

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in Table I. From an initial discovery of 115 samples, 34 were open access, and from those, 12 had to date (16 May 2024) been retracted.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 Year of publication	Journal Publisher	Country(ies) of affiliation(s)
10.21767/2254-6081.100032*.2 2015	<i>Archives in Cancer Research</i> Insight Medical Publishing (OMICS International)	Egypt, Saudi Arabia
10.9790/0661-1903015970 2017	<i>IOSR Journal of Computer Engineering</i> IOSR Journals	India
10.4172/2472-0429.1000126 2018	<i>Advances in Cancer Prevention</i> OMICS International	India
10.1080/21691401.2018.1478420 2018	<i>Artificial Cells, Nanomedicine, and Biotechnology</i> Taylor & Francis	Malaysia, Pakistan
10.22034/APJCP.2018.19.4.969 2018	<i>Asian Pacific Journal of Cancer Prevention</i> Asian Pacific Organization for Cancer Prevention	China
10.4172/2167-0501.1000246 2018	<i>Biochemistry & Pharmacology: Open Access</i> Longdom (OMICS International)	Pakistan
10.21608/bjas.2020.136251 2020 ³	<i>Benha Journal of Applied Sciences</i> Egyptian Knowledge Bank	Egypt
10.21608/bjas.2020.187219 2020 ⁴	<i>Benha Journal of Applied Sciences</i> Egyptian Knowledge Bank	Egypt
10.1186/s43094-020-00113-2 2020	<i>Future Journal of Pharmaceutical Sciences</i> BMC/Springer Nature	India
10.18844/gjit.v10i1.4533 2020	<i>Global Journal of Information Technology: Emerging Technologies</i> Birlesik Dunya Yenilik Arastirma ve Yayincilik Merkezi	Australia
10.35940/ijitee.h6160.069820 2020	<i>International Journal of Innovative Technology and Exploring Engineering</i> Blue Eyes Intelligence Engineering and Sciences Engineering and Sciences Publication	India
10.1088/1757-899x/994/1/012036 2020*	<i>IOP Conference Series: Materials Science and Engineering</i> IOP Science	India
10.21608/jfds.2020.160391 2020	<i>Journal of Food and Dairy Sciences</i> Egyptian Knowledge Bank	Egypt
10.1155/2020/8017496 2020	<i>Journal of Healthcare Engineering</i> Hindawi (Wiley)	Pakistan
10.1016/j.micpro.2020.103137 2020*	<i>Microprocessors and Microsystems</i> Elsevier	India
10.1016/j.procs.2020.04.270 2020	<i>Procedia Computer Science</i> Elsevier	India
10.2139/ssrn.3564459 2020	<i>SSRN</i> [#] Elsevier	India
10.21608/bjas.2021.169132 2021 ⁵	<i>Benha Journal of Applied Sciences</i> Egyptian Knowledge Bank	Egypt
10.1051/e3sconf/202130901075 2021	<i>E3S Web of Conferences</i> EDP Sciences	India
10.24018/clinimed.2021.2.3.59 2021	<i>European Journal of Clinical Medicine</i> European Open Science Publishing	Bangladesh
10.30699/fhi.v10i1.296 2021	<i>Frontiers in Health Informatics</i> Farname	Iran
10.1088/1757-899x/1084/1/012023 2021*	<i>IOP Conference Series: Materials Science and Engineering</i> IOP Science	India
10.1088/1742-6596/1916/1/012092 2021*	<i>Journal of Physics: Conference Series</i> IOP Science	India
10.1088/1742-6596/1916/1/012101 2021*	<i>Journal of Physics: Conference Series</i> IOP Science	India
10.1016/j.micpro.2020.103537 2021*	<i>Microprocessors and Microsystems</i> Elsevier	China
10.17762/turcomat.v12i1s.1562 2021	<i>Turkish Journal of Computer and Mathematics Education</i> Ninety Nine Publication	Not indicated
10.21203/rs.3.rs-1555234/v1 2022	<i>Research Square</i> [#] Springer Nature	India



Table 1 cont. Open access papers related to cancer and oncology containing one “tortured phrase” (“bosom malignancy”)¹

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

*Retracted; #Preprint; ¹Sourced 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; ²The 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.acancerresearch.com/cancer-research/roles-biomarkers-in-basic-and-clinical-research-for-breast-cancer.php?aid=7754>; ³At 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; ⁴At 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; ⁵At 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; ⁶Although 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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