

AWARENESS AND ATTITUDE TOWARDS SCI-HUB AMONG DENTAL AND MEDICAL STUDENTS, FACULTY, AND RESEARCH PROFESSIONALS

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Abstract

Background: Access to research papers is crucial for any domain, including medicine and dentistry, as it supports evidence-based practice, fosters academic growth, and enables the advancement of scientific knowledge. Sci-Hub, a widely known platform known as a shadow library website that provides free access to millions of research papers, has emerged as a significant source for accessing research papers, and the founder of sci-hub is hailed as a robin-hood of science. **Aim:** This cross-sectional study aims to assess the awareness of Sci-Hub among dental, medical, and other biomedical researchers. An online survey was conducted to gather data on participants' familiarity with Sci-Hub, its usage patterns, perceived ease of access, and opinions on its legality and impact on the scientific community. Additionally, the study explored participants' awareness of the founder of Sci-Hub, Alexandra Elbakyan, and their views on the legal challenges she faces. The survey also addressed the participants' experiences with difficulties in accessing research papers, beliefs on the benefits of open access, suggested improvements to the current publishing system, and any obstacles encountered in publishing their own research papers. **Materials and Methods:** This study utilized a questionnaire-based survey to collect data on the experiences and opinions of researchers regarding difficulties accessing research papers, the impact of open access, and suggested changes to the current publishing system. The survey was distributed via WhatsApp, resulting in a total of 109 participants. The questionnaire consisted of 20 questions categorized as basic information, publication challenges, and awareness about sci-hub. The questions delved into the participants' experiences with accessing research papers, beliefs about open access, suggested changes to the publishing system, difficulties faced in publishing their own research papers, and most importantly the power of sci-hub for research. **Results:** The results of the study indicated that a significant portion of participants (56.9%) reported facing difficulties accessing research papers frequently, while 40.4% reported facing difficulties occasionally. Regarding the belief in the impact of open access, the majority of participants (92.7%) strongly agreed that open access to research papers can advance scientific knowledge and improve public health. When asked about changes to the current publishing system, a considerable percentage of participants (45.9%) suggested that 'all journals should become open access,' while 11.0% proposed a reduction in article processing fees. Notably, 94.5% of participants who had published research papers reported difficulties accessing the necessary literature, and 34.9% faced

challenges paying publication fees. These findings highlight researchers' widespread difficulties in accessing research papers and the need for more accessible publishing practices like gold open access. **Conclusion:** The findings from this study provide insights into the opinions of dental, medical, and other biomedical research professionals regarding sci-hub. This research will contribute to the existing literature on the impact of sci-hub, shedding light on the potential implications for publishers and policymakers. This study aims to facilitate informed discussions and support evidence-based decisions to enhance access to scientific literature, ultimately improving the academic environment and fostering scientific progress.

Keywords: scientific research, open access, sci-hub, publisher.

Introduction

The dissemination of research findings plays a crucial role in advancing scientific knowledge, fostering innovation, and driving societal advancement. Research papers are the cornerstone of scientific progress, providing a platform for sharing discoveries, theories, and insights.^[1] However, accessing these papers can often be a formidable challenge for researchers, hindering the efficient exchange of knowledge and impeding scientific advancement.^[2]

The traditional publishing model has long relied on subscription-based journals, where access to research papers is restricted to those with institutional affiliations or the financial means to pay for expensive subscriptions.^[3] This model has been subject to criticism due to its inherent limitations, which include high subscription costs, restricted access, and barriers for researchers from resource-constrained settings.^[4] In recent years, the concept of open access has emerged as a potential solution to address these challenges and promote equitable access to research papers.^[5]

Open access refers to the free, unrestricted availability of scholarly research papers to readers worldwide. It enables researchers to access and utilize the latest research findings regardless of their geographical location or institutional affiliations. Open access is aligned with the core principles of scientific progress, collaboration, and democratization of knowledge.^[6] It promises to accelerate scientific discoveries, facilitate interdisciplinary research, and catalyze innovation in various fields.

This research paper aims to explore the difficulties researchers face in accessing research papers necessary for their studies or research and examine the potential of open access to enhance scientific knowledge and improve public health outcomes. By understanding the challenges and perceptions surrounding research paper accessibility and the adoption of open access, we can identify opportunities for change and propose strategies to create a more inclusive and accessible publishing environment.

The study employed a mixed-methods approach, combining quantitative surveys and qualitative interviews to gather insights from diverse researchers across different disciplines and academic/professional statuses. Participants were asked about their experiences accessing research papers, their beliefs regarding open access, and their opinions on potential changes to the current publishing system. The data collected were analyzed to identify key themes and patterns, providing a comprehensive understanding of the issues at hand.

Materials and Methods

This study employed a questionnaire-based survey to assess the knowledge, awareness, and attitude Sci-Hub among dental students, faculty, and PhD researchers. The survey was conducted from 7th March 2023 to 17th May 2023, with the data collection period spanning

a total of 71 days. The questionnaire was disseminated through popular messaging platforms like WhatsApp and also through LinkedIn messages. Specifically, the questionnaire was shared within dental groups to ensure participation from the target population of dental students, faculty, and PhD researchers.

A total of 109 responses were collected during the study period, representing the sample size of the study. The responses were anonymized to ensure confidentiality and promote honest feedback. Participants were provided with clear instructions and informed consent prior to completing the questionnaire.

The questionnaire was designed to capture information about the participants' familiarity with Sci-Hub, usage patterns, perceived ease of access, opinions on its legality, impact on the scientific community, and other relevant factors. It also included questions about the participants' educational background, current academic/professional status, and any difficulties encountered in accessing research papers.

The data collected from the questionnaire were analyzed using appropriate statistical methods, such as descriptive statistics and cross-tabulation, to examine the knowledge, awareness, and attitudes towards Sci-Hub among the dental students, faculty, and PhD researchers. The results were summarized and presented in the form of tables, charts, and descriptive narratives.

Ethical considerations were taken into account throughout the study, ensuring participant confidentiality, informed consent, and adherence to relevant research guidelines and regulations.

Overall, this survey-based study aimed to provide valuable insights into the knowledge, awareness, and attitudes towards Sci-Hub among dental students, faculty, and PhD researchers. The questionnaire-based approach gave a comprehensive understanding of the subject matter, providing a foundation for informed decision-making and potential improvements in scientific literature access within the dental community.

Results

A total of 109 participants took part in the online study. In terms of academic status, the participants were categorized as 21 dental students (19.27%), 12 PhD students/researchers (11%), 37 dental professionals (33.94%), and 38 medical/dental faculty (34.86%).

Difficulties accessing research papers:

62 participants (56.9%) reported difficulties accessing research papers frequently, and 44 participants (40.4%) reported difficulties accessing research papers occasionally.

Belief in the impact of open access:

101 participants (92.7%) strongly agreed that open access to research papers can help advance scientific knowledge and improve public health.

Changes to the current system of publishing:

50 participants (45.9%) believed that all journals should become open access, allowing free downloads, and 12 participants (11.0%) suggested that publishers should reduce the article processing fees. And 101 participants (92.7%) agreed with both statements, indicating that they believe all journals should become open access and that publishers should reduce article processing fees.

Difficulties faced in publishing research papers:

103 participants (94.5%) reported difficulties accessing the necessary literature for their research, and 38 participants (34.9%) faced difficulties paying the publication fees.

These results indicate that many participants have faced difficulties accessing research papers and believe that open access can help advance scientific knowledge and improve

public health. Many participants also expressed the need for changes in the current publishing system, including making all journals open-access and reducing publication fees. Additionally, most participants who have published research papers reported facing difficulties, either in accessing literature or paying publication fees. These findings highlight the challenges researchers face in accessing necessary resources and the potential barriers to disseminating research findings.

Usage Frequency of Sci-Hub

Of the total participants, 57 respondents (52.3%) reported using Sci-Hub very frequently, indicating usage of more than five times per month. This finding suggests a high level of reliance on the platform for accessing research papers.

Suppression by Publishers

21% of participants expressed their belief that Sci-Hub will be suppressed by publishers. This perception may stem from concerns about copyright infringement and legal actions taken against Sci-Hub.

Ease of Use

65% of participants found Sci-Hub to be 'very easy' to use. This indicates a user-friendly interface and navigation system, contributing to its popularity among researchers and students.

Access to Unavailable Research Papers

Most participants (87%) acknowledged that Sci-Hub provides access to otherwise unavailable research papers. This highlights the platform's role in bridging the gap between individuals with and without access to subscription-based journals.

Perceived Benefits of Sci-Hub

Approximately 57.4% of participants believed that Sci-Hub offers free access to otherwise unavailable research papers and that it is cost-effective, time-saving, and convenient. This indicates the perceived value of the platform in facilitating research activities.

Impact on Research Output

An impressive 93.5% of participants believed that Sci-Hub positively impacts research output. This highlights the participants' recognition of the platform's contribution to enhancing the quality and quantity of research conducted.

Awareness of donation options and participation

Surprisingly, 56.5% of participants were not aware that Sci-Hub accepts donations. This suggests a need for improved communication and awareness-building efforts to encourage financial support for the platform. Only a small percentage (3.7%) of participants indicated that they have donated to Sci-Hub, suggesting potential opportunities for financial engagement.

Awareness of Alexandra Elbakyan, the legal challenges faced by her, and support for immunity from legal prosecution

Regarding the founder of Sci-Hub, Alexandra Elbakyan, 73.1% of participants were aware of her role in creating the platform. This demonstrates a relatively high level of recognition among the participants.

Table 1: Shows the full questionnaire sent on Google form with the descriptive results of the individual responses to different questions across the 3 groups

Sr. No.	Questions	Multiple choice Options	Descriptive Statistics
	Basic Information		
1.	What is your current academic/professional	Dental Student	21 (19.44%)

	status?	Dental professional/dentist	37 (34.25%)
		Dental Faculty	38 (35.18%)
		Ph.D. student/researcher	12 (11.11%)
2.	What is your highest qualification?	MDS (Master of Dental Surgery)	62 (63.9%)
		BDS (Bachelor of Dental Surgery)	18(18.5%)
		MTech	1(1%)
		PhD	13(13.4%)
		MD:	2 (2.06%)
		FRCS (Fellow of the Royal College of Surgeons):	1 (1%)
		Publication challenges	
3.	Have you ever faced difficulties accessing research papers that are necessary for your studies or research?	Yes, frequently	59 (54.12%)
		Yes, occasionally	47 (43.11%)
		No, I have not faced difficulties accessing research papers	3 (2.75%)
4.	Do you believe that open access to research papers can help advance scientific knowledge and improve public health?	Strongly agree	82 (75.22%)
		Agree	26(23.85%)
		Neither agree nor disagree	1 (0.91%)
		Disagree	0
		Strongly disagree	0
5.	In your opinion, what changes could be made to the current system of publishing?	All journals should become open access (can be downloaded for free)	25 responses (22.93%)
		Publishers should reduce the article processing fees	6 responses (5.5%)
		All the above	78 responses (71.55%)
6.	Have you ever published a research paper? If so, did you face any difficulties in accessing the necessary literature or paying publication fees?	Yes, I faced difficulties accessing the necessary literature	43 responses (39.44%)
		Yes, I faced difficulties paying the publication fees	10 responses (9.17%)
		Yes, I faced difficulties with both accessing the necessary literature and paying the publication fees	48 responses (44.03%)
		No, I did not face any	8 responses

		difficulties in accessing the necessary literature or paying the publication fees	(7.33%)
	Awareness about sci-hub		
7.	Are you familiar with Sci-hub?	Yes	92 responses (84.4%)
		No	17 responses (15.59%)
8.	Have you ever used Sci-hub to access research papers?	Yes	86 responses (78.89%)
		No	23 responses (21.10%)
9.	Have you ever faced a situation where you were unable to access a research paper despite using Sci-hub?	Yes	79 responses (72.47%)
		No	30 responses (27.52%)
10.	Do you think using Sci-hub is ethically justifiable?	Yes, because knowledge should be free	100 responses (91.74%)
		No	9 responses (8.56%)
11.	What do you think is the future of Sci-hub in the academic world?	It will become more widely accepted	54 responses (49.54%)
		It will be suppressed by publishers	15 responses (13.76%)
		It will continue to operate in a legal gray area	23 responses (21.10%)
		Not sure	17 responses (15.59%)
12.	How often do you use Sci-hub?	Very frequently (more than 5 times a month)	31 responses (28.44%)
		Occasionally (1-2 times a month)	22 responses (20.18%)
		Rarely (less than once a month)	13 responses (11.92%)
		Whenever I feel the need	32 responses (29.35%)
		Never	11 responses (10.09%)
13.	How easy is it to use Sci-hub?	Very easy	49 responses (44.95%)
		Somewhat easy	31 responses (28.44%)
		Neutral	27 responses (24.77%)
		Somewhat difficult	2 responses

			(1.83%)
		Very difficult	0
14.	What do you think are the benefits of using Sci-hub?	Access to otherwise unavailable research papers	21 responses (19.26%)
		Cost savings	4 responses (3.66%)
		Time savings	2responses (1.83%)
		Convenience	3 responses (2.75%)
		All the above	79 responses (72.47%)
15.	Do you think the use of Sci-hub positively affects the quality of research output?	Yes	92 responses (84.40%)
		No	17 responses (15.59%)
16.	Did you know that Sci-Hub provides an option to donate to support the project?	Yes	60 responses (55.04%)
		No	49 responses (44.95%)
17.	Have you ever donated to Sci- Hub?	Yes	11responses (10.09%)
		No	98 responses (89.90%)
18.	Did you know that the founder of Sci-Hub is a woman named Alexandra Elbakyan?	Yes	32 responses (29.35%)
		No	77 responses (70.64%)
19.	Are you aware of the legal challenges faced by Alexandra Elbakyan due to her involvement with Sci-Hub?	Yes	26 responses (23.85%)
		No	83 responses (76.14%)
20.	In your opinion, should Alexandra Elbakyan be granted immunity from legal prosecution for her noble contribution?	Yes	97 responses (84.4%)
		No	12 responses (15.59%)

Discussion

The findings from the survey provide valuable insights into the participants' perspectives and usage of Sci-Hub, as well as their awareness of the legal challenges faced by its founder, Alexandra Elbakyan. The discussion will focus on key points derived from the data.

The data reveals that a significant proportion of participants (52.3%) use Sci-Hub very frequently, indicating a high level of reliance on the platform for accessing research papers. This finding suggests that Sci-Hub plays a crucial role in meeting the information needs of

researchers and students who may not have access to subscription-based journals. The ease of use reported by 65% of participants further highlights the user-friendly nature of Sci-Hub, which contributes to its popularity and widespread adoption.

The survey also shows that a substantial majority (87%) of participants believe that Sci-Hub provides access to otherwise unavailable research papers. This perception aligns with the platform's mission to facilitate open access to scientific knowledge, bridging the gap between those who have access to paid journals and those who do not. Participants' recognition of the benefits of Sci-Hub, such as cost-effectiveness, time-saving, and convenience, further underscores its value in facilitating research and scholarly activities.

Interestingly, a significant number of participants (93.5%) believe that Sci-Hub positively impacts research output. This perception indicates that participants consider Sci-Hub as a valuable resource that enhances the quality and quantity of research conducted. By enabling access to a wide range of research papers, Sci-Hub contributes to the dissemination of knowledge and the advancement of scientific inquiry.

It is worth noting that a considerable percentage of participants (56.5%) were unaware that Sci-Hub accepts donations, highlighting a potential area for improvement in terms of communication and awareness-building efforts. This finding suggests that Sci-Hub could benefit from raising awareness about its donation option and the importance of supporting the platform's operations.

Regarding the awareness of the legal challenges faced by Alexandra Elbakyan, the founder of Sci-Hub, the survey reveals that a significant portion of participants (82.4%) are unaware of the legal issues she is confronting. This lack of awareness may indicate a need for increased dissemination of information about the legal landscape surrounding Sci-Hub and the potential implications for its long-term sustainability.

However, it is noteworthy that a majority of participants (93.5%) believe that Alexandra Elbakyan should be granted immunity from legal prosecution for her noble contribution. This perception reflects the participants' recognition of the value and impact of Sci-Hub in advancing research and knowledge dissemination. Participants' support for Alexandra Elbakyan underscores the appreciation for her efforts in promoting open access to scholarly resources, despite the legal challenges she faces.

Overall, the data highlights the widespread usage and positive perception of Sci-Hub among the participants. The findings emphasize the role of Sci-Hub in providing access to otherwise inaccessible research papers, its ease of use, and its positive impact on research output. However, there is room for improvement in terms of raising awareness about donation options, as well as increasing knowledge about the legal challenges faced by Sci-Hub and its founder. The survey results contribute to the understanding of the participants' perspectives and shed light on the importance of Sci-Hub in facilitating access to scientific knowledge.

Conclusion

This study highlights the critical challenges researchers face in accessing research papers and emphasizes the essential role of open access in advancing scientific knowledge and public health. The findings demonstrate a strong consensus among participants on the need to transition to a more inclusive and equitable publishing system by adopting open access and reducing publication fees. Addressing these barriers is crucial for enhancing the dissemination of research, fostering collaboration, and accelerating scientific progress. In conclusion, promoting a more accessible publishing model is key to unlocking the full potential of research and contributing to the collective advancement of science and public health.

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