Ethnicity in Anaesthesia research: Time to search our own backyards!

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Researchers often claim primacy in their study being first in their country's populace, pointing to ethnic importance. Race and ethnicity play an important role in disease risks, responses to environmental exposures, access to treatment and health outcomes. An excellent example of this is the Framingham heart study, which found that ethnicity significantly modifies the association between risk factors and cardiovascular events.[1] Similarly, the performance of obstetric comorbidity adjustment indices was tested across race and ethnicity groups in a recent study.[2]

ETHNICITY IN ANAESTHESIA RESEARCH

Ethnic disparities can occur in drug responses and adverse effects, anaesthesia modalities and perioperative care, for example– an association of ethnicity with the minimum alveolar concentration of sevoflurane.[3] Recovery from anaesthesia with propofol and fentanyl is slower in Kenyans.[4] Afro-American women have the highest odds of undergoing general anaesthesia for caeserean delivery.[5] Ethnic minorities are less likely to be enroled successfully in peri-operative trials.[6]

During the coronavirus disease 2019(COVID-19) pandemic, ethnicity gained a lot of importance in related research. Indian ethnicity in COVID-19 research is reflected in the several studies published from India.[7-9]

ETHNICITY IN RESEARCH PUBLICATIONS: JUSTIFIED/UNJUSTIFIED?

Available medical literature, journals, editors, researchers and so-called "experts" are mostly Caucasian. Most of the current major treatment protocols, rules and guidelines, risk indices and clinical research have been created by as well as are predominantly geared to the White population in "Western" developed countries. Even in these countries, there is an enormous disparity in the amount of representation of racial and ethnic minorities in the research studies. And with half of the world population currently being Asian, treating this population with protocols directed at the Caucasian living in the Western milieu might be counter-productive, and *"what works for James from the United States might actually behave differently in Prasad from India or Chang from China!".* Ethnic research priorities should be identified country-wise and randomised controlled trials (RCTs) designed and based on local research gaps to formulate local clinical practice guidelines.

Furthermore, biomedical researchers applying ethnicity should be clear in their ideas, hypotheses and interpretation of results.[10] They need to understand in depth the concept of ethnicity and its application in research. If in a study, differences are found between diverse populations, the reasons need to be explored. Genetic variations, variation

in environmental exposure and differences in diet and health-related practices could be the reasons contributing to these differences in the observations and conclusion.[11] Nevertheless, all this has to be discussed by the authors in relation to their study findings wherever such studies are conducted. Just mentioning the ethnicity of the research participants without discussing the implications of this ethnicity on the research outcomes may evoke a bias and does not give any effective message.

Researchers usually enrol participants from their local population because this is the most convenient for them. In such situations, adding only the name of the population, for example, 'Indian' adds just flavour to the curry without adding to the real contents! The application of 'ethnicity' in this manner appears as a futile attempt by the authors to project another 'me-too' mundane study as a novel concept with an aim to getting it successfully published. Such research tactics to raise the acceptance of a study should be condemned. Whenever 'ethnicity' is applied in research, it should be a truly deserving, justifiable scenario. Routine collection of ethnicity should be a part of screening log data, and ethnic bias should be included in the limitations.[6]

Very few studies report the participants' ethnicity in the demographic details. A review of 224 perioperative trials found that only 2.2% had data on the race or ethnicity of the participants.[12] Of 732 RCTs reviewed from the highest ranking Anaesthesiology journals from 2014 to 2017, few reported results for ethnicity and race. The authors concluded that ethnicity should be considered when designing and reporting research studies.[13]

NEED FOR ETHNICITY IN RESEARCH IN INDIA

Dandona L *et al.* found that the health research output from India is grossly inadequate.[14] For many diseases affecting Indians, there is little useful data. Even the COVID-19 papers from India figured low in ranking.[15,16]

A considerably important proportion of global health problems are represented by our nation which represents a sixth of the world's population. Many of these issues are common elsewhere, but affect a much larger proportion of the Indian population, and therefore significant results for these can come only from studies in the Indian population. As in other medical specialities, there is an urgent need for

prioritisation of Anaesthesia research in the Indian population. We need a proportional inclusion of study results and protocols for Indians in high-ranked Anaesthesia journals. Newer anaesthetic agents, which we in India start using following the United States Food and Drug Administration approval and the Drugs Controller General of India procedures have not been tested in Indians on large multicentre trial bases. Thus, whether these have the same effects and adverse reactions on our populace is not known. An example is the recent advent of sugammadex to reverse neuromuscular blocking agents in India – systemic side effects like it making oral contraceptives ineffective from enzyme induction might have higher consequences in India, where oral contraceptive pills are the family planning method used by a significant percentage of those at pregnancy risk.[17] The advent and deployment of such agents in India thus requires directed testing, clinical trials as well as practitioner and patient education. All this can help improve clinical and patient safety. Another approach that is currently receiving special attention in this modern era to improve patient safety and quality of care is risk assessment. Risk stratification helps in identifying high-risk cases and thus facilitates optimal allocation of resources.[18] Risk assessment is slowly gaining momentum in the Indian subcontinent. However, risk assessment models based on data from Caucasians systematically underestimate the risk in Indians.[19,20] Very few are based on Indian data, or validated in Indians.[21] Indians are known to represent a unique population with heterogenicity in the ethnicity. There are several conditions, which affect Indians in a different manner than other races. Examples are heart diseases of the young, sickle cell anaemia and various infectious diseases with chronic sequelae that affect how the patients respond to anaesthesia, or multiply the complications of anaesthesia and surgery. There may be differences in the aetiology, epidemiology of the diseases, demographics, treatment modalities, techniques and practice of medicine as compared to the countries from which the models are derived. Since these risk algorithms are based on epidemiological data, they are applicable only to those populations from which the data has been derived. There is very little hard data available on anaesthetic risk stratification or management of the anaesthetic procedure for Indians with these conditions. There is thus a need to have a separate risk assessment approach in Indian patients. The predictive models and their relevance to the patient

population in question need to be validated. There is also the problem of heterogeneity of the Indian population, and the risk scores may need further validation in different parts across the country. Without proper model validation, the confidence that the model will generalise well can never be high.

Genetic make-up and early onset of conventional cardiovascular risks might contribute to the higher risk of cardiovascular diseases in Indians. EuroSCORE II was published in 2011, by collecting data from 22,381 patients across 154 units in 43 countries.[22] Of these, only four were from India. It is thus clear that Indians are under-represented. Indian studies that attempted validation of EuroSCORE II were from the urban population and included a high proportion of patients undergoing coronary artery bypass graft surgery. The general Indian population and the patients undergoing valve surgery may not be represented by these studies.[20] Validation also needs to be carried out in Indian patients from lower socio-economic strata.[19]

Nonetheless, researchers from our nation too are realising the importance of the development and validation of various scoring tools and risk indices in the Indian population.[23] The Hindi version of the United Kingdom developed obstetric quality of recovery scoring tool (ObsQoR-11) was recently validated in a hospital in North India and it was found to be a promising tool to evaluate the quality of recovery after elective caesarean delivery.[24] A study in this issue of the Indian Journal of Anaesthesia, is based on the preoperative shuttle-walk test to assess preoperative physical status and predict the risk of morbidity and mortality in patients posted for colorectal surgery. The authors state that this study is the first of its kind on Indians.[25] Thoracoscore, a preoperative risk score, was developed in 2007 in France.[26] Its performance varied in different validation studies.[26,27] In another study in this issue, the authors applied the 'Thoracoscore' in the Indian population to predict post-thoracotomy mortality.[28] Such studies are highly required for risk assessment in the Indian cohort.

HOW CAN WE ADDRESS THE ETHNIC INEQUALITY IN CLINICAL RESEARCH?

We need to build the clinical research infrastructure, identify and train motivated research personnel and decentralise funding for large multicentre trials, to represent health needs and interests of Indians.[29] The article on the 'Thoracoscore' is a timely reminder that we need peri-operative research by Indians, for Indians, which can culminate in good quality, indexed and peer-reviewed publications. This would ultimately improve the quality of peri-operative care in the Indian population.

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There are no conflicts of interest.

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