What does it mean to ‘do research’?

Part One

By Dennis J. Tartakow, DMD, MEd, EdD, PhD, Editor in Chief

When students and residents talk about “doing research,” many are not thinking in the realm of classic research approaches, but rather writing an article on a specific topic or exploring a limited clinical project.

Most medical and dental students think about the quantitative approach because it has been used as the method of choice for many years, whereas the social science students are more familiar with qualitative methodologies. Inquiry into a variety of clinical or theoretical medical and dental topics can employ quantitative, qualitative or both methodologies in the same study. It is time to expand the erudition of research, and it is at the medical and dental student level that such new points of interest must be established.

Until recently, the medical and dental sciences have been more concerned with treating the down stream problems, rather than up the stream etiologies. It is essential to focus on treating the systems and not just the symptoms. In order to appreciate that treating the systems and not just the symptoms is appropriate when gathering in-depth knowledge of the subject, it is possible to cure a patient without knowing how the cure works.

The primary purpose of “basic” research as opposed to “applied” research is established in the documentation, discovery, development and interpretation of methods, systems or approaches. These research and the research approaches depend on epistemology and vary considerably between the humanities and the sciences. A primary distinction in scientific research is between a theory and the hypothesis. A theory is a collection of hypotheses that are logically linked together into a coherent explanation of some aspect of reality, which individually or jointly receives some empirical support. Hypotheses are individual and empirically testable conjectures. As a basic review, the three most common research approaches are outlined as follows:

I. Quantitative research

II. Qualitative research

• Phenomenology
• Ethnography
• Case Study
• Grounded theory
• Historical

III. Mixed research

Rationale for research method appropriateness

For a very simple understanding, these three research methodologies (qualitative, quantitative and mixed) have been used to investigate a variety of issues, focusing on different aspects.

A quantitative approach is helpful to develop and expand knowledge, statistics and hypotheses pertaining to a problem. It uses measurements to provide the primary connection and expression of the quantitative relationships. A qualitative research approach is appropriate when gathering in-depth understanding of human and social behavior, for such behavior. It investigates the how and why rather than the when, what, or where of decision-making, as well as various re-actions to, or perceptions of a particular phenomenon.

This approach might assume some commonality to the perceptions of human beings and how they interpret similar experiences seeking to identify, understand and describe these commonalities. The mixed approach has evolved as a pragmatic way of using the strengths of high qualitative and quantitative research methodologies. It is still in its infancy and is expected to become more popular in the next few years.

As a pragmatist and realist, I see the worldview of a research question for allowing the researcher to be open to (a) multiple methods of data collection, such as qualitative and quantitative sources, (b) focus on practical implications of research, and (c) emphasize the importance of conducting research that best addresses the research problem.

Please look for Part Two in the next edition of Ortho Tribune.

[Image courtesy of Dr. Earl Broker.]

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