

Moving beyond gender identity: the need for contextualization in gender-sensitive medical research

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Gender is progressively recognized as a relevant social determinant of health in the field of biomedicine. In fact, a growing number of funding agencies and medical journals are requesting sex- and gender-sensitive analyses in applications and submissions.¹ However, these mandates frequently lack methodological clarity about how sex or gender should be analyzed in practice. As a consequence, the biomedical field still heavily focuses on the impact of sex on health and disease, and gender is oftentimes operationalized as a somewhat fuzzy construct. Regardless of calls for the standardization of sex- and gender-related terminology there is currently no methodological gold standard.²

The operationalization of gender should aim at addressing its different dimensions. Research currently distinguishes between - at least - gender identity (e.g. being a woman, a man, non-binary), gender expression (i.e. how do I present my body and identity to the world) gender roles and norms (i.e. societal constructs that lead to shared ideas about what constitutes e.g. masculinity and femininity) and gender relations (the impact of gender on e.g. power dynamics in relationships). These dimensions explain the inherent challenge of representing a sociocultural construct such as gender within the biomedical context, where research mostly relies on quantitative methodology.

In recent years, operationalization in biomedicine has primarily focused on the inclusion of gender identity alongside biological sex assigned at birth in large cohort studies (two-step method), although some combined instruments are being developed.^{3,4} The clinical utility of these novel approaches remains to be established. Even a multilayered approach, disentangling the contribution of different gender dimensions towards quality of life^{5,6} represent only a first step towards an appropriate operationalization of gender in biomedicine

and its translation into clinical action. Indeed, many of the currently available questionnaires in the field of health⁷ focus on abstract and culturally-primed variables related to gender, such as household task divisions, or traits related to ‘masculinities and femininities’. The results identified with these questionnaires fall short of direct clinical actionability and oftentimes highlight the trickle-down effect of societal inequities on health.

Gender is one element in a complex adaptive social system and its immutable quantification across time and place might be potentially impossible. In fact, social interactions and relationships are not fixed and gender-related variables constantly evolve; ‘what matters’ emerges in a particular real-world situation. Clinical research, however, is mostly based on cause and effect modeling.⁸ This positivistic and reductionist approach can hinder the identification of dynamic interactions and contextual gendered social practices that impact individual health. In complex systems, the question driving scientific inquiry should not be “*what is the effect size and is it statistically significant once other variables have been controlled for?*” but rather “*does this intervention contribute, along with other factors, to the desirable outcome?*”⁹ This requires a methodology that includes in-depth, mixed-methods case studies that can act as concrete, context-dependent examples. It includes ethnographic narratives that focus on interconnectedness of multiple factors that come together as a whole from different perspectives.¹⁰

To avoid the reduction of gender sensitive research in clinical settings to the sole disaggregation of data on the basis of gender identities, multimethod approaches in real-world social settings are needed. These approaches can enable the investigation of interrelationships between gender identities, contextual gender norms and roles and their impact on individual health, as well as their interaction with intersecting social factors such as age, sexual orientation, ethnicity and socio-economic status. Rather than using gender identity as proxy for an intricate social process, a complexity-informed approach to gender will allow to focus on *when*, *how* and *for whom* gender becomes a relevant social factor that influences health outcomes.

A complexity-led approach to gender in biomedicine should focus on how people are ‘doing gender’ and *when* and *how* this impacts individual care needs. It starts with

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close reading of patients' narratives to understand how gendered aspects arise in individual experiences of illness (case studies) and through narrative reviews. It involves a deconstruction of gender into observable variables that become meaningful in a particular context; from individual mores, community customs, to institutional mechanisms where aspects of gender become conjunctively relevant as a determinant of health. It is based on emergent causality where multiple aspects of gender interact for a particular health outcome but none can be argued to have a fixed 'effect size'. Incorporating complexity theory into the study of gender and health will not only contribute to a more nuanced understanding of the construct of gender, but can also help to overcome the reproduction of ingrained preconceptions and stereotypes that stand in the way of equitable and personalized care for all.

Contributors

IG and SOP drafted the comment together.

Declaration of interests

No potential conflicts of interest exist for all the authors.

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