RESEARCH ARTICLE

Open Access in low- and middle-income countries: attitudes and experiences of researchers [version 1; peer review: 2 approved with reservations]

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Abstract

Open Access (OA) is often considered as particularly beneficial to researchers in the Global South. However, research into awareness of and attitudes to OA has been largely dominated by voices from the Global North. A survey was conducted of 507 researchers from the developing world and connected to INASP's AuthorAID project to ascertain experiences and attitudes to OA publishing. The survey revealed problems for the researchers in gaining access to research literature in the first place. There was a very positive attitude to OA research and OA journals, but when selecting a journal in which to publish, OA was seen as a much less important criterion than factors relating to international reputation. Overall, a majority of respondents had published in an OA journal and most of these had paid an article processing charge. Knowledge and use of self-archiving via repositories varied, and only around 20% had deposited their research in an institutional repository. The study also examined attitudes to copyright, revealing most respondents had heard of Creative Commons licences and were positive about the sharing of research for educational use and dissemination, but there was unease about research being used for commercial purposes. Respondents revealed a surprisingly positive stance towards openly sharing research data, although many revealed that they would need further guidance on how to do so. The survey also revealed that the majority had received emails from so called 'predatory' publishers and that a small minority had published in them.

Keywords

Open Access, access, APCs, Creative Commons, open data, institutional repositories, Global South, LMICs, early-career researchers

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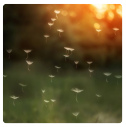

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Introduction

Much has been discussed about Open Access (OA) and its potential benefits in other studies and pro-OA messages (Chan *et al.*, 2002; Schmitt *et al.*, 2018; Tennant *et al.*, 2016). In particular, the concept of OA to published peer-reviewed research has long been considered beneficial to researchers in the developing world (Nobes, 2016). However, much of the research into the impact of OA and much of the lobbying in favour of OA has come from North America and Western Europe. This criticism has continued with feedback into the development of Plan S (Debat & Babini, 2019; Hinchliffe, 2019).

A wide picture of author attitudes and experiences has been given by a number of large-scale international studies carried out by publishers such as Wiley (Wiley, 2015) and Taylor & Francis (Frass *et al.*, 2013; Frass *et al.*, 2014). These studies showed a positive attitude and wide awareness of OA, but also showed authors' concerns around lack of access to other research, commercial usage of research (particularly with reference to the least-restrictive Creative Commons licences) and low usage of institutional repositories (IRs). They also show a difference in attitudes to OA depending on whether the researcher is in the role of reader or author. However, many such studies are dominated by Northern voices.

Less is known about the access and OA experiences of researchers in the Global South, although isolated studies have shown situations in particular regions, countries or institutions (for example, INASP, 2016a; Ouya & Smart, 2006).

Localized studies are very useful for informing local policies and OA mandates at institutional, country or funder level, and reflect many of the findings from the global studies. However, research systems also need to be considered in a global context. Critics have argued that OA has not benefitted the developing world as much as anticipated, and not aided North-South/South-North communication and collaboration as originally intended, although more recently there have been some favourable accounts of the impact on the developing world (Kienc, 2017; Iyandemye & Thomas, 2019; Tennant *et al.*, 2019).

The international development organization INASP has long supported and championed access to published research in a range of ways (Gwynn, 2019). INASP programmes have supported developing-country institutions to negotiate with subscription publishers for free and appropriately discounted access,[1] support and host local OA journals,[2] and support researchers to develop their research writing and publication.[3] The wide network of developing-country researchers in INASP's AuthorAID database provided an opportunity for in-depth research into attitudes to OA across Africa, Asia and Latin America, with a particular focus on early-career researchers.

The study reported here was prompted by conversations with researchers, librarians and others in many partner countries. Some in INASP's network have voiced strong support for OA (INASP, 2016b; INASP, 2016c). However, discussions within the AuthorAID network and with librarians have also revealed concerns about data sharing, commercial usage and the risks of accidentally publishing in journals with dubious publishing practices (Nobes, 2017). INASP has also observed confusion between free access and OA, and recognizes that projects that work with publishers to enable free access to e-resources in qualifying countries or institutions can add to this confusion.

Methods

Study background

A survey was conducted in 2016 of researchers from the Global South to ascertain experiences and attitudes to OA publishing. These researchers were members of the AuthorAID network.[4]

The survey was conducted using SurveyMonkey (a copy is available as *Extended data*; Nobes & Harris, 2019a) and consisted of 24 questions exploring the demographics of the group, research and publishing practices, experiences of OA from the perspectives of being a reader and an author, attitudes to OA, and attitude to open data sharing.

Survey distribution

The invitation to complete the survey was sent by email to approximately 3,000 researchers from the AuthorAID network and these researchers made up the bulk of respondents. This group was randomly selected from members of the network who had not been approached to participate in other AuthorAID surveys in previous months. The survey was also shared on AuthorAID's social media channels and 29 of the respondents came to the survey from Facebook or Twitter. As an incentive to complete the survey, respondents were entered into a prize draw to win one of three $50 Amazon vouchers. It should be noted that this group was self-selecting. There was no inclusion or exclusion criteria, other than whether respondents answered a question. However, the invitation to participate in the survey was sent to members of the AuthorAID network, which gave us a high level of confidence that respondents were researchers within or from low- or middle-income countries.

In total, there were 507 respondents (response rate of 17%). The majority of questions were optional. Therefore, there is some variation in the numbers given in the *Results and discussion* section between different questions. It should be noted that 25 of the respondents only completed the initial demographic information and none of the questions about OA, so, although they are included within the dataset (Nobes & Harris, 2019b), we chose to exclude their responses from analysis of the survey demographics.

[1] www.inasp.info/theme/information-access

[2] www.inasp.info/project/journals-online-project

[3] www.authoraid.info

[4] INASP's AuthorAID database contains over 20,000 researchers (12,000 at the time of the survey) from 174 countries

Participant background and demographics

The survey respondents came from 73 countries, with 44% from Africa, 37% from Asia and 11% from Latin America. The lower response from Latin America is probably due to the survey only being conducted in English. In addition, 5% of respondents were from the Middle East and 2% from Eastern Europe.

In terms of gender, 74% of the respondents were male and 26% female. At the time of the survey (March 2016), women made up 31% of the AuthorAID membership, so gender balance of the responses was reasonably representative of the population from which the survey was taken, although may not be representative of the Global South research community as a whole. For future studies we will aim to improve the gender balance of responses. Also, in line with the demographics of AuthorAID members, who are predominantly early-career researchers, 38% of respondents were aged 24–34, 35% were aged 35–44 and 15% were aged 45–54. Respondents were distributed between medicine and health (33%), social sciences (32%), STEM (29%), and arts and humanities (6%).

It should be noted that the respondents were self-selected from the AuthorAID network and completed the survey online. The authors therefore assume that the respondents in this group have at least a baseline experience of digital technology and some awareness of research communication needs (Hrdlicková & Dooley, 2017).

Results and discussion

The survey of researchers in the Global South revealed a wide-ranging picture of attitudes to and awareness of OA. Results fall into the main topics of use of OA literature, publishing in OA journals, OA awareness, and related issues, including licensing terms and data sharing. Answers from each respondent are available as *Underlying data* (Nobes & Harris, 2019b).

Access to academic journals

Survey respondents were asked about their access to academic literature. In response to the question "Do you have access to all the academic literature you need to carry out your research?", only 8% agreed, although 51% chose the less emphatic option of "mostly, but some literature is not accessible". In contrast, 34% said most literature is not accessible and 7% said they had very little or no access at all to the academic literature they needed (Table 1, Figure 1). This seems to suggest that there is still a problem with access to literature in developing countries. However, it is worth bearing in mind Harle's (2010) research from universities in Malawi, Kenya, Rwanda and Tanzania, which uncovered a poor awareness of what resources were available. That study found that, on average, 72% of journals reported as 'unavailable' were actually available at those universities. Harle concluded that it was not the availability of scholarly information that was the problem, but rather the awareness of the e-resources available. The same research found that 29% of researchers self-reported an unsatisfactory or 'non-existent' awareness of e-resources. It should be noted that Frass *et al.* (2013) found that even researchers in 'developed' countries reported problems with access; they found that, in response to the statement 'Researchers already have access to most of the articles they need', 37% agreed and 38% disagreed.

Discussions between INASP and partners, and internal surveys within our networks, have also revealed gaps in awareness of e-resource availability through the developing-world access initiatives established by INASP,[5] Research4Life[6] and EIFL,[7] as well as through OA content. Discussion of this awareness issue, and activities to address it, is outside the scope of this paper. However, it is clear that many developing-country researchers are not finding the research literature they need for their own research.

Searching for literature – sources used

When it comes to finding research literature, the survey reflected the earlier findings of Harle (2010) that Google was the most popular way to search for literature. In our study, 89% of respondents said they use it always or often (rising to 99% when people who use it sometimes or rarely are included). Google Scholar was the second most popular source, with 70% of people saying they used it always or often (rising to 97% when people who use it sometimes or rarely are included). Publisher websites came third with 56% using these methods used always or often, slightly ahead of 'other web services' such as ResearchGate, Academia, Mendeley and social media, with 52% using them always or often (Table 2, Figure 2). It is worth noting that many of these platforms link to free versions of content. Other sources, such as university libraries and websites, other information services, both international and local, were less used. However, all of the sources asked about were used in some way by over 50% of respondents.

There were no respondents who reported not using any search facilities. Searching via the developing-world access initiative Research4Life was low but usage will vary depending on local access to those schemes (for example, 25% of total survey respondents were from either Nigeria or India and neither of these countries have free access to resources via Research4Life). Some other local search tools may be limited by barriers such as language and awareness.

[5] www.inasp.info/project/availability-and-access-research-publications

[6] www.research4life.org

[7] www.eifl.net

Table 1. Do you have access to all the academic literature you need to carry out your research?

Yes	41
Mostly, but some literature is not accessible	247
Some – most literature is not accessible	161
Very little or none at all	33

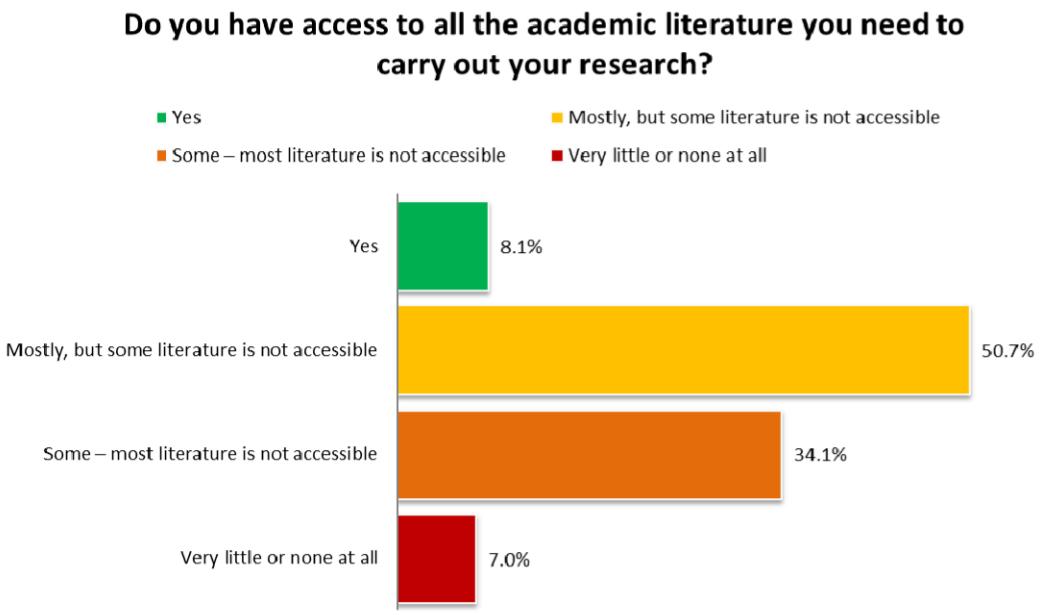

Figure 1. Do you have access to all the academic literature you need to carry out your research?

Table 2. How often do you use these sources when you are searching for research literature?

Source	Always	Often	Occasionally	Rarely	Never	Not applicable/ not heard of this
Google or other search engine	67%	22%	7%	3%	0%	1%
Google Scholar	40%	30%	19%	8%	2%	1%
Publisher websites (Elsevier, Springer, Taylor & Francis, Wiley, Emerald, Sage)	23%	33%	20%	12%	9%	2%
Other web services (Mendeley, ResearchGate, Academia.edu, social media)	20%	33%	28%	12%	6%	2%
University library (including resources available through INASP)	17%	26%	25%	17%	10%	5%
University website (using EBSCO or JSTOR)	13%	24%	26%	19%	12%	6%
The Directory of Open Access Journals (DOAJ)	12%	21%	25%	18%	15%	9%
Research4Life (AGORA, HINARI, OARE and ARDI)	9%	19%	19%	15%	22%	16%
Regional journal directory such as AJOL, BanglaJOL, SLJOL, SciELO	9%	19%	25%	14%	20%	13%
My supervisor or colleague	8%	23%	34%	22%	9%	4%

The high usage of Google above other searching methods is unsurprising, but potentially problematic. In Harle's 2010 study, which found that 73% of researchers used Google to find journal content, this was suggested as one of the most common reasons for the 'under-discovery of subscription resources' as it often caused users to bypass the 'correct' access points. As it currently stands, the complex system of authorisation portals and systems is a matter of contention for many, and makes accessibility more difficult (Powell, 2015). Tambo *et al.* (2016) argue that this in itself is an argument for universal OA. However, it's clear from other local studies that researchers' information-searching and internet navigation skills also need significant improvement (Dulle, 2010; Emojorho *et al.*, 2012; Harle, 2010; Mohammed, 2014), and there needs to be more awareness of library resources and OA resources such as DOAJ (Mohammed, 2014).

Usage of IRs

IRs also play an important role in making research papers publicly available and there have been many initiatives to develop IRs in developing countries, particularly in Africa. We therefore included a question to investigate researchers' understanding of IRs (Table 3, Figure 3). Over a decade ago, Swan & Brown (2007)

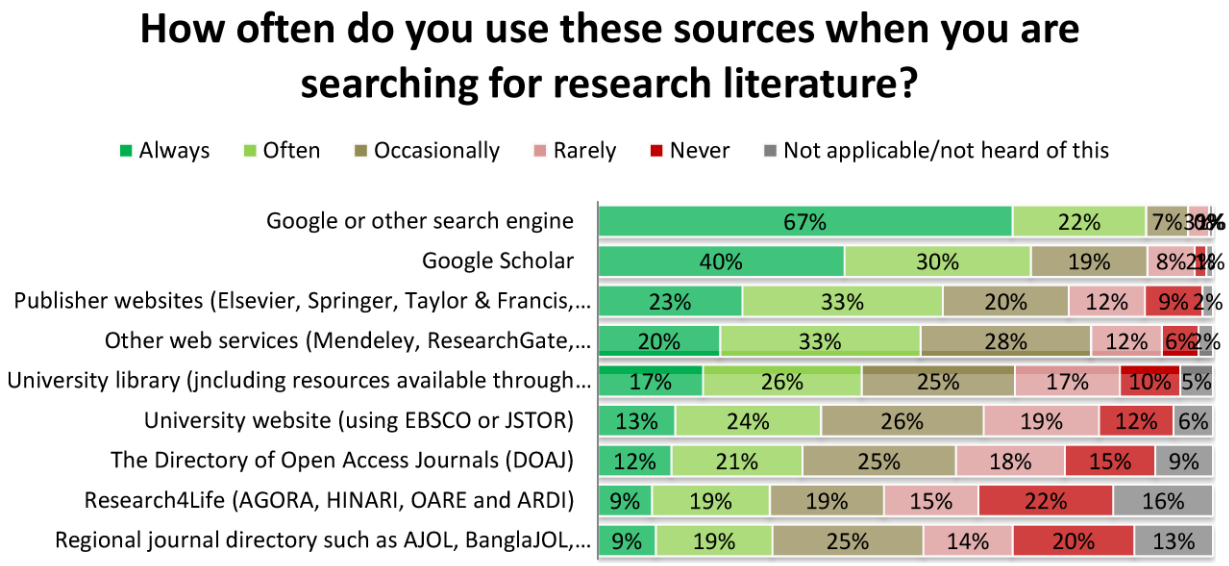

Figure 2. **How often do you use these sources when you are searching for research literature?**

Table 3. **What experience have you had with institutional repositories?**

I am not aware of my institution's digital repository	35%
I am aware of my institutions digital repository but I have not accessed it	22%
I have accessed my institution's digital repository	34%
I have deposited research in my institution's digital repository	18%
I have accessed material via another institution's digital repository	31%
I have accessed material via a repository directory such as OPENDOAR or ROAR	9%
My institution doesn't have one	2%

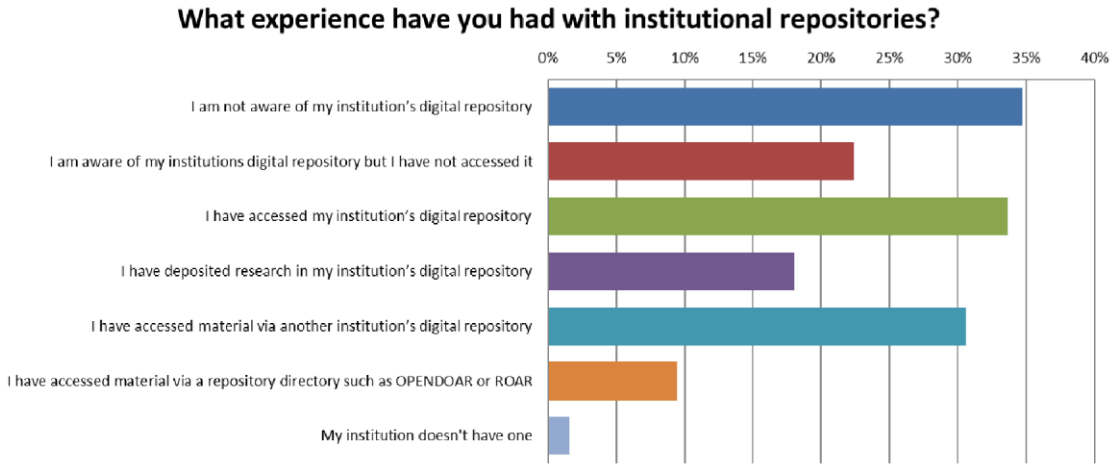

Figure 3. **What experience have you had with institutional repositories?**

reported that amongst UK researchers, nearly three quarters were unaware of whether their institution had a repository and, where there was awareness of a repository, only 40% had deposited in it. In our study, 56% were aware of their institution's repository, with 34% actually accessing it.

Our results are more encouraging than the more local-scale studies. Lwoga's (2013) Tanzanian research found that 36.6% were aware of their local IR, with 20% only being familiar with the concept of self-archiving. In Kenya, Mutwiri reported a 44.9% awareness, In the Caribbean, Iton & Iton (2016) reported only 22% awareness, and in Iran, Khalili (2012) only found 10.1% knew about IRs. However, on a global level, Frass *et al.* (2013) reported that researchers use IRs frequently for searching (over 50%).

Our question could not explore whether the lack of awareness of an IR was due to the lack of an IR or due to, for example, poor communication and marketing of the IRs. Only 2% explicitly stated that their institutions did not have an IR, although 35% were not sure if their institution had an IR or not. Lwoga & Questier (2014) reported that IR usage was low in Tanzania due to there not being many IRs in general, and lack of awareness of rights to self-archive. Islam & Ahkter (2013) reported that IRs were still at an infancy stage in Bangladesh, with even librarians unaware or uncomfortable with the concept. It should, however, be noted that awareness may have increased since these studies were conducted.

In terms of depositing practices, 17% had deposited their work in their institution's IR. However, the nature of the demographics of the respondent group (dominated by early-career researchers) meant that many had not yet published a paper.

There have been several studies that attempted to measure the percentage of global researchers who deposited their work in an IR. Wiley's 2015 survey data revealed that 43% had archived or deposited their research (with 57% of those respondents having deposited in an IR and 43% on their own web page). Creaser *et al.* (2010) reported that just over half had self-archived, yet Frass *et al.* (2014) only reported 23% posting to an IR. In local studies, Lwoga's (2013) Tanzanian study reported that 26.8% had self-archived and Mutwiri (2014) found 20.9% depositing in an IR. However, across these studies, there is a variation in terms and terminology in the questions asked (for example, 'self-archiving' is a broader term than 'depositing in an IR').

Since the study was conducted, the landscape has been evolving rapidly, with the emergence and growth of a plethora of e-print (pre-print and post-print) servers and aggregation/discovery services such as unpaywall.[8] Future studies should take this into account and investigate attitudes and knowledge towards the different aspects of self-archiving and usage of Green OA, as well as remembering that there are varying regional perspectives.

Attitudes towards OA journals

Questions concerning understanding and experience of the basic OA concept are rarely asked in larger studies because it is usually assumed that researchers in the study group have a good understanding of OA. In response to our question "Have you encountered and read Open Access journals or articles in your own literature searches and research?", 9% of the subjects said they had not encountered OA research, 8% were familiar with OA but didn't find it useful, and 13% were aware, but weren't sure how useful it was. However, the majority view was much more positive – 40% found OA research quite useful and 30% extremely useful (Table 4, Figure 4). Free text responses[9] revealed some very pro-OA researchers:

> *"Open access journal articles can be easily disseminated to the audience, and users get up-to-date research output." (Female, aged 25–34, Bangladesh)*

> *"It's a very good source for intellectual [sic] for scholars in poor countries where research is poorly funded." (Male, aged 35–44, Nigeria)*

Previous localized studies have revealed mixed awareness of OA journals, ranging from 42.5% in Iran (Khalili, 2012) to 74.3% Kenya (Mutwiri, 2014) and 93.5% in Tanzania (Lwoga, 2013). These studies tend to focus on groups in individual

[8] http://unpaywall.org/

[9] Some free-text responses have had minor typos corrected to aid readability; original responses are available in the raw dataset

Table 4. Have you encountered and read Open Access journals or articles in your own literature searches and research? How useful have they been to you?

No, I've not encountered Open Access research	40
Yes, I am aware of Open Access research, but it hasn't been very useful for me	35
Yes, I am aware of Open Access research but I'm not sure how much has been useful to me	58
Yes, I have used Open Access research and it has been quite useful	181
Yes, I have used Open Access research and it has been extremely useful	132

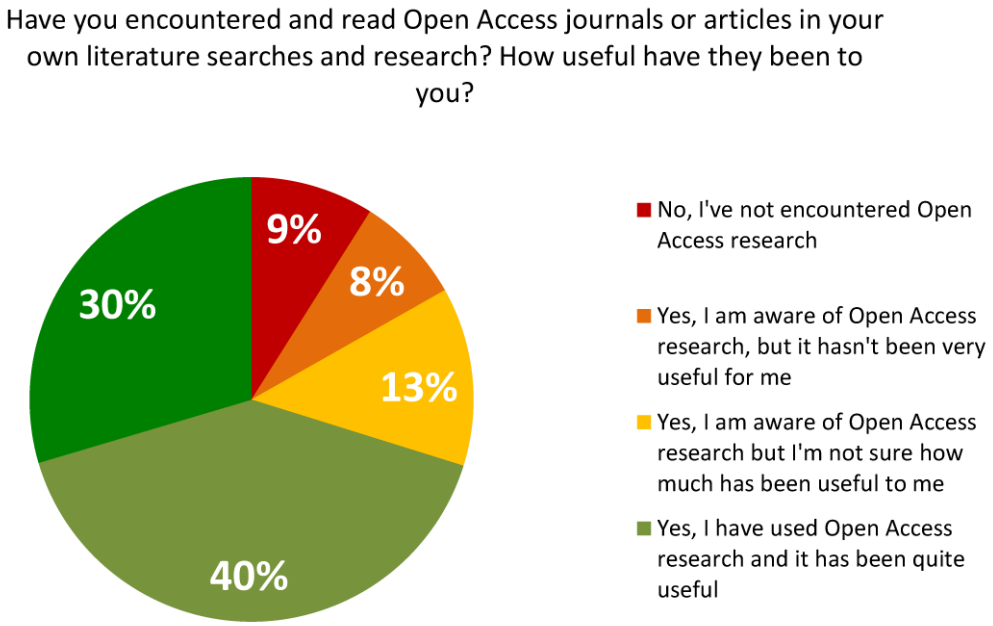

Figure 4. Have you encountered and read Open Access journals or articles in your own literature searches and research? How useful have they been to you?

institutions, so can vary significantly. Interestingly, Lwoga's (2013) research also asked where researcher awareness came from, with 32.1% mentioning workshops and seminars and 27.6% publisher promotions. Clearly the institute in question had worked to improve awareness and had had support from publishers. Similarly, Mutwiri (2014) found that 19.7% of respondents had found out about OA from workshops and seminars. Lwoga & Questier (2014) later summarized that adoption of OA generally followed on from the attitude of the faculty.

Perceptions of OA journals

The survey asked more about perceptions of OA journals. The results showed perceptions were generally good – and remarkably consistent - across all areas, particularly regarding the quality of editorial board and reviewers (27% very good; 48% good) and quality of research (26% very good; 28% good). There was a slight drop in perception in reliability, trustworthiness and reputation, but overall, feelings were positive, with only a small number of respondents reporting a poor or very poor perception (Table 5, Figure 5).

These positive results contrast with other studies, which show less positive perceptions of OA journals around the world. A study by Frass *et al.* (2013) had 34% agreeing with the statement that OA journals were of a 'lower quality'. This can vary by discipline – for example Hahn & Wyatt (2014) found a strong scepticism of OA journals as lacking prestige and quality amongst business researchers. There is also a slightly negative view of OA journals by tenure and promotion committees, based on a fear of quality and peer review (Hurrell & Meijer-Kline (2011), although this was reversed in Nariani & Fernandez's (2012) study.

Local studies have backed up this scepticism. A Bangladeshi survey by Shuva & Tasir (2016) found agreement that OA generally lead to higher citations, collaborations and fast publication, but that 55% of Bangladeshi researchers would chose print-only journals due to the poor perception of OA by university authorities that they were not a 'widely accepted platform for research'. Furthermore, 62% thought that OA journals were 'not always peer reviewed'. Similarly, in India, Singson *et al.* (2015) reported that 45% had a negative perception of OA journals with 40% believing they 'lacked quality'.

Some comments in our study reflected this suspicion of OA journals:

> *"There are so many Open Access journals which are not credible and do publish papers without even*

Table 5. What is your perception or experience of Open Access journals?

Variable	Very good	Good	Average	Poor	Very poor
Quality of editorial board & reviewers	116	202	81	15	7
Quality of research	112	203	91	9	6
Reliability	92	188	115	18	8
Trustworthiness	85	189	114	26	7
Reputation	84	171	132	24	10
Response times to authors	90	167	133	23	8

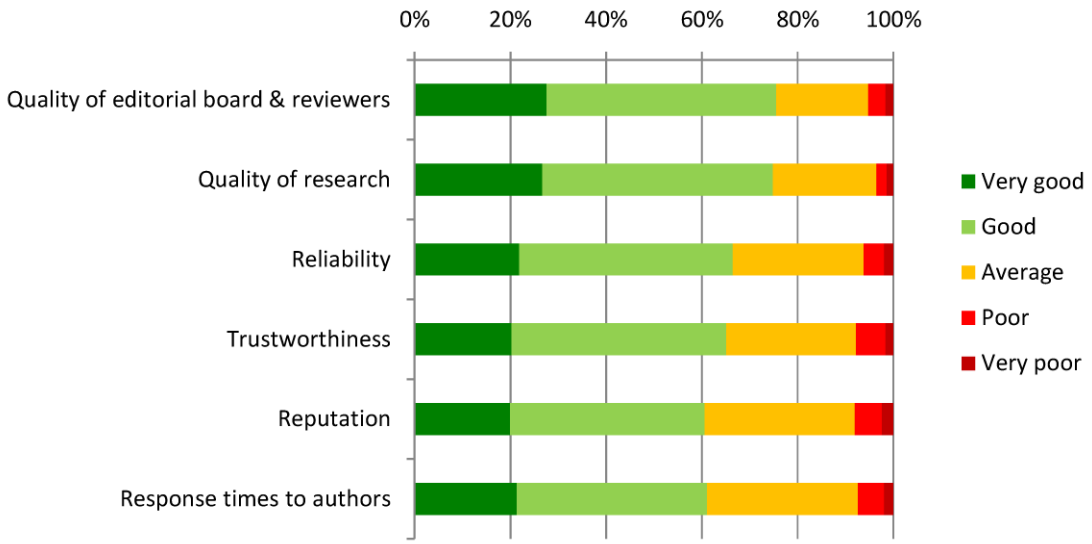

Figure 5. "What is your perception or experience of Open Access journals?"

> *reviewing them. No comments are provided to improve the submitted papers." (Male, aged 35–44, Tanzania)*

However, some critics seemed to be aware that there was a clear distinction between reliable and 'predatory' OA journals:

> *"It depends on who is the publisher of the Open Access journal. I mean if it is published by Elsevier, Emerald, SAGE, I would say the quality of editorial board and reviewers, reliability as well as all the points you mentioned would be in between very good and good. However, if a journal is published by a predatory publisher, I would say the quality and other factors would be very poor or poor." (Male, aged 25–34, Bangladesh)*

This stronger trust of OA journals from large, Global North-based publishers is a challenge for Southern journals. It reflects other observations by INASP (Murray & Cumming, 2017) and is an important area for further exploration.

What is most important when looking for a journal?

In addition to exploring OA as a means to access research, this survey also explored researchers' experiences of OA as a way of sharing their own work. In response to the question "When looking for a journal to publish in, what is most important?", the most-selected answer was "Relevant to my discipline". This was followed by preferences for journal impact and journal reputation. Also important were journal indexing and peer review quality. Despite all the positivity about OA in the survey comments, it came in seventh place, below journal readership. Only 19% of respondents choose OA in their top four decision factors (Table 6, Figure 6).

This is similar to other studies, at both national and international levels. Rodriguez (2014) similarly found that prestige, relevance and Impact Factor were top priorities, with OA bottom. Iton & Iton's (2016) Caribbean study saw reputation and Impact Factor top, way above 'free access'. Adjei & Owusu-Ansah (2016)'s Ghanaian study is a rare exception, with OA a close second to journal reputation, 'no APC' in third and indexing coming last. That particular study was from a small sample (n=67) of researchers attending a research writing workshop so might be an outlier.

If researchers choose, or need, to publish specifically in an OA journal the same traditional issues are still seen as important – Nariani & Fernandez (2012) found that indexing and Impact Factor were the most common considerations in choosing an OA journal. Similarly, Shuva & Tasir (2016)'s Bangladeshi study found that "…researchers prefer to publish in OA journals that possess qualities of prestige and editorial practice associated with traditional international journals" – peer review process and impact factor were seen as the most important motivational factors when publishing in OA journals. Our question did not make it clear if we were talking about considerations for publishing in OA or subscription journals, but we suspect the results may have been very similar.

Overall, the results found that developing country authors face the same pressures to publish in high impact, high reputation journals as other researchers around the world. This results in their positive intentions towards OA not always translating into action.

Publication record of participants

When looking at the publication records, most of the survey respondents (72%) had published papers, and these authors had roughly equal experience of publishing in subscription and OA journals – 17% had only published in subscription journals, and 11% had only published only in OA journals, with 44% having published in both. Overall, 55% of the total respondents to this question had published in OA journals, or 76% of those who have published at least one paper (Table 7, Figure 7).

Table 6. When looking for a journal to publish in, what is most important? Please rank according to importance, with (1) being most important and (8) being least important.

Priority	1st	2nd	3rd	4th	5th	6th	7th	8th	Total
The relevance to my discipline	97 27%	60 17%	44 12%	64 18%	37 10%	20 6%	22 6%	19 5%	363
Journal impact factor	87 24%	63 17%	56 15%	46 13%	36 10%	32 9%	27 7%	16 4%	363
Reputation of journal	52 14%	63 17%	72 20%	42 12%	42 12%	41 11%	37 10%	14 4%	363
Whether the journal is indexed	48 13%	59 16%	46 13%	37 10%	35 10%	63 17%	53 15%	22 6%	363
The quality of the peer review	33 9%	51 14%	59 16%	68 19%	59 16%	50 14%	28 8%	15 4%	363
The readership of the journal	14 4%	33 9%	32 9%	49 13%	72 20%	66 18%	60 17%	37 10%	363
Whether the journal is Open Access	17 5%	23 6%	36 10%	32 9%	53 15%	59 16%	81 22%	62 17%	363
The country the journal is published in	15 4%	11 3%	18 5%	25 7%	29 8%	32 9%	55 15%	178 49%	363

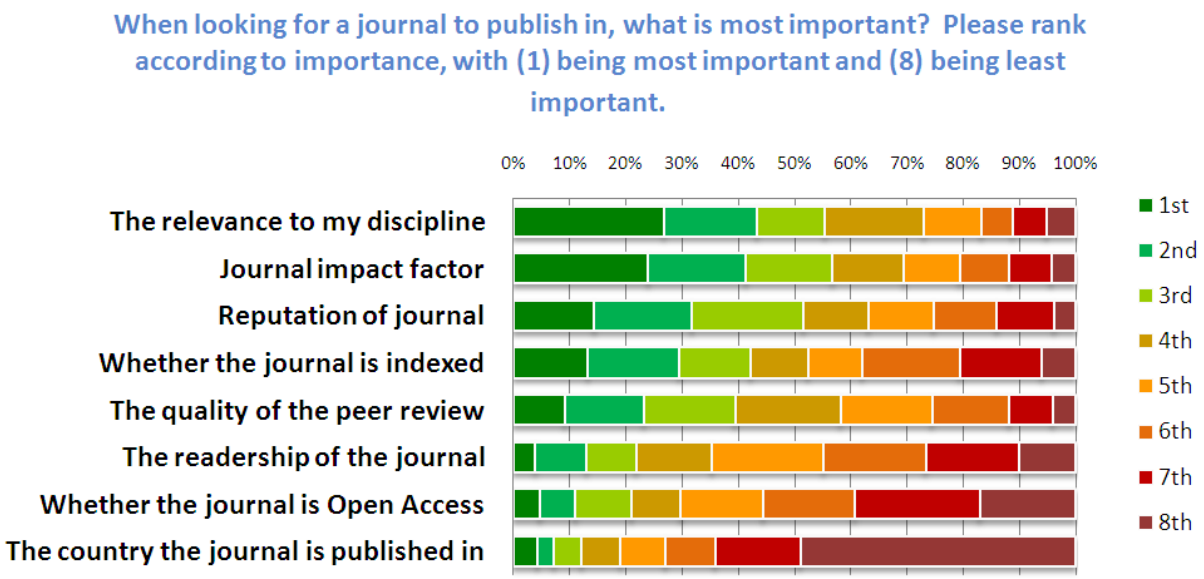

Figure 6. When looking for a journal to publish in, what is most important? Please rank according to importance, with (1) being most important and (8) being least important.

Table 7. In the past three years how many research articles have you published?

Authors with no publications	28%
Authors who have published in only subscription journals	17%
Authors who have only published in only OA journals	11%
Authors who have published in subscription and OA journals	44%

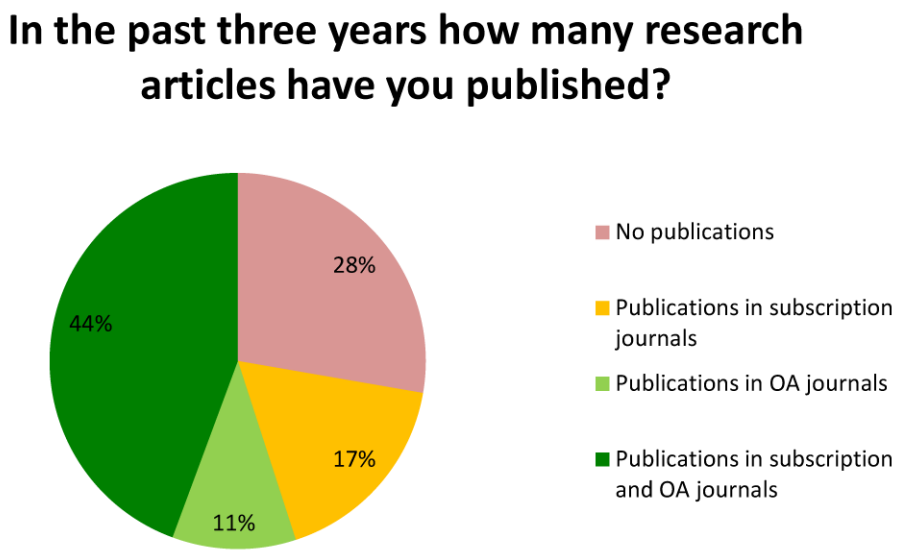

Figure 7. In the past three years how many research articles have you published?

Many surveys have shown that there tends to be a mismatch between researcher's usage and publishing via OA. Frass *et al.* (2013)'s respondents were undoubtedly keen to use OA (50%+ searched IRs regularly, for example), but only 21% had published a paper via OA (although many indicated they would do so in future). Smaller studies also reflect this. Khalili (2012) found that 58.3% of Iranian researchers were readers of OA, but only 27.2% were authors via OA. Similarly, Lwoga & Questier (2014) reported that only 38.9% had disseminated their work via OA but 64.4% had used OA outlets to find information. A total of 75.5% of Mutwiri's (2014) Kenyan researchers have used OA journals but only 27.5% had published in OA journals.

In our study, 82% claimed to use OA research (and 70% found it useful), but the study also showed that respondents were frequent publishers of OA research – 55% of respondents had published a paper in an OA journal (which is 76% of those who had published any paper). Although we also saw a gap between percentage of users and publishers of OA, it is less marked in our study than previous findings.

Publishing in OA journals with/without APCs

The survey also looked at experiences with article processing charges (APCs), which some journals charge for publishing papers. Of those who had published in an OA journal, 31% had published only in journals that had charged an APC, 29% had only published in journals that did not charge an APC, and 40% had published in a mixture of APC and non-APC OA journals. In total, 71% of those who had published in an OA journals had paid some kind of APC in the three years leading up to the survey (Table 8, Figure 8).

One free-form comment in the survey was:

> *"I try as much as possible to publish Open Access, particularly those that do not charge APCs as I cannot afford that." (Female, aged 65–74, Egypt)*

Table 8. Types of OA journals published in.

Authors publishing in OA journals charging APC	31%
Authors publishing in OA journals with no fee	29%
Authors publishing in OA journals with APC and without	40%

Another said:

> *"Open Access Journals should not charge an Article Processing Charge (APC) or have waiver policy for authors from developing countries" (Male, aged 35–44, Vietnam)*

The percentages of people paying APCs that we saw were surprisingly high considering the possibilities for developing-country authors to apply for APC waivers with many large publishers (although, as previously mentioned, around a quarter of our survey respondents were from India or Nigeria, which are ineligible for most waivers) and the possibility that researchers publishing as a result of a collaboration may not have been aware of APC payment. In comparison, the percentage from our survey was slightly higher than the percentage from the Wiley (2015) survey, which found that 63% had paid an APC, while Dallmeier-Tiessen *et al.* (2011)'s very large OA survey (2011) found that 50% of respondents paid no APC for their last OA article, and a further 25% paid an APC of less than £1000.

As our study focused only on researchers in the Global South – with a particular slant towards early-career researchers – our findings raise particular questions and concerns about the effectiveness of waiver policies. Indeed only 14% of our respondents said they had received an APC waiver, but again, this may reflect confusion over what constituted 'no APC' or APC waivers (Table 9, Figure 9). This contrasted with 60% of the 181 people who answered this question in our survey who reported that

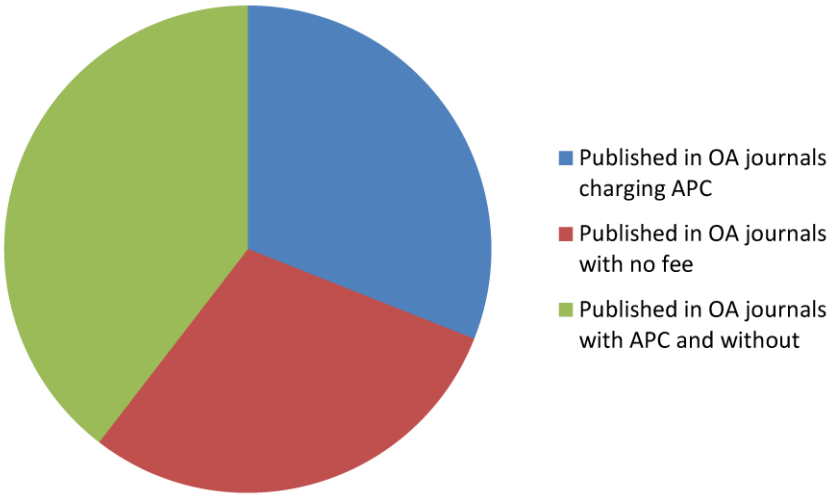

Figure 8. Types of OA journals published in.

Table 9. How did you pay the APC?

I paid the APC myself	60%
I received a waiver for the APC	14%
I received external funding to pay for the APC	8%
My university/institution paid for the APC	18%

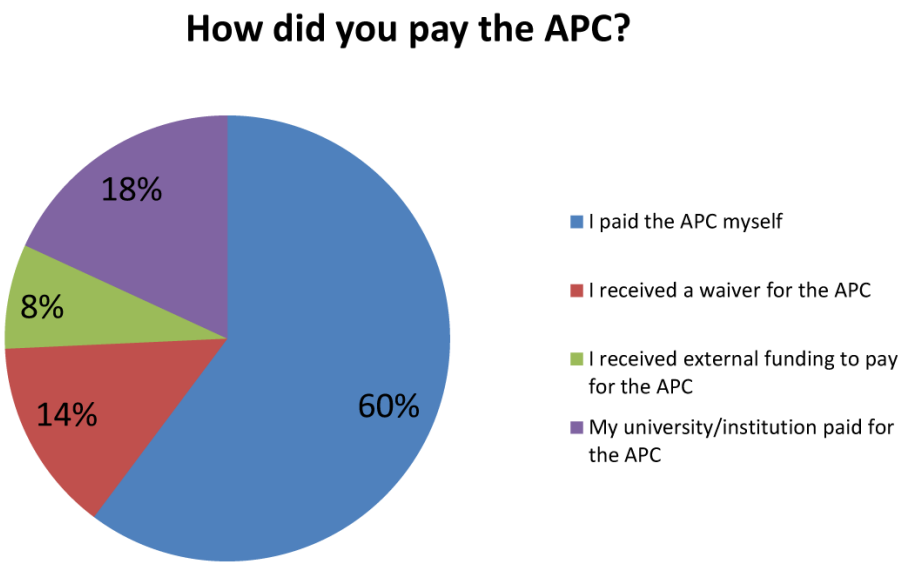

Figure 9. How did you pay the APC?

they had paid the APCs themselves, 18% said their university or institution paid the APC, and 14% said they had received external funding.

The high percentage of our respondents that had paid APCs themselves was also unexpected given that developing-country researchers may be more likely to publish in local or national journals, which are much more likely to be APC-free, so called 'platinum' OA (Nobes, 2016). Future research should ascertain the location of OA journal publishers to see how common this is. Further research into the size of these APCs and how they vary depending on the country of publication would also be important.

Researcher views on sharing and reuse

Respondents were asked about their views on the rights of readers to use their research in a number of different ways. They were generally happy for research to be used for teaching and education (provided they were properly credited), with 83% agreeing, 15% suggesting there should be some restrictions on this and only 1% disagreeing. There was also a positive reaction to sharing research with their friends and colleagues, with 73% agreeing. There was less positivity for the copying of articles, with 57% agreeing and 35% believing that there should be restrictions (perhaps in terms of quantity) (Table 10, Figure 10).

Authors were much less positive about derivatives and commercial usage. Just under half thought readers should be able to repost their research in another medium, such as a blog or book chapter, and 34% thought readers should be able to adapt or change their content for their own uses – 34% disagreed. A majority (52%) thought that readers should not be allowed to use research for commercial purposes, versus only 18% who agreed.

In summary, people are reasonably happy for people to use their article for teaching and sharing with colleagues, for example, but much less happy with adapting the content and unhappy with commercial usage.

Table 10. Readers should be allowed to…

	Agree	Agree with some restrictions	Disagree	Total
Readers should be allowed to make copies of an article	215	130	28	373
Readers should be allowed to share an article with friends/colleagues	272	90	11	373
Readers should be allowed to repost the article on another medium such as on a blog, or as a book chapter (crediting the author/original source)	182	122	68	372
Readers should be allowed to adapt or change the content for their own uses (crediting the author/original source)	129	117	124	370
Readers should be allowed to use articles for teaching/education (crediting the author/original source)	311	57	5	373
Readers should be allowed to reuse content for commercial purposes (crediting the author/original source)	69	112	191	372

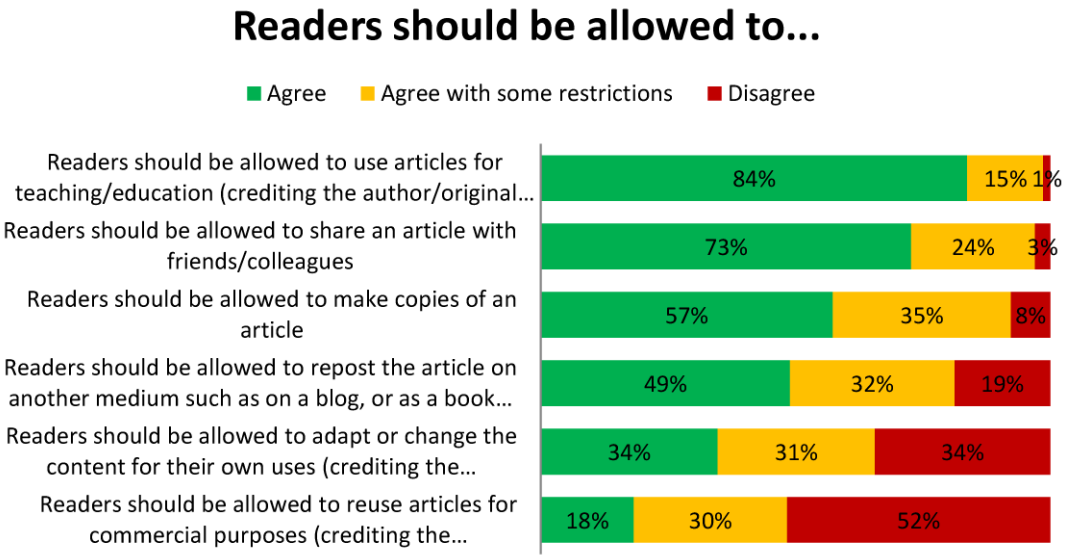

Figure 10. Readers should be allowed to…

Creative Commons

Respondents were also asked on their views of Creative Commons licences. We found that 60% were familiar with these licences, with 20% of that number having already published using them (Table 11, Figure 11).

There was a significant difference of opinion on the merit of the different types of licence, however. The most popular was the most restrictive CC-BY-NC-ND licence, with 27%. However, the second most popular was the most open licence – CC-BY – with 22%, followed in third place by CC-BY-NC. 11% stated they did not want to choose a CC licence at all (Table 12, Figure 12).

In total, 60% chose a licence that had a non-commercial clause, reflecting the results of the previous question – that the majority have concerns about commercial usage of their work. However, it should be noted that all respondents had the opportunity to answer this question, irrespective of whether they indicated awareness of CC licences, and this could have affected the strength of the result.

It is interesting to note the differences between the opinions on sharing and Creative Commons licences. There seems to be a small contradiction between 40% not choosing a licence with a NC clause (Table 12, Figure 12) and only 18% agreeing that their research could be used commercially (Table 10, Figure 10). This would suggest that many authors are unaware that the CC-BY licence does not protect against commercial usage. This contradiction is not unique to this study, however. For example, Frass *et al.* (2013) found that 44% agreed with the statement "There should be no restrictions on reuse of research outputs", yet CC-BY was the least popular choice of licence.

As Van Noorden (2013) has previously noted:

> *"Researchers don't understand how publishing licences affect 'open' research papers, and that more work needs to be done to explain why licences matter… Even researchers who publish in OA journals want to place restrictions on how their papers can be re-used – for example sold by others for commercial profit".*

Overall, there are differing opinions on the merit of the different Creative Commons licences, and a divide between researchers who were keen for their research to be shared as widely as possible and others who were worried about their research being misused, or financially exploited. There was also a lack of understanding of the commercial clause in Creative Commons licences, but this is by no means unique to developing-country researchers.

Table 11. Knowledge of Creative Commons licences.

Are you familiar with Creative Commons licences?	%
No, I have not heard of Creative Commons before this survey	41%
Yes, but I've not used a Creative Commons licence in my work	40%
Yes, I've used a Creative Commons licence in my work	20%

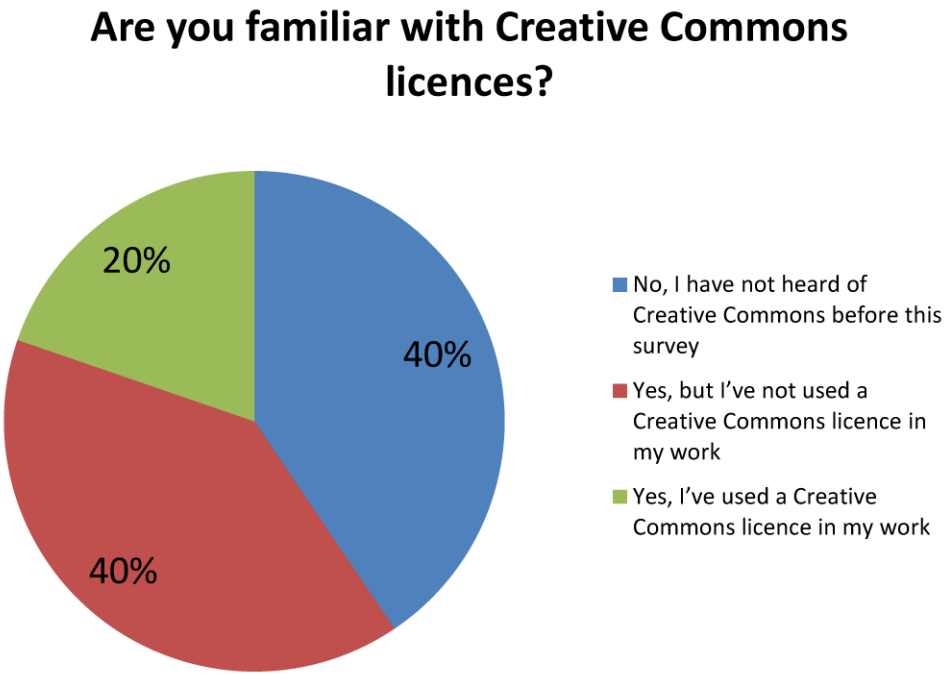

Figure 11. Knowledge of Creative Commons licences.

Perspectives on open data sharing

Participants were then asked about their attitudes to open data sharing. The response was surprisingly positive. It was previously the opinion of the authors that developing-country researchers were unsure and even suspicious of the idea of sharing their data. However, the results showed that 36% had shared, or were going to share, their data. Another 44% were quite happy to share their data but were not sure how to do so. 11% were nervous about sharing their data, but only 9% said they did not want to share data (Table 12, Figure 13).

This represents a very high total percentage of 80% who were willing to openly share their data. It is worth comparing with Wiley's survey on data sharing (Ferguson, 2014) that showed 52% of researchers having shared their data and 48% not. Geographical breakdown of these results showed willingness ranging from 55% sharing in Germany to a low of 36% in China.

The results also recorded reasons for not wanting to share data, with the top reasons being plagiarism or lack of acknowledgment, ethics/confidentiality, or theft of data (Table 14, Figure 14). Bezuidenhout & Chakauya (2018) have recently discussed the hidden incentives and disincentives for sharing research data among scientists in LMICs.

Overall, the results show that researchers are positive about data sharing, but need training in best practices on data management and sharing, as well as information on intellectual property and plagiarism.

This topic warrants further research and will be the subject of a future study.

Journals with dubious publishing practices

INASP has experienced that 'predatory' journals are increasingly a problem for developing-country researchers, who are particularly vulnerable to inadvertently publishing in such journals (Tennant *et al.*, 2019). In this study, 35% reported that they had no experience of them, but 56% reported that had received emails from predatory journals (the most common marketing strategy is to spam potential authors). Finally, 6% had reported actually having published in such journals. This is a major challenge but is outside the scope of discussion on this paper. INASP is working with other members of the Think. Check. Submit. committee, along with AuthorAID researchers, to understand the scale of the problem better and ways to address it (Think. Check. Submit., 2018).

Table 12. Creative Commons preference.

CC-BY	22%
CC-BY-SA	8%
CC-BY-ND	9%
CC-BY-NC	15%
CC BY-NC-SA	8%
CC BY-NC-ND	27%
None of these*	11%
I don't know	1%

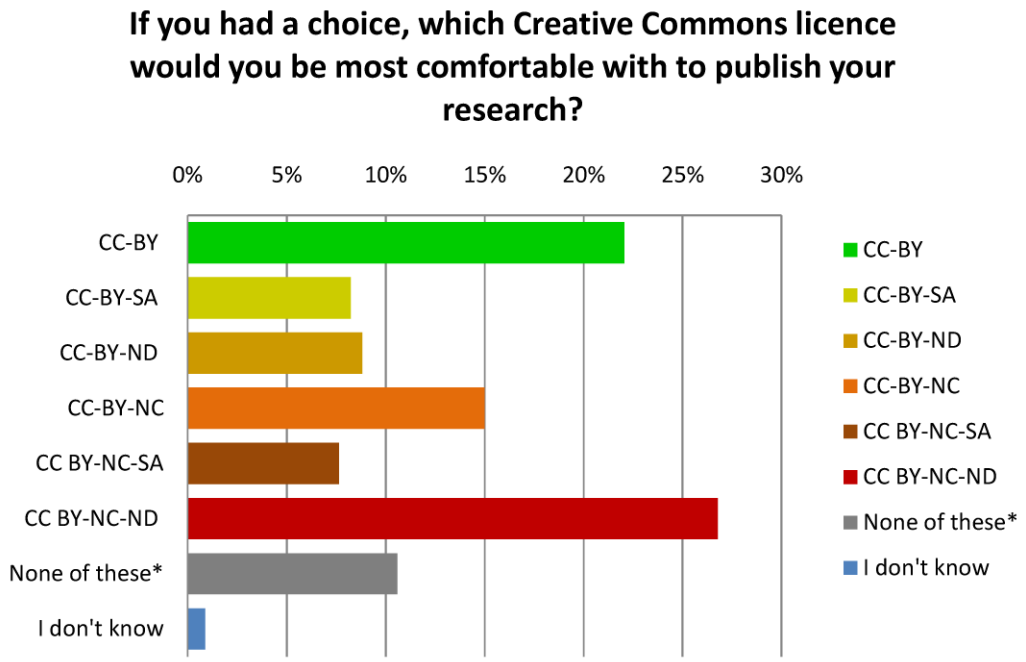

Figure 12. Creative Commons preference.

Table 13. Data sharing.

I have, or I am going to openly share data from my existing research	36%
I am happy to openly share research data but I'm not sure how to do it	44%
I am nervous about openly sharing my research data	11%
I do not want to openly share research data	10%

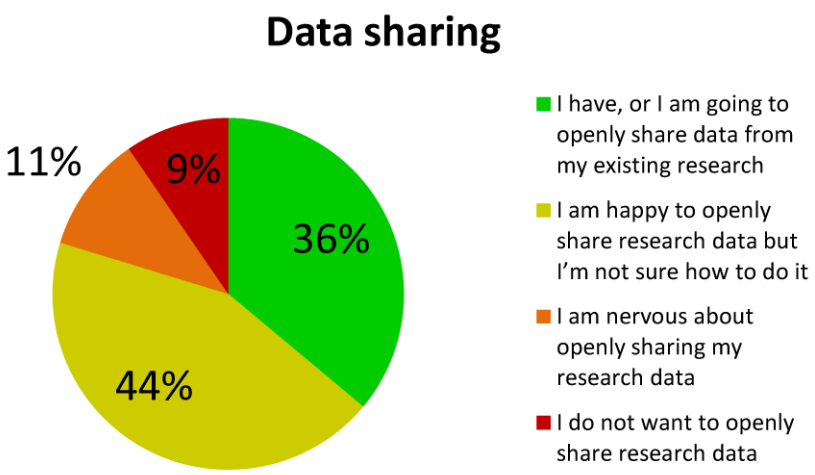

Figure 13. Data sharing.

Table 14. Reasons given for not wanting to share data openly.

Data being used without my acknowledgement	11
Ethics/confidentiality	9
Stealing data/publishing before I do	9
Plagiarism	7
I worked hard on gathering data	6
Worried about commercial exploitation	5

Conclusions

This study found a mixed picture in terms of awareness, use and level of support for OA from researchers in Africa, southern Asia and Latin America. Access is still a problem for many researchers, but some of the access challenges come from lack of awareness. There are differences in attitudes to OA depending on whether researchers are using this model as readers or authors. We found a generally positive view of OA, but the pressure of "publish or perish" means that researcher priorities are still driven by concerns about Impact Factor and prestige above OA.

The study also found positive attitudes to the sharing of research but concerns about commercial reuse. Similarly, there were positive attitudes to data sharing but a need for more information and support.

The findings in this study broadly agree with previous studies but give a particularly international perspective of predominantly early-career researchers in the Global South.

The study deliberately covered a wide range of aspects of OA. Areas for deeper exploration in future studies include awareness and use of different licences, institutional repository and e-print server use, open data and the extent of the challenge from journals with dubious publishing practices, as well as further analysis of this dataset by country and region.

Data availability

Underlying data

Zenodo: Open Access in developing countries – attitudes and experiences of researchers Dataset. https://doi.org/10.5281/zenodo.3516256 (Nobes & Harris, 2019b).

This project contains the anonymised raw survey output data.

Extended data

Zenodo: Open Access in developing countries – attitudes and experiences of researchers Survey Questions. http://doi.org/10.5281/zenodo.3518392 (Nobes & Harris, 2019a).

This project contains a blank copy of the survey used in this study.

Author contributions

The survey questions were developed by both authors. Andy Nobes ran the survey with the AuthorAID network and carried out initial analysis of the data. Subsequent analysis within the wider open access context and writing up of the findings were done by both authors.

Acknowledgments

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Open Peer Review

Current Peer Review Status: ? ?

Version 1

Reviewer Report 18 March 2020

https://doi.org/10.21956/emeraldopenres.14394.r26670

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I am happy to see this paper aiming to fill the important gap in studies of Open Access by focusing on the low- and middle-income countries, that I agree to be largely underrepresented or even ignored in many initiatives and studies.

On the other hand, I feel skeptical about some assertions made, e.g. that
"A wide picture of author attitudes and experiences has been given by a number of large-scale international studies carried out by publishers such as Wiley and Taylor & Francis". Namely, the experience of my 25+ years as researcher and that of many of my colleagues seem to indicate the opposite - that large publishers have not shown sufficient interest in researchers' experience and even tend to make it worse in many ways, e.g. by making important information hard to find and communication hard to conduct. Given their commercial interest, it is hard to imagine commercial publishers' own studies being accurate and unbiased.
In that vein, I find it sad that the authors do not instead refer/mention studies conducted by independent parties free from vested interests.

I feel puzzled by the statement:
"Critics have argued that OA has not benefitted the developing world as much as anticipated, and not aided North-South/ South-North communication and collaboration as originally intended"
that seems to me rather strong and generalist, raising many questions such as:
(1) On what basis were these critics concluded?
(2) What kind of anticipation was made? (3) What data was used for the conclusion made and what guarantees are there it was not misinterpreted?
(4) How significant was the coverage of the data for such conclusion, comparing to the less visible impact?

It is nice to see the authors' survey questions linked and shared, but from reader's usability perspective, I would recommend to link directly to actual articles' URL, instead of sending me first to the reference pages, where I have to remember and manually find the reference link.

I am delighted to see the authors have made the effort to shared their entire de-anonymised response data. Sadly this level of transparency does not seem to be the norm as it should, and as such, makes this article positively stand out.

The results are certainly interesting and valuable. That 34% respondents in those countries chose "most literature is not accessible" is of substantial importance, given how often publishers insist that their initiatives such as Research4Life solve the access problem in those countries.

Interestingly, the authors mention studies concluding that "some journals are reported as unavailable were actually available", making the whole discussion somewhat confusing and raising questions such as:
(1) Did the current survey accommodate for this confusion in any way?
(2) Did it attempt to ensure the respondents have been well-informed about their e-resources prior to taking the survey?
(3) If that information was indeed so poorly known or advertised, can one still regard the insufficiently publicized resources as being "available"?

I see such and many other nuanced questions missing from most surveys in general.
For instance, whether the perceived lack of access could be due to insufficient information about the resources available?

It is good to see mentioned that "the complex system of authorisation portals and systems ... makes accessibility
more difficult".

Another finding that I find extremely valuable that can't be emphasises enough is on page 6 that most (35%) respondents are "not aware of their IR". Likely this indicates that IRs are generally only affordable to few rich institutions worldwide. This is in contrast with free global discipline repositories such as ArXiv.org that are well-known and available to everyone. This contrast seems to suggest that global discipline repositories are perhaps more important and should not be forgotten when IRs are discussed. Sadly, the former seem to be mentioned in this article only briefly and indirectly as "e-print servers" in the article, without any details. This is puzzling, as these subject repositories like arxive.org (which is what I presume the author refer to as "e-print servers") are regarded by researchers in many fields as far more important.

Reading that paragraph again, I am not even sure the authors refer to arxiv.org when they write:
"Since the study was conducted, the landscape has been evolving
rapidly, with the emergence and growth of a plethora of e-print
(pre-print and post-print) servers".

In fact, arxiv.org had already existed in 1991. It is thus disappointing that such an old, established and important service is either not discussed here at all or mentioned only briefly as "emerging" in a sentence that also mentions Unpaywall, which is a very different service that also had existed for several years before the survey was taken.

The matters about "Perceptions of OA journals" I always find extremely confusing. It is perhaps plain meaningless to put all OA journals in one box and ask people to compare that box with the box of all non-OA journals. Obviously each group is huge and contains both excellent and low

quality journals. Then what exactly is assessed and compared here? The average quality? A weighted average? Rumours? Perception?

Most importantly, no distinction is made between the fee-based and no-fee OA journals. Why?

See e.g. [1] for elaborate nuanced discussion of this distinction. E.g. all so-called "predatory OA journals" are __fee-based__, that can be detrimental to their quality, while the no-fee OA journals do not have the same issues.
With the fee-based OA journals, researchers' attitude is often understandably negative, if they have to pay themselves, or are under pressure to find extra funds. Any response about "OA journals" as single category without that distinction ignore the substantial differences for authors between the fee-based and no-fee OA journals, and as such cannot be seen as nuanced and reliable.

This problem is further visible on the mentioned conclusions such as:
"There is also a slightly negative view of OA journals by tenure and promotion committees, based on a fear of quality
and peer review", raising many questions:
(1) Are these fee-based or no-fee OA journals?
(2) What about the no-fee OA journals only?
(3) This distinction is substantial in the fields I know, where fee-based OA journals are often treated with suspicion, while no-fee OA journals are highly respected.

And further: "55% of Bangladeshi researchers would chose
print-only journals due to the poor perception of OA by university
authorities". Again:
(1) Are all the OA journals are put in one box here?
(2) Do the authorities really focus on the OA part regardless of the quality?
(3) And if the quality matters, do they not appreciate the high quality no-fee OA journals?
(4) I feel any generalist statement without these nuances can be harmful leading to misunderstandings and misinterpretations.

And again:
"There are so many Open Access journals which are not credible and do publish papers without even reviewing them."
While this conclusion is likely (and sadly) correct, the lack of mentioning the high quality no-fee OA journals can easily lead to unfortunate misunderstandings.

On the good side, the authors continue by mentioning some distinction:
"However, some critics seemed to be aware that there was a clear distinction between reliable and ‘predatory’ OA journals".
But is this distinction really that "clear"? E.g. what about established commercial publishers adding new journals and selecting and influencing their editors to accept more papers. Or even firing editors for their high rejection ratios?

"It depends on who is the publisher ... if it is published by Elsevier, Emerald,
SAGE ... between very good and good."
This single quote by one person does not seem to be quite accurate without mentioning the

scholarly society and University press publishers, whose reputation and reliability are generally higher.

In conclusion, the entire "quality/perception of OA" discussion does not seem to distinguish between fee-based/no-fee OA in the article, while the subsequent APC/no APC discussion seems to be concerned with other, more technical aspects.

Generally, when discussing the APC, alternative OA funding models must not be forgotten, see e.g. [2,3]. Not doing so contributes to the sadly increasingly wide perception that "OA means APC".

It is not quite clear to me, to what extent it is useful to know the "percentage of people paying APC" without nuances, such as differences between someone doing it regularly and someone who had a one-off funding to cover the APC but couldn't afford it generally for many other articles.

A very important conclusion is
"our findings raise particular questions and concerns about the effectiveness of waiver policies".
However, the following comment
"this may reflect confusion over what constituted ‘no APC’ or APC waivers" is confusing.
The link to Table 9, Figure 9 in the article makes it even more confusing for the reader, as the question there is "How did you pay the APC?". If that is the question, it obviously ignores the no-APC OA journals entirely, that do not require any APC at all, and therefore no decision about payment is even needed. The latter is what no-APC or no-fee distinction should mean, which is very different from the APC waivers that are by no means guaranteed. I that vein, I don't understand what kind of possible confusion is mentioned in the article.

In fact, the next following paragraph is using the term "APC-free", differently from "no-APC" used before. Why? Is there a difference? If no, maybe using the same term used consistently would be less confusing?

In conclusion, the article provides important and valuable studies, but also occasionally misses crucial nuances that I would recommend to include, to make the conclusions more precise and accurate, while to reduce (or at least clearly mark as such) conclusions carrying personal interpretation, to help the reader avoid potential confusions and misunderstandings.

References

1. Zaitsev D: Hybrid vs APC fee-based vs no-fee OA. Reference Source
2. Hyland J, Kouker A, Zaitsev D: Open Access eXchange (OAeX): an economic model and platform for fundraising open scholarship services. *Insights the UKSG journal*. 2020; **33**. Publisher Full Text
3. Zaitsev D: Flexible membership funding model for Open Access publishing with no author-facing charges. Reference Source

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Partly

Is the argument information presented in such a way that it can be understood by a non-academic audience?
Partly

Does the piece present solutions to actual real world challenges?
Partly

Is real-world evidence provided to support any conclusions made?
Partly

Could any solutions being offered be effectively implemented in practice?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Mathematics, Open Access Publishing

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 10 February 2020

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I have added comments on the article directly to the text. My main concerns with the article are that there seems to be a confusing conflation of terms: OA at times also seems to include access-agreement bundles. Similarly, the definition of OA sometimes seems to include institutional

repositories, but not other repositories. I feel that the paper would benefit form a more detailed description of the OA landscape in the introduction. I also think that the authors would benefit from going through their analysis and specifically highlighting the sub-issues in OA that each survey question relates to.

Methodologically, I feel that there needs to be more information relating to the design of the questionnaire, the use of definitions (or not), and the piloting.

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Could any solutions being offered be effectively implemented in practice?
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Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Data sharing, sociology, ethics

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.