Our Role in the Changing Face of Research

I am indeed convinced that research is the cornerstone of scientific progress. Many a great men and women have dedicated themselves to this cause tirelessly, which has enabled us to have a better quality of life which we are living today. As dentists, we too have left behind the era of chisel and mallet to opt for more refined instrumentation and techniques, which is possible only by extensive research done over the years. Moreover, evidence-based practice has become the sole treatment principle in dentistry. It has been defined as combining the best research evidence, along with clinical experience and patient preferences, to improve treatment outcomes. These research evidence are available through clinical trials.[1]

Before carrying out any research, one must be armed with a valid research question, which can be generated by having a thorough knowledge of the pre-existing literature. A good research question provides a road map much needed to carry out a valid study, thus overcoming the initial challenges. Any loophole in the literature that could have a far-reaching clinical bearing can be red-flagged by a valid research question. The various research questions in dentistry do have a wide range of scope to work upon, with each question surpassing the other in terms of its complexity.[2]

Dental research, as we know today, has several phases to it and can be broadly divided into the preclinical and the clinical trial phase. Preclinical testing which involves in-vitro study and tests on animals. In in-vitro study, experiments are done in a simulated environment, either on natural extracted teeth or acrylic blocks in a laboratory setting. Following this is the phase of experiments to be done on animals where several stringent regulations have been laid out to ensure that these experiments are done on sound ethical grounds. Clinical trial phase involves testing the material or technique on human beings. Through this hierarchy, hypothesis is upheld or nullified to further pave the way for innovations.[3]

Although, research was once a term that was synonymous with only a select few, namely scientists, it has eventually become a routine among individual faculties as well as students alike. Every year a great body of research work gets published in many prestigious journal. This contribution to literature not only facilitates science, but it also opens a window of opportunities for all others to do some real serious research.

However, are we seeing a decline in this trend off late? Are our students choosing an easier way out? Is research during postgraduation becoming a mere reproduction of materials that already exist in the whole gamete of literature body to make things easier? Are we, as teachers, equally responsible for this?

Postgraduation is definitely a tough path and the journey requires 3 years of absolute dedication to make through this humbling experience. Therefore, carrying out full-fledged research consisting of the in-vitro phase, animal phase and human trials would be practically impossible to accomplish by one student in his given tenure. Resorting to the easier proven hypothesis for research to comfortably complete one’s degree is not the answer either.

Hence, what is the answer to this? What I propose is a model of this sort: one student should take up the in-vitro phase of the study based on a hypothesis. His successor should take up the animal experimental phase in the direction in which the in-vitro study leads. Once the animal phase is completed, the study could be relayed to a student in succession who can take up the human trial phase to its logical conclusion. In this manner, keeping the ethical principles intact, the continuum of the study would exist and there would also be genuine publication contributing to literature due to this unique research method.

It has been famously said by the renowned Japanese physician Sumio Lijima, “Research can be undertaken in any kind of environment as long as you have the interest. I believe that true education means fostering the ability to be interested in something.”[4] Hence, we have a great responsibility upon us to guide the young generation of dentists. We must ignite the fire of conducting innovative research in our students, make them realize the innumerable possibilities thrown open in various fields of dentistry and foster an environment conducive for better learning.
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