

## **Predictors and Outcomes of Physician Lifelong Learning**

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We all want to believe that our doctors keep up with the latest evidence-based care. We assume they read all the key articles, attend all the relevant continuing education programs, and recognize that these activities are essential for providing the highest quality care. But, it wasn't until recently that the importance of "lifelong learning" was recognized by academic medicine.

Three reports from the Association of American Medical Colleges (AAMC) Medical School Objectives Project (MSOP) stress the importance of preparing medical students to become lifelong learners.<sup>1</sup> Similarly, the Liaison Committee on Medical Education (LCME) recommends that medical school faculty "should foster in students the ability to learn through self-directed, independent study throughout their professional lives."<sup>2</sup> In the practice of medicine, a commitment to rigorous learning throughout professional life has also been described as an important element of professionalism in medicine.<sup>3</sup> Principle V of the *Principles of Medical Ethics* adopted and revised by the American Medical Association House of Delegates on June 17, 2001 specifies that: "A physician shall continue to study, apply, and advance scientific knowledge...."<sup>4</sup>

Empirical study to investigate physician lifelong learning would not be possible without psychometrically-sound instruments to measure the concept. To overcome this obstacle, through a previous project, which was supported in part by the National Board Medical Examiner (NBME) Stemmler Medical Education Research Fund, we developed the *Jefferson Scale of Physician Lifelong Learning* (JSPLL). The project was indeed initiated in response to a recommendation on the importance of developing lifelong learning habits among medical students made by the accreditation team representing the Middle States Commission on Higher Education.

The JSPLL includes 19 items, each answered on a 4-point Likert-type scale (Strongly Agree=4, Strongly Disagree=1). (See Table 1 for a sample of the items) Higher scores are equated with a greater orientation toward lifelong learning. We provided evidence in support of psychometric properties of the JSPLL,<sup>5,6</sup> including construct and criterion-related validities, internal consistency reliability (coefficient alpha), and test-retest reliability.

The availability of an operational measure of physician lifelong learning such as the JSPLL, provides an opportunity to investigate correlates of lifelong learning. Supported in part by an invitational grant from the NBME Stemmler Medical Education Research Fund,<sup>7</sup> we are conducting a new study designed to address predictors and outcomes of physician lifelong learning, using a nationwide sample of physicians. This 2-year study, approved by Jefferson's Institutional Review Board is scheduled for completion in 2007.

**Predictors of Physician Lifelong Learning:** It is important to investigate the predictors of lifelong learning to improve our understanding of the factors that contribute to its development. For example, the identification of measures of academic attainment prior to, during and after medical school that can predict lifelong learning would allow us to forecast those who

need supplemental educational remedies for enhancement of lifelong learning during medical school, or in residency.

Jefferson Medical College is in a unique position to address this issue because of the availability of data from the Jefferson Longitudinal Study of Medical Education that is recognized as a model of outcome assessment in medical education.<sup>8</sup> So far, 155 articles have been published in peer review journals from this database. We recently assembled the abstracts of the published articles from the Jefferson Longitudinal Study in a book, “*Abstracts: Jefferson Longitudinal Study of Medical Education.*” (Copies are available upon request from authors, electronic version is posted at: <http://jdc.Jefferson.edu/jlsme>).

In our current study, the potential predictors of lifelong learning prior to medical school will include the undergraduate grade point averages (GPAs) in science and non-science courses and the MCAT scores. Potential predictors of lifelong learning during medical school will include GPAs in the first and second year, objective examination grades in core clerkships in the third year (family medicine, internal medicine, obstetrics/gynecology, pediatrics, psychiatry, and surgery), and global ratings of clinical competence in the six core clerkships. Also, scores on Steps 1, 2, and 3 of the United States Medical Licensing Examinations (USMLE) and Parts 1, 2, and 3 of the NBME examinations will be among potential predictors of physician lifelong learning. In addition, ratings of postgraduate clinical competence in three areas of “data gathering and processing skills, “interpersonal skills and attitudes,” and “socioeconomic aspects of patient care” will be used as potential predictors of lifelong learning during residency training.

**Outcomes of Physician Lifelong Learning:** The issue of examining the outcomes of lifelong learning is also important to be addressed to improve our understanding of the associations between scores on the JSPLL and professional outcomes. The followings are the set

of variables we will use in this study: Employment status (full- or part-time), board certification, teaching and research activities (hours per typical week), patient load (number of patients per typical week), publications (in the past 5 years), work setting (solo practice, group practice, medical school, state or federal government), and satisfaction with career (on a 10-point Likert-type scale).

The study population consists of over 5,458 graduates of Jefferson Medical College from 1975-2000. These physicians practice medicine nationwide in different geographical areas of the United States, and in different specialties. Survey has been mailed to these physicians, and after two follow-up reminders 50% response rate has been achieved.

Examination of the correlates of physician lifelong learning (predictors and outcomes) will enhance our understanding of the variables that can predict lifelong learning and its outcomes.

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<b>TABLE 1: Sample questions from each Subscale in JSPLL</b>	<b>Subscale</b>
Rapid Changes in medical science require constant updating of knowledge and development of new professional skills	Learning Beliefs and Motivations
I actively conduct research as a principal investigator or a co- investigator	Scholarly Activities
I routinely attend annual meetings of professional medical organization	Attention to Learning Opportunities
I search computer databases to find out about new development sin my field	Technical skills in Information Seeking