



## The interpretation bias and trap of multicenter clinical research

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As doctors and researchers aim to optimize treatment for patients, they often use data collected through various research methods. One of these research methods is multicenter clinical research, in which research is conducted in multiple, independent centers following the same procedure. Multi-center research has its own advantages. It can offer a larger sample size, the ability to share resources across centers, and an opportunity for networking [1]. Multi-center research, compared to single-center studies, allows for enhancement of reproducibility, generalizability, as well as availability of clinical translation of clinical work [2].

The results of multi-center studies are very important in medical fields, not only in setting guidelines for prescribing drugs and practicing invasive interventional procedures, but also to evaluate the effectiveness of drugs and interventional tools. Therefore, although they are very hard to perform, multi-center studies are often necessary for data collection. None-the-less, the viability of multi-center research should be questioned. Although research shows that multi-center studies allow for better control of study quality than single-center studies [2], there is still a flaw in multi-center research.

Multi-center research may be effective when conducted on drugs, as many factors can be controlled, such as dos-

age, timing, and method of application. However, when it comes to usage and testing of invasive interventional techniques, data may be unreliable, as there are many varying components. Physicians are taught differently, they execute differently, and they choose patients differently even though they are trained under the same educational protocol. For example, radiofrequency technique is a useful medical practice for low back pain. However, there are lots of studies that show different results from the radiofrequency procedure. One of the single center studies showed a positive result after performing radiofrequency on low back pain [3], but a multicenter study had a negative result [4].

When various centers practice the same invasive intervention, they may result in different outcomes. With multi-center research, there must be one conclusion, so, depending on how this conclusion is devised, it may falsely conclude the nature of the invasive intervention. If vague and incorrect results from multi-center studies are used to set guidelines for practicing a technique and establishing an insurance clause, it could distort the truth of the medical technique, preventing direction of the procedure to patients who need it and interrupting the development of medical technology. In particular, novel techniques that need high levels of skill cannot be evaluated appropriately,

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which hinders evolving to the next step. Generally, there may be different results according to each center's technique level and inclusion indication criteria, but this may be prevented through a careful selection of controlled categories. For example, a wise selection of patients from the same study could result in a different outcome [5]. When the varying results from each institution are evaluated in detail, multicenter studies may show new outcomes.

In conclusion, when interpreting results from multicenter clinical research, bias and traps among the result should be detected according to who performs it, which inclusion indication criteria is involved, what the target is, and how it is carried out.

## CONFLICT OF INTEREST

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