

# Improvement of research and biomedical publication

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**B**ioomedical publication is the end stage result of biomedical research activities. Moreover, the rate of publication tends to correlate with the extent of research activities. Therefore, improvement in, as well as increasing the rate of, biomedical research activities would naturally lead to increased rate of publication, resulting in proliferation of biomedical journals as well as improvement of existing journals. In contrast, lack of research activities would result in very few and poor-quality publications; hence, few and very poor-quality journals.

It was clear from the various papers published recently in the Saudi Medical Journal supplement that lack of interest amongst many academics was the major reason behind the poor research activity-state in the Eastern Mediterranean Region (EMR).<sup>1,2</sup> We therefore believe that the cause for this fatigued state shown by many academics for research should form an important area for discussion. In this study, we will concentrate our discussions on potential ways of improving research activities in the region which would lead to increased rate of publication.

### ***Improving academic research potential.***

Research activity forms the heart of any nation, and only through continuous research activities can a nation hope to remain a life and continue to progress forward and its entire fate lies at the hands of Allah and its academics and full time researchers. They can choose to become active and keep their nation alive and progressing, or remain inactive and leave it to regress and fall into a state of decay. Academics should come to realize the responsibility they have come to bear, and discharge their responsibility through continuous work with the aim of taking their societies into success and prosperity. However, they alone would not be able to succeed

and therefore, would require the support and encouragement of their governments who should provide them with the necessary financial support so that they can free their minds and time and concentrate on developing their society.

At the moment, it would seem that such mutual thoughts between academics and their governments, at least in some parts of the region, may not have developed to that required state. The main cause for the poor research activity in the region would seem to be mainly due to the present unbalanced academic professional system that is in place in some countries of the region. This system motivates graduate-students to compete for semi-academic positions and then to progress to full academic positions, as assistant professors. However, the same system fails to motivate them for higher academic positions, which are linked to high research productivity.

The incentives for graduate-students to take up academic posts include status, financial gain and the opportunity to travel abroad to study for postgraduate-education (MScs, PhDs and MDs). Moreover, the authority and the large salary associated with full academic positions, as assistant professors, are enough incentives to force all assistant lecturers to aspire to such positions. Consequently, they are motivated to work exceedingly hard during their 3-4 years of postgraduate-training (MScs, PhDs, MDs), often spending all their times working in research, and in the process, make great contribution to their fields and produce many publications, often in high-impact factor journals. When these postgraduate-students take up full academic positions, as assistant professors, incentives for higher academic positions become less attractive, and research in the majority of cases freezes. The

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minority of cases continue to use their last degree findings with further expansions or additions to make a number of publications to enable them to gain promotions to professorial positions.

The main reason for the decline in interest in higher academic positions is due to the lack of any further financial incentives, or gaining of a well recognized status. Whereas, the salary gap between an assistant lecturer and a full academic position at the assistant professor level is more than 300%, the difference in salary between the latter position and that of a professor is less than 20%. Therefore, absence of any further financial incentives forces the majority of academics to abandon research and spend minimal time in other academic activities and, instead, concentrate all their times and efforts on private practice where they can guarantee substantial extra incomes. Consequently, this leads to disastrous results for both academics and their societies. Academic self-development comes to a halt, and with time, they become ignorant of their fields as their knowledge regress and that of their fields continue to progress rapidly everyday. Their societies gain very little from them, since they stop producing before they could start.

Therefore, in order to continue to motivate staff for high academic positions, and thus for research and other academic activities, we would like to make the following proposals: 1) To increase the salary-gaps between the assistant professor position and that of the associate and full professor positions (by at least 100 and 200%). 2) Create discrete points within the full professorial position and link them with defined salary-scales. 3) Give professors greater authority within academic institutions. 4) Alternatively, abolish the present scheme of promotion from the associate to the full professorial position and, instead, create a number of professorial-chairs within each department and open the competition for these limited chairs to candidates from the whole country, or region. The salaries and the authorities associated with such chairs should be sufficiently high to make all academics aspire to, and compete for, such positions.

In parallel with these incentives, the promotion between academic positions should be linked to increased research productivity (judged by the number and, more importantly, by the quality of publications). The number of publications for each position should be appropriately increased. In order to make judgment on the quality of publications, the regional academic-community, or editors, would need to establish a scaling-system for regional journals (see later under publication). Modification of the present academic professional system would ensure continual financial and promotional incentives for higher academic positions, and would thus maintain the interest and aspiration of academics for higher academic position and bring with it increased research activities, increased

publications and improvement in teaching and medical practice. In addition, since research is time consuming, the bulk of medical and biomedical research should be carried out in academic departments and academic staff should be given sufficient time to carry out research, in addition to teaching and medical practice. The emphasis now a day on academics is to actively engage in research activities. It is only through research and development can academics continue to improve and keep up with the development of their fields and thus provide their students and patients with the right education and health care. However, the above scheme would only succeed if training in research and publication is carried out systematically.

**Research training.** A number of strategies were suggested previously in order to improve research and paper writing including establishing courses and seminars for final year medical students.<sup>3,5</sup> However, although this would be useful, we believe the success of such scheme alone would be limited. Research training and paper writing is a long life learning process that should start right from the school level, and continue through to undergraduate and postgraduate levels. In theory, research-activities and paper writing is not very much different from that which should have started at the school level, where students carry out simple experiments and then write their work in a form that is not very much different from writing real research papers (such as heading, introduction, materials and methods, discussion and references). In addition, students at the school level should have started reading general scientific journals (written and presented by experts in the field in a simplified forms and cover recent aspects of important discoveries), which would have stimulated their interest in research and development. If these journals are not available in the region, then effort should be made to establish such journals and make them available to school and undergraduate students. In addition, it would be useful if regional general medical journals are produced for medical students and practitioners. Moreover, first year medical students should be made aware of the existence of general medical and research journals (such as British Medical Journal [BMJ], JAMA, Saudi Medical Journal [SMJ], EMMJ) and encouraged to read these journals through out their medical training years.

The next phase of training should start at the undergraduate level where medical students, who plan to work in the academic field, should be encouraged and supported to take some time out of their medical course to study full time for a science degree. In this way, they will get a chance to spend some times acquiring scientific knowledge and participate directly in research and scientific writing. Such experience would be invaluable to their future postgraduate-academic training, in the

forms of PhDs or MDs, which would complete their research-training.

Postgraduate-training should be carried out at an early stage, ideally before specialization, so that medical academics can spend their prime times on medical research and medical education. Early postgraduate-training would also be recommended to all other students including those doing biomedical science degrees, who would also play a major role in biomedical research activity.

Presently, it would seem that postgraduate-training is left to a very late stage of academic's career, and which undoubtedly contribute to the under productivity in research observed in the region. Late completion of postgraduate-research training has many effects. Firstly, the long period spent at the assistant lecturer level tend to coincide with the peak-age of academic working lives. When academics finally get the chance to do their postgraduate-training, they are already past their prime times, and by the time they finish their studies, they no longer have either the interest or the motivation to continue with research and other academic activities. Therefore, it is important that postgraduate academic-training is started at an early age, either before or during the period of specialization. The period of postgraduate-training (MSc and PhD/MD) should be limited to a maximum of 5 years, and extension beyond the fifth year should only be granted under exceptional circumstances. This is extremely important, since open-ended postgraduate-training period could discourage students from completing their training in time, resulting in delay in their career progression and huge financial loss to their funding bodies.

It is anticipated that the bulk of Medical and Biomedical research activities would be carried out by staff with academic postgraduate-training (possessing MScs and PhDs/MDs) in major academic medical departments which would be well staffed and equipped to carry out such activities.

Therefore, with the right research training, coupled with motivation for higher academic posts and sufficient time allocated for research, would lead to increased research activities and consequently increased rate of publication.

**Funding of research.** Regarding funding for research, it was reported that regional governments at best, but not all, spend less than 0.5% of the gross domestic product on research.<sup>5</sup> The question is forced to ask if whether this low expenditure on research is the fault of governments or academics themselves. It would be understandable for governments, with limited incomes, to show reluctance to spend more on research that may not have clear beneficial outcomes. It would be, therefore, up to the academics to make a case to their respective governments for the need to increase the budget for research. Regional governments may be persuaded to increase research

budget if they are convinced that research would result in visible beneficial outcomes (better healthcare, better health delivery, generation of increased revenues or decreased expenditures on health care). It is important therefore that researchers in the region concentrate their research activities on projects that would lead to clear beneficial outcomes to their communities. This may require researchers to adapt and apply their expertise to regional research needs. Research projects that would lead to improvement of the economy and health would produce more funds for further research (epidemiological studies, health education, improvement in health care through acquisition of new medical, surgical and diagnostic procedures and continuous auditing and re-auditing of existing procedures, improvement in methods of teaching, establishing normal and pathological indices for the regional populations and so forth). Such research activities would lead to better health delivery and better healthcare, in addition to producing endless publications. The progress and expression of research-activities should follow the needs of the regional communities. Basic biomedical research is very expensive, and in the majority of cases has no obvious beneficial outcomes. Therefore, extensive biomedical research should not be given high priority, as this would lead to drainage of the already limited budgets for research and, moreover, could have negative effects on the progression of the overall research activities in the long term.

Basic biomedical research may be established in certain universities in accordance with the regional health needs and the future planning directions of regional health care and health industry (pharmaceutical and biomedical industries). In addition, students who are normally sent abroad to study for postgraduate-degrees can be trained in such universities. This may prove more economical and beneficial for regional governments, since they would be able to plan postgraduate-training programs in accordance with their short and long term planning of health delivery, healthcare and health industry.

Experts from the regional expatriate population living in the West can be recruited back to the region to contribute to the success of the research and postgraduate-education programs, as suggested previously.<sup>5</sup> Indeed, attracting expatriates back to the region would make it possible to train post-graduate students regionally, conduct good quality research for the regional needs and lead to rapid development of the region in a way similar to that which has already occurred in the South Eastern Asian Nations (SEAN) such as Taiwan, Hong Kong, China, Thailand and so forth.<sup>6,7</sup> These countries initiated a program in the 1980s of attracting back their expert expatriates living in the West, using both financial and professional incentives. Such programs have led to the development of existing,

as well as proliferation of many top class, Universities, Research Institutions and Science Parks across the whole of the SEAN-region. This in turn, led to increased biomedical research and the rapid development of the health and education sectors, as well as the pharmaceutical and biomedical industries.<sup>8</sup> For effective research productivity, particularly in basic biomedical research and teaching fields, joint staffing by qualified medical and scientific academics would be essential. Scientists can be educated and trained at the undergraduate and postgraduate levels jointly by the faculty of Science and Medicine, in departments that are all ready engaged in the teaching and training of medical students (such as Biochemistry, Microbiology, Molecular Biology, Immunology). In addition to playing a role in research and academic teaching, qualified scientists would be able to play a major role in the development of the health-industry. For the latter to succeed, close planning between academic postgraduate-training institutions, health departments and the health industry, would be required. Establishment of biomedical-technology in the region would lead to further improvement in research activities.

**Biomedical publications.** Regarding biomedical publication, it would not need to perform extra research, or write extra papers, in order to enhance and expand medical publication in the region. Literature search, or just simply scanning through the reference-lists of regional journals, reveals that a large proportion of the regional publications are published in international journals. If those papers were published in regional journals, they would enhance the quality of existing journals, as well as lead to the birth of many new medical and biomedical journals. Therefore, one way of increasing and enhancing medical publication in the region is to encourage researchers to publish their work regionally.

Publishing in international journals does not help regional research activities, biomedical publication, or regional governments. Papers published in international journals are simply lost and the data cannot be used in the planning of future research by the regional researchers (or their governments in health planning), since the majority of universities in the region would not be able to stock the hundreds of medical and biomedical journals that are in existence. Therefore, we believe that publishing in regional journals is extremely important for the dissemination of knowledge to regional researchers and health care planners, leading to improved research activities and better health planning, respectively. Moreover, publishing regionally would lead to improvement in regional publication, resulting in increased and better quality biomedical journals in the region. Without publishing regionally, good quality papers would be published in international journals and, consequently, regional journals would find themselves barely able to survive, resulting in the

decline of regional medical publications. Therefore, to enhance medical publication, researchers should be encouraged to publish in regional journals and funding governments may need to attach this as a condition when funding research projects.

It was reported that one reason for the poor medical publication in the region is due to the fact that editors, and coordinators, of local/regional journals end up publishing their work in international journals.<sup>4</sup> Therefore, to start with, those who are attached to local or regional journals should set examples for the rest of researchers by publishing all their work in local or regional journals.

Finally, in order to encourage researchers to publish regionally, and at the same time enhance the quality of research in the region, it would be useful to have a regional journal impact factor system. Presence of such a system would allow researchers to distinguish their research work and encourage them to publish regionally. Moreover, such system would allow governments to direct their research funding to the appropriate institutions. In addition, such system would allow Universities to judge the quality of papers when assessing candidates for higher academic positions. At the moment, publications are counted with out due consideration to the quality of journals. This in itself de-motivates academics from doing high quality research work, since at the end of the day; good and bad publications are counted as equal.

In conclusions, improving research-training, enhancing financial incentives, linking research activities to communities need, establishing major research institutions for research and postgraduate-training and attracting expatriate experts, they should lead to enhanced research activities in the region and, consequently, lead to a better health delivery, better health care, rapid development of the health industry and increased rate of publication. Increased publications, with incentives to publish regionally, would enhance the quality of existing journals, as well as lead to proliferation of many new medical and biomedical journals in the region.

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