Guest Editorials

Genograms, Generalizability, Quantities, And Qualities

Investigators seem to have settled for what is measurable instead of measuring what they would really like to know.

—E.D. Pellegrino

After reading the article by Rogers and Rohrbaugh[1] in the September-October *JABFP* issue, which of the following two statements is more correct?

1. Genograms do not improve the quality of patient care.
2. Genograms recorded in a particular way in a specific teaching practice covering a single geographic area with a small group of English-speaking adults seen over a short period of time do not appear to make a difference during a single nonemergent patient visit in physician and patient perceptions of what occurred when quantified by a particular group of measurement instruments analyzed by an especially complex statistical technique.

If you have difficulty choosing between the two options, you are not alone; the distance between them is the subject of this editorial.

Researchers in family medicine have always questioned their methods. Articles on "What is research in family medicine?" and "Does family medicine research define a new paradigm?" can be found in some of our earliest publications. Central to the paradigm debate has been acknowledgment that the dominant reductionistic biomedical model fails to address many issues of importance to practicing family physicians, including the psychological, social, and cultural factors that are crucial to an understanding of health. Engel's biopsychosocial model proposed in the mid-1970s[2] gave our earliest researchers something to work with, and family medicine's original research since then has been replete with projects attempting to bring a large number of nonbiomedical factors within the boundary of "rigorous" research.

Important work has been published measuring and scaling such concepts as "family function," "social support," "compliance," and "health status." Typically, complex sampling and statistical strategies are used to construct valid measurement instruments. The goal has been to bring concepts that undeniably exist, but that are methodologically "soft," into the safe confines of measurably "hard" science.

The study in the September-October issue by Rogers and Rohrbaugh well illustrates where these arguments lead us. Before reading this article, those practitioners who use genograms would probably have thought that they are a pleasant addition to clinical practice, selectively useful in describing and managing complicated family relationships. But this "simple" idea becomes unimaginably complex when attempts are made to study it rigorously. Every variable must be carefully defined and measured, and the outcome can be ascertained only after sophisticated statistical analysis. Inevitably, each decision made in such a research project is arguable, so that the final conclusion persuades only if every decision along the way is accepted. We reach the end of the study dazzled by its virtuosity but knowing, in the end, that the soul of the question was lost somewhere in its translation to rigorous methods—thus Dr. Pellegrino's[3] quotation as epigraph.

Recent renewed interest in qualitative research has arisen because of the frequent inability of rigorous quantitative methods to produce results of general interest. The philosophical problem posed by the tension between qualitative and quantitative ways of knowing is profound. Pulling an analogy from physics, it is somewhat like Heisenberg's Uncertainty Principle: just as we cannot describe an electron's position and momentum simultaneously, neither do we have ways of simultaneously addressing questions of general interest with both rigorous quantitative and qualitative methods. The same

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From the Department of Family Medicine, University of Washington School of Medicine, Seattle. Address reprint requests to Alfred O. Berg, M.D., M.P.H., Department of Family Medicine, HQ-30, University of Washington, Seattle, WA 98195.

has been observed elsewhere in biology. Consider this excerpt from Barry Lopez's book *Arctic Dreams*[4]:

Many Western biologists . . . comprehend that, objectively, what they are watching is deceptively complex. . . . They know that while experiments can be designed to reveal aspects of the animal, the animal itself will always remain larger than any set of experiments. They know they can be very precise about what they do, but that does not guarantee they will be accurate. They know that the behavior of an individual animal may differ strikingly from generally recognized behavior of its species; and that the same species may behave quite differently from place to place, from year to year.

The same statement can be made even more strongly on research conducted with human animals.

The answer to the question posed in the opening paragraph, by the way, is option number two: Rogers and Rohrbaugh absolutely nail a narrow and ultimately not very interesting question with tangential relevance to the general use of genograms in daily practice. In doing so, however, the authors place us in their debt by clearly illustrating the complexity of studying questions lying outside traditional biomedical boundaries. The next researchers who wish to examine genograms should benefit from the authors' experience by seeking methods that have a better chance of producing results generalizable to daily practice.

The biopsychosocial model has already been discarded by some because it does not go far enough in eradicating linear causal thinking from research and clinical practice.[5] Philosophers of science have moved far ahead in developing a naturalistic perspective based on postpositivist theories that refute much of biomedicine's current scientific methodology.[6] Conceptions of what is and is not science are changing rapidly. Researchers in family medicine have much to gain by being first at the boundary.

Alfred O. Berg, M.D., M.P.H.
Seattle, WA

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Measures Of Clinical Effectiveness: The Numbers Needed To Treat

What are the best measures of clinical effectiveness to use when presenting health care decisions to individual patients and when determining what health care needs take priority when resources are restricted? The measures are numerous: disease-specific and all-cause mortality rates, morbidity rates, years of life lost before a specified age, population-attributable risk, relative risk reduction, odds ratios, absolute or attributable risk reduction, to name a few. Each has advantages and disadvantages related to the question being asked and to the inherent statistical properties of the measure.

In this issue of the *Journal*, Grumbach[1] applies another measure, "the number needed to treat," to the question of how best to measure the consequences of pharmacologic management of hypercholesterolemia using outcome and side effect data from five major clinical trials. The statistic "the number needed to treat" (NNT) provides the number of persons needed to be treated in order to reach a given end point, for example, prevention of one myocardial infarction, prevention of one death, or causation of side effects in one patient. NNT is the inverse of the absolute risk reduction (ARR), which, in

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From the Department of Family Medicine, University of Washington, Seattle. Address reprint requests to William E. Neighbor, Jr., M.D., Department of Family Medicine, RF-30, University of Washington, Seattle, WA 98195.