COVID19 Research for the English-Speaking World: Health Communication During a Pandemic

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Today, access to scientific information is as important as its production, but access should not only imply that information is free of costs but also free from other barriers, like language. Thousands of scientific papers are being written and published all over the world and the contents of these papers need to reach relevant scientific communities. This is essential and critical to what we call "science communication".

Science communication is often done in two ways. The first, is "***inreach***", which is actualized via formal and informal sharing amongst colleagues. This is achieved through all the scholarly communication channels that scientists are already familiar with. There is also an "***outreach***" part, which is about sharing produced scientific content and findings with the public (McClain & Neeley, 2015).

Health is naturally a critical subject, and in the age of COVID-19, we are hyper-aware of how important it is to share research. According to the U.S. Department of Health & Human services (2020), health communication is defined as "*the study and use of communication strategies to inform and influence decisions and actions to improve health*". When health communication is implemented effectively, scientists share important research findings with society, as well as with their research communities. This can lead to better solutions to health-related problems and an increase in health literacy amongst individuals.

Individuals who take a rational approach to both health problems and the consultation of various information sources are generally better at deciding which information is consistent in the face of a collective health issue. In an ideal situation measures can be taken by authorities and individuals quickly before chaos leads to a social catastrophe. Currently whole world is in a state of chaos, due to the identification and spread of COVID-19. Thousands of articles are now being published in high-impact journals every day; thus, people with low levels of health information literacy are at risk of failing to access the right information from the right people at the right time. This due to the fact that misleading and/or speculative information is being circulated online via social

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networking platforms (BBC News, 2020). While scientists are working towards publishing their breakthroughs in science, more attention needs to be given to the mission of science communication, which entails informing the public.

What portion of the scientific literature on COVID-19 is being published in English versus other languages?

According to the World Health Organization (2020), a total of 10,728 papers were published from the day of the novel coronavirus outbreak (now known as COVID-19) to April 28th, 2020. The database includes not only scientific articles, but also different types of documents on COVID-19. Language information for 7,501 papers is accessible at the web site of the World Health Organization (WHO). Because the language of each these 3,227 papers has not been provided at this WHO web site, we have searched scholarly academic databases to collect this information. In addition, ULRICH database has been used to collect country of origins of publishers. Figure 1, below, presents the overall language distribution for this dataset.

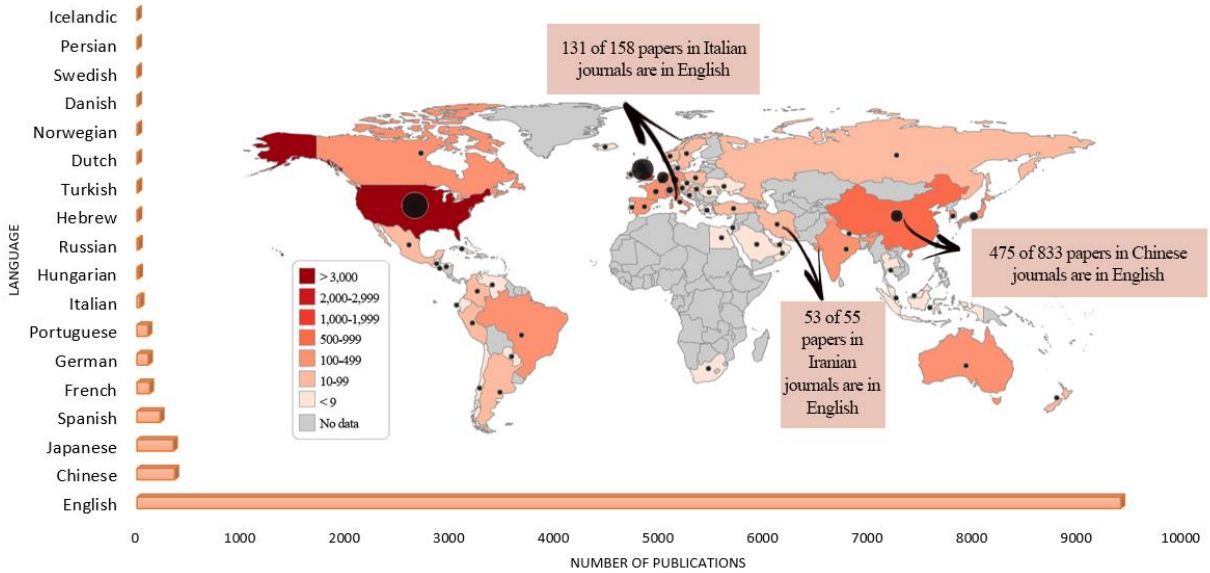

Figure 1. Languages of articles on COVID-19 and publishers' country of origins

Note from Figure 1 that up to 85% of the articles from the WHO dataset, defined as "Global research on coronavirus disease", has been published in English language. Scientists around the world are working overtime to produce research results that will contribute to the fight between humanity and COVID-19. Scientific journals are part of this race to contribute, and have been publishing articles on different aspects of the virus. Figure 2 shows the geographical distribution of authors that have recently published papers on COVID-19.[6]

[6] WHO dataset does not include affiliation data of authors. To gather the affiliation data, Doi's and titles of articles were used, and different databases were searched (Scopus, Web of Science, PubMed etc.). As a result, address information for 4,863 articles were gathered. The map shows distribution of 4,863 articles to the countries.

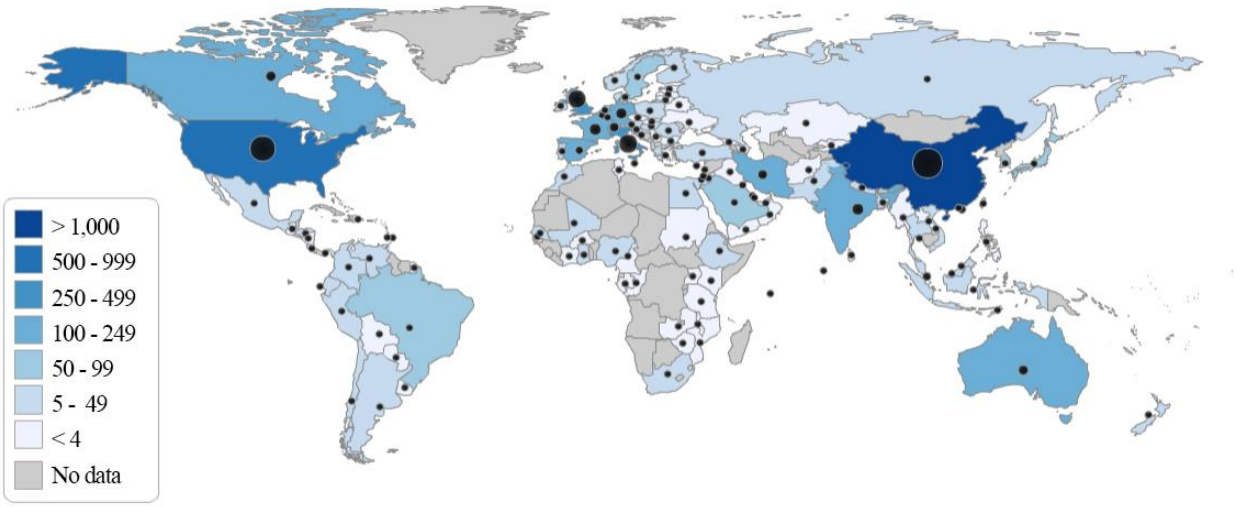

Figure 2. Distribution of articles to countries (interactive map: http://yunus.hacettepe.edu.tr/~ztaskin/COV/StatPlanet.html)

Note that 125 unique countries have been publishing articles on COVID-19. A total of 1,352 articles have produced by China-affiliated authors about the virus, and The United States has recently had 980 articles on this subject. In the countries that have been facing critical challenges with the virus – i.e., Italy, United Kingdom, Germany, Spain and France – scientists have also been maximizing their efforts to solve the spread COVID-19.

However, an aggregation of this data based on research efforts by country possesses a downside, particularly when it is communicated exclusively in English. The risk is that science is not fully meeting its' third mission, which is to inform the public, and this means reaching people in their native languages. It is also unclear which recommendations stem directly from scientific evidence, and which do not; thus, misinformation or vague information circulating via social networks continues to be a threat to public health. At this stage government-ordered recommendations, mandates or policies can only be based on a "better to be safe than sorry" approach.

The Importance of Multilingualism in Science

Important steps have been taken in recent years concerning multilingual publishing in science. The Helsinki Initiative on Multilingualism in Scholarly Communication (2019) was launched in 2019 in order to support locally relevant research. This initiative encourages the dissemination of research results in a way that protects national science infrastructures and promotes language diversity. All the suggestions put forth by the initiative further encourage scientists to share their research findings with the public. However, this does not mean that the initiative is against the production of research published in English. It was primarily put forth to challenge performance evaluation systems that put too much emphasis on English content, especially in countries where it can complicate or compromise the third mission of science, which is to inform the public. And finally, it simply supports national science practices by suggesting that relevant policies are put in

place, alongside the creation and maintenance of national databases for regional journals and regional-oriented evaluation practices.

Despite the importance of multilingualism in science, current research evaluation systems in many countries (especially in EU) set guidelines (including publisher lists) that encourage researchers to publish in prestigious or high-impact factor journals (Sīle et al, 2018). Moreover, there are no national journals listed in the Web of Science Journal Citation Reports (JCR) that have an impact factor of more than 3 and that publish in their own languages. It means that there are not enough incentives for scientists to publish in their native languages. Many national science policies encourage scientists to produce research in the English-language, and in instances of international collaboration, this is also necessary. To a large extent this limits the proliferation of each countries' own scientific journals and national language literatures.

Journals that are indexed in Web of Science and publish articles in their own languages have interesting common features. These features demonstrate why national science practices must be evaluated differently than international ones.

Common features of non-English journals

Here we uncover some of the key characteristics of journals that have publish research in a country's 'native' (other than English) language. In Web of Science, up to 3 million articles and reviews were published between 2016 to 2017 (JCR calculation year). 98% of these publications were written in the English language. We have analyzed 20 native language journals indexed in JCR for the JCR calculation year of 2016 to 2017. The results are shown in Figure 3.

	Age of journal		Country & language	Main characteristics of the journal				Data about alternative journals				
SYLWAN	200	13	PL, Polish	100.0%	46.1%	61.2%	100%	7	4	4	2	1
CHEM LISTY	144	69	CZ, Czech	77.3%	39.9%	47.1%	100%	3	3	2	1	1
MAGY ALLATORVOSOK	142	44	HU, Hungarian	95.0%	60.1%	14.1%	100%	2	1	1	2	1
LISTY CUKROV	138	44	CZ, Czech	73.4%	42.8%	18.8%	100%	4	3	2	2	1
NIPPON SUISAN GAKK	88	33	JP, Japanese	97.2%	35.0%	17.4%	95%	19	17	17	3	1
ACTA PHYS SIN-CH ED	87	33	CN, Chinese	99.8%	33.2%	62.5%	100%	43	40	36	5	1
INT POLIT-OSLO	83	54	NO, Norwegian	96.2%	68.2%	18.6%	100%	2	1	1	1	1
ZH OBSHCH BIOL	80	48	RU, Russian	95.2%	28.6%	38.1%	100%	78	103	63	7	1
CHINESE J GEOPHYS-CH	72	21	CN, Chinese	100.0%	51.03%	71.4%	100%	81	72	69	4	1
ZH VYSSH NERV DEYAT	69	48	RU, Russian	97.5%	34.6%	50.4%	100%	44	63	41	3	1
JPN J APPL ENTOMOL Z	63	44	JP, Japan	100.0%	56.3%	54.0%	100%	33	29	29	2	1
AMME IDARESI DERG	52	13	TR, Turkish	95.5%	40.4%	8.9%	100%	3	2	2	1	1
KAGAKU KOGAKU RONBUN	45	40	JP, Japanese	100.0%	62.6%	36.5%	100%	21	15	15	7	6
SOTSIOL ISSLED	45	37	RU, Russia	91.7%	40.1%	32.5%	100%	120	150	112	1	1
PSIKHOL ZH	40	37	RU, Russia	94.7%	43.5%	35.2%	100%	95	129	93	2	2
ACTA PETROL SIN	35	20	CN, Chinese	99.8%	28.3%	78.7%	100%	74	61	61	4	1
TEK DERGI	29	13	TR, Turkish	100.0%	33.7%	23.4%	100%	4	3	3	1	1
J FAC ENG ARCHIT GAZ	26	12	TR, Turkish	100.0%	63.0%	77.2%	100%	34	21	21	1	1
ASSIST INFERM RIC	21	13	IT, Italian	79.4%	26.1%	43.2%	100%	5	4	3	1	1
INF TARSAD	19	13	HU, Hungarian	84.4%	69.8%	20.0%	100%	6	5	5	1	1

Publisher: Society/foundation, Academic institution, Commercial, Academy of sciences & arts, Collaboration

Subject: Agriculture/veterinary, Engineering/technoogy, Medical sciences, Natural sciences, Social sciences

Indexed years in WoS
% of local authored papers
Self-citation rate
% of documents cited
% of the journal's contribution to its language in its discipline in WoS
N of journals published in this country on this subject
N of journals on this subject and language all over the world
N of journals published in this country on this subject and language
JCR indexed journals of this country on this subject
JCR indexed journals of this country on this subject and language

Figure 3. Main characteristics of 20 regional journals which publish papers on their own languages

Note that these regional journals all have a deep-rooted historical background, yet most of their articles have not received citations. Whilst localized publishing practices are common in the social sciences and humanities (Kulczycki et al, 2020), little has been done to explore local or national science publishing practices, yet our data (n=20) confirms that there are such journals for the natural sciences, agriculture, engineering and health sciences.[7] And, we have found that each of these journals has a high journal self-citation rate. Moreover, almost all have no alternative or similar competing journal in the same country from the same field and in their own languages.[8] The most important indicator for these national journals is that they are unique in their fields even though they have low impact factors. Hence, national research evaluation systems are advised to

[7] For classification of Web of Science subject fields, OECD category scheme is used: http://help.prod-incites.com/inCites2Live/filterValuesGroup/researchAreaSchema/oecdCategoryScheme.html

[8] ULRICH Serials Directory was used to find equivalent journals. ULRICH subject fields are used to find the journals in the same subjects.

examine and give more consideration to national science practices, particularly when there is a need for public outreach in non-English native languages.

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