Initial Steps Toward Functional Assessment

Fifteen years ago I sat down with Cynthia Smith, who was then chief of occupational therapy in the Department of Rehabilitation Medicine. We acknowledged our limitations and said that we wanted to describe how our patients are doing, not what they are doing. After some argument, we decided that we had to start collecting data to help us address the issue.

Our discussions focused on performance, that is, physical measures, and we took our first step toward functional assessment. With the help of some of our young, enthusiastic therapists, we developed a complete hand evaluation with wonderful static measures and even a few descriptors of prehension. We patted ourselves on the back, only to discover that the instrument was not used. It was not even looked at by members of our own department. So we scrapped it.

We next moved up the kinetic chain to the upper extremity, looking at the shoulder, elbow, wrist, and hand as a complex. This time we were not so ambitious as to develop our own instrument. We searched the literature and found the Keil Index (Ebert, Fasching, Rahlfis, Schleyer, & Wolf, 1976), an anatomically based dynamic measure of the upper extremity that was valid and relatively easy to use. We started to plug it in. However, it too turned out not to be very effective for our purposes, because it did not measure function.

We kept searching for enlightenment on what function is and how to measure it, not knowing how to fully describe it but believing that we would recognize it when it came. We knew that we had to advance beyond anatomy as our sole purview, but the leap into a broader realm was quite foreign to me because of my medical training, which was laboratory oriented and objective. I had to accept the notion of subjective reports for information pertaining to psyche and soma.

Systems Theory

At about this time, systems theory began to creep into some of the medical literature, even the concept of open systems. The novel idea here was that humans were not necessarily bound for all time by the physical accoutrements of their bodies; they could extend the boundaries. The focus was clearly shifting away from anatomy, away from impairment per se, and toward a more global view of men and women in all of their environmental trappings.

Health Status Indicators

Simultaneously, there was a burst of interest in health status indicators as outcome measures of treatment efficacy in rheumatic diseases. These instruments were actually breaking new ground for physicians. They incorporated measurements of health beyond grip strength, walk time, and joint counts—the gold standards of disease. What they added included reflections of psychological states, of roles, and of satisfaction with life. The measures, called the Arthritis Impact Measuring Scale (Meenan, Gertman, & Mason, 1980) and the Health Assessment Questionnaire (Fries, Spitz, Kraines, & Holman, 1980), were validated and reliable. They were questionnaires addressed to patients, and they could be completed in 30 minutes or less. They represented an important conceptual breakthrough because physicians were willing to acknowledge that a question with an answer supplied by a patient could serve as objective data. Second-generation measures such as the Sickness Impact Profile (Bergner, Bobbitt, Carter, & Gilson, 1981) and Symptom Checklist 90 (Derogatis, 1983) soon evolved to measure more psychological parameters. This kind of data took a while to be accepted, but I think it is now firmly entrenched, at least as information that enhances our understanding of what a patient is experiencing and how a patient is doing.

Correlational Studies

Additional studies then emerged demonstrating that objective measures, such as sedimentation rates, hemoglobins, other biological indexes, joint counts, and stamina, unexpectedly correlated with all sorts of psychological phenomena, such as moods, desires, and satisfactions.
and hysteria as measured by the Minnesota Multiphasic Personality Inventory (MMPI) (McKinley & Hathaway, 1943)—for many years the gold standard for measuring psychological states—seemed to correlate extremely well with what rheumatologists thought was disease activity. For example, depression on the MMPI seemed to track very closely with joint count and sedimentation rate.

Neuroendocrine Axis

Meanwhile, observations of Lewis rats were suggesting an interesting connection between the psyche and the soma that could not be ignored (Sternberg et al., 1989). Lewis rats are genetically determined to develop a terribly destructive arthritis. They also handle stress extremely poorly. When placed in the proper environment, they behave aberrantly, crouching and hiding in the corner and displaying extremely passive and withdrawn behavior. Their nongenetically identical relatives, Wistar rats, behave very differently, handling stress more appropriately and not developing chronic arthritis (Sternberg et al., 1989).

As a result of these observations, we came to understand the relationship between stress reaction and biological activity. We learned that corticotropin-releasing factor, which is released by cortisone from the adrenal cortex, is highly related to the expression of arthritis. We think that this genetically controlled releasing factor modulates arthritis, that mood influences it, and that it in turn influences mood.

This neuroendocrine axis may influence not only the expression of arthritis but also its severity. That is, mood and environmental issues, families and support systems, drives and desires, and routines in people’s lives all pertain not only to their level of functioning, but also, perhaps, to the level of disease activity and its severity. These phenomena are integrated in ways that we do not understand, the modulation of which we do not fully comprehend. However, we are learning that we must pay attention to the connection and that we should be measuring it.

We are thus broadening our horizons with respect to the importance of functional assessment, that is, the importance of understanding the multiplicity of systems that go into life. We are beginning to fuse the psyche and the soma through the neuroendocrine axis, and we are breaking down the barriers between the objective and the subjective. The psyche and the soma are not totally separate and different. Some aspects of them are clearly different, but to toss out subjective measures because they are not quantifiable or reproducible is unconscionable.

Systems Theory and the Model of Human Occupation

Let me go back now to the concept of humans as open systems, an idea that presaged the development of these recent biopsychosocial events. Actually, this concept was based on the teachings of the ancient Greek philosophers. Heraclitus said, “It is not possible to step twice into the same river.” Panta rhei is a Greek phrase meaning, “All things are in flux; everything influences everything else.” There are multiple feedback loops at many levels. In the context of all of the other developments I have recounted, systems theory established a conceptual framework around which we could, for example, challenge, question, create data sets to collect information or refute hypotheses, and establish new treatment outcomes. It gave us the ability to move ahead in our thinking about a more global and more general evaluation of patients.

Open systems theory led the way to the Model of Human Occupation, a way of viewing performance, individual drives, goals, and routines. This was the very fabric of daily life that we were struggling to understand. The model, a three-part approach to evaluation, laid the groundwork for the development of assessment tools that we could use every day in our clinical settings.

The beauty of the Model of Human Occupation at that time was that it knew no distinction between physical and psychological disabilities. It took whatever perturbing force was hitting the system and it analyzed that force in a way that gave us an understanding of how a phenomenon quite remote from an organism could have a significant influence on function.

We have used the Model of Human Occupation in rheumatic disease populations with much success. Our most recent application was a validation study (Gerber & Furst, in press) against the typical objective measures of joint counts and other biological indexes as well as the gold standards for arthritis impact measurement. The model measured up. As a matter of fact, not only is it valid and highly correlated with these indexes, but also, it takes us a step further into a realm that we think we must eventually enter—measurement of fatigue.

The Model of Human Occupation has wide application, at least with the rheumatic disease population and with some other subsets of patients, such as persons with postpolio syndrome, cerebellar ataxias, Alzheimer disease, cancer, or various psychosocial dysfunctions. The model’s conceptual framework enhances our ability to tackle difficult, complex problems that are chronic and unpredictable with respect to functional impact. It helps us understand what is functional and what is dysfunctional in our patients.

The outcome of all of this is assistance in devising innovative, effective treatment to help patients achieve their maximum functional potential.

Acknowledgment

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