt was made to interview researchers holding different titles and achieve gender balance; this latter effort was unsuccessful. All the participants agreed to be interviewed on the condition their identities remained confidential. The characteristics of the participants are presented in [Table 2](#) (at the beginning of Section 3.4).

### 2.4. Qualitative data collection procedure

In the qualitative strand, a semi-structured interview that consisted of four main questions and some probes was used to facilitate an in-depth analysis and understand the rationale behind the participants’ quantitative responses. The participants were first asked about their knowledge regarding PFJs. Subsequently, general questions and accompanying probes were asked to understand why they published in Journal X. In this process, the participants also shared their experiences regarding their publications in PFJs prior to 2017.

To develop the interview form, an initial question pool was created. Non-incriminating and non-threatening questions were identified to elicit participant rationale for publishing in PFJs. After the draft questions were developed, two researchers with PhD degrees were asked for their opinions, with a particular emphasis on comprehensibility and the potential negative impact on the participants. Both were aware of PFJs. Each had at least one article published in journals indexed in SSCI/SCI, and both had a good command of qualitative research procedures. According to the views of the experts, one question was accusatory in its wording; thus, the question was reworded.

Later, the interview was piloted with one researcher with a PhD degree. This researcher had already published in PFJs. In this process, one probe question was deleted and one new question was added. The researcher interviewed in the piloting stage was not included in the study group. The participants were informed regarding the aims of the study and assured that their personal information would remain confidential. The duration of the interviews was 399 min in total. The shortest interview was 18 min, the longest interview was approximately 34 min, and the average duration was 24.93 min.

If the participant was completely unaware that a journal was a fake from first submission to publication, it was coded as “unaware.” If the participant said that he/she somehow came to think that there might be a problem with the journal, it was coded as partially unaware.

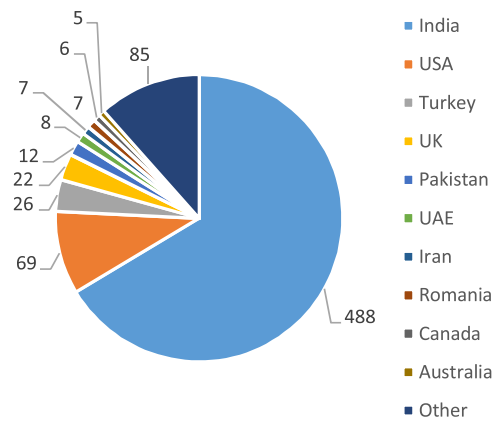


Fig. 2. Claimed contact locations from PFJ websites.

## 2.5. Qualitative data analysis

The face-to-face interviews were recorded, and the recordings were transcribed verbatim. All interview transcripts and field notes were carefully read to become familiar with the data. The data were then analyzed by using NVivo 10, qualitative analysis software, used for organizing and managing qualitative data and thinking processes. The analysis began with free coding before a coding structure was created. The importance of context, process-related reasons, and their mutual effects were considered during coding. At the beginning of the categorization and thematization process, the rationales for publishing in PFJs were classified as “personal” and “external” reasons. However, upon realizing that a category under “personal reasons” was actually directly related to external reasons, the data were subsequently presented under comprehensive themes related to each other, rather than presenting categories as personal or external.

The categories that formed a meaningful and coherent whole were combined to form themes, which are provided under different subheadings in the results (Sections 3.4.1–3.4.6). Annotations and memos were frequently used to facilitate analysis and provide rich data for later interpretation. These annotations and memos sometimes included notes on various contextual factors that could improve the interpretation of a particular utterance. Furthermore, various queries were used to explore the data fully, and the participants were compared based on their personal characteristics by using matrix coding queries. Coding, category development, and theme development processes continued through a reflexive understanding, and accountability was the main principle.

While interpreting the data, various analysis strategies were used, such as inductive descriptive analysis, content analysis, and constant comparison. While selecting the quotes for the final report, specific attention was paid to how frequently a particular idea was mentioned, the extent to which the participants were sure of what they said, tone of voice, and so forth. Permission to conduct the study was obtained from the institutional review board, which examined the interview and informed consent form and provided guidance.

## 3. Results

### 3.1. What are the foundation/administration locations of the journals on the Beall list?

No address was listed for 97 out of the 832 journals with accessible information. Therefore, the publication locations of 735 PFJs were included in the analysis. The addresses that journals provided on their websites and their addresses in IP/WHOIS were examined and compared. The findings based on the website contact location of the PFJs are presented in Fig. 2, and the findings obtained based on the IP/WHOIS contact locations are presented in Fig. 3.

According to the website contact location data, the number of distinct countries in which PFJs are located was 55: in actuality, this was found to be 52, according to data from the IP/WHOIS contact locations. In addition, 38 journals that claimed to have been founded in India were located in the United States, and eight journals that claimed to have been founded in the United States were located in India.

According to the IP/WHOIS contact locations, PFJs are primarily located in India (62.0%). There are 456 PFJs in India, followed by the United States with 93 journals, Turkey with 29 journals, and the United Kingdom with 17 journals. The UAE and Australia are among the top ten countries, according to the website contact location data, and these countries are not listed in the top ten according to the IP/WHOIS data. Notably, Russia, which is not among the top ten countries according to the website contact location claims, ranks in the top ten countries according to the IP/WHOIS data. Another notable finding is China has one PFJ, according to the journal's statement and IP/WHOIS data. Countries where PFJs are located are categorized as developed and developing countries based on the data from the [International Monetary Fund \(2018\)](#).



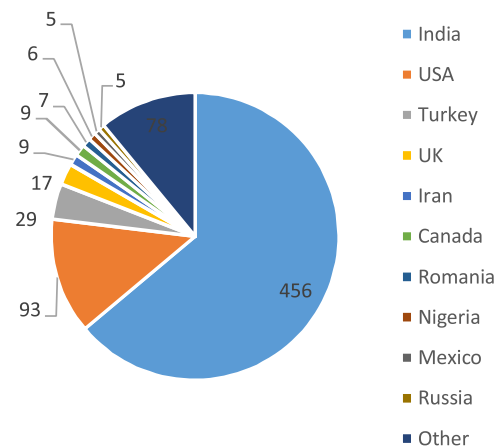


Fig. 3. PFJ IP/WHOIS contact locations.

Table 1

Comparison of journal website contact location claims and actual locations based on the IP/WHOIS.

Journal website contact location claim	Journal IP/WHOIS contact location
India (n = 42)	USA (n = 38), Panama (n = 1), China (n = 1), Turkey (n = 1), Canada (n = 1)
USA (n = 27)	India (n = 8), Canada (n = 4), UK (n = 4), Turkey (n = 3), Nigeria (n = 2), Romania (n = 1), Bangladesh (n = 1), Canada (n = 1), Iran (n = 1), Australia (n = 1), Brazil (n = 1)
UK (n = 10)	India (n = 3), USA (n = 3), China (n = 1), Pakistan (n = 1), Oman (n = 1), Hong Kong (n = 1)
Canada (n = 4)	Iran (n = 1), USA (n = 1), Panama (n = 1), Pakistan (n = 1)
UAE (n = 5)	USA (n = 3), Iran (n = 1), Swedish (n = 1)

Table 2

Themes and characteristics of the participants.

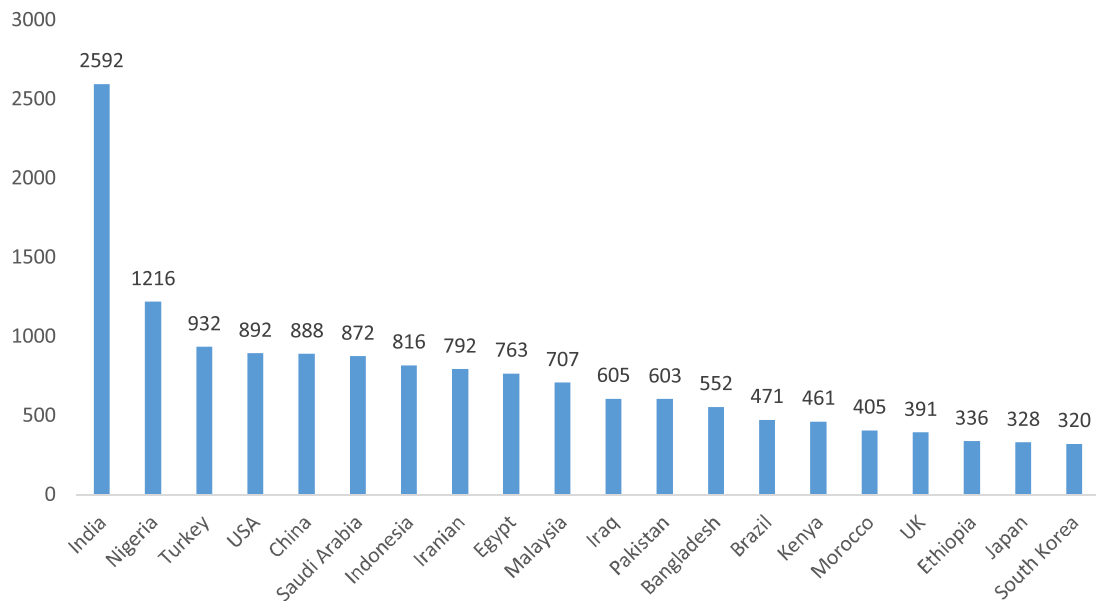
Participant	Gender	Age	Title	University	Discipline	Awareness	Academic Promotion	Academic Incentive	Fear of Job Loss and Publish-or-Perish Pressure	Failure to Publish in Journals Indexed by SSCI/SCI/AHCI	Competition within the Institution, Desire to Score High
P1	M	41	Full Prof	A	Edu. Sci.	●	✓			✓	
P2	M	37	PhD	A	Sci- Eng.	●		✓			
P3	M	36	PhD	B	Health Sci	●	✓				
P4	F	45	Full Prof	B	Sci- Eng.	●		✓			
P5	F	27	Non-PhD	C	Soc. Sci.	×					✓
P6	M	44	Full Prof	C	Soc. Sci.	○	✓			✓	
P7	M	26	Non-PhD	D	Health Sci.	○			✓		✓
P8	M	39	Full Prof	D	Sci- Eng.	●			✓		
P9	M	30	PhD	E	Edu. Sci.	●	✓				
P10	F	49	Full Prof	E	Sci- Eng.	●	✓				
P11	M	29	PhD	F	Soc. Sci.	○				✓	✓
P12	M	45	Full Prof	F	Edu. Sci.	●	✓			✓	
P13	M	28	Non-PhD	G	Soc. Sci.	×			✓		✓
P14	F	26	Non-PhD	G	Health Sci.	○			✓		
P15	M	32	PhD	H	Health Sci.	●					✓
P16	M	49	Full Prof	H	Edu. Sci.	×					✓

● Aware ○ Partially aware × No awareness /Uncertain ✓ Basic reason.

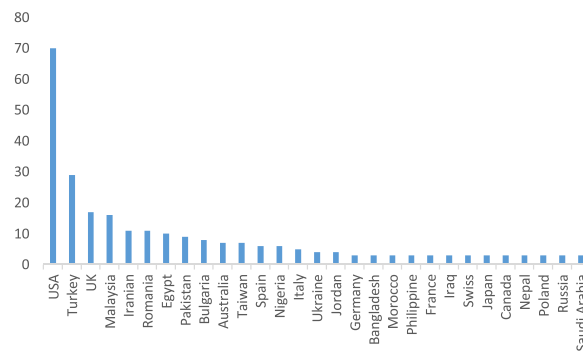
● =  $\frac{n_i}{N} \times 100$  ○ =  $\frac{n_i}{N} \times 50$  × =  $\frac{n_i}{N} \times 33.3$  ✓ =  $\frac{n_i}{N} \times 18.7$

According to the IP/WHOIS contact location data, 19.2% of the PFJs are located in developed countries, 18.8% are in developing countries, and 62.0% are in India. Additionally, the addresses that many journals claimed on their websites are not the same as the IP/WHOIS contact location addresses (n = 119). Table 1 presents the related.

As presented in Table 1, many journals located in the United States, according to the IP/WHOIS data, claimed they were in India. Similarly, many other journals that claimed to be located in the United States or India, were in other countries. In sum, 119 out of 735 (16.2%) journals incorrectly stated their locations.



**Fig. 4.** Countries with the highest number of publications in PFJs with their number of publications. *Note.* Information about India is not included.



**Fig. 5.** The first 30 countries where editors of PFJs are located, and the number of editors.

### 3.2. Which countries' researchers have more papers published in PFJs?

Although the location information in some journals was inaccessible (i.e., 97 out of 832 journals), all the articles in the 832 journals published in 2017 were accessed. A total of 24,840 publications in these journals, in 2017, was observed. Researchers from 146 countries published in PFJs. The countries with the highest number of publications among 832 PFJs along with the number of publications are presented in Fig. 4.

The data in Fig. 4 indicate that India, Nigeria, and Turkey have the highest number of publications in the PFJs. Additionally, although 62% of the PFJs are located in India, only 10.4% of the publications in PFJs are published by Indian researchers. In addition, the United States, the United Kingdom, and South Korea, which are among the developed countries, rank in the first 20 countries publishing a higher number of papers in PFJs.

An assertion has been made that researchers from developing countries publish more papers in PFJs (Lukić et al., 2014; Kurt, 2018; Simón, 2016; Truth, 2012). To further test this claim, the countries where these researchers are located were categorized as developing and developed countries, based on data from the International Monetary Fund (2018). Researchers from developed and developing countries published 3938 and 20,902 articles, respectively, in PFJs in 2017. In short, 15.85% and 84.15% of the publications in PFJs were submitted by researchers from developed and developing countries, respectively.

### 3.3. Who are the editors of PFJs?

Some of the PFJs provided the initials of their editors, and the editors' full names could be determined for only 653 out of the 832 PFJs. The countries where these editors are located are presented in Fig. 5.

Researchers from 53 countries hold the editorship of PFJs. The editors of 378 out of 653 PFJs are located in India, the country with the highest number of editors, followed by the United States and Turkey. The countries where the editors of PFJs are



located are categorized as developed and developing countries, according to the data from the [International Monetary Fund \(2018\)](#). This categorization indicates that 57.9% of the editors of PFJs are located in India, 26.1% are in developing countries, and 18.0% are in developed countries. Twelve percent of the editors of the 653 PFJs, with complete information about their editors, have misleading or fake information, and 88% of the editors are researchers at universities in various countries.

### 3.4. Why do researchers publish in PFJs? What is their rationale?

Data regarding all the themes and characteristics of the participants are presented in [Table 2](#).

#### 3.4.1. Aspirations toward academic promotion

In a country such as Turkey, in addition to publishing articles in journals indexed in national indices, researchers must publish at least one article in journals indexed in international indices, such as SSCI/SCI/AHCI, Scopus, PubMed, Medline, and Eric, H. W. Wilson (although the minimum number of publications required may vary by field). Furthermore, some universities require PhD candidates to publish at least one article to qualify as a PhD candidate. In such cases, the journal or quality of the article is not a factor, but the journal must be indexed in the indices aforementioned. The literature indicates that researchers who tried but failed to publish in such journals have a tendency to publish in PFJs to fulfill graduation or promotion requirements.

For example, P1 noted that s/he had submitted a manuscript to a journal indexed in SSCI and received a short email rejecting publication following a 1-year wait. When asked what happened next, the reply was, *"I needed to get an article published in one of the journals indexed in SSCI, ERIC, or Wilson to apply for associate professorship title. I then submitted my manuscript to the journal based on word-of-mouth recommendation; I did not find the process very reliable, but my manuscript was published shortly."* Just like P1, P6 also stated, *"I needed to get an article published in a journal indexed in Scopus to be entitled to associate professorship. I submitted it and got it published. The article was rather good though."* The researcher was asked if s/he knew the journal was regarded as a PFJ. She replied, *"One cannot know whether a particular journal is fake or not. If it is fake, why is it indexed in a prestigious index? You cannot label a journal indexed in a prestigious index as 'fake!' This is not right."*

In Turkey, a researcher must have two articles published in SCI or PubMed to apply for an associate professorship in health sciences. P10, who published an article in a fake journal to fulfill the minimum requirement of publishing in a journal indexed in PubMed noted, *"I can only tell you that I knew the journal was fake and submitted my manuscript deliberately. Everybody submits their articles and takes advantage of it. Why should I wait? I submitted my manuscript so that I can immediately apply for associate professorship. That's all I can tell you..."* Echoing these comments, P09 commented, *"Many people I know send their manuscripts to such journals. They are really indexed in prestigious indices. They paid a little money and got them published quickly. They became an associate professor. I was determined not to submit any articles to these journals, but such cases tempted me to do so. This has become an established part of academic culture."*

The views of the participants suggest that researchers basically tend to publish in PFJs. Additionally, some young researchers who wanted to fulfill the doctoral graduation requirement set by some universities, tended to publish in PFJs. For example, P3 stated that toward the end of his/her PhD study, his/her advisor told him/her that s/he must publish one article in these indices as quickly as possible, and s/he submitted a less-than-perfect study to a PFJ (because all her/his colleagues submitted their studies to this journal); the explanation was that s/he had to because s/he felt obliged to complete the submission process to graduate as soon as possible. Additionally, s/he reported this tendency in his/her environment as follows, *"Most PhD candidates publish their work in such journals; they think that they should publish to graduate without losing time; after all, it is only a publication."*

The participants frequently emphasized the paradox that PFJs are indexed in prestigious indices and that it is not them, who publish in these journals, who make the journal reputable but the indices that make the journals reputable. When the participants were asked whether they would have submitted their articles if the journal was not indexed in these indices, P1 said, *"I cannot know,"* and P3, P6, and P9 gave answers that can be summarized as follows: *"No. Why should I submit my article to journals indexed in unknown indices?"*

#### 3.4.2. Academic incentive allowance payment

Since 2015, researchers who work in state universities in Turkey have been paid extra money for each publication in international journals (i.e., fake or not) even if these journals are not indexed in SSCI/SCI/AHCI. However, the ex-post funding incentive system in Turkey was observed to encourage researchers to publish in PFJs. For example, K4 explained how the academic incentive allowance motivated him/her to publish in PFJs.

*"Unfortunately, I submitted a manuscript of mine to a journal, which I more or less knew to be fake. If I had sent it to a journal indexed in SCI, it would have taken more time and I would not have been able to reach 30 points, you know. . . it is the lowest limit for receiving academic incentive. If I had not submitted my paper to that journal, I would have lost 5000 Turkish liras (approx. US \$1400). I submitted the manuscript to the journal; you know. . . I paid a small publication fee. It was published in a short time and I was able to receive the incentive allowance. If you asked if it is right, I would say I think what is legal is right."*

P12, who published in a PFJ to fulfill the minimum publication criteria for associate professorship rather than receive an academic allowance payment stated that the academic allowance payment increased the number of Turkey-based publications in PFJs and went on to recount one of his/her experiences, *“A research assistant came to my office, inquiring, ‘Sir, I will submit a manuscript to a Journal X, what do you think about it?’ and I told him/her that the journal in question was problematic. S/he told me that s/he needed money and was to get it published in a month to receive the academic allowance. S/he submitted it to that fake journal and received the money.”* The research assistant, who did not accept an invitation to participate in the study earlier, was asked to verify if what K12 said was correct, s/he said *“yes, correct, but it was a mistake.”*

P2 stated that the number of Turkey-based fake publications increased with the introduction of the academic allowance system and that s/he had published in a Turkey-based PFJ not indexed in any of the well-known indices to receive an academic incentive allowance in 2016. S/he remarked that such cases were quite common in Turkey, adding nervously, *“Examine Journal X (The journal she mentions is on Beall’s list) to find out how many people in our faculty published in this journal. Seeing that professors also published in such journals, one realizes that the main aim is to receive incentive allowance.”* Based on the suggestion of P2, the relevant journal was examined, and it was determined that eight articles were published by the faculty members in the same faculty in 2017, and three were professors.

P1, P9, and P16 stated that a loophole in the academic allowance system in Turkey was readily exploited by researchers. They also stated that they did not publish in these journals for academic allowance payment. However, what P1 reports regarding his/her observation as an insider is striking:

*“Once the incentive allowance payment system was introduced, everyone rushed to publish in PFJs. Hurray! I can give you their names. Faculty members with years of experience submit their manuscripts to PFJs and then enjoy the allowance. It is true that they pay to get their articles published but they receive more money from the state. You know, ‘you must lose a fly to catch a trout.’”*

Other participants did not make any comments on this topic. However, the aforementioned findings indicate that a negative externality of the incentive allowance payment is that researchers are encouraged to publish in PFJs.

#### 3.4.3. Fear of job loss and the “publish-or-perish” pressure

The qualitative data also revealed that fear of job loss and the pressure and anxiety to finish a project for which block funding was received were the impetus for participants to publish in PFJs. For example, P8, who published in PFJs twice in his/her career, stated that s/he published the first manuscript because s/he was lured with an expression in a spam email, *“fast publication in ERIC,”* but s/he submitted to the second journal knowing it was a PFJ. When s/he was asked to explain her decision, she stated, *“I was conducting a project. For funding, my institution officially wanted me to publish an international paper. I had a very little time and I wittingly submitted it to a fake journal. If I had not submitted it to that journal, I would have been fined,”* which indicates that s/he published in PFJs to avoid the threat of the well-known “publish-or-perish” dilemma.

Moreover, two participants stated they had submitted manuscripts to a fake journal for fear of losing their jobs. P14 stated that s/he submitted a manuscript to that journal to win the university administration’s favor and protect his/her position, but s/he did not know—at the time—that the journal was highly problematic. Similarly, P7 embarrassingly confessed that s/he submitted his/her article just before his/her contract finished and claimed that the journal was not fake. However, later in the discussion, s/he stated: *“I was anxious about losing my job. I wanted to get one more article published. I submitted my manuscript to that journal.”*

The views conveyed by the participants indicate that researchers submit their manuscript to PFJs when they fear unemployment or want to avoid pressure or threats. Especially notable was P8 and P7, who put forward such common defense arguments as, *“Everybody does so,”* and *“What is wrong with that?”*

#### 3.4.4. Failure to publish in journals indexed in SSCI/SCI/AHCI and Inadequate Research Skills

Evidence suggests that some researchers who had submitted manuscripts to SSCI/SCI/AHCI indexed journals, but had been rejected, somehow experienced learned helplessness and submitted their manuscripts to PFJs to avoid wasted effort. Some participants submitted their manuscripts to journals indexed in SSCI/SCI to apply for associate professorship, but later submitted them to PFJs when they failed to publish in journals indexed in prestigious indices. Some participants thought their manuscript would not be accepted by any journal after a rejection by a journal indexed in SSCI/SCI and chose to act based on the perception that their manuscript would be accepted if they submitted to a journal that publishes easily and quickly.

The perceptions and experiences of P1, P6, and P12 quite similar. All three participants stated their articles were not accepted for publication by journals indexed in SCI/SSCI a few times and implied they were not fully knowledgeable regarding how to write a qualified article that could be published in journals indexed in SCI/SSCI. This opinion is clearly expressed by P12: *“I submitted my article to a journal indexed in SSCI. It was rejected even before going through the review process. When I experienced the same thing many times with different journals, I got fed up with it. Nobody comments and tells you ‘what’s wrong.’ They just send an automatically worded email saying ‘this manuscript is not suitable for publication in our journal.’ I finally understood that the manuscript will get wasted. . . Then I submitted it to that journal. What should I have done?”*

P11, who made statements similar to P12, said, *“I tried a lot. . . to get an article published in a journal indexed in AHCI. I wanted a publication indexed in AHCI to be in my CV. But I don’t think I will have one.”* When asked why s/he thought so, s/he completed his/her remarks by saying *“I am not sure. . . Perhaps, I do not have a good command of research methods.”*

Or perhaps I do not have good command of English...” P1, P6, and P12 stated they had submitted their manuscripts to a journal indexed in SSCI/SCI to apply for associate professorship but had failed. With a different aim in his/her mind than those aforementioned, P11 submitted an article to a journal indexed in AHCI to strengthen his/her CV. However, all four participants finally submitted their journals to PFJs as a result of failing to publish their manuscript in rigorous journals.

#### 3.4.5. Competition among colleagues; desire to score higher and gain respect

The analysis of the qualitative data indicated that administrators and other researchers in institutions assessed faculty members' performance on the basis of the number of publications rather than the quality of the publications, which was the impetus for researchers to publish in PFJs. Some researchers wanted to increase their publications to not fall behind in their competition with colleagues, and other researchers believed they would receive more respect from administrators and colleagues when they published more.

P15, who submitted his/her manuscript to a fake journal, stated, *“The more goals you score, the more you are respected. It does not matter how you play”* (using a live metaphor comparing publication to playing football). P2 remarked that s/he had closely observed that competition based on the number of publication was becoming more apparent by the day and added, *“The more publications you have, the more value you get.”*

P16 stated that university administrators consider the number of publications rather than the quality and the journals the researchers published in and described the relation between the number of publications and the value given to a person, *“Neither your colleagues nor others . . . read your article. They rarely consider its quality. Do you have a lot of publications? If so, you are considered to be diligent.”* P5, who stated there was serious competition in their university and department, and in even in scientific circles, clearly explained the topic by saying, *“If you want to earn respect in your institution, you must have a high number of publications. The more I publish, the happier I feel, and the higher my reputation grows.”*

P4, in particular, who linked the competition within institutions and the academic incentive allowance system in Turkey, argued, *“If someone receives more incentive than I do; or if I do not receive any money, I feel uneasy and inadequate. The amount of academic incentive received is an element of competition. This competition can cause them to make mistakes or publish fast.”* P7 indicated the link between competition in his/her institution and the desire to achieve higher scores by saying, *“In an environment where a higher number of publications indicates you are more diligent and you are ahead of your colleagues, researchers tend to publish in PFJs, either willingly or unwillingly.”*

#### 3.4.6. Lack of awareness

On the one hand, some participants argued that the studies they published in PFJs are of high quality, whereas others firmly claimed that the journals are not fake. On the other hand, some participants sincerely stated that, *“I was deceived. I did not know. . . it was due to being inexperienced at the first time.”*

The most striking finding was expressed by P16: *“I did not know it. We wrote an article together. My friend suggested submitting it to a journal. It seems that my friend was also unaware that it was a notorious journal. S/he told me: ‘We should pay 100 dollars and it gets published; there is no need to wait.’ S/he paid the money without my knowledge and got it published. Now I see it as a mistake. Perhaps I was not aware of fake journals at the time. If I knew, I would have told him/her not to submit it there.”*

P8, who viewed his/her publication in a PFJ as a mistake, stated that s/he was lured by a spam mail and got his/her article published in a fake journal and that s/he later realized that the journal was fake in the review process: *“I submitted it and I received reviewer reports 5 days later. No one read it. They made nonsensical comments on it; the journal only asked for money, and I paid. But there were neither corrections nor comments. . . .”*

P5 said: *“I frequently heard that it was easy to publish (in Journal X). I had a manuscript about an ordinary topic, and I was not very knowledgeable about the journal. The manuscript was (supposedly) reviewed so fast that I think it did not go through a peer review process.”* The words of P5 and P8 indicated that although the researchers did not know that the journal was fake at the beginning, they somehow realized it during the publication process.

Regarding inadequate awareness, P1 stated, *“Researchers more or less know if there is problem with a journal when submitting a manuscript. But some young scholars are deceived by emails.”* P13, who published in a PFJ but strongly contended it was not fake, said, *“I did not know”* if the journal was fake, and added, *“I cannot tell you which journal is fake.”* P16 stated that academic circles with journals that publish fast are frequently criticized, and people who publish in PFJs became associate professors and are rewarded extra money thanks to the academic incentive allowance. S/he further stated that information about PFJs spread through word of mouth, and people come to understand which journals are fake.

## 4. Discussion and conclusion

This study investigated 735 PFJs located in 52 different countries (according to the data from the IP/WHOIS), and location of the majority of PFJs is India, followed by the United States, Turkey, and the United Kingdom, respectively. However, after examining the whole picture, 82.3% of the journals are located in developing countries. Furthermore, the addresses provided on websites by 119 journals are not compatible with their addresses provided by the IP/WHOIS, namely, 119 journals provided incorrect addresses. Notably, the location of the journals that provided fake addresses was generally in India, the United States, and the United Kingdom. Beall (2015) and Gutierrez et al. (2015) have remarked that PFJs tend

to provide misleading addresses. However, a related finding from this study indicates that only 16.2% of the PFJs provided incorrect addresses, suggesting that this assumption is an overgeneralization.

The results of the study indicate a universal problem. In 2017, the highest number of researchers publishing in PFJs were from India, Nigeria, and Turkey. This result was at least partially supported by [Simón \(2016\)](#), who found that the highest number of researchers who published in PFJs was from Nigeria, followed by Turkey, Botswana, Jordan, Malaysia, Pakistan, and Saudi Arabia.

The study revealed that 15.85% of the publications in PFJs were submitted by researchers in developed countries, with 84.15% of the researchers coming from developing countries in 2017. This finding echoes the literature ([Kurt, 2018](#); [Lukić et al., 2014](#); [Simón, 2016](#); [Truth, 2012](#)) that has found that mostly researchers from developing countries publish in PFJs. However, and notably, the United States, the United Kingdom, and South Korea rank among the first 20 countries with highest numbers of publications in PFJs.

As was identified, a number of PFJs claimed they were founded and managed in developed countries like the United States or England. By doing so, they misled people and intended to win the respect of the academic community. Notably, such intentions and behavior are a significant factor that motivate researchers to publish in these journals.

One of the most significant findings to emerge from this study is that more than half of the journals on Beall's list are located in India. A possible explanation is that these journals choose India as their location because English is commonly used in this country. Moreover, and notably, there are other PFJs around the world; yet, Beall's list includes only those journals published in English. However, these reasons are not more than an intelligent guess. Therefore, further research could focus on the reasons why so many of the PDFs are based in India.

The quantitative aspect of this study revealed that the identities of 80 editors of 653 PFJs are fake or incorrect. However, the editors of 573 PFJs work at a university. Although [Beall \(2015\)](#) and [Jalalian and Mahboobi \(2014\)](#) have claimed that the editors of PFJs are mostly fake, the finding that the editors of 573 PFJs are real members of the universal community of science seems to falsify this assumption. This result reminds us of the Turkish idiom that literally means, “a tree has its worms inside,” that is, what spoils a community is no one other than its own members.

[Beall \(2012\)](#) claimed that a number of editors are unaware they are listed as editors of PFJs. Even if this claim is true, in the information age, it is difficult to believe an individual would be unaware they are listed as the editor of a journal. Moreover, whether a person is actually fulfilling the task of editorship is almost impossible to know; yet, a person should simply be considered the editor of a particular journal when his/her name is listed as the editor. In this regard, the current academic incentive policies must be carefully revised to determine whether articles published in such journals should receive academic incentive support.

PFJs continue to occupy the agenda of the science world. Identifying PFJs and their locations and editors, and discouraging publications in PFJs, are the first steps to a solution. Notably, PFJs might continue their publication businesses by changing their names after detection. Moreover, new PFJs can publish dozens of articles before being noticed. When considered globally, the data suggest that PFJs can become windmills, and those who fight against them might become the Don Quixotes of the science world. Therefore, PFJs and their characteristics must be identified, and researchers must be warned to not publish in these journals. However, in the long run, a more effective step would be to remove the factors that incentivize researchers to publish in these journals.

In this context, the findings of this study and those in the literature should be considered as a call for an urgent international action plan against PFJs that reduces the factors directing researchers to PFJs. Such an action plan could ensure that PFJs no longer gain the favor of researchers.

This study attempted to investigate the reasons why researchers tend to publish in PFJs and found that some participants published in PFJs to earn rapid promotions. For example, Turkey is one countries where a significant number of researchers tend to publish in PFJs because they have to publish in journals indexed in SSCI/SCI/AHCI or in those indexed in Scopus, Medline, ERIC, Wilson, and so forth. Notably, countries like Turkey, India, Nigeria, Indonesia, Iran, and Egypt, which stipulate publishing in journals indexed in certain indices regardless of the quality of the journal, rank among the top ten countries.

One of the most important factors that make PFJs valuable to researchers is they are indexed by prestigious indices. A major finding from this study is that researchers who publish in PFJs would not submit their manuscripts to these journals if the journals were not indexed in prestigious indices. Notably, all these indices are managed in developed countries, and these indices make these journals favorable. Therefore, arguing that “developing countries start these journals and these journals are located in these countries and that researchers from these journals publish in PFJs” would be burying one's head in the sand like an ostrich. Some studies have indicated that some PFJs are indexed by various indices. For example, [Manca, Martinez et al. \(2017\)](#) stated that some potentially fake journals are included in PubMed. [Savina and Sterligov \(2016\)](#) found that 447 PFJs were indexed in SCOPUS in May 2016. In a study conducted by [Demir \(2018a\)](#), one PFJ was found to be indexed in SCI and two others were included in ESCI, 53 in SCOPUS, 12 in ERIC, and six in Medline in March 2018.

The incentive allowance system was found to be a factor that encourages researchers to publish in PFJs. This result is compatible with the claims that an academic incentive system that is not carefully developed can encourage researchers to publish in PFJs. ([Adomi & Mordi, 2003](#); [Demir, 2018c](#); [Mouton & Valentine, 2017](#); [Pyne, 2017](#)). In this study, India, Nigeria, and Turkey were the countries that generated the highest number of publications in PFJs. In these countries, researchers are paid extra money for publications, whether they are in PFJs or not ([Bello, 2012](#); [Demir, 2018c](#)). Basically, the argument

was that academic incentives given as ex-post funding contributed to academic productivity (Aagaard, Bloch, & Schneider, 2015; Chudnovsky, Lopez, Rossi, & Ubfal, 2008; Franzoni, Scellato, & Stephan, 2011; Ocholla, 2006). However, although the studies conducted in developing countries found that an academic incentive allowance increased productivity, they reported a decrease in publication quality (Demir, 2018b; Good, Vermeulen, Tiefenthaler, & Arnold, 2015). Another argument was that an incentive allowance is a catalyzer that directs researchers to PFJs (Andersen & Pallesen, 2008; Demir, 2018c, 2018b; Iqbal & Mahmood, 2011; Kameny, 1998). Developing countries are recommended to revise their academic allowance systems to make them more quality-oriented, because this study found that researchers in developing countries publish more in PFJs compared with those in developed countries and that ex-post funding per publication in developing countries is a factor that directs researchers to PFJs.

Additionally, the obligation to publish because of the fear of job loss or “publish-or-perish” pressure was found to be another factor that directs researchers to PFJs. This result supports the literature (e.g., Kolata, 2013; Kurt, 2018; Roberts, 2016; Shaw, 2013). It was also found that institutional reasons are one factor that direct researchers to PFJs; thus, a conclusion was drawn that quantity-oriented (rather than quality-oriented) institutional assessments along with expected reputation and prestige encourage researchers to publish in PFJs to get published more and faster. This finding is in line with the assumption of Xia (2015); Xia et al. (2015) and Kurt (2018), that is, “researchers might want to increase their number of publications to gain more prestige, to be respected more and not to fall behind in the competition in the institution, thus they might tend to publish in PFJs.”

This study found that some participants did not submit their articles to PFJs to gain scores, and they initially wrote up their studies to publish them in a journal indexed in SSCI/SCI/AHCI. However, some researchers, after several attempts at publication in rigorous journals, realized dead ends because of an inability to gain acceptance of their manuscripts due to ineffective writing or research skills. This situation led to the perception that their manuscripts would not be published anywhere, and they submitted their manuscripts to PFJs, lest their studies would “go down the drain.” Arunachalam (2006) stated that researchers who cannot publish or do not have academic competency to publish in quality indices gravitate toward PFJs.

This study determined that another factor that causes participants to submit manuscripts to PFJs is their insufficient awareness of fake journals. This result is compatible with the findings of several studies (Darbyshire et al., 2017; Hadi, 2016; Lukić et al., 2014; Kurt, 2018). Although some studies have argued that the most important reason researchers submit manuscripts to PFJs is that they are unaware, the findings of this study indicated that argument is inaccurate. This study observed that researchers tend to realize that the journals to which they submit their manuscripts are fake at a later time during the process of publication rather than at the beginning.

Open access journals undeniably help researchers access information more easily. However, given the easy access to information published in these journals, the supply and demand balance should control a possible increase or decrease in the number of PFJs. Notably, at this point, prospective research could focus on the factors that motivate researchers to publish in PFJs in those countries with the highest number of PFJs. Similar factors may lead researchers in different countries to these PFJs. For example, Omobowale et al. (2014) stated that Nigerian academics were publishing more papers in PFJs following the implementation of a financial incentive payment in Nigeria. Another point of further investigation could be a comparison of factors that motivate researchers to publish in these journals in different countries.

## 5. Limitations

One limitation of this study is its reliance on Beall's list of predatory journals as one of the primary sources of information. That is, concerns have been raised regarding Beall's lists (Coyle, 2013; Crawford, 2014a, 2014b; Emery, 2013). Some have argued that Beall reflected his biases in the list (Anderson, 2015; Berger & Cirasella, 2015; Crawford, 2014a); therefore, some of the information provided may not reflect reality. Moreover, the data collection process to select the articles published in PFJs in 2017 was completed at the beginning of April 2018. Some PFJs may have been published the last issues of 2017, after the data collection was complete. Nearly all journals on Beall's list used for this study are in English. Thus, this study also a language bias. For this reason, future studies should examine PFJs published in other languages.

The data collected and analyzed in the qualitative strand of the study are limited to the responses from the 16 Turkish researchers interviewed. Although every effort was made to include participants with different nationalities, none agreed to participate in the interviews due to the sensitive nature of the topic under examination. Therefore, the results obtained by analyzing such data should be interpreted within the Turkish context. Another limitation of the study was the cut-off point for the analysis. Although Beall's list has been updated periodically, this study included data from the list until December 2017; the data from the updates in January and June 2018 were not included in the study, indicating there may have been additions or deletions from the list. One other limitation of this study was that although Beall published two lists (a list of publishers and list of journal names), this study used the only the list of journal names.

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SBD carried out all Process.

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