

Some aspects of research in anesthesiology in Pakistan

Do not waste your time in compilations, but when your observations are sufficient, do not let them die with you. Study them, tabulate them, seek the points of contact which may reveal the underlying law. Some things can be learned only by statistical comparison. (Sir William Osler (1849–1919))¹.

Research has always been a core component of the activities within the Departments of Anesthesiology, and more and more department staff than ever are involved in research activities besides taking surgical patients through the surgery safely and in a pain free manner. Anesthesiologists have diverse research interests ranging from very basic investigations of anesthetic effects on subcellular function to more clinical projects directed toward goals that will have a direct impact on patient care involving fields of anesthesia, pain management, intensive care as well as resuscitation, e.g. reducing the need for perioperative transfusions, controlling post-operative pain and improving the management of chronic pain.

The many dimensions of research have changed over the passage of time, the change being more notable within the last two decades. One aspect of such changes concerns the rapid advances in science, the changes in the field of research in general, and the shift in global focus from “health research” to “research for health”. Another aspect concerns the role of journals in reporting research, advancing patient treatment and care, educating health professionals, and helping to bridge the communication gap between researchers and policy-makers. A third aspect concerns the way in which information is delivered and knowledge is shared, an area that has been revolutionized by computer technology and electronic media. Investigators of the advanced countries are developing cutting-edge technologies such as the use of gene therapy to treat cardiovascular disease in the perioperative period. The research in these countries is more targeted at understanding basics e.g. cardiovascular biology, integrative physiology, lung biology, neurobiology/pain, pharmacology etc., but clinical research in the perioperative coagulation, thrombosis, fibrinolysis, platelet function, antifibrinolytic therapy, intraoperative assessment of coagulation function, blood transfusion, and blood and blood product conservation,

pharmacologic and mechanical methods to reduce bleeding associated with cardiac surgery, and perioperative research including clinical trials in ARDS, intraoperative ventilator management and sedation and analgesia in the intensive care unit has been their focus of attention. I must mention here the invention of i-gel, which has been a result of years of research in the anatomy of the airways as well as synthetic polymers by an eminent Pakistani origin anesthesiologist Muhammad Aslam Nasir. Prognostic scoring systems have been developed to determine the severity of illness of patients in the ICU. These predictive models are used to assess the quality of ICU care, to evaluate the effect of novel therapies or protocols, and for optimization of resource use. A collaborative multidisciplinary approach with experts in intensive care medicine, anesthesiology, pulmonary medicine, nephrology, surgery, emergency medicine, epidemiology, medical informatics, and biomedical statistics is the hallmark of research in these countries².

The situation in the developing countries is quite different with little or no emphasis on research by the anesthesiologists. The number of research articles published per annum is alarmingly low, and the researchers have to depend upon the meager resources for the very elementary research undertaken mainly by compulsion to satisfy one of the promotion criteria. The vast majority of journals in this region are produced in an environment where the resources and infrastructure available for research are low in comparison with developed regions, not necessarily because the financial resources are lacking (although that is true in some cases) but rather because a “research culture” is lacking.

The situation is not different in Pakistan, only one anesthesiology journal of Pakistan, 'Anaesthesia, Pain & Intensive Care' is indexed by Index Medicus of WHO-EMRO out of a total of 47 different medical journals from this country³. Only four medical journals are indexed by Medline (PubMed), e.g. JPMA, JCPCP, JAMC, and PAFMJ. Out of these, one journal JAMC was indexed before being registered by Pakistan Medical & Dental Council (PMDC) or being recognized by Higher Education Commission

(HEC) due to untiring efforts of her editor. The other three had dedicated editorial staff but took years to acquire this coveted status. None of the health sciences journals published in Pakistan has been placed in W and X categories of HEC, which contain a total of 3 and 7 journals respectively, whereas 11 out of 23 journals in category Y and 19 out of 28 journals placed in category Z belong to health sciences category, Z being the lowest category. It speaks volumes about the scientific content and the editorial processing of these journals^{4,5}.

In Pakistan, HEC and Pakistan Medical Research Council (PMRC) have become active in promoting research in this country at institutional level. These institutions have provided funding to a number of researchers of university level medical institutions. The researchers of smaller institutions either do not fit in the criteria for acceptance or do not have knowledge about this facility. HEC offers numerous research grants to faculty members of recognized universities and other degree awarding institutions (DAI's)⁶.

With the aim of encouraging research in all disciplines and to strengthen the indigenous capacity and reduce exodus of talent from the country, HEC has embarked upon various program including National Research Program for Universities (NRPU) and Pakistan Program For Collaborative Research (PPCR), which offer financial support to the suitable researchers. The later has been started recently, which will provide one window facility through which the academia's, the world over, can collaborate with researchers in Pakistan which will strengthen the indigenous capacity in all the disciplines of academics research and will also raise the over all standard of the teaching & research. Innovative support and encouragement of collaborative research between faculty at Pakistani Universities/Institutions and those abroad, through PPCR research program, will also support the faculty and students at Pakistani Universities. Such foreign visits will also be very useful for Pakistani researcher to conduct certain short experiments/analysis during the research projects which would not be possible to perform in the local institution^{7,8}.

This program is primarily targeted at the faculty of Pakistani origin serving as faculty members and researchers at premier teaching and research institutions of the world. The experts from universities will be involved in developing curriculum, updating laboratory techniques and provide guidance to post graduates

students. Community of scholars will be encouraged to develop joint research programs with local faculty and also provide expertise for the overall development of concerned department.

The program will provide grant to scholars for travel and short term visits of each others' institutions /laboratory for advance research or take up joint research studies. Such visits may also be used for development of joint research proposals which may be submitted to internal and external funding agencies. This program will also provide the opportunity to foster collaboration between the universities/DAI's and research organization in Pakistan and the academics abroad to advance research, higher education and high tech industry in Pakistan.

HEC has also established a program for recognizing and rewarding research achievements in various fields. Under this program, Pakistani scholars are acknowledged for achievements in their respective fields of specialization through a series of annual awards. The awards will be given for different categories, including 20 X Best Research Paper Awards, 4 X Best Young Research Scholar Awards, Best Innovator Award, 4 X Best Book Publication Awards and 4 X Lifetime Academic Achievement Awards, amounting Rs. 50,000.00 to Rs. 500,000.00.^{7,8}

PMRC is another government arm, which offers research grants to the potential researchers. Routine Research Grants, the maximum limit for which is Rs. 0.2 million is offered to projects dealing with a health problem of national importance / related to public health. PMRC does not support basic research studies. Projects under this grant are accepted through out the year. Projects are peer reviewed by the expert panel and if approved by them then are presented to PMRC Technical Advisory Committee (TAC) for final evaluation and approval for funding. The TAC meeting is held twice in a year (i.e. 1st and 2nd half of the year) depending upon the number of approved projects to be presented in the meeting⁹.

PMRC Research Grant for Projects in High Priority Areas of Health has a maximum limit of Rs. 0.3 million. This grant has recently been announced. PMRC invites research projects for funding in high priority areas of health in which the country's National Health Programs are working¹⁰.

It is notable that only two out of a total of 38 projects funded by PMRC were related to health sciences and were

completed during the period of 2006-9, only one of these fell within the domain of anesthesiology and pain management, e.g. 'Comparison of Treatment modalities for acute pain'. Two out of a total of 7 ongoing projects during the same period belonged to health sciences and out of the two, one falls in the specialty of anesthesiology, e.g. 'Cognitive dysfunction after Bispectral Index (BIS) maintained depth of anaesthesia: A comparison of intravenous and inhalation balanced anaesthesia'¹¹.

The constraints to research are numerous, but probably the major causes include low priority to research at all levels, lack of support staff (secretarial assistants, computers and computer operators / data entry operators), lack of functional departments of research, epidemiology and statistics in medical institutions, lack of adequate laboratory facilities, low level of staffing with main emphasis on employing all the available anesthesiologists on routine non-flexible operating schedules and low wages forcing them to utilize all the available evening time in private practice at one or more private clinics.

In most cases the researchers need substantial financial support for research projects to allow them in their research pursuits. Their parent institutions, often do not have any funds allocated for research, in the absence of which, the researchers-to-be have to resort to very elementary type of research involving available resources or occasionally have to involve pharmaceutical companies, thus introducing substantial element of bias. But these measures can not address the dearth of research literature / costly equipment, and it becomes a major impediment to the productivity of many creative and talented faculty members / researchers. In the absence of such facilities the researchers, specifically the young ones, are discouraged and look for better opportunities in developed countries. It is not surprising that collectively, Pakistani anesthetists have produced more reputable research papers in Western countries than at home. Many of them have contributed sections and chapters in world renowned books.

Many international agencies also offer scholarships and financial awards to candidates from third world countries. The financial support may be granted to participate in a particular international conference, symposium or workshop, or the grant may be awarded to complete a research project. Although these donor agencies sometimes require the applicant to be a member of that

particular association, they offer special reduced membership fee for foreign exchange starved countries. One such association is International Association for the Study of Pain (IASP®), which offers a number of research grants, the details of which can be had from their website. Anesthesiologists and pain specialists from Asian countries can avail this vast resource after becoming a member at reduced fee.

The work conditions for anesthesiologists are not likely to be improved in the near future, noting the ever increasing number of specialists who opt to serve abroad for better wages and better work conditions. The recent financial incentive by Punjab Government to anesthesiologists in the shape of special allowance will not prove adequate to prevent this exodus. Anesthesiologists' monthly income remains many fold low as compared to their surgical counterparts and besides, they face another professional dilemma; lack of job satisfaction due to low public awareness at home about the sensitive nature of their job and no acknowledgement at appropriate levels of their contribution in the healthcare system. On the other hand undue media publicity given to any untoward event involving or not involving even the slightest role of anesthesia or an anesthesiologist is one important factor in the prevailing job dissatisfaction. Is it so that all of these factors may well have contributed in low research inclination in the anesthesiologists, and if we have to address this grim situation, the focus on many other ground realities is also needed other than the financial aspect of the research?

One of the basic requisite of research is that it should add materially to the existing knowledge and it should be useful for the public or the healthcare system. A look into published articles in the scientific journals in this country is sufficient to highlight the scientific famine associated with these. Only the researchers can not be blamed for poorly selected research topics. Their supervisors must share equal, if not more, share of the responsibility. Thus, accepting the topics for research needs a keen insight of the supervisors. 'Painless labour' and 'Role of epidural analgesia in normal delivery' were two topics accepted for research thesis by the candidates of the current batch of M.Sc.(Pain Medicine) being run by a private university. Supervisors need to constantly update their knowledge about the current trends in research, guide the candidates about selection of topic and facilitate them about the availability of the resources in different parts of the country. They should ensure that the completed thesis is so

authentic and authoritative that it could be published in any well-reputed scientific journal. Conducting research is in itself a scientific field with an enormous canvas to be painted. Continuous medical education (CME) or continuous professional development (CPD) in research methodology is equally important as it is in other fields of medicine. CME programs and workshops need to be organized for the supervisors as well, and the research accepted by them and/or conducted under their supervision must add materially in the scientific thinking and be useful for the public. The review article in this issue entitled 'Methodological Issues in Nonpharmacological Trials for Chronic Pain' by Michael I. Bennett and S. José Closs highlights some of these aspects in context of chronic pain.

During the current era of a revolution in information technology, anyone interested can spend some time learning in the ways and means to conduct meaningful research. Many international universities run websites which might provide useful guidance about what to research and how to research. One could find topics, which can be suitably selected with or without modifications to be researched here. Many original articles address recent innovations in the equipment, lab investigations, drugs or therapies, which although usually late to reach third world countries, yet could still be used to investigate in domestic environment. One such useful website is clinicaltrials.gov, being run by NLM. It registers clinical trials from all over the world, and offers general plan of each trial, which could be followed by our researchers. Medpedia also offers a site for finding clinical trials underway.

Thus, the possibilities are endless. We have to get started,

select many different topics, explore the resources, formulate protocols and guidelines, collect data and continue. Once a study is rolled out and put in the reviewing process of the selected journal, the work continues on the other trials simultaneously. The heads of departments should ensure that the work is underway upon 4 to 6 projects simultaneously, so that at least one or two studies are completed every six months. We should continue with our contributions without being satisfied with the present situation. We should continue to stress upon our juniors that research is enjoyable and fruitful, not only a hardship.

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Quote from 'Bailey and Love' by Sir Robert Hutchison

«From inability to let well alone; from too much zeal for the new and contempt for what is old; from putting knowledge before wisdom, science before art, and cleverness before common sense, from treating patients as cases, and from making the cure of the disease more grievous than the endurance of the same, Good Lord, deliver us.»
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