

Behavioral and Social Sciences for Personalized Medicine: Teaching with Novel Methods

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Received: 11 September 2015 / Accepted: 18 September 2015 / Published online: 30 September 2015
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A collection of articles in this issue of the journal relates broadly to the teaching of behavioral and social sciences in medical education. This part of the medical curriculum has been recently prioritized for aspiring and enrolled medical students, as evidenced by the Association of American Medical Colleges 2011 report “Behavioral and Social Science Foundations for Future Physicians” [1] and the addition of the Psychological, Social, and Biological Foundations of Behavior section to the Medical College Admissions Test (MCAT²⁰¹⁵). These articles suggest that teaching this curriculum may involve not only different content, as expected, but also alternative and novel pedagogical methods, rather than the lecture-based educational methods traditionally used in teaching a fundamental sciences curriculum.

Process-oriented sessions enabled psychiatry residents, as Awaad et al. [2] describe, to explore the affective and social aspects of religion and spirituality in a more experiential manner, whereas Beder et al. [3] used a learner-led reading group to teach cross-cultural psychiatry. Devlin et al. [4] studied the use of a narrative method of instruction for faculty, involving close reading, self-reflective writing, and response to text, as a mechanism for discovery about teaching through reflective practice. Bogetz and Bogetz [5] propose that the reframing of a physician’s identity is part of teaching about newer social

models of medicine resulting from a shift in how providers approach chronic care—a shift from a primary identity as an authority figure to a member of an interdependent and interdisciplinary team. These articles suggest that approaches like process-oriented sessions, narrative methods, and experiential, student-driven, and team-based learning may be especially valuable in the behavioral and social sciences curriculum in medicine. The authors draw broadly from the ways physicians think, including utilization of not only their knowledge base but also their personal and professional experiences, including their (sometimes hidden) values, ideals, and biases.

Bolton [6] describes teaching and integrating biopsychosocial knowledge to psychiatry residents through case formulation. He emphasizes an important distinction—case formulation is not synonymous with the straightforward derivation of a diagnosis. Although medical students may have a sense of how to generate a diagnostic hypothesis, they may not have a clear understanding of how to perform a case formulation. Bolton writes, “They [diagnosis and case formulation] are complementary competencies: diagnosis sees illness as a state and the expression of a disease; case formulation sees illness as a process mediated by myriad factors.” The formulation is far more expansive than a “diagnosis” by including multiple psychological, sociocultural, family historical, spiritual, and value-laden foundations of the person and the inner psychodynamics of the individual and family system in which the patient lives, which are required for comprehensive treatment. Bolton further opines, “The psychological and sociological sciences will have more to contribute to case formulation than to diagnosis.” The current models of checklist-based diagnoses, particularly the Diagnostic and Statistical Manual, are intricate and do not lend themselves to multimodal treatment that attends to the complexities and subtleties of an individual’s life. Narrative methods, such as a case formulation, attempt to do so; such narrative approaches

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are, however, not usually emphasized in medical school curricula, except sometimes in psychiatry [7].

A related area of differential emphasis in the behavioral and social science curricula regards the teaching of quantitative versus qualitative methods. Medical students are well schooled in quantitative methods and familiar with terms like *standard deviation*, *mean*, and *p value* and randomized controlled trials in evidence-based medicine by exposure to quantitative research-based curricula. In contrast, qualitative methods and mixed methods (i.e., strategic use of both quantitative and qualitative methods) are less likely to be included in a medical school core curriculum. Few medical students have had the opportunity to be exposed to rigorous qualitative techniques, such as data triangulation, saturation in data collection and coding, inductive and deductive approaches to coding of transcripts for themes, and the process of deconstruction, interpretation, and reconstruction of data that allow one to handle data that are more individualized, subjective, and experiential.

This underexposure to qualitative methods may need to change because such analytic and interpretive methods have recently become more common in the medical literature. Researchers have enhanced data collection and analysis with methods that are more traditional (e.g., interviews, case studies, focus groups, ethnography), clinically relevant (e.g., cultural aspects of diagnosis, formulation, and care), and contemporary (e.g., critical appraisal of qualitative methods) [8] and with participatory action research, photovoice [9], and participant diagramming [10]. Medical students will have to learn also how to appraise qualitative studies critically, including the “veracity” of the qualitative methods utilized and whether standards of transparency and rigor are met. Medical students should appreciate the shortcomings and problems of qualitative methods, just as they do for quantitative methods (e.g., type 1 and type 2 errors).

Qualitative methods [11] seek themes and content and, as such, cannot—and generally do not—follow the same experimental research methods used in quantitative studies, such as randomized controlled trials. The focus of qualitative research on high-quality and detailed data from individuals about their experiences bears more surface similarity to the clinical interview and the daily work with patients. The clinical interview of medical students and residents in all specialties would quite possibly benefit from knowledge of how experts in qualitative research improve the “authenticity” of interview data and the “trustworthiness” of their analysis. Further, most of the time, the analysis of qualitative data requires a group-based consensus of experts in a discursive fashion—techniques that more closely resemble clinical-team-based evaluation and case study than using statistical methods on a population dataset.

An inherent dissonance arises when one attempts to apply population averages and quantitative thinking to an individual—validity and reliability are useful across patients, not so

much with individuals. Qualitative analysis may help bring to bear quantitative results in individual cases [12]. Consider suicide risk assessment. Results of quantitative studies reveal, for example, that an elderly, white, widowed man is at a higher suicide risk than the general population. This observation, however, does not reveal much about a specific male presenting at a general emergency or psychiatric emergency department. Qualitative, collaborative, multispecialty (e.g., psychiatry, social work) narrative, which may also integrate the quantitative risk factors (gender, age, physical health status, level of isolation, immediate stressors, and the like), will reveal more about a particular individual’s risk of suicide. Similarly, qualitative assessment of patients at the end of life that integrates information from a specific patient, the patient’s caregivers, and the treating team into an individual narrative will help provide individualized palliative care instead of care based only on the prognosis of a specific cancer.

Our thesis here is that the teaching of qualitative and mixed methods, as a complement to quantitative ones, may be foundational to a behavioral and social science curriculum in medical education. These methods may add a great deal to understanding the fundamental sciences curriculum as well. Qualitative methods are highly relevant to a scientific approach, because they relate to the individual patient and his or her unique psychological and social circumstances. They are also highly relevant to the family, community, and society in which the individual is embedded and influenced. Also in parallel to medical practice, qualitative methods involve the researcher as an interviewer or observer, and the qualitative literature addresses this human factor with the biases that the researcher may embrace as a strength and weakness in both the data collection process and subsequent analysis. Within qualitative methods, the need for triangulating across data sources, incorporating other individual observers and participants, and group consensus alleviates much of the bias found in any particular individual researcher [13, 14]. Reminiscent of the transference and countertransference literature, physicians are well advised to consider their biases, which could be part of the training in qualitative methods. Through reflection and introspection, the qualitative researcher, as part of the research process itself, may provide valuable insight into the research through clarifying follow-up questions during an interview or discovering underlying contexts. Because interviews involve opinions, feelings, and perspectives, the subjective is embraced. Indeed, the material may be deeply personal and sensitive. This fact amplifies particular ethical issues around confidentiality and the potential for doing harm that should also be considered formally as part of the interviewing curriculum.

Similar to the suggested complementarity of diagnosis and case formulation, qualitative methods may be used side by side with quantitative ones, in point and counterpoint. Quantitative thinking is reductionistic and positivistic and seeks to prove or disprove a focused hypothesis. Qualitative thinking,

in contrast, is expansive, textured, and generally utilized to posit alternative hypotheses or explain the why behind a phenomenon. The complexity and holistic nature of psychological and social systems at times requires qualitative inquiry. As such, traditional qualitative methods are highly useful in understanding the interplay of and between systems—family, community, and social systems. Group dynamics that are highly influential in human behavior are often best studied through qualitative methods, such as interviewing a patient about experiences or observing verbal and nonverbal interactions within a group. With any individual patient, the physicians should think of both diagnosis and case formulation. With quantitative thinking, they need to reduce the history and physical to a diagnosis justified by evidence; with qualitative thinking, they ought to explore the meaning of illness that will influence treatment adherence, the social context that will perpetuate risk factors, and the psychological reactions of a human being who is now not whole, all involving evidence of a different and significant kind worth analyzing.

There have been various attempts of using the mixed quantitative and (mostly) qualitative approach to view a clinical case. One such example is the four perspective model developed by McHugh and Slavney [7]. The four perspectives are the disease perspective (i.e., categorical—a patient has the disease or does not), the dimension perspective (e.g., gradation, quantification, personality traits), the behavior perspective (e.g., antecedents, behavior itself, consequences), and the life story perspective (i.e., the life narrative). These four perspectives together provide a qualitative and personalized picture of an individual case and may lead to invaluable insight into treatment opportunities.

Qualitative knowledge is relevant to individual care in medicine, but it is also highly applicable to the healthcare delivery system [12]. This observation is best illustrated by the role of qualitative methods in quality assurance studies—more accurately, mixed quantitative and qualitative methods are required to offset weaknesses and highlight the strengths of each method to identify a well-rounded phenomenon. Quality improvement often starts with a survey of practices in health care, and these data may be handled with quantitative techniques and statistics. For example, a survey might find that a significant portion of personnel are not taking a detailed social history of patients. Such a survey, however, might not provide insight into the various reasons why different staff do not take detailed social history. The solution may be to simply ask the clinical care team members about this, and qualitative methods outline a scientific way to do this. Focus groups, interviews, or observations are extremely useful in this context and highly relevant to understanding group and individual behavior. Combining methods, or strategically incorporating both quantitative and qualitative (i.e., mixed) methods to better understand the phenomenon of interest, can help identify elements necessary for effective patient care. A recent, large

mixed methods study on the factors influencing decision-making elements within multidisciplinary teams patients with chronic diseases by Raine et al. [15] utilized a variety of data sources in parallel, including observations of decision meetings and provider interviews, and uncovered positive team elements, such as clear team member roles and goals, and factors involving individual inclusivity within the team. When the positive elements were present, treatment care decisions were clearer across the team and, ultimately, better for the patient. Although aspects of this study may have been accomplished by either quantitative or qualitative inquiry, the study and its findings have a more nuanced understanding of the role of team members and the treatment decision-making and implementation process by integrating methods. Such approaches may provide information of value to highly talented and effective multidisciplinary health care teams.

In conclusion, we suggest that medical schools and residencies should emphasize innovative teaching as they seek to integrate social and behavioral sciences into their curricula. Experiential and clinical case formulation approaches may be of particular interest. We further suggest the importance of teaching qualitative research literacy to all medical students and providing opportunities to conduct mentored qualitative research to students with interest. Such teaching should occur in addition to, and not at the expense of, education in quantitative research and, ideally, will illustrate how each method can be a complementary approach when well utilized in studies. In addition to supporting the behavioral and social science curriculum, narrative and experiential learning and qualitative knowledge will be pertinent especially to the competencies of interpersonal and communication skills; an understanding of social, cultural, and spiritual issues in practice; normative ethics; systems-based practice; and professionalism. Educators too should therefore value and appreciate the methods of qualitative thinking and research in order to be effective teachers of the social and behavioral sciences in the clinical practice of medicine. Qualitative approaches to assessment and treatment are very important in the future era of more integrated, personalized, and precise medicine.

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