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MINI-REVIEW

Why should I do research? Is it a waste of time?

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ABBREVIATIONS

RCT, randomised clinical trials;
LoE, level of evidence;
R&D, research and development

Abstract ***Objectives:*** To answer the questions 'Why should I do research? Is it a waste of time?' and present relevant issues.

Methods: Medline was used to identify relevant articles published from 2000 to 2013, using the following keywords 'medicine', 'research', 'purpose', 'study', 'trial', 'urology'.

Results: Research is the most important activity to achieve scientific progress. Although it is an easy process on a theoretical basis, practically it is a laborious process, and full commitment and dedication are of paramount importance. Currently, given that the financial crisis has a key influence in daily practice, the need to stress the real purpose of research is crucial.

Conclusion: Research is necessary and not a waste of time. Efforts to improving medical knowledge should be continuous.

What is research?

Research is a general term that covers all processes aiming to find responses to worthwhile scientific questions by means of a systematic and scientific approach. In fact, research is the search for scientific knowledge, a systematically formal process to increase the fund of knowledge and use it properly for the development of novel applications.

There are several types of research, such as basic science laboratory research, translational research, and clinical and population-based research. Medical research through randomised clinical trials (RCTs) represents the principal methodological approach for the structured assessment of medical outcomes. RCTs provide prospective and investigator-controlled studies, representing the highest level of evidence (LoE) and grade of recommendation, and define the ultimate

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practice guideline [1]. However, many constraints, such as ethical, economic and/or social issues, render the conduct of RCTs difficult and their application problematic. For instance, in one of the largest RCTs in urology, on preventing prostate cancer with finasteride, the LoE was 1 [2]. In this RCT, after 7 years of finasteride chemoprevention, the rate of cancer decreased from 24.4% to 18.4%. Based on this study, it could be postulated that finasteride chemoprevention should be offered to men in the general population in an attempt to reduce the risk of prostate cancer. However, the findings of this RCT could not be implemented universally due to financial issues [3].

There are two main research processes, i.e., qualitative and quantitative studies. Although very different in structure and methods, these studies represent two arms of the same research body. Qualitative studies are based mainly on human experience, using notions and theoretical information without quantifying variables, while quantitative studies record information obtained from participants in a numerical form, to enable a statistical analysis of the data. Therefore, quantitative studies can be used to establish the existence of associative or causal relationships between variables.

From a practical perspective, adding a Research Unit to a Medical Department would ultimately enhance clinical practice and education. As such, almost all hospitals in Western countries have research and development (R&D) departments, where the R&D can be linked with clinical innovation. Basic areas in this field include business planning, sales policies and activities, model design, and strategic propositions and campaign development. However, if researchers are not motivated, the research could be counterproductive, and the whole process could ultimately be a waste of time and effort [4].

The ethics and the high quality of research are ensured by committees, such as the Internal Review Board, and Ethics Research Committees, especially in academic hospitals. They consist of highly educated and dedicated scientists of good faith as well as objectivity, to be the trustees of ethical and properly designed and performed studies.

Do we need research?

Research is the fuel for future progress and it has significantly shaped perspectives in medicine. In urology there are numerous examples showing that current practice has rapidly changed as a result of several key research findings. For example, from the research of Huggins and Hodges (who won the Nobel Prize in 1966), hormone therapy has become the standard treatment for patients with advanced/metastatic prostate cancer. The use of ESWL to treat stones in the urinary tract is another example of research that has improved practice in urology. The current trend in urology to use robotic assistance in surgery is a relatively recent example of how constant research worldwide improves everyday clinical practice [5]. Furthermore, in a more sophisticated field, research is used to identify factors influencing decision-making, clarify the preferred alternatives, and encourage the selection of a preferred screening option in diseases such as prostate cancer [6,7].

Conducting research provides a deeper understanding of several scientific topics within the specialty of each doctor. Furthermore, it helps doctors of a particular specialty to understand better the scientific work of other colleagues. Despite the different areas of interest between the different specialties, there are common research methods.

In a University, PhD and MSc students concentrate their efforts at higher research levels. Apart from having to produce a challenging and stimulating thesis, young researchers try to develop their analytical, conceptual and critical thinking skills to the highest academic level. Also, postgraduate students thus prepare themselves for a future job in the global market.

During the research process several approaches can be tested and compared for their safety and efficacy, while the results of this procedure can be recorded and statistically analysed to extract the relevant results. Similarly, any aspects of false results and side-effects, e.g., for new medications, can be detected and properly evaluated to devise every possible improvement. Hence, research components under the auspices of dedicated supervisors, assisted by devoted personnel, are of utmost importance. Also, funding is a catalyst for the optimum progress of the research programme, and it must be independent from any other financial source with a possible conflict. Unfortunately, in cases of economic crisis in a hospital, the first department that is trimmed is research.

Is research time a waste of time?

Even if the right personnel are appointed and the funding is secured, it would be a great mistake to believe that the results are guaranteed. Full commitment and dedication are of utmost importance for successful research. Also, these questions are raised in relation to the scientific papers that are accepted for publication in medical journals. About US$ 160 billion is spent every year on biomedical research [8]. Recently, in the Lancet [9] it was estimated that 85% of research is wasteful or inefficient, with deficiencies presented in the following questions: (1) is the research question relevant for clinicians or patients?; (2) are the design and methods appropriate?; (3) is the full report accessible?; (4) is it unbiased and clinically meaningful? Such questions about the importance, purpose and impact of research should surely be answered during the research. The view of the general public is that the purpose of medical

research is to advance knowledge for the good of society, to invent new substances to fight disease, to create diagnostic and therapeutic algorithms, to improve public health, to prevent diseases, to improve the quality of life and to prolong overall survival.

Pharmaceutical companies that sponsor research are financially orientated. This fact leads to a sole result, i.e., profit, as a return on their investment. In this framework it would be impossible for academic institutions to operate on any other basis but finance. Economic indicators, even better benefits and the commercial potential of research are important for their survival. Nevertheless, the purpose of research is more than that. It is time to reframe the way research is done and rewarded, leaving profits in second place. We need to remind ourselves about the real purpose of scientific research. Moreover, we need to decide what research is needed and what impact it is likely to have. Researchers and those who benefit from research (i.e., patients, practising doctors) have a crucial role in the research process. Academic institutions should assess and reward researchers on a long-term basis, and help them to concentrate on meaningful research. Researchers must defend their selection of topics as being those appropriate to benefit public health.

Each medical specialty has a different working plan, and surgical specialties such as urology are characterised by a lack of time for research. It is suggested that specific sessions for research could be implemented in the job plan of urologists, and for other doctors. This is more important for the 'academic doctor', but even non-academic doctors could undertake research, if only of the current updated medical literature.

Last but not least is the issue of teaching research to junior doctors. This is very important, as the sooner each doctor is involved in the research process the better for his or her career. Even for junior doctors who are not interested in an academic career, understanding the research process helps them to develop their scientific skills. Young doctors should be motivated to understand and undertake research. However, it is important to guide them through the basic principles of research and to mentor them during their first scientific projects. Furthermore, specific academic training opportunities should be offered within developing programmes, such as the academic specialist registrar's career pathways in the UK [10].

In conclusion, research is necessary and not a waste of time. All relevant components of the research engine should co-operate to achieve scientific progress that will help patients and the general population.

Take-home messages

- In medicine, research is the search for scientific knowledge, which is crucial for the development of novel medications and techniques.
- Conducting research provides a deeper understanding of several scientific topics of the specialty of each doctor.
- Research through RCTs represents the principal methodological approach.
- There are two main research processes; qualitative and quantitative studies.
- It is important to develop Research Units in hospitals and medical centres.
- Ethics and the high quality of research are ensured by committees (i.e. Internal Board Review, Ethical Research Committee).
- Research sessions could be implemented in the job plans of doctors.
- Research is not a waste of time, but a scientific investment.

Conflict of interest

None.

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