“Woke” nomenclature in health research: a descriptive study of terms used in titles and abstracts of articles indexed in PubMed

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“Woke” is a colloquial term that refers to a raised consciousness or awareness of purported social injustices that are believed to be caused by unjust power dynamics in society. “Woke” ideas, which originated in the humanities, have been criticised by many commentators. “Woke” ideas now appear in health research, but their proliferation has not been formally documented. Here, the aim was to describe the proliferation of “Woke” ideas (or related ideas) in the health sciences by quantifying use of “Woke” nomenclature in biomedical research articles. A total of 156 “Woke” terms, representing concepts (e.g., equity, social justice) or names of relevant people (e.g., Foucault, George Floyd), were searched in titles and abstracts of articles indexed in PubMed. Use of “Woke” terms was common and has increased exponentially in the past 15 years. The most frequently used “Woke” terms were: disparit* (94,667 articles), equalit*/inequalit* (53,672), climate change (50,822), equit*/inequit* (47,705), underserv* (14,062), social determinant* (13,103), marginaliz* (11,457), global warming (10,990), transgender* (10,192), health equit*/inequit* (8,730), health equalit*/inequalit* (8,257), racial parity/disparit* (7,732), feminis* (5,349), social equalit*/inequalit* (5,102), cultural competenc* (4,902), gendered (4,869), built environment (4,813), social justice/injustice (3,933), gender equalit*/inequalit* (3,724), intersectional (3,082), underrepresentation (2,989), gender parity/disparit* (2,800), and gender bias (2,552). The results suggest increased uptake of “Woke” ideas in health research. Irrespective of intentions, the possibility that “Woke” ideas might harm patients through misallocating research funds or misinforming patients about health causes warrants discussion. At minimum, the results document the rise of “Woke medicine.”

Keywords: medicine; public health; social justice; society; woke culture

"Woke" is a colloquial term that refers to a raised consciousness or awareness of purported social injustices that are believed to be caused by unjust power dynamics in society (Lindsay, 2024). The "Woke" movement encourages political and academic activism to correct these purported injustices (i.e., "social justice"). This activism is intended to create public or administrative policies whose aim is to disrupt or "dismantle" the purported power dynamics to equalise opportunities and outcomes between groups (i.e., "equity"). Diversity, equity, and inclusion (DEI) committees are often the vehicles by which "Woke" policies are administered and monitored in educational, corporate, and not-for-profit settings.

"Woke" and closely related ideas have been criticised on various grounds (Barry et al., 2021; Ferguson, 2023; Madison and Soderlund, 2018; Nuzzo, 2018; Redding and Satel 2023; Soderlund and Madison, 2017), including lack of empiricism and scientific rigor and oversimplification of data interpretation of group differences. "Woke" ideas often stem from misinterpretations of selective group differences in outcomes as evidence of discrimination, injustice, or bias (i.e., social, environmental, or structural factors) with little consideration for biological or intrapersonal causes. To equalise such group differences, advocates of "Woke" ideas promote action on structural or procedural factors believed to underlie the differences, sometimes leading to policies that discriminate against individuals of other groups (i.e., "reverse discrimination").

"Critical studies," the philosophy from which "Woke" is based, was first taught in humanities departments. In recent years, uptake of "Woke" ideas in the health sciences has been noted anecdotally. If critiques of "Woke" ideas are valid, then adoption of Woke ideas in the health sciences is problematic. For one, "Woke" ideas might harm patients by misattributing causes of health outcomes and thus provide problematic health advice. For example, some medical and public health journals have published articles that suggest individuals are largely unable to control their own body weights, due to a belief that body weight is determined primarily by environmental factors (The Lancet Public Health, 2019), though most health practitioners believe this is untrue (Bleich et al., 2015). Also, research on "toxic masculinity" – a concept considered "Woke" (see methods) – has revealed that psychological therapists' views about masculinity impact how they treat male clients (Barry et al., 2021) and that men and women from the general population view the concept of toxic masculinity as insulting and probably harmful to boys and men and unlikely to help curb their behaviours (Barry et al., 2020). Second, an overemphasis on certain structural factors, based on critical theory, might cause misallocation of research funds to topics of less benefit to patients and might also discourage patients from taking actions to improve their own health. Thus, "Woke" ideas, and the policies they inform, might directly or indirectly harm patients. At minimum, the rise of "Woke" is a noteworthy social phenomenon, and the extent to which "Woke" ideas are communicated in health research should be understood.

Scientometric analysis is one way of establishing such an understanding. Text analysis of biomedical research articles for "Woke" nomenclature – of which there is an extensive vocabulary (Lindsay, 2024) – can indicate the extent to which "Woke" ideas have been adopted in health research. Academic journals are a major communication pathway for health and medical information between researchers, health practitioners, journalists, policymakers, and the public. Thus, if "Woke" ideas are influencing health research, this should be reflected in frequent use of "Woke" nomenclature in research articles. Therefore, the purpose of the current study was to examine the proliferation of "Woke" ideas in health research by quantifying use of "Woke" nomenclature in biomedical research articles. More specifically, the aim was to quantify how many times certain "Woke" words and phrases appeared in the titles or abstracts of articles indexed in PubMed.

METHODS

Search

To quantify use of "Woke" nomenclature in the titles and abstracts of biomedical research articles, "Woke" terms were searched in PubMed on September 4, 2023. A total of 156 "Woke" terms were searched. These terms were selected based on (a) the author's experience in researching topics such as equity and sex/gender differences, biases, and violence (Nuzzo, 2019; Nuzzo, 2020; Nuzzo, 2023; Nuzzo et al., 2023) and (b) the New Discourses website, which indexes concepts considered "Woke" (Lindsay, 2024). Give that the study was descriptive and explorative, the author reasoned that it was unnecessary to limit the number of "Woke" terms searched.

The "Woke" term and TIAB operator were entered into the PubMed search field to identify articles that included the "Woke" term in article titles [TI] or abstracts [AB]. The DP operator was used to limit the searched publication dates to January 1, 1900 to December 31, 2022. For some "Woke" terms, the asterisk (*) wildcard operator was added to the term's root to maximise search results. The wildcard operator enabled the search to identify both singular and plural versions of a root term (e.g., racial bias* identifies "racial bias" and "racial biases") and other versions of a root term (e.g., misogyn* identifies "misogyny," "misogynist," and "misogynistic"). For terms in which different spellings might be used to refer to the same "Woke" concept (e.g., marginaliz* and marginalis*), both spellings were included in a single search that also included the OR operator (e.g., marginalis* [TIAB] 1900/01/01:2022/12/31 [DP] OR marginaliz* [TIAB] 1900/01/01:2022/12/31 [DP]). Moreover, some "Woke" nomenclature involves use of prefixes that reflect inverses of a given concept. For example, "inequity" is the inverse of "equity," but both terms refer to the same general concept. In such scenarios, the inverse term was searched with the direct term using the OR operator. For example, the terms "equity" and "inequity" were included in the same search (e.g., gender equit* [TIAB] 1900/01/01:2022/12/31 [DP] OR gender inequit* [TIAB] 1900/01/01:2022/12/31 [DP]). The terms "justice" and "injustice" were also included in the same search (e.g., racial justice [TIAB] 1900/01/01:2022/12/31 [DP] OR racial injustice [TIAB] 1900/01/01:2022/12/31 [DP]). For the word "decolonise", a unique search strategy was adopted because this word is also used in research to refer to medical interventions that remove pathogens from the body. Thus, the NOT operator was used with certain medical terms (e.g., "bacteria," "infection") to exclude articles that included "decolonise" as a medical rather than "Woke" term. A spreadsheet with search strategies for all terms is available at the Open Science Framework (https://osf.io/fep69/).

Though some climate and environment terms (e.g., "climate change," "global warming") are not part of the New Discourses index (Lindsay, 2024), and though such concepts are sometimes used in a scientifically neutral way irrelevant to group health differences or purported injustices, it is also true that climate and environment issues are now part of the intersectional framework associated with "Woke" (e.g., "climate justice"). For example, the World Health Organization (2014) has generated reports about how climate change is "gendered" and impacts health. Thus, as the current research was descriptive and explorative, various climate and environment words were included in the search.

Finally, a selection of non-"Woke" biomedical terms – "bone," "brain," "cancer," "heart," and "muscle" – were also searched. These terms were selected arbitrarily by the author. They were thought to suffice in providing a broader perspective of how use of "Woke" nomenclature compares to that of common medical terms.

Data processing

PubMed generated a spreadsheet with results for each search. The spreadsheet was downloaded and submitted to further organization and analysis. In some instances, though the search end date was input as December 31, 2022, PubMed identified papers that it classified as published in 2023. These papers were excluded from the final analysis. Moreover, after all searches were performed, it was obvious that few articles published prior to 1960 included "Woke" nomenclature in their titles or abstracts. Thus, only data from 1960 to 2022 were tallied and graphed.

"Woke" terms can be categorised in different ways. Some terms reflect concepts like group differences (e.g., "disparity," "inequity," "inequality"), justice (e.g., "social justice," "health injustice," "environmental injustice"), race or ethnicity ("racial inequity," "multiculturalism," "indigenous knowledge," "Black Lives Matter"), gender (e.g., "transgender," "cisgender," "women's rights," "female genital mutilation," "manels," "misogyny"), sexuality or sexual orientation (e.g., "homophobia," "queer theory"), violence ("gender-based violence," "rape crisis," "safe space," "microaggression," "trigger warning"), power or privilege ("marginalised," "oppression," "dismantle," "White privilege," "male privilege"), discrimination, hate, bias, or stigma ("gender bias," "implicit bias," "hate speech"), fatness, obesity, or body weight (e.g., "fat stigma," "fat shaming," "body positivity"), climate or environment ("climate change," "climate crisis," "climate justice," "social determinant," "environmental determinant"), individuals associated with "Woke" ideas (e.g., "Paulo Freire," "Foucault," "George Floyd"), and other (e.g., "critical theory," "intersectional"). The author classified each "Woke" concept according to these categories. The intersectional nature of many "Woke" concepts meant that some concepts were placed into multiple categories. For example, the term "gender justice" was classified as a gender term and a justice term. Category-based analyses were not the primary focus of the current work.

Nevertheless, classifications for each term can be found in a spreadsheet available at the Open Science Framework, along with all other search results (https://osf.io/fep69/).

RESULTS

Between 1960 and 2022, the total number of articles that included "Woke" terms in their titles or abstracts was 432,196. Use of "Woke" terms increased exponentially over the last 15 years, with the largest accelerations in use occurring since 2020 (Figure 1). In 2022, the number of articles including "Woke" terms in their titles or abstracts peaked at 85,967 articles.

Use of specific "Woke" terms in paper titles or abstracts ranged from 2 ("systemic sexism") to 94,667 ("disparit*"). Of the 156 terms searched, nine terms appeared in the titles or abstracts of over 10,000 articles each (Figure 2). Time courses for each of these nine terms are presented in Figure 3. A total 16 "Woke" terms appeared in the titles or abstracts of 2,001 to 10,000 articles each (Figure 4), 39 "Woke" terms appeared in the titles or abstracts of 501 to 2,000 articles each (Figure 5), 40 "Woke" terms appeared in the titles or abstracts of 101 to 500 articles each (Figure 6), and 53 "Woke" terms appeared in the titles or abstracts of 0 to 100 articles each (Figure 7).

Of the "Woke" terms that refer to broad group differences, the most used were disparit* (94,667 articles), equalit*/inequalit* (53,672), and equit*/inequit* (50,822). Of the justice terms, the most used were social justice/injustice (3,933), environmental justice/injustice (1,186), and women's rights (801). Of the race or ethnicity terms, the most used were racial parity/disparit* (7,732), cultural competenc* (4,902), and racial discrimination (1,714). Of the gender terms, the most used were trangender* (10,192), feminis* (5,349), and gendered (4,869). The time course of use gender terms is presented in Figure 8. Of the sexuality or sexual orientation terms, the most used were homophobi* (1,864), LGBTQ (1,704), and non-binary (584). Of the power or privilege terms, the most used were marginaliz* (11,457), oppression (2,057), and underpriv* (1,525). Of the violence terms, the most used were gender/gender-based violence (1,862), female genital mutilation (1,486), and safe space (705). Of the discrimination, hate, bias, or stigma terms, the most used were gender bias* (2,552), homophobi* (1,864), and ageis* (1,801). Of the fatness, obesity, or body weight terms, the most used were weight stigma (594), weight bias (593), and body positiv* (378). Of the climate or environment terms, the most used were climate change (50,822), social determinant* (13,103), and global warming (10,990). Of the names of individuals associated with "Woke" ideas, the most used were Foucault/Foucauldian (1,347), Paulo Freire (166), and Derrida (101). Of the other miscellaneous terms, the most used were intersectional (3,082), neoliber* (1,818), and indigenous knowledge (779).

DISCUSSION

The purpose of the current study was to describe use of "Woke" nomenclature in health research. Titles and abstracts of articles indexed in PubMed were searched for 156 "Woke" terms. The results showed a marked exponential increase in use of "Woke" nomenclature over the past 15 years, with the largest accelerations in use occurring since 2020. The total number of articles with "Woke" terms in their titles or abstracts peaked in 2022 (the last year of the analysis) at 85,967 articles. "Woke" terms that described group differences – "disparity," "inequity," "inequality" – were the most frequently used terms.

Overall, the results suggest proliferation of "Woke" ideas in the medical and health sciences. Whether this is a net positive or negative for health research is a point of debate, and this debate is not resolved here. Social and environmental factors impact health, but there exist concerns about the validity of "Woke" and related concepts (Barry et al., 2021; Ferguson, 2023; Madison and Soderlund, 2018; Nuzzo, 2018; Redding and Satel 2023; Soderlund and Madison, 2017) and the ethics and effectiveness of "Woke" policies (Nuzzo, 2019). As mentioned in the Introduction, "Woke" ideas may misattribute or overemphasise certain causes of health outcomes and disempower patients from addressing their own health issues. "Woke medicine" represents a fundamental shift away from personalised medicine. Finally, "Woke" ideas have led to "reverse discrimination" policies (e.g., affirmative action), and they have resulted in medical doctors and researchers writing articles in medical journals apologising for their "White privilege" (Cohan, 2019) and declaring "whiteness" a problem (Hantke, 2022) – two pronouncements that are unlikely to help patients.

Figure 1. Annual number of articles indexed in PubMed that contained any “Woke” term, or that contained one of the non-“Woke” terms (cancer, brain, heart, bone, muscle) in their titles or abstracts. In 2022, the total number of articles containing “Woke” terms in their titles or abstracts (85,967) was greater than the number of articles containing the words “brain” (72,710), “heart” (51,202), “bone” (42,186), and “muscle” (36,554) in their titles or abstracts.

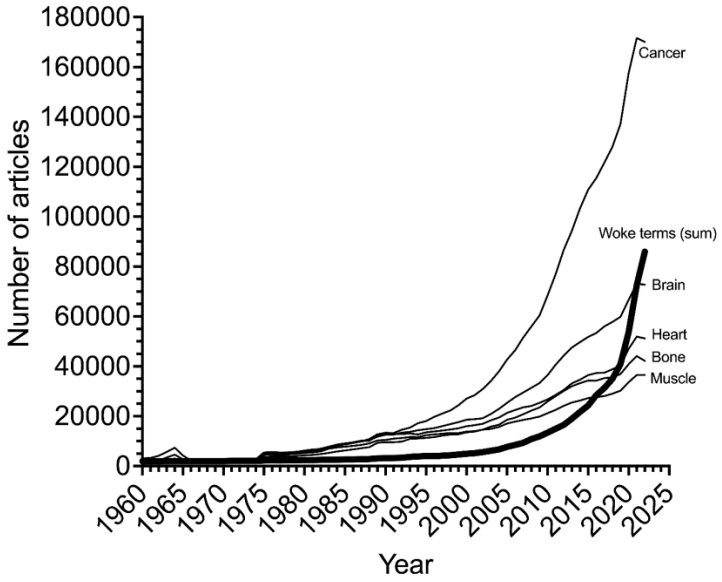


Figure 2. “Woke” terms that appeared in the titles or abstracts of 10,001 to 100,000 articles indexed in PubMed. Terms listed on the y-axis are, in some cases, shorthand descriptors for the actual terms searched. For example, the descriptor “in/equit” refers to the search for inequit* and equit*.

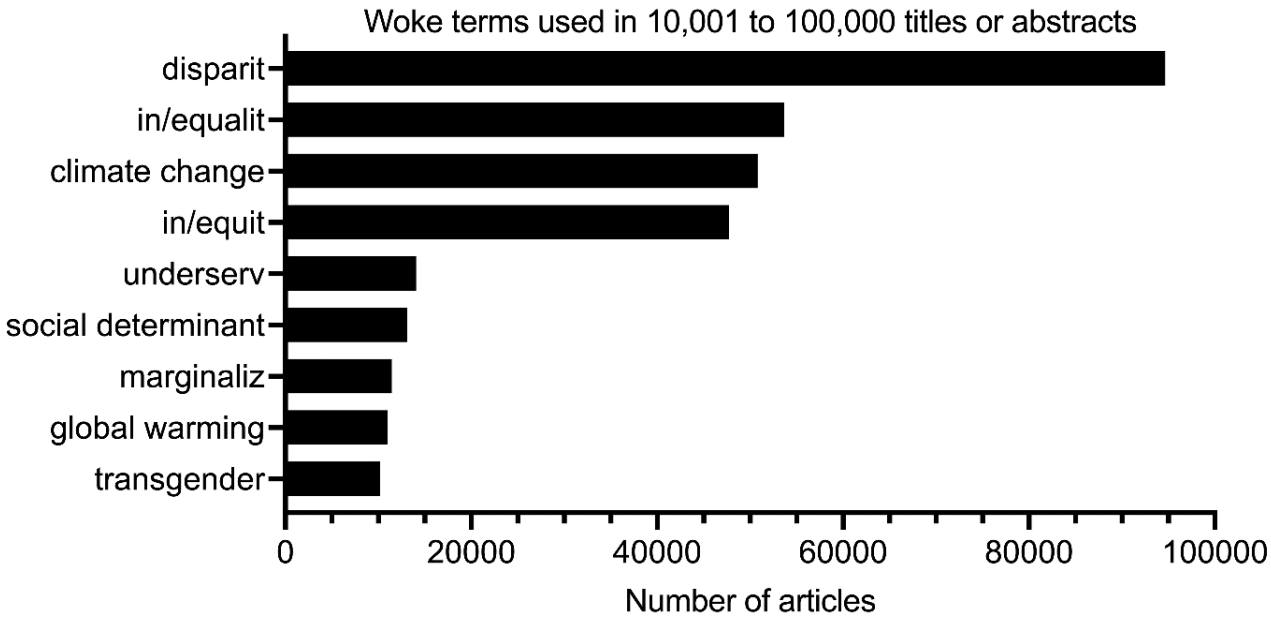


Figure 3. Annual numbers of articles indexed in PubMed that contained the most frequently used “Woke” terms in their titles or abstracts. Terms listed on the figure are sometimes shorthand descriptors for the actual terms searched

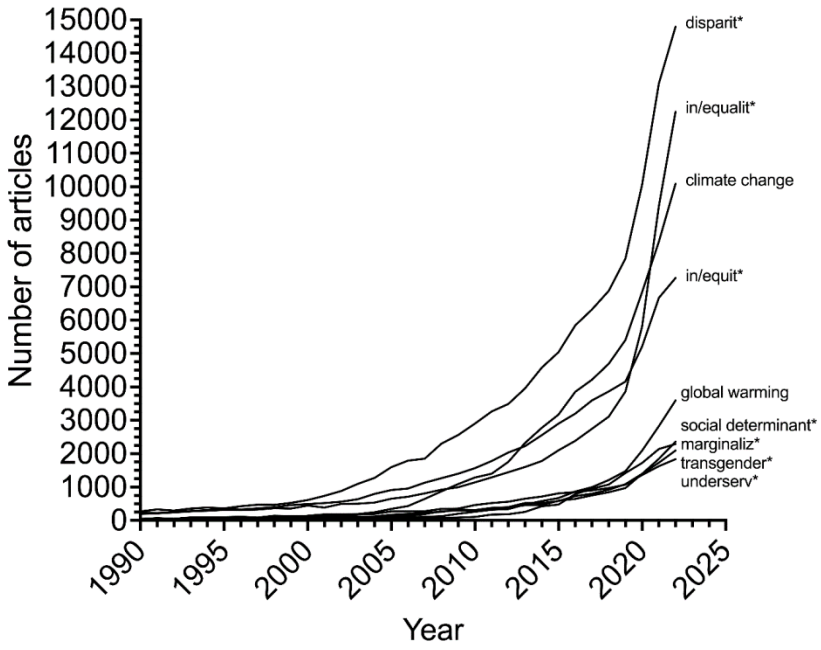


Figure 4. “Woke” terms that appeared in the titles or abstracts of 2,001 to 10,000 articles indexed in PubMed. Terms listed on the y-axis are, in some cases, sometimes shorthand descriptors for the actual terms searched. For example, the descriptor “health in/equalit” refers to the search for health equalit* and health inequalit*.

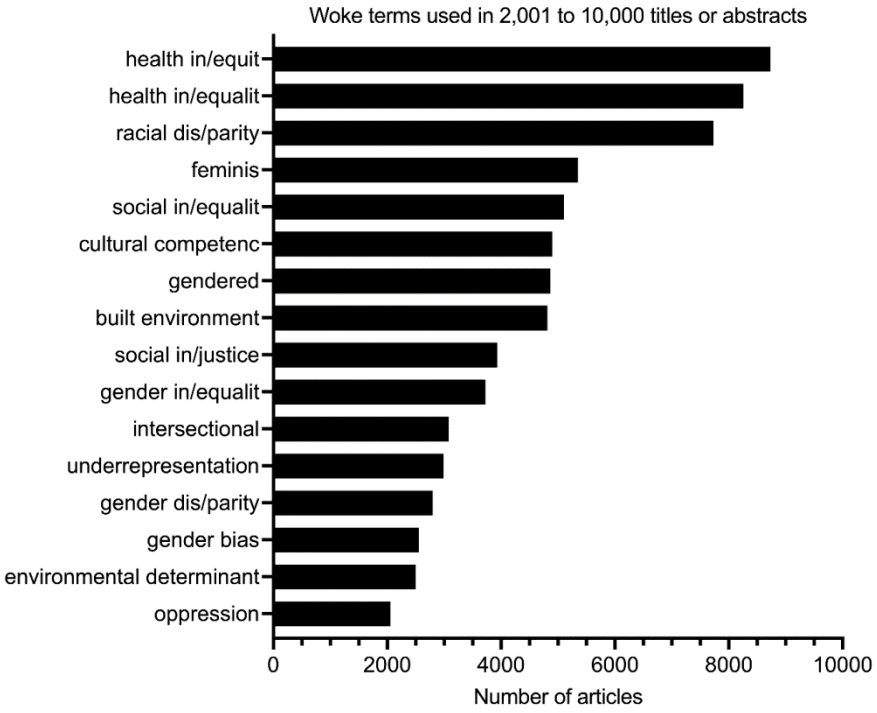


Figure 5. “Woke” terms that appeared in the titles or abstracts of 501 to 2,000 articles indexed in PubMed. Terms listed on the y-axis are, in some cases, sometimes shorthand descriptors for the actual terms searched. For example, the descriptor “environmental in/justice” refers to the search for environmental justice and environmental injustice.

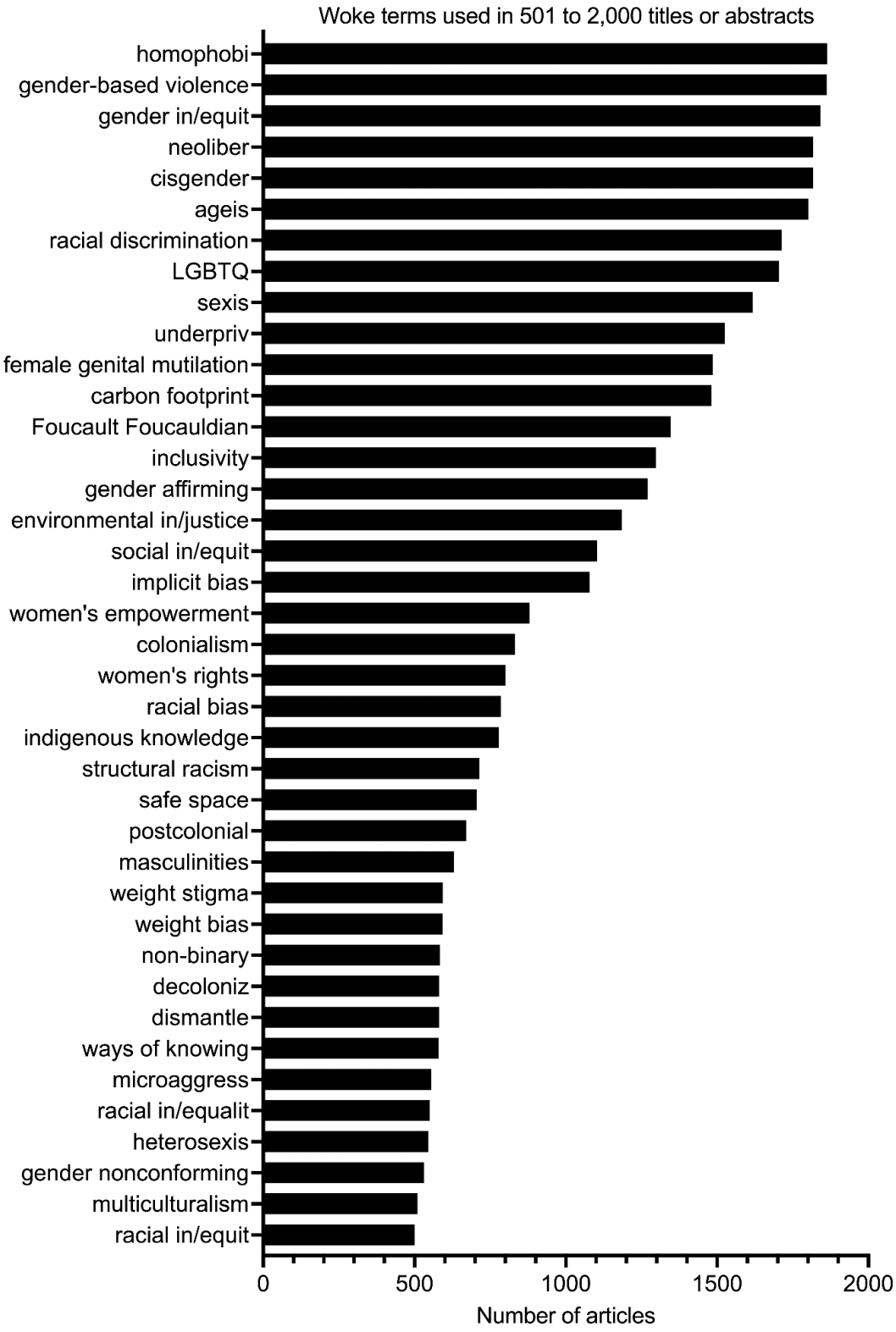


Figure 6. “Woke” terms that appeared in the titles or abstracts of 0 to 500 articles indexed in PubMed. Terms listed on the y-axis are, in some cases, sometimes shorthand descriptors for the actual terms searched. For example, the descriptor “reproductive in/justice” refers to the search for reproductive justice and reproductive injustice.

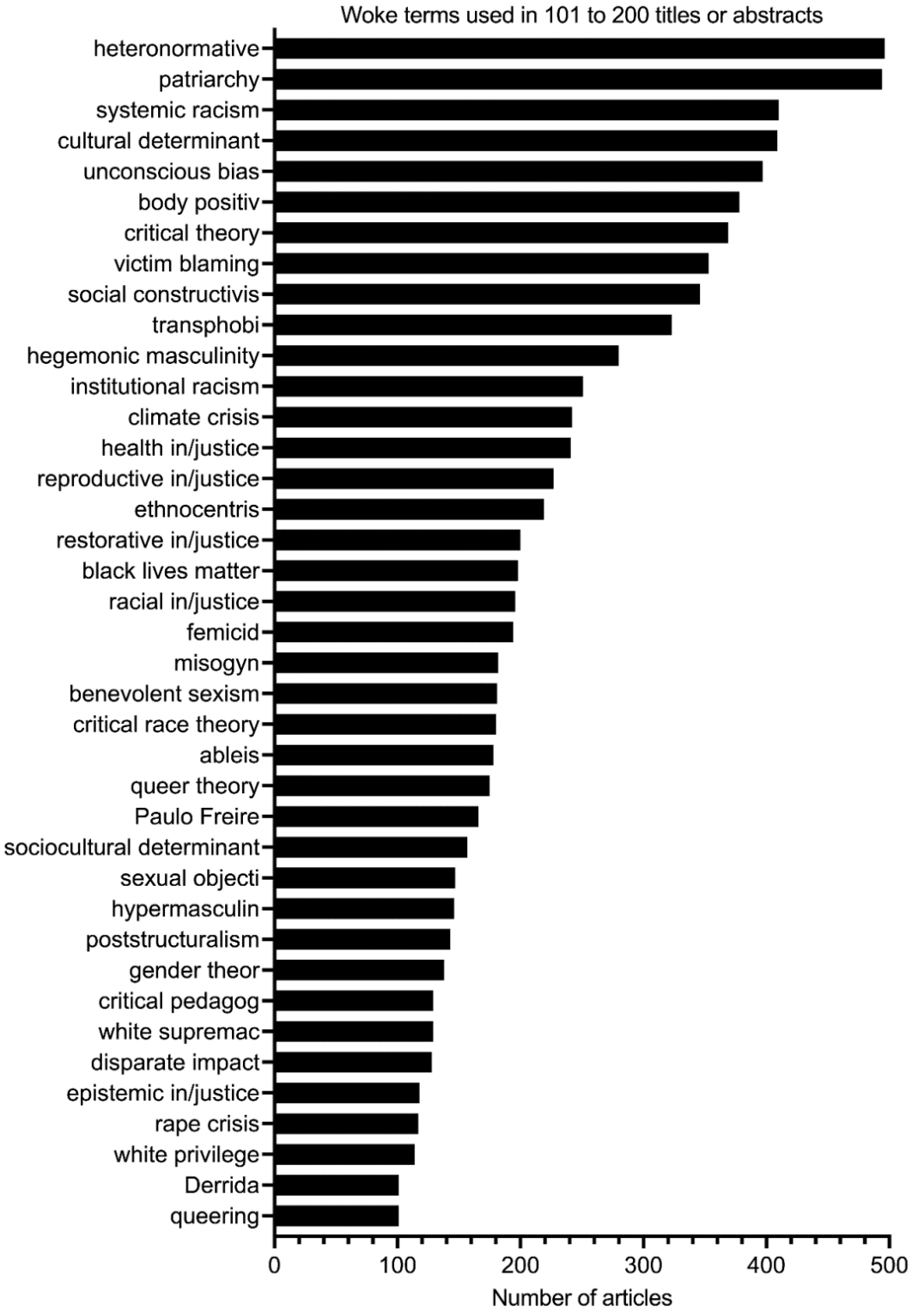


Figure 7. “Woke” terms that appeared in the titles or abstracts of 0 to 100 articles indexed in PubMed. Terms listed on the y-axis are, in some cases, sometimes shorthand descriptors for the actual terms searched. For example, the descriptor “gender in/justice” refers to the search for gender justice and gender injustice.

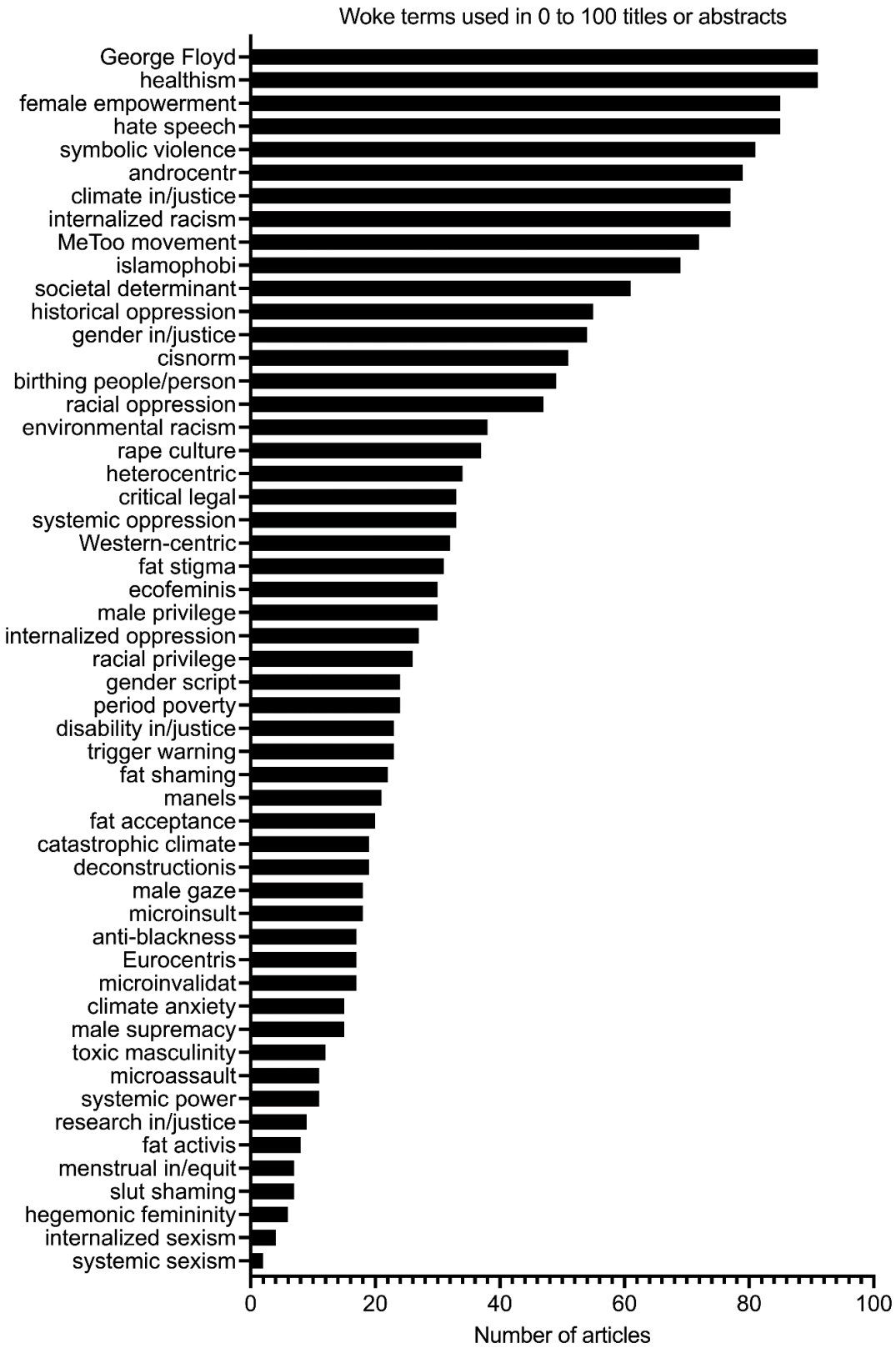
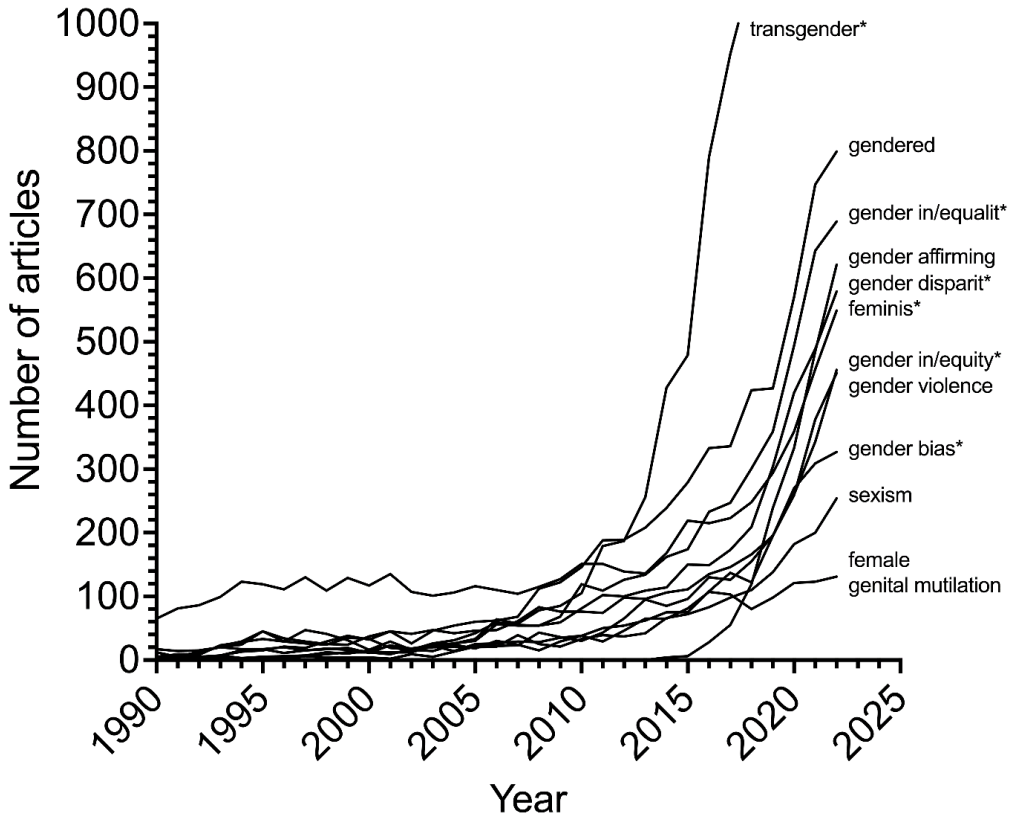


Figure 8. Annual numbers of articles indexed in PubMed that contained the most frequently used gender-based "Woke" terms in their titles or abstracts. Terms listed on the figure are sometimes shorthand descriptors for the actual terms searched. For transgender*, the results have been truncated to permit visual clarity of results for the other gender-based terms. The complete results for transgender* are displayed in Figure 7.



The current study has limitations that might have *underestimated* the proliferation of "Woke" ideas in health research. First, only the PubMed database was searched. Not all biomedical research articles are indexed in PubMed, and other relevant articles might be published in humanities journals that are not indexed in PubMed. Second, the searches explored only the titles and abstracts of articles. The search did not examine the full text of articles, where "Woke" concepts will also have been discussed. Third, though a substantial number of "Woke" terms were searched, other relevant terms might exist. Thus, articles including those terms might not have been discovered in the searches. Nevertheless, the search could have also *overestimated* the proliferation of "Woke" ideas in health research. For example, some articles will have been counted more than once due to the independent search strategies used for each term. Also, the context in which "Woke" terms were used was not examined. Some authors might have used "Woke" nomenclature in articles that were critical of "Woke" concepts, though a critique of an idea is still evidence of the proliferation of that idea.

CONCLUSION

"Woke" nomenclature is now regularly used in biomedical research articles. This use has accelerated exponentially over the past 15 years, and the current data suggest that reference to "Woke" ideas in the health sciences literature is likely to continue to increase. Discussion and debate about the validity of "Woke" concepts is necessary given the rapid adoption of these ideas in the health sciences and the political motives that often underlie them. To the extent that "Woke" philosophy (critical or social justice theory) is misguided, it could cause substantial misallocation of medical resources and cause harm to patients. At minimum, the current analysis has documented a significant trend in health research. It has highlighted the rise of "Woke medicine."

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