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The predatory journals phenomenon

Abstract. Science policy is becoming one of the priority areas of government activity. Various indicators are used to determine the development of science. One of them is the presence of publications in foreign peer-reviewed journals. This indicator is important when advancing in a career, obtaining a degree, and funding projects. The demand for such articles has led to the formation of the phenomenon of predatory journals or pseudoscience, when researchers, for various reasons, publish their articles in low-grade journals. Determining the main characteristics of such journals, as well as identifying the reasons why the author is sent articles there, is the purpose of this work. Also, this article presents an analysis of the publications of Kazakhstani scientists and reveals the motives of researchers who publish in predatory journals. The main hypothesis is that the policy pursued by the state negatively affects publication practices, namely, it contributes to an increase in the proportion of articles in predatory journals. The scientific and practical significance of the work lies in the assessment of the ongoing scientific policy of the state. The article uses a secondary data analysis, based on the Scopus and SJR databases, and an analysis of the publication activity of Kazakhstani scientists was carried out. Proposed measures to combat pseudoscience.

Keywords: science policy, predatory journals, pseudoscience, peer-reviewed journals.

Introduction

Today, we are seeing a global increase in the number of predatory scientific journals that publish research that often does not meet scientific standards. This phenomenon is absolutely new, it appeared less than ten years ago (see Figure 1). For example, in total, for the query “Predatory journal” (predatory journals), the Scopus database offers 701 articles, the first of which dates back to 2013. In the social sciences, the study of this phenomenon occurs with a slight delay, but with a complete repetition of the general trend.

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The rise in interest in the study of predatory journals has fueled the rise in the popularity of academic misconduct research, which we have clearly seen explosive growth since the mid-2010s.

The number of publications of Kazakhstani scientists in Scopus is increasing every year. So, according to the data on the SJR [1], 258 articles were published in 1996, in 2021 this figure was 5779 articles. However, the rapid growth in the number of publications does not determine the quality of these articles. In 2018, Professor BulatKenessov presented the results of his analysis of the publication activity of universities of Kazakhstani journals indexed in the Scopus database [2]. According to these data, Kazakhstan topped the ranking of countries in terms of the share of articles in journals excluded from the
The predatory journals phenomenon

Scopus database. The list of unscrupulous authors includes teachers from prestigious universities of the country, as well as eminent Kazakhstani scientists. In 2021, an article “Predatory publications in Scopus: cross-country differences” was published by Czech scientists – Macháček. V., Srholec. M. – shows that Kazakhstan is one of the main countries whose authors are actively published in predatory journals. According to the results of this study, almost every sixth article by Kazakhstani scientists was published in journals discontinued in the Scopus database [3].

The purpose of this work is to study the characteristics of predatory journals and the authors who publish their articles in these outlets. To achieve the goal, the following tasks are supposed to be solved: to identify the motives of the authors, to determine the current state of the publication activity of Kazakh scientists, and also to propose measures to combat the spread of academic misconduct.

The relevance of the research topic is determined by the lack of research in the Kazakh literature aimed at studying academic misconduct. The significance of the work lies in assessing the existing mechanisms for publishing articles, as well as determining the degree of effectiveness of the scientific policy of the state.

Materials and methods

This article, based on the analysis of secondary data and desk research, presents an overview of the existing literature in considering the phenomenon of “fake science” in the context of the science policy of states. It is hypothesized that the existing scientific policy of the state is based on quantitative indicators and leads to an increase in the proportion of articles in predatory journals. Based on the data available on the Scimago Journal & Country Rank, data on the publication activity of Kazakh scientists from 1996 to 2021 are provided. By using citation indicators, the most and least productive years of publication of Kazakh authors were determined.

Literature review

Foreign scientists have made attempts to identify high-quality and low-quality scientific journals. The term “predatory publications” was first introduced by American librarian Jeffrey Bill, who maintained a list of potential fraudulent journals from 2010 to 2017. This list, called "Bill's List", was posted on the author's open blog. However, the author, for certain reasons, was forced to delete the blog. But to this day, Bill's list remains an authoritative source that many authors use to test journals for "decency." Multiple copies of Bill's deleted site are publicly available [4].

There is another authoritative list called Cabell's Blacklist, which includes not only unscrupulous journals but also provides information about reliable, serious journals [5]. Even though we think that Beall was generally reasonable with his list, there’s a number of problems with that list: 1) it’s now out of date; 2) it’s politically unpopular with many; 3) it’s based on one man’s subjective opinions. The Cabells’ list is more comprehensive, more current, and is not despised like Beall’s list. For example, we have seen presentations at
conferences based on Beall’s list get dismissed solely because they used Beall’s list, even though their work was probably decent. Plus, Cabells differentiates types and degrees of violations which offers a much more nuanced view of predatory publishing. However, its limitation is that you need to buy a subscription to use this list. Also, on the DOAJ portal, you can find a list of high-quality open access journals [6]. The above resources allow you to identify a journal for quality and minimize the risk of becoming a victim of predatory journals.

Foreign scientists conducted research aimed at studying the phenomenon of pseudoscience and predatory journals. In fact, there is a spectrum of predatory academic journals. These models evolve and become more complex every time.

The journal Science published an article by a biologist and science journalist from Harvard University [7]. In the article, the author describes his research, during which he submitted a fake scientific article to a large number of paid open access journals, showing that more than half of them accepted his article, 60% of the journals did not conduct peer review. In case of rejection, this is a good sign, but in case of acceptance of the article, it means that no one has read it. The author found that most publications hide their true geographical location. They create journals with titles that imitate the journals of Western academic publishers. But the addresses listed by IP addresses and bank accounts often don’t match.

During this period, studies on predatory journals begin to be published in Scopus. Figure 3 shows the distribution of studies of predatory journals in Scopus.

![Figure 3. The distribution of studies of predatory journals in Scopus](https://www.scopus.com/)

* First ten months.

A more detailed cross-country analysis shows that Asia and North Africa are the most fertile ground for predatory publications. The least susceptible to predatory
The predatory journals phenomenon publications are Europe, North, and South America, as well as southern African countries [3]. The authors studied 172 countries in 4 research areas. The top 20 countries with the worst rating include Kazakhstan, where approximately one in six articles fall into the predatory category. This includes Indonesia, Iraq, Albania, and Malaysia, where more than one in ten articles end up in predatory journals. The authors conclude that countries with a medium level of economic development and a large research sector are most susceptible to predatory publishing.

The article also confirmed that Arab countries are rich in oil, which is especially susceptible to predatory investments. The authors conclude that publications of space data, where possible, hastily pour into research and do not pay due attention to their evaluation.

In addition to their specific geographic location, predatory journals are characterized by the fact that they require payment for publication. Charging by itself is not the hallmark of predatory journals. There are reputable open-access journals that are also paid. But the difference is that the predatory journals only initiate for the purpose of getting paid, without reliable peer review. It is known that the peer review process in a good journal takes a long time. Predatory journals reduce this time from 4 weeks to several days. So, for example, 67% of the journals that sent invitations to publish articles and were reviewed by Polish scientists experienced peer review within 4 weeks or less. The longest review period in the studied journals is 16 weeks, and the shortest is 1 week. One of the publications offered a potential author a review within 3 days [8]. There are times when there is no peer review process. Predatory journals contain a large number of low-quality articles, and send out spam letters with an offer to publish an article. An e-mail newsletter invites you to submit an article to a magazine about a fact that can be misleading for inexperienced young people.

Also, among such journals, it is common practice to add people to the editorial board without their knowledge and consent, moreover, the names of members of the editorial board can be fictitious. The editorial board ensures the authenticity of the content published in their journals. Therefore, before submitting an article to the journal, you should familiarize yourself in detail with all available information, and at least try to find the names of members of the editorial board in a search engine. In addition, predatory magazines design and advertise themselves as recognized and legitimate magazines. They can even imitate well-known magazines by creating similar titles and websites. It is very common for unscrupulous researchers to falsify journal metrics such as impact factors, and misleading or misleading information about the publisher’s location [9]. The reasons why researchers publish in dubious journals are lack of awareness, threats to social identity (low self-esteem or fear of being belittled, inherent in scientists from less developed countries), pressure or coercion to publish, as well as lack of skills (knowledge of methodology, statistics, etc.) [10]. The author suggests that developing countries provide inexperienced young researchers with mentors to guide and teach the process of publishing in reputable high-quality journals. The author also urges higher education institutions to abandon the excessive focus on quantity rather than quality as an indicator of effectiveness. Especially in a difficult situation are young researchers who are just starting to work. They are under considerable pressure according to the principle, referred
to in foreign literature as “publish or perish”, the meaning of which is to publish at any cost, and as a result, many low-quality articles appear. Authors who publish in so-called predatory journals have little to no previous publication or citation history. This once again indicates that these are indeed young, inexperienced researchers who are in developing countries [11].

Measures are needed that will not only discourage publication in predatory journals, but also punish authors. Experienced researchers have an important responsibility to the academic community, and as such, they must properly guide their students and emerging researchers when evaluating journals. Academic institutions should also actively initiate internal campaigns to inform academic staff as well as students about such publications. For example, departments may maintain their own whitelists and blacklists of journals and share them with students and faculty. Research grants should only be awarded to research published in quality real journals. Academic promotion and tenure committees should also respond to the threat of predatory publishing by improving their systems to refuse recognition of papers published in questionable journals.

The number of publications should also be reconsidered as a proxy for academic productivity and achievement [12]. Three main drivers of predatory academic journals stand out, the elimination of which will have a long-term and sustainable impact: the growing monetization and commercialization of scientific organizations, including the academic publishing system, whose own and commercial interests may conflict with the integrity of the study, since the “author pays” model (fee per publication, pay per view) is particularly susceptible to abuse by predatory journals; the prevalence of research evaluation systems based on quantity rather than quality, together with institutional drivers and incentives that shape the behavior of individual scientists; and serious problems and shortcomings in the peer review system, namely a lack of transparency (whether completely open, anonymous or mixed) in the peer review process, as well as a lack of training, capacity, and recognition of reviewers [13].

The above problems are also relevant to Kazakhstani science. Science policy in Kazakhstan is aimed at integration into world science with a focus on quantitative indicators. Kazakhstani scientists are forced to publish in short periods of time in predatory journals in order to obtain a degree, and participate in research grants. Below we consider a graph of publication activity and citations of Kazakhstani scientists in the period from 1996 to 2021. The graph is based on public data located on the Scimago Journal & Country Rank.
The predatory journals phenomenon

**Figure 4.** Publications of Kazakhstani scientists and their citation based on materials of publications indexed by the academic database Scopus. 1996–2021.

Source: Scimago Journal & Country Rank

The blue line in Figure 4 illustrates the continuous growth in the number of articles. A noticeable jump occurs after 2011. If in 2011 the number of articles published in Scopus was 576, in 2012 this figure reaches 854 articles, in 2013 – 1826, in 2014 – 2449. Such a sharp increase in articles is explained by the fact that in 2011 the Law on Science was adopted, obliging doctoral students publish articles in high-ranking journals indexed by Scopus or Web of Science [14]. This measure was taken by the state in order to raise the level science of Kazakhstan and its integration into the world scientific space through an increase in the number of articles in prestigious publications. However, has the increase in the publication activity of scientists led to an increase in the quality of their work? To answer this question, we will use the citation rates per publication, the data for which are also posted on the Scimago Journal & Country Rank portal.

In Figure 2, citations per article are shown as an orange line. There is a slight increase in the citation rate after 2011, which, however, does not exceed the figures before. After 2017, there is a rapid decline in citation. Note that articles published in 2017–2021 may not have gained citation yet, this process still takes time. But regarding articles from 2012–2016, it is safe to say that they were not cited much. And since citation is considered an indicator of how well an article is written, it can be concluded that the explosive growth of articles published after 2011 does not justify the quality of these articles. Another interesting fact is that along with the drop in the number of citations of works, the number of self-citations is growing.

In Figure 5, we see a steady and steady increase in self-citations while the total number of citations is declining. Such active citation of themselves, in addition to the fact that scientists want to be known about them, can be explained by the desire to increase the number of citations and scientometric indicators. This leads to the locking of Kazakhstani science on itself.
Figure 5. Self-citation by years of Kazakhstani scientists based on publications indexed by the academic database Scopus. 1996–2021
Source: Scimago Journal & Country Rank

An analysis of the state of Italian science makes it possible to identify the motives of the authors of such publications [15]. The authors created a database of CVs and assessments of more than 46,000 candidates who participated in the 2012 edition of the Italian National Scientific Qualification. Applicants had to go through two rounds of selection by submitting a resume and a list of publications. Members of the commission were provided with additional information about the scientific results of all applicants. To identify predatory logs, the authors use the above Bill’s List. At the same time, the authors prefer not to blindly trust this list, but reinforce the status of the journal as “predatory” using the bibliometric data of the journals, in particular, the citation index. In addition, a survey of scholars who have published in such journals is conducted and asked about the editorial practices of the journals. As a result, the authors find that out of the 1.8 million articles that were analyzed, about 6,000 were published in the predatory journals that were included in Bill’s list. At first glance, this figure may not seem like really high, but if we assume that the number of such publications will grow every year, the problem becomes more obvious. According to the study, only 38% of journals have an h-index of 5 or higher, based on articles published in the previous 5 years. The authors also identify business and economic sectors as the most vulnerable to predatory publications.

In a survey conducted by the authors of the article, respondents admit that they did not know about the dubious nature of the journal, were misled, deceived by the information that the journal provided them. The other part of the respondents note that they deliberately submitted their articles, as they expected to receive certain academic privileges. Although in this case, this not only does not provide any advantages, but completely undermines the confidence of the academic world in this scientist, calls into question his research skills.
The predatory journals phenomenon

Various attempts are being made in different countries to increase the publication activity of scientists. This includes institutional pressure to publish in high-ranking journals, as in the case of Kazakhstan, and various bonuses in the form of monetary awards or promotions. In Turkey, financial rewards for publications have led to rather conflicting results [16]. The authors compared the number of researchers published in predatory journals before and after the introduction of the reward. Thus, their number increased from 455 to 1045 articles in two years. In general, the number of publications increased by 129.67% after the introduction of the remuneration policy. Another contradiction is the fact that Turkish researchers have begun to participate more in dubious conferences. If 49 people published in such conferences before the introduction of the stimulus, this figure rose to 408 after. The authors cite neoliberalist and capitalist theories that people can notice loopholes in systems relatively quickly and use them to their advantage. In addition, as Bourdieu points out, external factors can contribute to the creation of self-serving groups, which can be called Homo Academicus [17].

How to prevent the spread of the phenomenon of pseudoscience? Adequate funding, as well as the availability and accessibility of the necessary research equipment, ensures that researchers can conduct quality research with results that can be published in reputable journals. Also, one of the strategies could be to review the criteria for promoting scientists, focusing more on the quality rather than the quantity of publications. States, ministries, universities should support the development and promotion of local journals that meet international standards, create favorable conditions for high-quality research.

The theory of symbolic violence defines the existence of some kind of symbolic power that is legitimate and used in public life. The education system within the framework of this theory is considered as one of the main agents of symbolic violence. As soon as the owner of symbolic capital uses his power against an agent who has less power and seeks to change the actions of the agent, he carries out symbolic violence. The concept of symbolic violence is useful in understanding the dominance, exploitation, and submission that many university students experience in university. In this context, the dominant groups with a large amount of capital are the state, universities and professors, which differ from students, young researchers with a low amount of cultural and economic capital. Due to the manifestation of symbolic violence on the part of the state, institutions in relation to the publication of articles, students are in constant struggle to achieve the requirements that must be met in order to receive grades or academic degrees [18].

Some countries are taking strict steps and tightening the fight against pseudoscience. According to China's new policy, cases of misconduct will be registered in the national database. Inclusion on this list may deprive researchers of the opportunity to receive funding or adversely affect future research careers. The Ministry of Science and Technology will be responsible for investigating and adjudicating cases of scientific misconduct, a role previously held by individual agencies [19].

In the realities of Kazakhstan, science policy also tends to quantify science. Contradictory as it may be, the modern system of research evaluation is the main driving force behind predatory practices.
There is an urgent need for training at all levels from students to teachers and administrators to raise awareness of the activity of predatory journals. It is necessary to enable doctoral students to defend their work without having articles in international journals, for example, after an independent examination of the dissertation at the National Center for Science and Technology by two reviewers and a positive recommendation from them [20]. Thus, it is necessary to minimize the temptation to use or promote this practice, to strengthen control over the observance of the principles of scientific ethics.

Results and discussion

The problem of predatory publications is a worldwide problem. The widespread practice has a number of negative consequences for the individual scientist and science as a whole. All predatory journals share certain common features, the knowledge of which will help the researcher to identify unscrupulous journals and make the right choice. The most common strategies are the promise of rapid publication, which is important for doctoral students with limited study time. A short review period, or lack of it, can also be considered a "plus" for a researcher who lacks the skills to conduct a qualitative study and write this article. Numerous email invitations in the form of spam mailings are not a manifestation of a special individual approach, but just one of the indicators of predatory magazines. A non-existent editorial board or the attribution of its members is actively used by unscrupulous journals to deceive and attract inexperienced authors. Awareness and understanding of predatory practices is low. In addition, predatory journals are becoming more sophisticated, making it difficult for scientists to distinguish bad journals from good ones. The inclusion of some fraudulent logs in the leading databases further exacerbates the confusion.

Predatory journals can take root in a research culture. Some researchers deliberately use predatory journals for career advancement, meeting deadlines, or institutional pressure. All higher education institutions should have good institutional practices in place to deter researchers and take action against those who publish in predatory journals. Accordingly, such a policy should be implemented with the support of a science management organization supported by the scientific community.

Science policy should focus on what an author publishes instead of "where" and "how often". In this sense, authors and universities are part of a structurally unfair global system that prevents them from publishing in "high-quality" journals on the one hand, and limits their publication in dubious journals on the other.

Finally, it’s time for all of us to think about academic integrity, professionalism, research ethics, and research goals. It is time for academic institutions and universities to rethink their expectations of staff in terms of key performance indicators and develop effective staff support and mentoring systems, especially for emerging researchers. It’s time to think about clinical research from a humanistic perspective beyond impact factors and the H-index. This is the time when we put patient care above all else.
The predatory journals phenomenon

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С.С. Казтаева

**Аңдатпа.** Ғылым саласындағы сақат мемлекет қызметінің басым бағыттарының біріне айналуады. Ғылымның дамуын анықтау үшін эртүрлі көрсеткіштер қолданылады. Сондықтан өткенде рецензияланатының жұрналдарда жарияланымдардың болуы. Бұл көрсеткіш манызы менен әлі және жобаларды қаржыландыру кезінде мәнінен болып табылады. Мұндаи мақалаларға ұраныс зерттеушілердің өз жұмыстарын қолдану әсері жұрналдарда жариялау нәтижесінен немесе ғылыми құбылысқа қалыптауда әкелді. Бұл мақаланың мұқатты - мұндаи жұрналдардың негізі сипатталғаның анықтау, сондай-әк зерттеушілердің жұртылысы жұрналдарға мақалаларды жіберуінің себептерін анықтау.

Сондай-әк, бұл мақалада қазақстандағы ғалымдардың жарияланымдарына талдау жасалып, жұртылыс жұрналдарда жарияланған жұрген зерттеушілердің үйжерін анықтайды. Негізі бұл қызметізің отырып сақат жариялау тәжірибесіне ғылыми әсер етеді, атап айтқанда, жұртылыс жұрналдарының мақалалар үлестінің артық үкіп етеді. Қызметің ғылыми-практикалық мәнін қалыптасуы ғылымдық мемлекеттің жұртылыс ісіне және ғылымдық қызметіне өз қызметін аяқтауға әкелді. Мұндай мақалада Scopus және SJR мәліметтер базасы өзінің екінші реттік деректер талдауы қолданылып, қазақстандағы ғалымдардың жариялау қызметіне қолданылған. Сондай-әк, ғылымдық, рецензияланған жұрналдарға, ғылым.

С.С. Казтаева
Феномен хищнических журналов

Аннотация. Научная политика становится одним из приоритетных направлений деятельности государств. Для определения развития науки используются различные индикаторы. Один из них – наличие публикаций в зарубежных рецензируемых журналах. Этот показатель важен при продвижении по карьере, получении степени и финансирования на проекты. Востребованность таких статей привела к формированию феномена хищнических журналов или псевдонауки, когда исследователи по разным причинам публикуют свои статьи в низкосортных журналах. Определение основных характеристик таких журналов, а также выявление причин по которым автору отправляют туда статьи – является целью данной работы.

Также в данной статье представлен анализ публикаций казахстанских ученых, выявлены мотивы исследователей, публикующихся в хищнических журналах. Основной гипотезой является то, что политика, проводимая государством отрицательно влияет на публикационные практики, а именно способствует увеличению доли статей в хищнических журналах. Научная и практическая значимость работы состоит в оценке проводимой научной политики государства. В статье использован вторичный анализ данных, на основе баз данных Scopus и SJR проведен анализ публикационной активности казахстанских ученых. Предложены меры по борьбе с лженаукой.

Ключевые слова: научная политика, хищнические журналы, псевдонаука, рецензируемые журналы, наука.

References

The predatory journals phenomenon

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Казтаева С.С. – Л.Н. Гумилев атындағы Еуразия ұлттық университетінің алеуметтану кафедрасындың докторанты, Астана, Қазақстан.