

PERSPECTIVE

Reflections on knowledge and wisdom in neurosurgery

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A Puerto Rican neurosurgeon is sharing some time with his family on a sunny Sunday afternoon, when he suddenly receives an emergency call from a close friend. He is concerned about his relative in the ER, who is semi-conscious after suffering a fall and has been diagnosed with a skull fracture and an epidural hematoma. The neurosurgeon leaves his family and heads to the ER, evaluates the patient, and operates on him. The day is over. It is 9pm. As usual, there is hardly any more time to rest and get ready for the start of the following week.

This tale is probably much too common in the life of any neurosurgeon. We believe that neurosurgery, in addition of being our profession, is the north in the compass that guides the majority of our time, effort, and energy—our life style. A vital part of this life style, this profession, this path we have chosen is composed by an element that everyone assumes any neurosurgeon undoubtedly possesses—knowledge. Here in Centro Medico, we direct most of our energies and efforts to educate our medical students, residents, colleagues, and even ourselves. By “educating” we refer to the experience of sharing knowledge; but, what is knowledge? What exactly is this fundamental element in the life of any physician?

Looking for an answer to this inquiry, we have turned to thinkers of more depth and erudition than ours. Thinkers, who have dedicated their life to the search for a response; scholars, who untiringly ask themselves the why of things; intellectuals, that we call philosophers. Some of the ideas that will be discussed have been built upon the thoughts of French philosopher, André Comte Sponville, and of the Norwegian author, Jostein Gaarder. Great part of the philosophical movement consists of a controversy to define the concept of “knowledge”. In fact, due to the complexity of the topic, there is an entire branch in philosophy called epistemology—or theory of knowledge—devoted to its study. The term comes from the Greek word “episteme,” which means knowledge and “logos,” which means study or theory (1). The dictionary defines knowledge as “learning

through experience or study” (2). Is acquiring knowledge learning from our senses, or is knowledge what we build from experience? Or is it both?

In our neurosurgery training program, we spend seven years sharing “knowledge” with the residents. This knowledge is acquired by both practice and study. Residents spend this time learning theory about the diseases that affect the central and peripheral nervous system. They also get to experience in practice how to diagnose them, how to cure them, and when cure is not possible, how to comfort the patients. Thus, their process of education incorporates both theory and experience.

Many philosophers have adopted a different definition for “knowledge.” These thinkers such as Lucrecio, believe knowledge is not the “truth,” but an approximation of it (3). They define “truth” as “like which is” or “what corresponds exactly to what it is” (4). Knowledge represents an approximation of the truth because we never master everything that there is to learn about one particular item. For example, we never know everything about our friends, patients, or relatives. We do not know everything about our neighborhood, our house, our body. For instance, do we know our neighborhood? Many of us could claim the answer is yes, but do we know all the streets? All the houses and their colors? All dust specks? All the molecules of the houses? All the atoms of the molecules of the houses? All the nuclei and electrons of all the molecules of each house? The point should be clear—knowledge is an infinite entity. Our minds and intelligence are not. Socrates said it best: “wisest is she who knows she does not know” (5).

As professionals, we neurosurgeons, take care of the sick ones. As educators, we spread knowledge—knowledge that we have defined is not perfect, nor absolute, but most likely incomplete since we will never master it all. However, during seven years of training, residents acquire the *essential* knowledge to consistently relieve the great majority of the ailments of our patients. This brings up another characteristic of the knowledge shared in our residency—it is not only essential information that is gained, but also pragmatic. It is pragmatic in the sense that it helps to alleviate others from diseases, conditions, and suffering. It serves to assist another human being. It helps in reducing human misery.

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It serves to repair pathological conditions that prevent the sick from reaching a feeling of wellbeing.

During this process of education, we aim to approximate the “truth.” However, the “truth” deepens and evolves with every second and so must our knowledge in order to maintain our accuracy. Hence, one of our goals in the years of residency is not just to pass on our knowledge to students, but also to train them with skills that will enable them to stay actualized in all the new scientific developments in the medical field. We try to instruct them how to self-educate during their entire professional life. Medical science does not stop making new discoveries, new diagnoses, new techniques, new medicines, and new procedures. During the professional life of a neurosurgeon, during thirty to forty years, the medical knowledge advances dramatically. It is imperative that the neurosurgeon stay up to date in order to avoid practicing archaic medicine. I believe that our program does a great job in this area. For example, two of our former residents that moved from Puerto Rico after completing their training program were implanting deep brain stimulators for Parkinson’s disease, a short time after relocating—a procedure that was not done routinely in our program. As a matter of fact, they also used their knowledge to operate in a gorilla. Many might think that an operation in a gorilla is not a new endeavor after taking care of some of the very unusual patients seen in Centro Medico. The implementation and application of the knowledge and especially new knowledge is the essence of neurosurgery and medicine in general.

Unquestionably, the information database of a resident increases exponentially during training programs, but neurosurgery is not just a profession that relies upon a solid knowledge core; neurosurgery is a life style. It is a way of life that makes use of this extensive education to apply it to daily living; this application or the use of knowledge is the road to wisdom. Wisdom, *utilizing* our knowledge obtained through books, patients, mentors, experience, and not just *possessing* information, should be our goal as physicians. To strive for wisdom means seeking not just theoretical and practical knowledge, but to seek the “knowledge of living,” which according to Comte-Sponville is the equivalent of “[living] correctly.”⁶ This brings us to the question, what does it mean to “live correctly?”

All those Sunday afternoons, when we leave our family to go take care of our patients, we do it because it is “the correct thing to do”—at least in the book of morals. It implies making use of our knowledge for the benefit of the society. However, to dedicate time to ourselves and to our family it is also part of “living correctly”. Resting our bodies and minds, relaxing, recreating, charging our internal

batteries, allow us to be better physicians and healthier in the future. This conflict defines the great challenge in the life of a neurosurgeon; this is the great challenge of time allocation. Our life consists of a constant dilemma of use of time for ourselves, our families, our careers, our patients.

Who defines then how do we live correctly? Should we rest and take care of our minds and bodies or is our primary responsibility always towards patients? Where is the line drawn? This is the question which every neurosurgeon faces from the very first day of the residency training. This is the point in which the field of ethics, defined as the “art to live,” should be distinguished from the subject of morals, which talks about our duties as human beings.⁷ It is important that these two areas go together; asking ourselves how to live should also involve asking ourselves what place to grant our duties. (160) Morality responds to our question “what must I do?” and ethics to “how am I going to live?” Moral duties culminate in the virtue and kindness, while ethics in happiness. Consider the question “do you respect the law? Do you respect the commandments?” One might be able to answer yes to all of the above, but who is satisfied by just abiding by the rules? Following the moral law—saying no to prohibitions—is not enough. It is about saying yes to life and no to passivism. It is about embracing life, liberty, freedom, and knowledge. Finding, living, and cultivating knowledge through theory and advice, but mostly through first hand experience, will lead to wisdom. Wisdom is the response to our puzzling dilemmas. Wisdom was previously defined as the pragmatic use of the knowledge. Each one of us must obtain his/her own personal wisdom. Apply what you have learned. Apply what you have seen. Then, decide which should be the rules to follow. We dare to say that all the conflicts in life have solutions. Some solutions are trivial and others are difficult, or complex. What matters though is allowing wisdom lead us to the answer.

The question of “how to live?” has many answers and many solutions as human beings. Our careers as neurosurgeons are long journeys that start in unknown waters. We must study the waters and adjust the sails of our vessel, finding the balance, the angle in life that is just right to propel our voyage into happiness, respecting the laws of nature and also aiming for the ports we desire.

Neurosurgery is one of those professions that challenge the human being to be all the best you can be that expose the essence of our being. We never reach the end of our education process. We must continue learning to think, to feel, and to live. As we learn how to apply our knowledge in every breath we take, we become apprentices of wisdom, which guides us in the art of “living correctly.”

We have reflected on knowledge and wisdom. It can be

fair to say that our reflections would not be complete if we did not confess that here in Centro Medico, we have thought a lot about how to improve our residents training, how to improve their confidence, self-esteem, personal and professional growth. We would like for them to be the very best professionals they can be. How they can use the best of their talents, intellect and skills. How to make them the best neurosurgeons they can be. These are the challenges of the educators, the challenge of our faculty, and my challenge. It is a great challenge!

Resumen

La facultad del Programa de Residencia de Neurocirugía del Recinto de Ciencias Médicas dirige la mayoría de sus esfuerzos a la educación de los residentes y a la expansión de sus conocimientos. En este artículo, nos preguntamos y exploramos el significado del vocablo "conocimiento". Se trata de comprender que exactamente constituye este "conocimiento" que deseamos impartirle a nuestros estudiantes.

Además, se propone discutir otros elementos que también definen lo que significa ser un neurocirujano, en adición al proceso interminable de adquirir y actualizar el "conocimiento". Nos referimos a un "estilo de vida" compuesto por decisiones difíciles relacionado a dividir el tiempo entre la vida personal y el cuidado de los pacientes. Pretendemos explorar y solucionar este dilema para alcanzar el equilibrio de "vivir correctamente."

Se llevo a cabo una búsqueda extensa para definir y entender ideas complejas tales como "conocimiento" y "sabiduría" usando el Internet y los pensamientos del filósofo francés, André Comte-Sponville y del autor noruego, Jostein Gaarder. Las ideas y el análisis de estos temas antedichos fueron examinados y aplicados a la neurocirugía como una profesión y estilo de vida.

La Educación, el acto de compartir el conocimiento, representa un aspecto fundamental en la vida de cualquier médico. Definimos conocimiento, no tan sólo el que se aprende con teoría y práctica, pero también como una aproximación de la "verdad." Debido a la evolución natural del concepto de "la verdad" a través del tiempo, según se aprende más sobre un tema, enfatizamos la importancia del proceso inacabable de aprendizaje que intentamos inculcar a nuestros estudiantes.

El conocimiento es una de las bases esenciales de ser neurocirujano, sin embargo, la aspiración de "vivir correctamente," debe ser la meta final de esta profesión. Para lograr esta meta, se debe hacer una distinción entre la moral y la ética, (la moral pretende culminar en benevolencia y la ética en felicidad), en orden de alcanzar el conocimiento para poder "vivir correctamente." Nuestra profesión debe esforzarse en obtener "sabiduría"- definida como la aplicación útil del "conocimiento" adquirido durante el entrenamiento y con los años de práctica médica subsiguiente. Conocimiento que se obtiene con la teoría y el ejercicio de la medicina. La "sabiduría" debe ser la guía maestra de nuestra profesión, de nuestro "estilo de vida".

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