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Letter to the Editor

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# The existence of "bosom malignancy" — a "tortured phrase" in breast cancer literature

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Dear *Nowotwory. Journal of Oncology* Editors,

One of the corner-stones of the integrity of biomedical literature, including that related to cancer and oncology, lies in the precision of descriptors. This can be measured by the selection of appropriate technical terms or jargon, and then their accurate use and application, which would allow scientific output to be transmitted more precisely [1]. The impact (and thus integrity) of biomedical literature becomes compromised or reduced when inappropriate or inaccurate terms are used, also colloquially known as "tortured phrases", which may replace existing technical terms, either accidentally (i.e., due to a lack of knowledge) or intentionally (e.g., to masquerade plagiarism) [2, 3]. While users and readers of such literature might not notice or pay attention to such — sometimes subtle — deviations from established scientific terminology, the greater risk is that they might be propagated into downstream literature, through text reuse or citation. Peer reviewers and editors are thus tasked to scrutinize papers carefully before accepting and publishing them.

Among several issues plaguing the integrity of cancer research, one issue has not yet been widely debated, namely the erosion of scientific precision due to the presence of "tortured phrases", which distort the accuracy of established oncological terms and jargon. To gain a micro-appreciation of the extent of this phenomenon in oncological literature, or in literature of other fields of study (e.g., computer science, etc.) discuss cancer-related topics, a search was conducted for one "tortured phrase" — "bosom malignancy" (including other variants such as "bosom malignant", "bosom disease", etc.), which most likely represents breast cancer. Open access examples are listed in Table I. From an initial discovery of 115 samples, 34 were open access, and from those, 12 had to date (16 May 2024) been retracted. Two instances were in preprints, which have also shown to be vulnerable to being populated by "tortured phrases" [4].

While the issue of "tortured phrases" might appear to be minor or trivial when seen alongside larger issues impacting trust in cancer research, such as the lack of reproducibility [5], encompassing aspects like erroneous nucleotide sequences [6], this issue is nonetheless important and worthy of wider debate. Even though "tortured phrases" might exist in a text, undetectable by an untrained or uncritical eye, they may reveal additional issues with that manuscript that may further degrade its integrity, such as the undeclared use of paraphrasing software to avoid the detection of plagiarism [2], or the undeclared use of third party services, like language editing companies. For that reason, "tortured phrases" can serve as "epistemic markers" or useful (but crude) primers to evaluate or measure one aspect of the integrity of a paper, particularly its scientific linguistic integrity [7].

Effective detection methods are needed to identify synonymized text or "tortured phrases". The discovery that ChatGPT, a large language model, has the ability to reverse them [8] is worrisome because it would allow cheating authors to cover up their unethical behaviour with the assistance of AI.

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**Table I.** Open access papers related to cancer and oncology containing one "tortured phrase" ("bosom malignancy")[1]

| Paper DOI<br>Year of publication | *Journal*<br>Publisher | Country(ies)<br>of affiliation(s) |
|---|---|---|
| 10.21767/2254-6081.100032*,[2]<br>2015 | *Archives in Cancer Research*<br>Insight Medical Publishing (OMICS International) | Egypt, Saudi Arabia |
| 10.9790/0661-1903015970<br>2017 | *IOSR Journal of Computer Engineering*<br>IOSR Journals | India |
| 10.4172/2472-0429.1000126<br>2018 | *Advances in Cancer Prevention*<br>OMICS International | India |
| 10.1080/21691401.2018.1478420<br>2018 | *Artificial Cells, Nanomedicine, and Biotechnology*<br>Taylor & Francis | Malaysia, Pakistan |
| 10.22034/APJCP.2018.19.4.969<br>2018 | *Asian Pacific Journal of Cancer Prevention*<br>Asian Pacific Organization for Cancer Prevention | China |
| 10.4172/2167-0501.1000246<br>2018 | *Biochemistry & Pharmacology: Open Access*<br>Longdom (OMICS International) | Pakistan |
| 10.21608/bjas.2020.136251<br>2020[3] | *Benha Journal of Applied Sciences*<br>Egyptian Knowledge Bank | Egypt |
| 10.21608/bjas.2020.187219<br>2020[4] | *Benha Journal of Applied Sciences*<br>Egyptian Knowledge Bank | Egypt |
| 10.1186/s43094-020-00113-2<br>2020 | *Future Journal of Pharmaceutical Sciences*<br>BMC/Springer Nature | India |
| 10.18844/gjit.v10i1.4533<br>2020 | *Global Journal of Information Technology: Emerging Technologies*<br>Birlesik Dunya Yenilik Arastirma ve Yayincilik Merkezi | Australia |
| 10.35940/ijitee.h6160.069820<br>2020 | *International Journal of Innovative Technology and Exploring Engineering*<br>Blue Eyes Intelligence Engineering and Sciences Engineering and Sciences Publication | India |
| 10.1088/1757-899x/994/1/012036<br>2020* | *IOP Conference Series: Materials Science and Engineering*<br>IOP Science | India |
| 10.21608/jfds.2020.160391<br>2020 | *Journal of Food and Dairy Sciences*<br>Egyptian Knowledge Bank | Egypt |
| 10.1155/2020/8017496<br>2020 | *Journal of Healthcare Engineering*<br>Hindawi (Wiley) | Pakistan |
| 10.1016/j.micpro.2020.103137<br>2020* | *Microprocessors and Microsystems*<br>Elsevier | India |
| 10.1016/j.procs.2020.04.270<br>2020 | *Procedia Computer Science*<br>Elsevier | India |
| 10.2139/ssrn.3564459<br>2020 | *SSRN*#<br>Elsevier | India |
| 10.21608/bjas.2021.169132<br>2021[5] | *Benha Journal of Applied Sciences*<br>Egyptian Knowledge Bank | Egypt |
| 10.1051/e3sconf/202130901075<br>2021 | *E3S Web of Conferences*<br>EDP Sciences | India |
| 10.24018/clinicmed.2021.2.3.59<br>2021 | *European Journal of Clinical Medicine*<br>European Open Science Publishing | Bangladesh |
| 10.30699/fhi.v10i1.296<br>2021 | *Frontiers in Health Informatics*<br>Farname | Iran |
| 10.1088/1757-899x/1084/1/012023<br>2021* | *IOP Conference Series: Materials Science and Engineering*<br>IOP Science | India |
| 10.1088/1742-6596/1916/1/012092<br>2021* | *Journal of Physics: Conference Series*<br>IOP Science | India |
| 10.1088/1742-6596/1916/1/012101<br>2021* | *Journal of Physics: Conference Series*<br>IOP Science | India |
| 10.1016/j.micpro.2020.103537<br>2021* | *Microprocessors and Microsystems*<br>Elsevier | China |
| 10.17762/turcomat.v12i1s.1562<br>2021 | *Turkish Journal of Computer and Mathematics Education*<br>Ninety Nine Publication | Not indicated |
| 10.21203/rs.3.rs-1555234/v1<br>2022 | *Research Square*#<br>Springer Nature | India |

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**Table I cont.** Open access papers related to cancer and oncology containing one "tortured phrase" ("bosom malignancy")[1]

| Paper DOI<br>Year of publication | *Journal*<br>Publisher | Country(ies)<br>of affiliation(s) |
|---|---|---|
| 10.1177/15330338221132078<br>2022* | *Technology in Cancer Research & Treatment*<br>SAGE Publications Inc. | Pakistan |
| 10.7759/cureus.28875<br>2022*,[6] | *Cureus*<br>Springer Nature | India |
| 10.1186/s12906-022-03810-y<br>2022 | *BMC Complementary Medicine and Therapies*<br>BMC/Springer Nature | India |
| 10.1155/2022/4217529<br>2022* | *Journal of Nanomaterials*<br>Hindawi (Wiley) | Bangladesh, Pakistan |
| 10.1016/j.dajour.2023.100177<br>2023* | *Decision Analytics Journal*<br>Elsevier | India |
| 10.1155/2023/3875525<br>2023 | *Journal of Healthcare Engineering*<br>Hindawi (Wiley) | India, Kenya, Saudi Arabia |
| 10.1007/s12652-018-1066-y<br>2024* | *Journal of Ambient Intelligence and Humanized Computing*<br>Springer Nature | India, USA |

*Retracted; #Preprint; [1]Sourced and discovered with the Problematic Paper Screener (https://dbrech.irit.fr/pls/apex/f?p=9999:24:::NO:::) using the search term "bosom malignancy". Only open access journal articles were included to allow for open and public verification; [2]The article appears to have been silently retracted [9], but an archived version exists on the Internet Archive: https://web.archive.org/web/20180604062320/https://www.acanceresearch.com/cancer-research/roles-biomarkers-in-basic-and-clinical-research-for-breast-cancer.php?aid=7754; [3]At the time of analysis (16 May 2024), the article and journal websites were not accessible, but a copy is available on the Internet Archive: https://web.archive.org/web/20210118201919/https://bjas.journals.ekb.eg/article_136251.html; [4]At the time of analysis (16 May 2024), the article and journal websites were not accessible, but a copy is available on the Internet Archive: https://web.archive.org/web/20210812024850/https://bjas.journals.ekb.eg/article_187219.html; [5]At the time of analysis (16 May 2024), the article and journal websites were not accessible, but a copy is available on the Internet Archive: https://web.archive.org/web/20210527114817/https://bjas.journals.ekb.eg/article_169132.html; [6]Although the retraction notice alludes to the presence of tortured phrases, precisely which tortured phrases are not specified: https://www.cureus.com/articles/109423-causes-of-cancer-in-the-world-comparative-risk-assessment-of-nine-behavioral-and-environmental-risk-factors/retraction#!/; the paper remains unretracted at PubMed Commons (16 May 2024) (https://pubmed.ncbi.nlm.nih.gov/36225498/; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9540511/), even though retraction took place on 19 April 2024. This ineffective bibliometric mismanagement accentuates concerns about the curation management of that popular biomedical database [10]

## Article information and declarations

### *Author contributions*

Jaime A. Teixeira da Silva — conceptualization, data curation, formal analysis, investigation, methodology, supervision, validation, visualization, writing — original draft preparation, writing — review & editing.


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### *Conflict of interest*

The author declares no conflict of interest.

### *Supplementary material*

None.


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