Opinion

Future of urology research in India

INTRODUCTION

As we near the year 2020 in a millennium marked with rapid clinical developments, it is important to ask whether we have kept up with core research in Urology. What, actually, is research? (French recherché- "to go about seeking"). It can be classified as scientific, basic, applied, or clinical research. Research can also be either disease-oriented or patient-oriented (POR). Sir Archibald Garrod is honored as the Father of modern POR research because of his pioneering work in inborn errors of metabolism.[1] Dr. James Shannon who organized National Institute of Health (NIH) had stated in 1974 that "the danger to medical research in the United States (USA) is that the delivery of medical care may well pull research under and drown it!"[2] He envisioned the concept of "physician-scientist" who would translate the discoveries for patient care which is popularly considered as "Shannon's model."[3] Prof. Wyngaarden called the group of clinical investigators an 'endangered species' way back in 1979.[4] Addressing this issue further, Goldstein used the term paralyzed academic investigator's disease syndrome ("PAIDS"). He hypothesized that M.D.'s with PAIDS could not solve biological problems because they lacked fundamental research skills.[5] In 1984, Gordan Gill questioned if the concept of physician-scientist was ending?[6] However, the answer to the question was 'no'. Leon E. Rosenberg beautifully explained the role of the physician-scientists and emphasized that they are the essential but fragile link in the medical research chain.[7]

In this era, the field of urology suffers from unwillingness amongst the residents to take up academics as their career path. This situation is a reality not only in India but all over the globe. To go into the depth of the reasons for this, one has to understand a few questions.

IS THERE ANY EVIDENCE FOR THE CONCLUSION THAT THERE IS REDUCTION IN RESEARCH?

A roundtable discussion at the Department of Urology in University of Michigan made the conclusion that residency programs in the USA fail to provide continuity between research activities in residency and fellowships.[8] A survey of urology program directors in the USA in 2008 showed that 65.9% programs provide fewer hours for evidence-based medicine than required.[9] While Indian data is lacking in this regard, there is some evidence that points toward a dismal state of affairs in this regard. In 2008, only 82 Indian manuscripts were published in top journals of Urology in 3 years as compared to 3275 manuscripts from the USA.[10] Isn't this because of lack of original research in our Urology programs? Certain questions from an inquisitive mind would also address this issue. Do the urology residency programs in India have uniform curricula? Is there any single governing authority which directs the urology program? Does the Urology Society of India (USI) play a direct role in formulating recommendations for the residency training programs? Do the residents get some time for clinical or basic research? Can they perform statistical analysis or critical appraisal of articles on their own?

CAN WE IDENTIFY CERTAIN REASONS FOR THE DECLINE? TIME TO INTROSPECT!

Montie *et al*. have mentioned four major barriers for research; namely money, time, space, and mentorship.[8] In the USA, core research is funded by hospital funds as well as funding from National Institutes of Health (NIH). There are certain opportunities for arranging funds for research in India such as Indian Council of Medical Research, Department of Science and Technology, etc., Unfortunately, these options remain under-explored by our urology residents. Lack of time is the main hurdle for research activities during residency. In 3 years of residency students can barely manage time for research out of their clinical duties. The apathy in residents toward academics and research seeps in right from their undergraduate training. Preparation for the competitive qualifying exams takes priority and research takes a back seat. This vicious cycle is the main reason for the lack of motivation among our so-called "young enthusiastic urology learners." Sadly, our young generation doesn't perceive the need to ask a question "Why?" in all aspects of patient related care.

The third factor considered is the lack of space and research environment. There are few dedicated research laboratories in academic institutes in India. There are very few centers which have electronic medical record systems. Data maintenance is a daunting challenge in such situations and diligently performed prospective data keeping is difficult in our institutes. Lack of research

This essay was awarded the Dr. Sitharaman memorial prize of the Urological Society of India for the year 2017.

mentors for encouraging residents for academic activities is an important contributing factor. It would be an unrealistic expectation from a budding urologist to venture into core basic research without assistance and direction from his or her skilled mentor. The 4 P's for successful POR are defined as passion (passionate curiosity about the disease), patients (deep involvement for patient-related care), patience (infinite patience), and poverty (ability to withstand poverty in terms of grants).[3] These morals cannot be assimilated in young residents without an appropriate mentor. The lucrative financial reward from a clinical practice is a critical factor in drawing the attention of a resident away from basic research.

WHAT ARE THE LONG-TERM IMPLICATIONS OF THIS? THE FUTURE COULD BE DARK!!

The translation of research from bench to bedside ultimately leads to immense benefits in patient care. As hypothesized this bridge would collapse if the fragile, but essential, link of physician-scientist is lost.[7] Down the line, if someone looks behind, one may find a tombstone engraved with the name "Physician scientist." We would not have been able to visualize the urinary system from inside if Desormeaux had not put his efforts in inventing endoscopes. We would not have been in a position to use intravesical Bacillus Calmette–Guérin (BCG) if Morales had not shown us a ray of hope in his early experiments on BCG.[11] Urology would not have been the leading specialty in robotics if Dr. Menon had not envisioned this journey. The management of prostate cancer would not be where it is if the Nobel Laureate Dr. Huggins had not hypothesized the role of androgens in prostate cancer.

HOW CAN WE IMPROVE?

"Every human has four endowments- self-awareness, conscience, independent will and creative imagination. These give us ultimate human freedom. The power to choose, to respond and to change"

Stephen Covey

Nurturing the innocent child's nascent mind

There is a desperate need to understand the concept of basic, clinical research right from the under-graduate days in MBBS. The first and foremost thing to be done is to direct these undergraduates towards asking the question "Why?" One cannot explore newer science unless the question "Why?" bothers him or her. They should become well versed with biostatistics, critical appraisals, scientific search, concepts of ethics, and good clinical practice. Candidates can be encouraged for NIDA clinical trial network certifications. A dissertation should be a mandatory requirement for qualification.

Should we dedicate 1 year of residency at least for basic and clinical research?

Yes- a plea for innovation! This should be the 2nd year as the candidate is well oriented with urology and still away from the conflicts of career path at the end of his tenure. As emphasized by Gautam, 3 years is too short a time for managing all these aspects.[10] Prospective data maintenance and studies would keep the research interest alive within the resident. Periodic progress assessment should be done in the form of interim analysis or presentations. Maximum trials should be enrolled on the official government websites. IJU and AUA and EAU board review courses in USICON, which are quite successful, could also be done on a separate and larger scale in the form of master-class or the annual research meets. All the residents at the start of their research year could be encouraged to attend these programs. It is not a bad idea to incentivize the research activities by announcing different awards (e.g., DUSCON awards, Dr. S. S. Bapat prize paper for innovations). In this context, one has to understand that we have to balance both the quantity and quality of research so as to publish the best quality research and not perish.[12]

Role of fellows

The entry portal for a fellowship should consider the background research done by the candidate. Fellows are the keystones who can make USI proud by presenting and publishing on international fronts. There should be a provision of national level grants similar to NIH T32 for the fellows who want to pursue an interest in research.

Role of Institutional Ethics Committee

The role of local hospital-based Institutional Ethics Committee (IEC) is pivotal in establishing the standards for the best possible quality of research. Not all IEC across the country will be equally stringent. There should be some regulations for assessing this issue further.

Building a conducive environment for research

There is a tremendous scope for improving the facilities in the research laboratories in our teaching institutes. Researchers should have the options of scholarships for overseas observer-ships. Department libraries should be equipped with tremendous amount of knowledge. Provision of E-Libraries and access to different articles and journals can be an integral part of this process. Joint efforts of a research mentor and mentee would establish a strong pool of prospectively maintained database for periodic evaluation.

Ph. D.- am I wrong in thinking in that direction after spending so many years in clinical work?

In developed countries, many academicians have earned their Ph.D. after completion of their M. D. What's the problem in India then? Are we afraid of it? No, it is pure ignorance rather than anything else. Our younger teaching faculty could always be motivated for this. Age is no bar for learning, then why are we lacking behind in this regard?

Scientist– Clinician bond. (M. D.-Ph.D. collaboration)

Collaborative efforts between the physician-scientist (clinician) and molecular scientist is the ideal goal if we sincerely want to increase our own research. These collaborations have been Nobel Prize-winning pairs many times (e.g., Watson and Crick for DNA model, Hench and Kendall for the discovery of cortisone).

Multi-institutional trials and national database

Majority of our original studies have limited relevance across the globe as they are single-institution-based studies. While a number of Indian institutions are doing exemplary clinical work, we do not have a national database of our own. USI can take active steps in formulating such national database registry. Multi-institutional randomized control trials can be easily performed in our set up if we plan and devote some time for these collaborative efforts.

Funding issues

All these things would need significant funding. Whom should we approach then? Health insurance firms, biopharmaceutical companies, funding authorities all can be actively involved in this ongoing process. The projects which need funding beyond the scope of local grant could be sent to USI for approval. A dedicated committee can critically analyze the topic and in case of approval, it can be channelized for funds at USI level.

Era of sub-specialization. (Time to look 10 years down the urology lane)

It's time to build institutes dedicated for single organ function (prostate health institute, kidney cancer institute, and stone care institute). These would be the apex institutes of excellence with all the facilities related including basic research laboratory.

REVOLUTION IN THE SYSTEM! - LIGHT AT THE END OF TUNNEL!

I have just compared the mechanics of plantar arch support with this research development project [Figure 1]. Keystones are the residents and fellows, staples would be the research mentors and institutions, tie beam would be the USI which holds us like a family and the suspension bridge would be the potential research environment. Together we form a great support system. It is difficult to step in for all these ventures at the same time. However, it is a completely feasible project if one can approach this gradually. The goals would be long-term. Our endurance and perseverance would count in the end. As clinicians, we are at par with our western colleagues, but we should be in a race with equal zest in research. One of the biggest strength of our country is patient volumes. If these suggestions are implemented, and high-quality research becomes a common practice in our country, we have the potential to be the leaders in framing guidelines and designing protocols for urological diseases. The ultimate development of our society and family is in our capable hands!

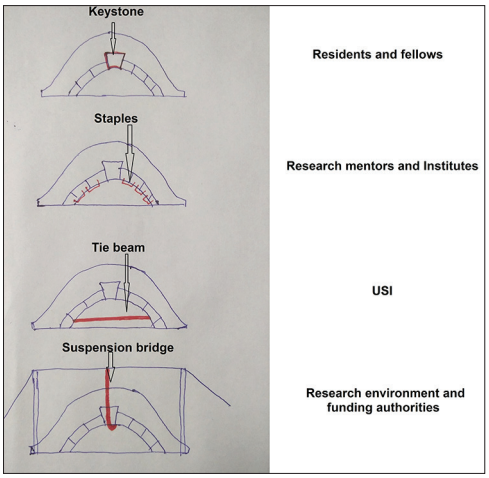

Figure 1: Plantar arch model of research development project

Acknowledgment

The author would like to acknowledgethe support and direction given by Dr. Gagan Gautam.

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Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

Access this article online	
Quick Response Code:	Website: www.indianjurol.com
	DOI: 10.4103/iju.IJU_58_18

How to cite this article: Tamhankar AS. Future of urology research in India. Indian J Urol 2018;34:185-8.