

Gender, subjects, developing countries, and other terms in research: the use of appropriate terminology in scientific writing

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Publications in scientific journals serve as a channel to promote research dissemination to practitioners, policymakers and the general public. While researchers publishing in peer-reviewed journals reap the benefits in the form of their career progression, conducting a research project comes with several responsibilities. Of particular interest, research involving human participants entails that the terminology used within the research paper is accurate and unbiased. However, there are instances when such expectations are not fulfilled. This editorial aims to discuss the use of different terms in research papers and attempts to provide a balanced view and suggestions for the future work particularly in context of Pakistan.

The first example is the inconsistent and interchangeable use of 'gender' while referring to sex. The binary configuration of chromosomes (male/female) makes it a dichotomous variable in nature. Although it may be argued that the dichotomy of sex is not a neat concept, particularly in instances of genetic variations in sex chromosomes (e.g., Klinefelter's syndrome (XXY), Turner's syndrome (X monosomy), XXX syndrome, or XYY syndrome), therefore, making sex somewhat a fluid term.^{1,2} However, these variations are rare and might not be relevant in most studies.¹ Evidence shows that every cell has sex chromosomes that have significant gonadal and non-gonadal effects on the organism's physiology.¹ Further, there is enough evidence suggesting the relationship of several pathophysiological conditions with sex and not gender.¹ Therefore, studies referring to 'sex differences' might incorrectly report it as 'gender differences'. In any case, the use of terms should reflect the intended aims of the research.

There is also a concern about use of the term 'human subject' while referring to 'research participants' or 'human participants'.³ Every human being deserves respect as a person, which suggests that a person

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recognised as a unique, autonomous, and free individual.⁴ From an ethical perspective, however, the use of the term 'subject' does not justify a person's dignity as a unique and free being. In addition, using the term 'subject for human participants asserts that human bodies are mere objects (commodities) for research, which undermines human dignity and personhood. Using the term participants instead of subjects is important as it signifies that these individuals participated voluntarily in research without any coercion or undue influence.⁵⁻⁷ This is particularly important in research involving students and institutionalised individuals (e.g., prisoners, employees, patients) or other vulnerable populations.⁸ Moreover, many researchers feel indebted and thankful to research participants (as stated in the acknowledgement section) for their participation and help move the science forward. Therefore, we encourage researchers to refer to humans as research participants and not subjects.

The term 'developing country' to refer to low- and middle-income countries (LMICs) also seems problematic. Before 2016, World Bank classified the countries into developing and developed countries or economies to refer to low- and middle-income and high-income countries. However, this dichotomous classification (developing vs developed) was abandoned because of the lack of specificity.⁹ Developing did not reflect whether the country was developing in education, health, construction, or economy. On the contrary, no country is likely to reach its full potential in all aspects to be labelled 'developed'. However, a quick Scopus search conducted on 09 October 2022, with the keywords "developing country/countries", "developing world", "developing economy/economies" through the titles of the papers, yielded 34,970 results (177,369 through title/abstract), with 9,448 (69,076 through title/abstract) papers published after 2016. Therefore, researchers are encouraged to use low- and middle-income countries (LMICs) or high-income countries (HICs) instead of developing or developed countries.

The term 'disabled' for 'differently abled individuals' (or persons with disabilities) is arguably exclusionary and puts the onus of the condition on the individual. The term disability was subtitled with alternative terminology in

the disablement models.¹⁰ However, the term has not been abandoned to date, with 99,458 results while searching (conducted on 09 October 2022) for the keywords “disabled” or “disability” in the titles of papers indexed in Scopus database. Language not only plays the role of a channel for communication but also shapes people’s behaviours and creates their identities (e.g., naming, for example, tells who the individual is).¹¹ The primary issue with calling individuals ‘disabled’, ‘crippled’ or similar connotations is that these terms reflect a sense of incompleteness (the prefix dis- itself means without/deprived of), lack, deprivation or incapacitation.¹¹ In addition, these terms have been arguably considered exclusionary, stigmatising, and anti-transformational.¹¹ We argue that the use of such terminology does not consider the respect of the person – as humans. No one is born perfect, and we have a specific set of qualities and virtues that makes us different from others. Therefore, it seems reasonable to name individuals with physical or mental anomalies as ‘differently abled’ (or persons with disabilities) as it relatively shirks the burden of deficit carried by the prefix dis-.

There may be several other terms (e.g., black for individuals from African or Afro-Caribbean/African Caribbean ethnic origin, client for patient) which may be considered problematic or inappropriate to use in scientific writing, and a potential author should be aware of the changing norms of scientific writing. However, discussing every term is beyond the scope of this editorial. Our main aim was to highlight potential issues with use of the terminology that an author (a researcher) may face. Authors based in Pakistan are not native English speakers and may not realise the value of appropriate use of terminology in scientific writing, although it can change with time. We intended to bring this issue to the light and be debated among the scientific community in Pakistan. Thus, the discussion on the terms in this editorial should not be considered as recommendations. We also

suggest that researchers, authors and physicians publishing in the *Journal of Pakistan Medical Association* should carefully consider the use of appropriate, inclusive and non-discriminatory terminology in their papers.

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