

## Short Commentary

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# Incorporation of research curriculum in specialty training: The need for a paradigm shift

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### Abstract

Residents are the backbone of every large medical center that aims to strengthen and nourish the upcoming crop of medical personal. The professional prospect of a resident is largely based on their core subject knowledge, the tenacity to practice these core principles and their ability to add to it by academic activities and didactic thinking. Academic and research activities bear the brunt of spillover from clinical and surgical responsibilities of a residents, and this must be curtailed to maximize the involvement of residents in research activities. A possible con of these activities can be the deduction of these academic hours from the surgical training and eventual compromise. Some would argue that research activities can be a double edged sword, but in order to cultivate progressive thinking amongst the newer generation and to improve the quality of care of our patients, these didactic activities should be made a priority rather than a privilege. Moreover, it should be encouraged and controlled at a national level to ensure the availability of resources and curriculum to strengthen this practice.

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### Introduction

In an average working medical personal's life, the circle of their professional life is loosely divided into their clinical, academic and research activities. In this circle, the clinical duties and activities spillover into academic and research section and therefore impinge the overall productivity. As per an earlier report, residents spend an approximately 95.8 hours per week in the hospital [1]. This categorization is for both residents and faculty alike and has been shown by numerous papers and guidelines. Though the extent of responsibilities of a resident and the constant need and expectation of growth with the added grunt work makes it more relevant for them. On the other end of the spectrum, faculty members are entrusted with their fare share of administrative responsibilities in addition to their academic and professional growth [2]. Consequently, research slots for faculty and residents should be a significant consideration for every academic institute to further the cause of evidence-based practice and to indulge the upcoming generations of surgeons, radiologists, anesthesiologists, and medical specialist in a culture of research-based medicine.

### Resident average working hours

Several impediments in the allocation of time slots for promotion of academic activities and eventually didactic thinking can be considered but for most residency programs, working hours are a sore thumb that has been curbing the enthusiasm of most academic activities. In this consideration, a significant aspect is that clinical activities, in most academic institutes, put this endeavor on the back burner. There is a wide array of difference amongst the average working hours of most specialties. The reported working hours of residents before the OSHA petition in United States were that 94% of residents particularly in New York City and 37% in the remaining state had more than 85 hours per week. Similarly, 77% of surgical residents in New York City were working more than 95 hours per week [3]. These were taken into consideration for US and Europe in 2003 with their respective petitions and implementations [3,4].

### Academic slots

In a setting primarily over shadowed with the immense clinical load, academic and research activities, though being a prime

need, if not properly weaved into the schedule somehow fall through the cracks [6]. With this new world order where Covid-19 has brought on an onslaught of new literature, residents must not only keep up for evidence-based practice but also need to know the significance a piece of literature has and the final impact on the patient in order to make use of the overwhelming literature published [7]. This can only be done with proper guidance regarding the essence of the research. Certain programs have looked at this issue even prior to the covid pandemic and have attributed the issue to problems like lack of mentorship and the relevant technical support as well as the lack of time and interest [6]. Hence the creation of dedicated research slot with it being conducted by academic faculty member having a sound knowledge of the research process would aid in the process.

### Academic and clinical balance

In the current environment although many patients die due to surgical negligence, the trend of academic surgery is on a decline. There have been numerous advancements that have been made over the years, however the last Noble Laurette who was awarded for their work for medicine was Joseph Murray in 1990, over thirty years ago. [8]. We have seen that there is a staunch inadequacy of time and resources invested in academic surgery. Literature has enumerated multiple reasons for this issue including an excessive clinical demand, challenging economic environment and the stress of revenue generation and excessive spillover from other aspects of professional life, however the lack of allocation of a protected time hold great significance [8,9].

### Work life balance

Work life balance is a significant aspect of every professional. The working hours of a resident trainee affects it the most with a noticeable gender inequality further aggravating the situation. There was a greater reluctance and happiness at work amongst the married female residents as per a study. The study also reported that married life meant a greater strain on both professional as well as personal lives of General Surgery residents [10]. This impact on the mental stress levels further abates the prospects of research inclination. These stressors curb the learning potential and the inclination towards learning. As per one survey, women bearing the brunt of carrying the family life forward were more likely to be junior than men with a significant difference in level of employment. Moreover, though after adjusting the for the number of years in practice, both the gender groups had a equal rate of publication. This rate was considerably difference if it had been calculated on a yearly basis which was (99% versus 76%,  $P < 0.001$ ). The survey also showed that women were less likely to be on a tenure track [11].

### Time division, a neglected front

In order to pay more attention to academic and research activities, division, and allocation of a greater than usual time is of utmost significance. In a survey conducted in 2005 amongst residents of Internal medicine, a higher level of efficiency was reported in residents allocating a greater period of time to their academic activities (median, 200 vs 50 hours); also, research was conducted for a variety of reasons in which intellectual cu-

riosity (73%) and career progression and development (60%) were the most significant factors. The reported barriers however were insufficient time (79%), inadequate research skills (45%), and lack of a research curriculum (44%) [12].

### Weaving research curriculum into residency

As pointed out earlier, the lack of a curriculum for research and taking it as an ancillary activity rather than considering it bedrock of academic training is one of the highlighted barriers [12]. A study conducted in a cardiothoracic institute showed the rise in academic productivity for cardiothoracic residents after the implementation of an academic environment. The changes implemented in the program included pairing of residents with academically inclined faculty with regular meetings and feedbacks, a formal peer reviewed protocol and project prioritization. The overall outcome showed an overwhelming rise of number of publications from an odds ratio of 0.61 to 2.03 in the pre-implementation to post-implementation period with a similar outcome in other aspects as well [13]. Hence for establishing an academically inclined program, not only research culture but also research curriculum should be interwoven with the surgical and clinical aspects of a residents training.

### Current national landscape

The current population of Pakistan is roughly 225 million with an academic medical community catering to them showing a dismal landscape of inadequacy [14]. Scores of research-based endeavors have been recognized and implementation not only at institutional level, but rather at a national level has been considered in this category like Pakistan Medical and Dental council [15]. These efforts have fell prey to political aspects. In these circumstances, one standing beacon of research has been the Aga Khan University that started employing research faculty to aid in their endeavor to make an academic community out of the current medical professionals. This has aided in flourishing the culture of academic research and has valued evidence-based practice amongst their residents [16]. However, further strengthening is required to aid their workforce in establishing a culture of research alongside the clinical duties. As per one study, 69% of the residents thought that research should be essential aspect of curriculum [12].

### Covid-19, a new world order

Where Covid-19 tested the world's patience and resolve, it provided the residents with a unique opportunity to see gross changes in various aspects of their professional lives. Ranging from decreased number of elective procedures and re-allocation of surgical residents to non-surgical wings to a greater inclination of emergency medicine residents to respond to covid-pneumonia and exercising greater caution and self-protection [17,18]. In this environment, a greater amount of time can be allocated to academic activities; however barriers like connectivity and interest development should also be taken care of [18]. Similarly some programs which showed the reallocation of residents to Covid-specific wards showed a decline of research activities amongst the residents specifically in their own specialty [17].

## An hour spent on research is an hour taken out of surgical experience

A perception exists amongst residents and faculty members alike that residents who spend more time in such academic activities have to compromise on their medical and more importantly their surgical prowess. Certain surveys have showed the same and as per one study in which residents paid attention to basic science research as well, it showed these researchers were significantly more likely to report a decrease in clinical judgment (75% vs. 22%,  $p = 0.013$ ) as well as a decrease in patient care skills (63% vs. 0%,  $p = 0.002$ ) [19]. So, in order to paint a larger picture of the current landscape, one need to realize the finite period assigned for surgical training and hence surgical training might suffer in this regard.

### Career outlook: Worth it or not

Academic surgeons and clinicians are the way of the future. Having said that, weaving the culture of research and fashioning it along side one's specialty is a heavy price to pay. In this regard, one does and should expect some prospects of the practice of academic research. In a study conducted in 2020 from the data on surgical residents from Association of American Medical Colleges, American Board of Medical Specialties, and the National Institutes of Health, it was posited that Graduate Medical Education (GME)-research participants had a greater chance of receiving faculty appointments (AOR 1.790; 95% CI 1.573–2.037) and federal Research Project Grants (RPG) awards (AOR 4.596; 95% CI 2.355–8.969). In this light one could argue for the burgeoning research culture and the implementation of such programs in every academic centre [20].

### Conclusion

Research culture and academic inclination should be instilled into every residency program and this can be achieved by specifying academic slots for the residents to ensure greater academic productivity. This must be augmented with establishing programs with a sound work life balance and limited working hours.

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