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Animal versus human research reporting guidelines impacts: literature analysis reveals citation count bias

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The present study evaluated for the first time citation-impacts of human research reporting guidelines in comparison to their animal version counterparts. Re-examined and extended also were previous findings indicating that a research reporting guideline would be cited more for its versions published in journals with higher Impact Factors, compared to its duplicate versions published in journals with lower Impact Factors. The two top-ranked reporting guidelines listed in the Equator Network website (http://www.equator-network.org/) were CONSORT 2010, for parallel-group randomized trials; and STROBE, for observational studies. These two guidelines had animal study versions, REFLECT and STROBE-Vet, respectively. Together with ARRIVE, these five guidelines were subsequently searched in the Web of Science Core Collection online database to record their journal metrics and citation data. Results found that association between citation rates and journal Impact Factors existed for CONSORT guideline set for human studies, but not for STROBE or their counterparts set for animal studies. If Impact Factor was expressed in terms of journal rank percentile, no association was found except for CONSORT. Guidelines for human studies were much more cited than animal research guidelines, with the CONSORT 2010 and STROBE guidelines being cited 27.1 and 241.0 times more frequently than their animal version counterparts, respectively. In conclusion, while the journal Impact Factor is of importance, other important publishing features also strongly affect scientific manuscript visibility, represented by citation rate. More effort should be invested to improve the visibility of animal research guidelines.

KEY WORDS: citation analysis / citation bias / reporting guidelines / animal study / human study / clinical research / duplicate papers

Bibliometric citation analysis is a powerful and versatile approach allowing the quantitative analysis of diverse aspects related to scientific publishing [Yeung *et al.* 2019ab, Yeung *et al.* 2020ac]. Previous research has revealed that a pair of identical papers tend to have a different fate in terms of citation it receives when published in journals with different Impact Factors (IFs), with the one published in a higher Impact Factor journal receiving on average twice the number of citations than its twin published in a lower journal [Larivière and Gingras 2010]. While duplicate original research papers may pose ethical concerns, it is not the intention of the current manuscript to investigate their prevalence. The focus of the current study is to re-examine this notion of IF-biased citations received by duplicate papers. Reporting guidelines, or consensus statements, serve as an excellent sample for this purpose, because they would be simultaneously (or within a short period) published in multiple journals for a better dissemination of information and reach of a broader target audience. Therefore, instead of evaluating pairs of duplicate papers, multiple copies of the same paper can be evaluated, which may better reveal the relationship between citation count and journal IF. Moreover, renowned reporting guidelines are usually published open access, meaning that paper availability should not be a confounding factor where some versions would be hidden behind the paywall and thus less reachable and cited. Such a positive relationship between citation count and journal IF was confirmed in the past, with four reporting guidelines for human studies [Perneger 2010]. It was again partially confirmed in 6 of the 9 reporting guidelines, with an additional finding that the citation count was positively correlated with the number of article accesses recorded at the journal websites [Shanahan 2016]. However, three questions remain unanswered: 1. Copies of the reporting guidelines were published in different journals. Did different target audiences cite them? 2. It is known that different research fields have different citation practices as well as averaged journal IF. IF percentile was found to improve the relative value of IF by having a more normal distribution and a smaller variation coefficient [Yu and Yu 2016]. Does the correlation between citation count and journal impact still exist if IF is normalized across fields as IF percentile? 3. Is there a difference in this relationship between reporting guidelines designed for human studies and their counterparts for animal studies? Along these lines, the current work was designed to answer these questions, with the primary aim of investigating whether citation counts followed IF and whether animal guidelines were cited as frequently as human guidelines.

Material and methods

The Equator Network website (http://www.equator-network.org/) was accessed to check the list of reporting guidelines for main study types. The two top-ranked reporting guidelines listed on the website were CONSORT 2010 (http://www.consort-statement.org/), for parallel group-randomized trials; and STROBE (https://www.strobe-statement.org/), for observational studies. These two guidelines also had animal study versions, REFLECT (https://www.reflect-statement.org/) and STROBE-Vet (https://strobevet-statement.org/), respectively. REFLECT and STROBE-Vet were also among the four highlighted reporting guidelines listed on the front page of Meridian (https://meridian.cvm.iastate.edu/), a website with a collection of reporting guidelines involving animals. To make this study more comprehensive, ARRIVE, a guideline for general animal experiments listed on the Meridian front page, was also evaluated. These five guidelines were subsequently searched in the Web of Science Core Collection online database (https://www.webofknowledge.com) to record their journal metrics and citation data, namely: 5-year IF in 2017, 2017 IF percentile (which normalizes the IF by its rank in the respective journal category; with the formula of (N–R+0.5)/N, where N is the number of journals in that category and R is the descending rank), total citation, journal category, citation rank of the same journal category, and citation count by the same journal category. The data for the journal category of a citation was extracted by examining the citing documents with the "Analyze" function of Web of Science and then checking the journal category data. To roughly estimate the ratio of human versus animal studies, Web of Science was queried with search terms.

To evaluate the relationship between citation count and journal impact in terms of IF and IF percentile, two-tailed Pearson and Spearman correlation tests were conducted using SPSS 25.0 (IBM, New York, USA). Because it was unclear if a linear or non-linear correlation existed, both Pearson and Spearman tests were conducted. Since two tests were conducted, tests were statistically significant if $p<0.025$.

Results and discussion

The bibliometric data of the duplicate versions of CONSORT 2010 [Schulz *et al.* 2010abcdefghi, 2011], STROBE [Von Elm *et al.* 2007abcdefg, 2008, 2014], REFLECT [O'Connor *et al.* 2010abcde], STROBE-Vet [Sargeant *et al.* 2016abcde] and ARRIVE [Kilkenny *et al.* 2010ab, 2012ab] are listed in Tables 1-5, respectively. In brief, the former two had 650.1±646.4 and 1012.8±651.1 (mean±SD) citations, respectively, whereas their animal version counterparts had 24.0±17.3 and 4.2±3.8 citations, respectively. The differences were 27.1 and 241.0 times respectively. ARRIVE had 185.6±164.1 (mean±SD) citations, and the differences with the human guidelines were 3.5 and 5.5 times respectively. Meanwhile to roughly evaluate the number of scientific works referring to human versus animal studies, Web of Science was queried with the search strings ("human studies" OR "human experiments" OR "human research" OR "clinical studies" OR "clinical experiments" OR "clinical research") and ("animal studies" OR "animal experiments" OR "animal models" OR "animal research"). These two search strings yielded 136,607 human studies and 157,157 animal studies, respectively. Therefore, the ratio of papers referring to human vs animal studies was roughly 0.87:1. It should noted that animals in research have been often used as models of human effects of especially in civilization ones to study potential therapeutic or preventive effects of natural products [Huminiecki *et al.* 2017, Pogorzelska *et al*. 2018, Huminiecki, Horbańczuk 2018, Mozos *et al*. 2018, Tewari *et al*. 2018, Wang *et al.* 2018, Yeung *et al*. 2018a]. Moreover, many animal studies also concerned research on the quality of products of animal origin [Cooper

Table 1. Citation data of 10 duplicate papers that published the CONSORT 2010 guideline

Journal	5-year Impact Factor in 2017	2017 Impact Factor percentile	Total citation	Publication year / citations per year	Journal category	Citation rank of the same journal category	Citations by the same journal category
International Journal of Surgery	2.728	72.75	280	2011 / 35	Surgery	2[a]	44
Journal of Clinical Epidemiology	5.185	88.674	513	2010 / 57	Health Care Sciences & Services; Public, Environmental & Occupational Health	2, 4[b]	54, 41
Journal of Pharmacology & Pharmacotherapeutics	0	0	163	2010 / 18	Pharmacology & Pharmacy	16[c]	5
Annals of Internal Medicine	18.726	95.806	1376	2010 / 153	Medicine, General & Internal	1	199
Obstetrics and Gynecology	5.609	93.293	122	2010 / 14	Obstetrics & Gynecology	1	40
BMC Medicine	9.41	93.226	1238	2010 / 138	Medicine, General & Internal	1	136
Trials	2.343	37.218	334	2010 / 37	Medicine, Research & Experimental	1	90
BMJ	20.467	97.097	1946	2010 / 216	Medicine, General & Internal	1	239
PLOS Medicine	14.799	93.871	528	2010 / 59	Medicine, General & Internal	1	94
Epidemiology Biostatistics and Public Health	0	0	1	2010 / 0	Public, Environmental & Occupational Health	1	1

[a] The top-ranked citing journal category was Dentistry, Oral Surgery and Medicine.
[b] The top-ranked citing journal category was Medicine, General & Internal.
[c] The top-ranked citing journal category was Psychiatry.

Table 2. Citation data of 9 duplicate papers that published the STROBE guideline

Journal	5-year Impact Factor in 2017	2017 Impact Factor percentile	Total citation	Publication year / citations per year	Journal category	Citation rank of the same journal category	Citations by the same journal category
International Journal of Surgery	2.728	72.75	570	2014 / 114	Surgery	1	110
Journal of Clinical Epidemiology	5.185	88.674	1607	2008 / 146	Health Care Sciences & Services; Public, Environmental & Occupational Health	3, 6[a]	130, 89
Bulletin of the World Health Organization	7.134	95.304	236	2007 / 20	Public, Environmental & Occupational Health	1	37
Epidemiology	6.375	97.771	299	2007 / 25	Public, Environmental & Occupational Health	1	42
BMJ	20.467	97.097	1036	2007 / 86	Medicine, General & Internal	1	144
Lancet	52.665	98.387	2273	2007 / 189	Medicine, General & Internal	1	159
Annals of Internal Medicine	18.726	95.806	1184	2007 / 99	Medicine, General & Internal	1	143
PLOS Medicine	14.799	93.871	726	2007 / 61	Medicine, General & Internal	1	104
Preventive Medicine	3.754	83.548	1184	2007 / 99	Public, Environmental & Occupational Health; Medicine, General & Internal	1, 2	143, 121

[a] The top-ranked citing journal category was Surgery.

Table 3. Citation data of 5 duplicate papers that published the REFLECT guideline

Journal	5-year Impact Factor in 2017	2017 Impact Factor percentile	Total citation	Publication year / citations per year	Journal category	Citation rank of the same journal category	Citations by the same journal category
Journal of Food Protection	1.882	41.729	9	2010 / 1	Biotechnology & Applied Microbiology; Food Science & Technology	2, 3[a]	3, 2
Journal of Swine Health and Production	1.281	50.357	8	2010 / 1	Veterinary Sciences	1	6
Journal of Veterinary Internal Medicine	2.315	91.071	33	2010 / 4	Veterinary Sciences	1	25
Preventive Veterinary Medicine	2.399	83.929	49	2010 / 5	Veterinary Sciences	1	28
Zoonoses and Public Health	2.473	95.357	21	2010 / 2	Public, Environmental & Occupational Health; Infectious Diseases; Veterinary Sciences	1, 2, 4	13, 4, 3

[a] The top-ranked citing journal category was Veterinary Sciences.

Table 4. Citation data of 5 duplicate papers that published the STROBE-Vet guideline

Journal	5-year Impact Factor in 2017	2017 Impact Factor percentile	Total citation	Publication year / citations per year	Journal category	Citation rank of the same journal category	Citations by the same journal category
Journal of Food Protection	1.882	41.729	2	2016 / 1	Biotechnology & Applied Microbiology; Food Science & Technology	NA[a]	0
Journal of Swine Health and Production	1.281	50.357	1	2016 / 0	Veterinary Sciences	1	1
Journal of Veterinary Internal Medicine	2.315	91.071	6	2016 / 2	Veterinary Sciences	1	5
Preventive Veterinary Medicine	2.399	83.929	10	2016 / 3	Veterinary Sciences	1	8
Zoonoses and Public Health	2.473	95.357	2	2016 / 1	Public, Environmental & Occupational Health; Infectious Diseases; Veterinary Sciences	1, NA, NA	2

[a] The top-ranked citing journal category was Veterinary Sciences.

and Horbańczuk 2004, Horbańczuk *et al*. 1998, 2007, 2019, Sales and Horbańczuk 1998, Strzałkowska *et al*. 2009ab, Horbańczuk and Wierzbicka 2016, Tewari *et al*. 2017, Zdanowska-Sąsiadek *et al*. 2018].

Most of the copies of the guidelines were indeed mostly cited by papers belonging to their journal category. However, there were some exceptions. For example, for the CONSORT 2010 copy published in the *International Journal of Surgery* [Schulz *et al*. 2011], a Surgery journal, the largest citing category was Dentistry, Oral Surgery

Table 5. Citation data of 4 duplicate papers that published the ARRIVE guideline

Journal	5-year Impact Factor in 2017	2017 Impact Factor percentile	Total citation	Publication year / citations per year	Journal category	Citation rank of the same journal category	Citations by the same journal category
Osteoarthritis and Cartilage	5.800	93.193	181	2012 / 26	Orthopedics; Rheumatology	3, 7[a]	18, 15
Veterinary Clinical Pathology	1.342	48.214	48	2012 / 7	Veterinary Sciences	2[b]	7
Journal of Pharmacology & Pharmacotherapeutics	0	0	317	2010 / 35	Pharmacology & Pharmacy	2[c]	59
PLOS Biology	9.527	95.543	2,380	2010 / 264	Biochemistry & Molecular Biology; Biology	5, 25[c]	150, 43

[a] The top-ranked citing journal category was Dentistry, Oral Surgery & Medicine.
[b] The top-ranked citing journal category was Multidisciplinary Sciences.
[c] The top-ranked citing journal category was Neurosciences.

Table 6. Relationships of total citation with 5-year Impact Factor in 2017 and 2017 Impact Factor percentile

Reporting guideline	Parameter	Pearson correlation coefficient	Spearman correlation coefficient
CONSORT 2010	5-year Impact Factor	0.869 ($p = 0.001$)*	0.845 ($p = 0.002$)*
	Impact Factor percentile	0.600 ($p = 0.067$)	0.772 ($p = 0.009$)*
STROBE	5-year Impact Factor	0.712 ($p = 0.031$)	0.310 ($p = 0.417$)
	Impact Factor percentile	0.151 ($p = 0.698$)	0.117 ($p = 0.764$)
REFLECT	5-year Impact Factor	0.717 ($p = 0.173$)	0.700 ($p = 0.188$)
	Impact Factor percentile	0.703 ($p = 0.185$)	0.500 ($p = 0.391$)
STROBE-Vet	5-year Impact Factor	0.587 ($p = 0.298$)	0.564 ($p = 0.322$)
	Impact Factor percentile	0.505 ($p = 0.385$)	0.308 ($p = 0.614$)
ARRIVE	5-year Impact Factor	0.805 ($p = 0.195$)	0.400 ($p = 0.600$)
	Impact Factor percentile	0.490 ($p = 0.510$)	0.400 ($p = 0.600$)

* $p<0.025$.

and Medicine. Another copy of it published in the *Journal of Pharmacology & Pharmacotherapeutics* [Schulz *et al.* 2010a], a Pharmacology & Pharmacy journal, but the largest citing category was Psychiatry. Regarding the relationship between citation count and journal impact, results revealed that citation count positively correlated to 5-year IF for CONSORT 2010, but not for STROBE, REFLECT, STROBE-Vet and ARRIVE (Tab. 6).

In general, the copies of the reporting guidelines were mainly cited by papers published in the same journal category. This finding implies that future versions of CONSORT guideline may consider publishing copies in journals with their own journal categories, such as dentistry and psychiatry.

For the animal study reporting guidelines, the citation counts were much lower than their counterpart versions for human studies. One could argue that STROBE was published in 2007, but its counterpart STROBE-Vet was published in 2016. However, both CONSORT 2010 and REFLECT were published in 2010. This may imply that REFLECT and STROBE-Vet should be further promoted so that papers reporting animal studies should cite and adhere to these guidelines. Of course, one potential reason for the low citations of REFLECT and STROBE-Vet could be that many of the studies chose to adhere to ARRIVE, for which the PLOS Biology version had over 2,000 citations. On the other hand, a survey of Editors-in-Chief (EICs) of veterinary journals reported that half of the respondents knew of reporting guidelines, but only 35% referred to reporting guidelines in their journal instructions to authors [Grindlay *et al.* 2014]. This was considerably lower than other fields such as dentistry, where 74% of surveyed EICs knew of reporting guidelines and 51% referred to reporting guidelines in their journal instructions to authors [Hua *et al.* 2016]. Perhaps the veterinary research community should further promote awareness and education on the adherence to reporting guidelines. In particular, the recurrent failure of translating promising treatment results from animal studies to human studies was partly attributed to the methodological flaws in animal studies [Van der Worp *et al.* 2010], implying that closer adherence to reporting guidelines might improve the study quality.

When IF percentile was considered, no correlation was elicited for the reporting guidelines except CONSORT. These findings could imply that human study and animal study reporting guidelines have received different extent of attention and citation, and that their citation profiles with regards to IF were also different. Moreover, when IF was normalized across different research fields into IF percentile, it could no longer correlate with citation count. It suggests that certain journal categories may have an inherent advantage of getting more citations. For example, it seemed that papers published in neuroscience journals tended to have more citations than papers in pharmacology journals, which were in turn cited more than those in food chemistry journals [Yeung 2018bcd]. In the current study, CONSORT and STROBE were mostly published in General & Internal Medicine journals, and these copies had many citations. Maybe this represents one of the reasons that the authors did not choose to publish in journals in other relevant disciplines, such as dentistry and psychiatry, or even psychology and neuroscience. Another reason could be that there exist discipline-specific guidelines for researchers to adhere. For instance, there are reporting guidelines for neuroimaging research [Poldrack *et al.* 2008, Müller *et al.* 2018], and therefore such papers may follow these guidelines instead.

In the current digital age, researchers can easily access articles in electronic format, regardless of journal title or category, as long as they have the right to access the digital files. Therefore, the relationship between IF and citation count may be weakening [Lozano *et al.* 2012]. On the other hand, researchers may tend to cite papers that are already highly cited, known as the Matthew effect [Larivière and Gingras 2010]. It remains to be seen which trend will be more prominent in the coming years. We believe that the Matthew effect will still dominate in the future, as literature databases such as Google Scholar often consider citation count as an important factor in determining the ranking of relevant papers resulted from a search [Rovira *et al.* 2019]. It means that higher cited papers tend to be listed higher up in the list and thus more easily to be recorded and cited by the users.

There are several limitations to the current study. For instance, the following potential influencing factors could not be evaluated in the current study: the size of readership of the journals, the perceived credibility of the journals, and the user-friendliness of the journal websites. Therefore, the current study, which may be considered as a partial conceptual replication of Shanahan [2016] published in *PeerJ*, could only elucidate the correlation between IF and citation count without suggesting a causal relationship between them. Moreover, the animal guidelines had fewer datapoints for testing the correlations, which might make it more difficult to find a significant association.

Conclusions

The current results have suggested that different target audience cited the guidelines published in different categories of journals. The correlation between citation count and IF was demonstrated by consensus guidelines for human studies but not for animal studies. The correlation existed for CONSORT only, if IF was replaced by IF percentile.

To conclude, our work demonstrates that human research guidelines are by far more frequently cited than animal research guidelines, and that the relationship between IF and citation count is not as simple as previously demonstrated.

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REFERENCES

1. GRINDLAY D.J., DEAN R.S., CHRISTOPHER M.M., BRENNAN M.L., 2014 - A survey of the awareness, knowledge, policies and views of veterinary journal Editors-in-Chief on reporting guidelines for publication of research. ***BMC Veterinary Research*** 10, 10.
2. HUA F., WALSH T., GLENNY A.-M., WORTHINGTON H., 2016 - Surveys on reporting guideline usage in dental journals. ***Journal of Dental Research*** 95, 1207-1213.
3. COOPER R.G., HORBAŃCZUK J.O., 2004 – Ostrich nutrition: a review from a Zimbabwean perspective. ***Revue Scientifique et Technique de L Office International Des Epizooites*** 23(3), 1033-1042.
4. HORBAŃCZUK J.O., KAWKA M., SACHARCZUK M, COOPER R.G., BORUSZEWSKA K., PARADA P., JASZCZAK K., 2007 – A search for sequence similarity between chicken (Gallus domesticus) and ostrich (Struthio camelus) microsatellite markers. ***Animal Science Papers and Reports*** 25, 283-288.
5. HORBAŃCZUK, O.K., MOCZKOWSKA, M., MARCHEWKA, J., ATANASOV, A.G., KUREK, M.A., 2019 - The composition of fatty acids in ostrich meat influenced by the type of packaging and refrigerated storage. ***Molecules*** 24, 4128. https://doi.org/10.3390/molecules24224128.

6. HORBAŃCZUK J.O., SALES J., CELEDA T., KONECKA A., ZIĘBA G., KAWKA P., 1998 – Cholesterol content and fatty acid composition of ostrich meat as influenced by subspecies. ***Meat Science*** 50, 3, 385-388.
7. HORBAŃCZUK O. K., WIERZBICKA A., 2016 - Technological and nutritional properties of ostrich, emu and rhea meat quality. ***Journal of Veterinary of Research*** 60, 279-286.
8. HUMINIECKI L., HORBAŃCZUK J., 2018 - The functional genomic studies of resveratrol in respect to its anti-cancer effects. ***Biotechnology Advances*** doi: 10.1016/J.Biotechadv.2018.02.011.
9. HUMINIECKI L., HORBAŃCZUK J., ATANASOV A.G., 2017 - The functional genomic studies of curcumin. ***Seminar Cancer In Biology*** doi.Org/10.1016/J.Semcancer.2017.04.002.
10. KILKENNY, C., BROWNE, W. J., CUTHILL, I. C., EMERSON, M., ALTMAN, D. G., 2010a - Improving bioscience research reporting: the ARRIVE guidelines for reporting animal research. PLoS Biology 8, e1000412.
11. KILKENNY, C., BROWNE, W. J., CUTHILL, I. C., EMERSON, M., ALTMAN, D. G., 2010b - Improving bioscience research reporting: the ARRIVE guidelines for reporting animal research. Journal of Pharmacology & Pharmacotherapeutics 1, 94-99.
12. KILKENNY, C., BROWNE, W. J., CUTHILL, I. C., EMERSON, M., ALTMAN, D. G., 2012a - Improving bioscience research reporting: the ARRIVE guidelines for reporting animal research. Veterinary Clinical Pathology 41, 27-31.
13. KILKENNY, C., BROWNE, W. J., CUTHILL, I. C., EMERSON, M., ALTMAN, D. G., 2012b - Improving bioscience research reporting: the ARRIVE guidelines for reporting animal research. Osteoarthritis and Cartilage 20, 256-260.
14. LARIVIÈRE V., GINGRAS Y., 2010 - The impact factor's Matthew Effect: A natural experiment in bibliometrics. ***Journal of the American Society for Information Science and Technology*** 61, 424-427.
15. LOZANO G.A., LARIVIÈRE V., GINGRAS Y., 2012 - The weakening relationship between the impact factor and papers' citations in the digital age. ***Journal of the American Society for Information Science and Technology*** 63, 2140-2145.
16. MOZOS I., STOIAN D., CARABA A., MALAINER C., HORBAŃCZUK J., ATANASOV A.G., 2018 - Lycopene And Vascular Health. ***Frontiers In Pharmacology***, 9, 521, doi: 10.3389/Fphar.2018.00521.
17. MÜLLER V.I., CIESLIK E.C., LAIRD A.R., FOX P.T., RADUA J., MATAIX-COLS D., TENCH C. R., YARKONI T., NICHOLS T.E., TURKELTAUB P.E., 2018 - Ten simple rules for neuroimaging meta-analysis. ***Neuroscience & Biobehavioral Reviews*** 84, 151-161.
18. O'CONNOR A.M., SARGEANT J.M., GARDNER I.A., DICKSON J.S., TORRENCE M.E., PARTICIPANTS C.M., 2010a - The REFLECT statement: methods and processes of creating reporting guidelines for randomized controlled trials for livestock and food safety. ***Preventive Veterinary Medicine*** 93, 11-18.
19. O'CONNOR A.M., SARGEANT J.M., GARDNER I.A., DICKSON J.S., TORRENCE M.E., PARTICIPANTS, C. M., 2010b - The REFLECT statement: methods and processes of creating reporting guidelines for randomized controlled trials for livestock and food safety. ***Journal of Veterinary Internal Medicine*** 24, 57-64.
20. O'CONNOR A.M., SARGEANT J.M., GARDNER I.A., DICKSON J.S., TORRENCE M.E., PARTICIPANTS C.M., 2010c - The REFLECT statement: methods and processes of creating reporting guidelines for randomized controlled trials for livestock and food safety. ***Journal of Food Protection*** 73, 132-139.
21. O'CONNOR A.M., SARGEANT J.M., GARDNER I.A., DICKSON J.S., TORRENCE M.E., PARTICIPANTS C.M., 2010d - The REFLECT statement: methods and processes of creating reporting guidelines for randomized controlled trials for livestock and food safety. ***Journal of Swine Health and Production*** 18, 18-26.

22. O'CONNOR A.M., SARGEANT J.M., GARDNER I.A., DICKSON J.S., TORRENCE M.E., PARTICIPANTS C.M., 2010e - The REFLECT statement: methods and processes of creating reporting guidelines for randomized controlled trials for livestock and food safety. ***Zoonoses and Public Health*** 57, 95-104.
23. PERNEGER T.V., 2010 - Citation analysis of identical consensus statements revealed journal-related bias. ***Journal of Clinical Epidemiology*** 63, 660-664.
24. POGORZELSKA-NOWICKA E., ATANASOV AG., HORBAŃCZUK J., WIERZBICKA A., 2018 - Bioactive compounds in functional meat products. ***Molecules*** 31, 23(2). Pii: E307. Doi: 10.3390/Molecules23020307.
25. POLDRACK R.A., FLETCHER P.C., HENSON R.N., WORSLEY K.J., BRETT M., NICHOLS T.E., 2008 - Guidelines for reporting an fMRI study. ***Neuroimage*** 40, 409-414.
26. ROVIRA C., CODINA L., GUERRERO-SOLÉ F., LOPEZOSA C., 2019 - Ranking by relevance and citation counts, a comparative study: Google Scholar, Microsoft Academic, WoS and Scopus. ***Future Internet*** 11, 202.
27. SALES J., HORBAŃCZUK J.O., 1998 – Ratite Meat. ***World's Poultry Science Journal*** 54, 1, 59-67.
28. SARGEANT J., O'CONNOR A.M., DOHOO I., ERB H., CEVALLOS M., EGGER M., ERSBØLL A.K., MARTIN S., NIELSEN L.R., PEARL D., 2016a - Methods and processes of developing the Strengthening the Reporting of Observational Studies in Epidemiology–Veterinary (STROBE-Vet) statement. ***Journal of Swine Health and Production*** 24, 315-325.
29. SARGEANT J., O'CONNOR A.M., DOHOO, I., ERB, H., CEVALLOS, M., EGGER, M., ERSBØLL A. K., MARTIN S., NIELSEN L.R., PEARL D., 2016b - Methods and processes of developing the Strengthening the Reporting of Observational Studies in Epidemiology-Veterinary (STROBE-Vet) statement. ***Zoonoses and Public Health*** 63, 651-661.
30. SARGEANT J., O'CONNOR A.M., DOHOO I., ERB H., CEVALLOS M., EGGER M., ERSBØLL A.K., MARTIN S., NIELSEN L.R., PEARL D., 2016c - Methods and processes of developing the Strengthening the Reporting of Observational Studies in Epidemiology–Veterinary (STROBE-Vet) statement. ***Preventive Veterinary Medicine*** 134, 188-196.
31. SARGEANT J., O'CONNOR A.M., DOHOO I., ERB H., CEVALLOS M., EGGER M., ERSBØLL A.K., MARTIN S., NIELSEN L.R., PEARL D., 2016d - Methods and processes of developing the Strengthening the Reporting of Observational Studies in Epidemiology-Veterinary (STROBE-Vet) statement. ***Journal of Veterinary Internal Medicine*** 30, 1887-1895.
32. SARGEANT J., O'CONNOR A.M., DOHOO I., ERB H., CEVALLOS M., EGGER M., ERSBØLL A.K., MARTIN S., NIELSEN L.R., PEARL D., 2016e - Methods and processes of developing the Strengthening the Reporting of Observational Studies in Epidemiology–Veterinary (STROBE-Vet) statement. ***Journal of Food Protection*** 79, 2211-2219.
33. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010a - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***Journal of Pharmacology and Pharmacotherapeutics*** 1, 100-107.
34. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010b - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***Journal of Clinical Epidemiology*** 63, 834-840.
35. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010c - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***PLoS Medicine*** 7, e1000251.
36. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010d - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***Trials*** 11, 32.
37. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010e - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***Epidemiology Biostatistics and Public Health*** 7, 325-332.

38. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010f - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***Obstetrics and Gynecology*** 115, 1063-1070.
39. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010g - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***BMJ*** 23, c332.
40. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010h - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***BMC Medicine*** 8, 18.
41. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2010i - CONSORT 2010 statement: updated guidelines for reporting parallel group randomized trials. ***Annals of Internal Medicine*** 152, 726-732.
42. SCHULZ K.F., ALTMAN D.G., MOHER D., CONSORT GROUP, 2011 - CONSORT 2010 statement: updated guidelines for reporting parallel group randomised trials. ***International journal of surgery*** 9, 672-677.
43. SHANAHAN D.R., 2016 - Auto-correlation of journal impact factor for consensus research reporting statements: a cohort study. ***PeerJ*** 4, e1887.
44. STRZAŁKOWSKA N., JOŹWIK A., BAGNICKA E., KRZYŻEWSKI J., HORBAŃCZUK J.O., 2009a – Studies upon genetic and environmental factors affecting the cholesterol content ion cow milk. I. Relationship between the polimorfic form of beta-lactoglobulin, somatic cell count, cow age and stage of lactation and cholesterol content of milk. ***Animal Science Papers and Reports*** 27, 2, 95-105.
45. STRZAŁKOWSKA N., JÓŹWIK A., BAGNICKA E., KRZYŻEWSKI J., HORBAŃCZUK K., PYZEL B., HORBAŃCZUK J.O., 2009b – Chemical composition, physical traits and fatty acid profile of goat milk as related to the stage of lactation. ***Animal Science Papers and Reports*** 27, 4, 263-272.
46. TEWARI D, MOCAN A, PARVANOV E.D., SAH,A,N., NABAVI,S.N. HUMINIECKI L, MA, Z,F, LEE Y,Y, HORBAŃCZUK J.O, ATANASOV A,G. 2017 - Ethnopharmacological approaches for therapy of jaundice: Part II. Highly used plant species from acanthaceae, euphorbiaceae, asteraceae, combretaceae, and fabaceae families. ***Frontiers in Pharmacology*** Doi: 10.3389/Fphar.2017.00519.
47. TEWARI D., STANKIEWICZ A., MOCAN A., SAH A., HUMINIECKI L., HORBAŃCZUK J.O., ATANASOV A.G., 2018 - Ethnopharmacological approaches for management of dementia and the therapeutic significance of natural products and herbal drugs. ***Frontiers in Aging Neuroscience*** Doi:10.3389/Fnagi.2018.00003.
48. WANG D., ÖZEN C., ABU-REIDAH I.M., CHGURUPATI S., PATRA J.K., HORBAŃCZUK J.O., JÓŹWIK A., TZVETKOV N.T., UHRIN P., ATANASOV A.G., 2018 - Vasculoprotective effects of pomegranate (Punica Granatum L.). ***Frontiers In Pharmacology*** 9,544, doi: 10.3389/Fphar.2018.00544.
49. VAN DER WORP H.B., HOWELLS D.W., SENA E.S., PORRITT M.J., REWELL S., O'COLLINS V., MACLEOD M.R., 2010 - Can animal models of disease reliably inform human studies? ***PLoS Medicine*** 7, e1000245.
50. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S. J., GØTZSCHE P.C., VANDENBROUCKE J. P., STROBE INITIATIVE, 2007a - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***PLoS Medicine*** 4, e296.
51. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S. J., GØTZSCHE, P.C., VANDENBROUCKE J.P., STROBE INITIATIVE, 2007b - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***Lancet*** 370, 1453-1457.

52. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S.J., GØTZSCHE P.C., VANDENBROUCKE J.P., STROBE INITIATIVE, 2007c - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***Preventive Medicine*** 45, 247-251.
53. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S.J., GØTZSCHE P.C., VANDENBROUCKE J.P., STROBE INITIATIVE, 2007d - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***Bulletin of the World Health Organization*** 85, 867-872.
54. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S.J., GØTZSCHE P.C., VANDENBROUCKE J.P., STROBE INITIATIVE, 2007e - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***Annals of Internal Medicine*** 147, 573-577.
55. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S.J., GØTZSCHE P.C., VANDENBROUCKE J. P., STROBE INITIATIVE, 2007f - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***Epidemiology*** 18, 800-804.
56. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S. J., GØTZSCHE, P.C., VANDENBROUCKE J. P., STROBE INITIATIVE, 2007g - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***BMJ*** 335, 806-808.
57. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S.J., GØTZSCHE P.C., VANDENBROUCKE J.P., STROBE INITIATIVE, 2008 - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***Journal of Clinical Epidemiology*** 61, 344-349.
58. VON ELM E., ALTMAN D.G., EGGER M., POCOCK S.J., GØTZSCHE P.C., VANDENBROUCKE J.P., STROBE INITIATIVE, 2014 - The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. ***International journal of surgery*** 12, 1495-1499.
59. YEUNG A.W.K., 2018a - The 100 most cited papers concerning the insular cortex of the brain: A bibliometric analysis. ***Frontiers in Human Neuroscience*** 12, 337.
60. YEUNG A.W.K., AGGARWAL B., BARREC D., BATTINO M., BELWAL T., HORBAŃCZUK O., BERINDAN-NEAGOE I., BISHAYEE A., DAGLIA M., DEVKOTA H., ECHEVERRÍA J., ELDEMERDASH A., ORHAN I., GODFREY K., GUPTA V., HORBAŃCZUK J., MODLIŃSKI J., HUBER L., HUMINIECKI L., JÓŹWIK A., MARCHEWKA J., MILLER M., MOCAN A., MOZOS I., NABAVI S., NABAVI S., PIECZYNSKA M., PITTALÀ V., RENGASAMY K., SILVA A., SHERIDAN H., STANKIEWICZ A., STRZAŁKOWSKA N., SUREDA A., TEWARI D., WEISSIG, V., ZENGIN G., ATANASOV A., 2018b - Dietary natural products and their potential to influence health and disease including animal model studies. ***Animal Science Papers and Reports*** 36, 345-358.
61. YEUNG A.W.K., AGGARWAL B.B., ORHAN I.E., HORBANCZUK O.K., BARRECA D., BATTINO M., BELWAL T., BISHAYEE A., DAGLIA,M., DEVKOTA H.P., EL-DEMERDASH A., BALACHEVA A., GEORGIEVA M., GODFREY K., GUPTA V.K., HORBAŃCZUK J.O., HUMINIECKI L., JÓŹWIK A., STRZAŁKOWSKA N., MOCAN A., MOZOS I., NABAVI S.M., PAJPANOVA T., PITTALA, V., FEDER-KUBIS J., SAMPINO S., SANCHES SILVA A., SHERIDAN H., SUREDA A., TEWARI D., WANG D., WEISSIG V., YANG Y., ZENGIN G., SHANKER K., MOOSAVI M.A., SHAH M.A., KOZUHAROVA E., AL-RIMAWI F., DURAZZO A., LUCARINI M., SOUTO E., SANTINI A., MALAINER C., DJILIANOV D., TANCHEVA L.P., LI H.B., GAN R., TZVETKOV N.T., ATANASOV A.G., 2019a - Resveratrol, a popular dietary supplement for human and animal health: Quantitative research literature analysis-a review. ***Animal Science Papers & Reports*** 37, 103-118.

62. YEUNG A.W.K., HEINRICH M., ATANASOV A.G., 2018c - Ethnopharmacology - a bibliometric analysis of a field of research meandering between medicine and food science? ***Frontiers in Pharmacology*** 9, 215.
63. YEUNG A.W.K., MOCAN A., ATANASOV A.G., 2018d - Let food be thy medicine and medicine be thy food: a bibliometric analysis of the most cited papers focusing on nutraceuticals and functional foods. ***Food Chemistry*** 269, 455-465.
64. YEUNG A.W.K., ORHAN I.E., AGGARWAL B.B., BATTINO M., BELWAL T., BISHAYEE A., DAGLIA M., DEVKOTA H. P., EL-DEMERDASH A., BALACHEVA A.A., GEORGIEVA M.G., GUPTA V.K., HORBAŃCZUK J.O., JÓŹWIK A., MOZOS I., NABAVI S. M., PITTALA V., FEDER-KUBIS J., SANCHES SILVA A., SHERIDAN H., SUREDA A., WANG D., WEISSIG V., YANG Y., ZENGIN G., SHANKER K., MOOSAVI M.A., SHAH M.A., AL-RIMAWI F., DURAZZO A., LUCARINI M., SOUTO E.B., SANTINI A., DJILIANOV D., DAS N., SKOTTI E.P., WIECZOREK A., LYSEK-GLADYSINSKA M., MICHALCZUK M., SIEROŃ D., HORBANCZUK O.K., TZVETKOV N.T., ATANASOV A.G., 2020a - Berberine, a popular dietary supplement for human and animal health: Quantitative research literature analysis - a review. ***Animal Science Papers and Reports*** 38, 5-19.
65. YEUNG A.W.K., SOUTO E.B., DURAZZO A., LUCARINI M., NOVELLINO E., TEWARI D., WANG D., ATANASOV A.G., SANTINI A., 2020b - Big impact of nanoparticles: analysis of the most cited nanopharmaceuticals and nanonutraceuticals research. ***Current Research in Biotechnology*** 2, 53-63.
66. YEUNG A.W.K., TZVETKOV N.T., GUPTA V.K., GUPTA S.C., ORIVE G., BONN G.K., FIEBICH B., BISHAYEE A., EFFERTH T., XIAO J., SANCHES SILVA A., RUSSO G.L., DAGLIA M., BATTINO M., ERDOGAN ORHAN I., NICOLETTI F., HEINRICH M., AGGARWAL B.B., DIEDERICH M., BANACH M., WECKWERTH W., BAUER R., PERRY G., BAYER E.A., HUBER L.A., WOLFENDER J.-L., VERPOORTE R., MACIAS F.A., WINK M., STADLER, M., GIBBONS S., CIFUENTES A., IBANEZ E., LIZARD G., MÜLLER R., RISTOW M., ATANASOV A.G., 2019b - Current research in biotechnology: Exploring the biotech forefront. ***Current Research in Biotechnology*** 1, 34-40.
67. YU L., YU H., 2016 - Does the average JIF percentile make a difference? ***Scientometrics*** 109, 1979-1987.
68. ZDANOWSKA-SĄSIADEK Ż., MARCHEWKA J., HORBAŃCZUK J.O., WIERZBICKA A., LIPIŃSKA P., JÓŹWIK A., ATANASOV A.G., HUMINIECKI Ł., SIEROŃ A., SIEROŃ K., STRZAŁKOWSKA N., STELMASIAK A., DE SMET S., VAN HECKE T., HOFFMAN L.C., 2018 – Nutrients composition in fit snacks made from ostrich, beef and chicken dried meat. ***Molecules*** 23, 1267; doi: 10.3390 /molecules23061267.