

Avoiding bias in medical research

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Most people are rather vague when reporting on food and drink consumption, smoking and exercise habits. General practitioners, however, are skilled at interpreting phrases such as "I only have a few drinks rarely...each week" and "I get to the gym regularly" and can estimate based on symptoms and a person's physical appearance just how precise those claims are. However, it is crucial for healthcare research and epidemiology that relies on patient self-reporting that we find a more objective, rather than intuitive, way to identify bias in self-reporting.

A new [statistical approach](#) to address the problem of bias in self-reporting has been developed by a team at Washington State University in Pullman. The technique, reported in a forthcoming issue of the *International Journal of Behavioural and Healthcare Research*, is based on stochastic frontier estimation (SFE). SFE is more commonly used in economics and market research to spot statistical errors and unanticipated deviations from the norms in data. The approach helps highlight when the subjects of medical research may either deliberately or inadvertently bias the information they provide to researchers.

"There are many reasons individuals might offer biased estimates of self-assessed behavior, ranging from a [misunderstanding](#) of what a proper measurement is to social-desirability bias, where the respondent wants to 'look good' in the survey, even if the survey is anonymous," explains Robert Rosenman, , who coauthored the study with Laura Hill and Vidhura Tennekoon. "Response bias itself can be problematic in program evaluation and research, but is especially troublesome when it causes a recalibration of bias after an intervention," he adds.

SFE can identify bias at specific times in self-reported data and in particular identify bias after a healthcare intervention so that researchers can determine whether or not self-reporting patients have biased their responses because they presume the intervention should have caused

changes. This characteristic of the technique could ensure that double-blind placebo-controlled trials are more robust in terms of the validity of data. It could help improve results obtained before and after an experimental treatment is given to one group and the placebo to another when neither party, patient or researcher, is aware in advance of which group a patient is in.

Using data involving family dynamics and interventions to help strengthen family bonds, the team has demonstrated the statistical aspects of the SFE approach. "SFE allows the researcher to identify bias and causal factors at the individual level, it expands our ability to identify, understand, explain, and potentially correct for, response shift bias," Rosenman explains.

More information: "Measuring bias in self-reported data" in *Int. J. Behavioural and Healthcare Research*, 2011, 2, 320-332

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