

Undergraduate medical research is not an endangered species and why its future is bright in Pakistan?

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Madam, I have read "Undergraduate medical research: An 'endangered species'"¹ by Shah et al with interest. They have highlighted the importance of developing and promoting undergraduate medical research in Pakistan. But I feel that the bleak picture about the future of undergraduate medical research in Pakistan is not very accurate. First of all I could not find any reference to the statement "It is true that researchers have been termed an "endangered species". In addition 'researchers' have not been listed as an endangered species anywhere.^{2,3}

Undergraduate medical research has been improving and developing in Pakistan and I would like to share some developments I witnessed or facilitated in the last one decade which indicate that there is still light at the end of the tunnel.

- ◆ Annual Neurology Research Day for Medical Students and Residents at the Shifa College of Medicine, Islamabad started six years back as a forum for the medical students and residents interested in neurology to present their research and interesting case reports. The number of abstracts and the quality of research being submitted by the medical students has been improving each year. Keeping in view the positive feedback there are plans to extend the invitations to the medical students and residents all around the country.

- ◆ The annual undergraduate medical research conference of Peshawar Medical College will enter its 7th consecutive year in March 2014.⁴

- ◆ Aga Khan Medical University, Karachi holds a postgraduate medical education (PGME) conference each year which is attended by faculty and students of the university as well as delegates from other universities.⁵ So far, 18 PGME conferences have been successfully held. Residents and undergraduate medical students present a large number of original research papers and posters.

- ◆ Many of the medical conferences in Pakistan now a days

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have separate poster and presentation sessions for the medical students and residents.⁶

When I was a medical student at the Army Medical College, Rawalpindi (1996-2000) there was no concept or facilitation of medical research at the undergraduate level. There is now an active AMCOLIANS undergraduate research forum (AURF) which not only holds workshops but also facilitates the medical students in conducting medical research and securing research funds. Some of the important research work on spinal injuries during the 2005 earthquake was documented and published by medical students of Rawalpindi Medical College at that time.^{7,8} Journal of Pioneering Medical Sciences was started by two medical students of Dow Medical College, Karachi in 2011.⁹

Khan et al assessed knowledge and attitudes about health research amongst a group of Pakistani medical students in Karachi.¹⁰ They concluded that medical students demonstrated moderate level of knowledge and attitude towards health research. Intensive training in this regard is associated with significant improvement in knowledge and attitudes of students towards health research. A similar study conducted at five medical colleges in Karachi concluded "There is keen interest and involvement in research, among final year medical students and fresh graduates of Karachi".¹¹

These all are positive indicators of a new generation of undergraduate medical students who are keen to learn the art and science of medical research and share it in medical conferences. However a lot needs to be done and some recommendations to improve the current situation are as follows:

Table-1: Student Associations working in research.

S/No	Name of the student association	Web address
1.	Society for Undergraduate Medical Research	http://www.sumrpk.com/
2.	Asian Medical Students' Association Pakistan Chapter	http://www.amsapakistan.org/
3.	Pakistan Medical Students Research society	http://pmsrs.com/
4.	National Academy of young scientists	www.nays.com.pk

Table-2: Free Online resources available to medical students and researchers around the globe.

Resource	Description	Web address
AuthorAID	This global online network provides support, mentoring, resources and training for researchers in developing countries.	http://www.authoraid.info/
Basic Biostatistics Concepts and Tools	A full course, including slides and video clips, from the School of Public Health at the University of Alabama at Birmingham, USA	http://statcourse.dopm.uab.edu/
NIH Clinical Center International Training Programmes	A collection of course material and distance learning courses offered through the National Institute of Health , USA Clinical Center's International Training Programs to help train the next generation of clinician-scientists.	http://www.cc.nih.gov/training/international/
Distance Education Programme Resources	A collection of links to online trainings, courses, videos, webinars and other training resources assembled by the National Library of Medicine, USA	http://www.nlm.nih.gov/bsd/dist_edu.html
PurdueOnline Writing Lab	The Online Writing Lab (OWL) at Purdue University ,Indiana , USA offers free online writing resources and instructional material.	https://owl.english.purdue.edu/owl/
Coursera	A social entrepreneurship company that partners with top universities to offer courses online for anyone to take, for free. Includes a large collection of courses in Health and society and medical ethics.	https://www.coursera.org/
Edx	A non-profit enterprise founded by partners Harvard University and the Massachusetts Institute of Technology (MIT) that features learning designed specifically for interactive study via the web.	https://www.edx.org/courses

1. Basics of medical research and bio-statistics should be a part of the undergraduate medical curriculum. This can be done in the form of formal lectures, followed by one-three days workshop with hands on training.

2. Medical students should identify the faculty members who are experienced researchers and should form a mentee-mentorship relation with them in order to polish their skills and learn from the experienced researchers.

3. In the era of internet sometimes a virtual mentor is more reliable, readily available and useful than an actual mentor (which can take some time to find in Pakistan). A list of these useful resources is given in Table-2.

4. The experienced researchers based in Pakistan with a track record of publications and presentations should strive to share their knowledge with the medical students and residents because "whatever we possess becomes of double value when we have the opportunity of sharing it with others" (Jean-Nicolas Bouilly).

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