Questions to the article: demonstrating the ascendancy of COVID-19 research using acronyms

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Abstract

The article published on 16 May 2021, is well-written and of interest, but remains several questions that are required for clarifications, such as the presentations in Table 1 and Fig. 1 that should be improved further for providing more valuable information to readers. After viewing Table 1, measuring the strength of quantity (= 0.84) referred to the next two counterparts for the top one acronym (e.g., COVID) is demonstrated using the absolute advantage coefficient (AAC). Similarly, Traditional line charts on top-eight acronyms provide us with messages, including (i) DNA and RNA are popular over three decades; (ii) CT, MRI, HIV, SARS, and CoV start in 1972, 1985, 1986, 2003, and 2003, respectively; (iii) the number of COVID substantially surpasses over other seven acronyms in 2020 though the seven acronyms are almost equal in quantity in 2020. We are interested in producing similar Table 1 and Fig. 1 with a video MP4 provided to readers who can click on the link to manipulate the scenarios on their own. We found that the AAC and the traditional line charts on a dashboard make data clear for a better understanding of demonstrating the ascendancy of COVID-19 research using acronyms. The line charts are easily examined on Google Maps.

Keywords Google maps · COVID-19 · Absolute advantage coefficient · Line chart · Acronym

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Table 1 Comparison of numbers of acronyms and AACs in two studies

Year	Acronyms in titles				
	Barnett and Doubleday(2021)			This study	
	Acronym	Number	AAC	Number	AAC
2019	DNA	10,873	0.51	11,860	0.52
	HIV	9,485		9,423	
	RNA	8,636		8,019	
	CT	4,686		5,590	
	MRI	4,619		5,687	
2020	COVID	57,074	0.82	64,692	0.84
	SARS	11,747		12,290	
	DNA	11,189		12,210	
	CoV	10,981		11,817	
	RNA	10,476		9,482	
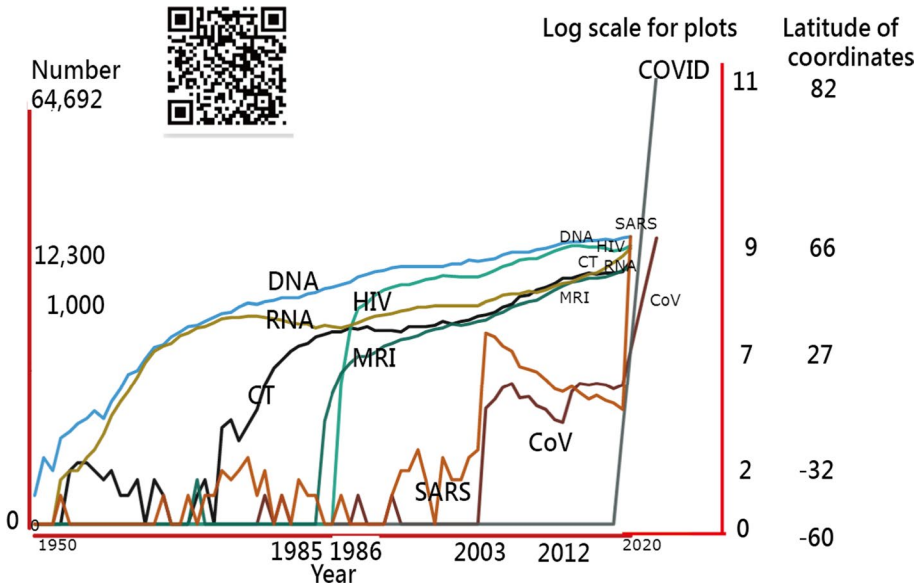
Fig. 1 The most popular scientific acronyms in health and medical journals over the years

We read with great interest the study by Barnett and Doubleday on demonstrating the ascendancy of COVID-19 research using acronyms (Barnett & Doubleday, 2021). However, two major concerns were raised, such as how to (1) measure the strength of quantity referred to the next counterparts and (2) produce the traditional line charts on a dashboard that provides more valuable information to readers.

The absolute advantage coefficient(AAC) (Chang et al., 2020; Chien, 2012; Lee et al., 2020, 2021; Wang et al., 2021; Yang et al., 2021) to report the strength of quantity when compared to the next two counterparts using Eq. (1) and (2):

$$\text{Ratio} = \frac{\frac{\gamma_1}{\gamma_2}}{\frac{\gamma_2}{\gamma_3}}, \tag{1}$$

$$\text{AAC} = \frac{\text{Ratio}}{(1 + \text{Ratio})}, \tag{2}$$

where Ratio is determined by the three consecutive numbers of acronyms(e.g., in 20,220; the top three have the most number of frequency in quantity, denoted by γ_1, γ_2, and γ_3 in Eq. (1)). The ACC ranged from 0 to 1.0 stands for the strength of quantity in 2020 when compared to the next two acronyms.

We extracted the top eight acronyms involved in the article title shown in Table 1(Barnett & Doubleday, 2021) and downloaded them from PubMed since 1950. In comparison to the original counts shown in the study (Barnett & Doubleday, 2021), almost equal counts across the eight acronyms were found in Table 1. The AACs were particularly calculated for the two studies. We can see that the AACs in 2020(> 0.80) are substantially greater than those in 2019($\cong 0.50$). The higher ACC for the top one acronym means stronger in quantity when compared to the next two.

Next, the line charts are shown in Fig. 1. More valuable information is provided to readers, including (i) DNA and RNA are popular over three decades; (ii) CT, MRI, HIV, SARS, and CoV start in 1972, 1985, 1986, 2003, and 2003, respectively; (iii) the number of COVID substantially surpasses over other seven acronyms in 2020 though the seven acronyms are almost equal in quantity in 2020.

We provided a video MP4 with a link at the reference (Chien, 2021a). Readers are invited to scan the QR-code or click on the link (Chien, 2021b) to manipulate the line charts by using the zoom-in and zoom-out functions on a dashboard laid on Google Maps that is unique and modern, and easier to understand the features of frequencies in acronyms than the static line charts shown in the studied (Barnett & Doubleday, 2020, 2021).

We produced the improved Table 1 and Fig. 1 when compared to the previous study (Barnett & Doubleday, 2021). The abstract video is present in (Chien, 2021a) for readers who are interested in replicating Table 1 and Fig. 1 on their own in the future.

References

Barnett, A., & Doubleday, Z. (2020). The growth of acronyms in the scientific literature. *eLife, 23*(9), e60080. https://doi.org/10.7554/eLife.60080 PMID: 32701448; PMCID: PMC7556863.

Barnett, A., Doubleday, Z. (2021). Demonstrating the ascendancy of COVID-19 research using acronyms. Scientometrics, 16, 1–4. https://doi.org/10.1007/s11192-021-04016-8. Epub ahead of print. PMID: 34024958; PMCID: PMC8124093.

Chang, C. S., Yeh, Y. T., Chien, T. W., Lin, J. C. J., Cheng, B. W., & Lai, F. J. (2020). Using the separation index to identify the most dominant role: A case of application on COVID-19 outbreak. *International Journal of Organizational Innovation, 12*, 10–20.

Chien, T. W. (2012). Cronbach's alpha with the dimension coefficient to jointly assess a scale's quality. *Rasch Meas Trans, 26*, 1379.

Chien, T. W. (2021a). Code, data, and results for this article. 2021/6/27 available at http://www.healthup.org.tw/article/course_mb2.asp?repno=9

Chien, T. W. (2021b). Figure 1 in this study. 2021/6/28 available at http://www.healthup.org.tw/gps/acronymskeys.htm

Lee, C. J., Chou, W., Chien, T. W., Yeh, Y. T., & Jen, T. H. (2020). Using the separation index for identifying the dominant role in an organization: A case of publications in organization innovation. *International Journal of Organizational Innovation, 12*, 135–145.

Lee, K. W., Chien, T. W., Yeh, Y. T., Chou, W., & Wang, H. Y. (2021). An online time-to-event dashboard comparing the effective control of COVID-19 among continents using the inflection point on an ogive curve: Observational study. *Medicine (baltimore), 100*(10), e24749. https://doi.org/10.1097/MD.0000000000024749 PMID: 33725830; PMCID: PMC7969250.

Wang, L. Y., Chien, T. W., & Chou, W. (2021). Using the IPcase index with inflection points and the corresponding case numbers to identify the impact hit by COVID-19 in China: An observation study. *International Journal of Environental Research and Public Health, 18*(4), 1994. https://doi.org/10.3390/ijerph18041994 PMID: 33670825; PMCID: PMC7923186.

Yang, D. H., Chien, T. W., Yeh, Y. T., Yang, T. Y., Chou, W., & Lin, J. K. (2021). Using the absolute advantage coefficient (AAC) to measure the strength of damage hit by COVID-19 in India on a growth-share matrix. *European Journal Medical Research, 26*, 61.