BRIEF RESEARCH COMMUNICATION

Bridging Gap in Research During Medical Training

Abstract

Research, a methodical pathway to discover facts, enunciate principles, or offer an interpretation of the existing knowledge. Everything written in undergraduate textbooks was once a research topic, somebody thought about a relation, or correlation, and asked a question, and research was the path to the answer. To start any research, students should be aware of the right time and methods. The best way to start research from scratch is to approach the respective college or department. Showing enthusiasm or zeal to know may help pave your way into it. Having a mentor at the college is of great help. With the ever-changing face of medicine in today's rapidly changing world, it is of utmost importance to prepare for the upcoming challenges; research is our biggest tool in this. To conclude, medical research is at crossroads and is being scrutinized for validity and reproducibility. Errors are common, but can jeopardize the health of a number of people. Sloppy research is waste of time and resources. It plays a crucial role in discovering new treatments, while making sure that we use existing treatments in the best possible ways. Research helps us to explore the unknown, filling the gaps in existing knowledge and modifying the way that health care professionals work.

Keywords: Medical education, Medical students, Research.

Introduction

Research is a path where we discover facts, enunciate principles, or offer an interpretation of the existing knowledge.[1,2] To qualify to be called valid research, the research question must have applicability to our well-being, and it must contribute of how and why of a fact we come across. Searching for answers to questions, such as what, how, and when, is also a valid part of research. There are also uses of statistics in medical research, results are what your data concludes, whereas it is also based on the results plus other evidence available in the credible biological explanation of the results.[3] Results likely give too much importance to the statistical *p* values, and sometimes ignoring *p* values compromise statistical significance. There is a great confabulation going on regarding the validity of the results based on *p* values.[3]

Everything written in undergraduate textbooks was once a research topic; somebody thought of a relation, or correlation, and asked a question, which is how the research came in. Concisely, research is a window to the current scenario. Textbooks are barely covering a quarter of the actual diseases, their prevalence, and the respective treatment. Research humbles people, and talks about how unaware we are. It is a tool to explore medicine and its intricacies. The objective of medical research is basically to ensure a better understanding of how our mind, body, and soul function, what can be done to put ourselves back in the homeostatic state, how to minimize and prevent such aberrations. Medical research is trying to discover new ways to improve our health, not only physically but also mentally, and possibly spiritually.

Existing Drawbacks and Lucunae

The major drawback of lack of research during medical training is limited awareness. Postgraduates because of its compulsion more commonly do research as a part of their dissertation, but in undergraduates, more than half of the students are unaware about the importance of it. Some of the students who are even aware have certain gaps in their information about it. A roadblock in people's minds is that it is about finding a rare cause of diseases, which is very far from the truth. It should definitely add value to existing pool of information. It should also add something that is of practical significance.[3] There might be instances where research done meticulously as provided in rulebook's, fails to be noticed solely due to sloppy presentation.

Students also feel that somehow only if they write a heavy or complicated word or if mention on how extensively looked into the topic, then only the reviewer or journal will accept the research.

Something people fail to understand, which the British or American journals have also quoted, is shortcomings are appreciated. So, if a research paper could not even reach any concrete conclusion, but still could add some value to existing knowledge, is accepted by them. As for a survey research is concerned, the validity of answers might not be accurate is a major drawback. Poorly designed research instruments produce inaccurate answers or respondents might not answer accurately or honestly. Likewise, the absence of representativeness can also affect the validity of research findings. Difficulty in getting a representative sample affects the generalizability of the conclusion, which can be due to unequal male-to-female ratio, ethnicity, education level, or income level.[4] Nearly 85 billion dollars that are spent every year in medical research go in vain.

In our country, while most of the researchers are working toward the development in the field of medical research, a fair number of them, are already crammed with patients. The data available shows that medical professionals are not as involved in research as it is desired and gradually their involvement is on the decline. An analysis done by Elsevier, in the year 2015, it was reported that the Indian subcontinent, which has nearly 18% of the world's population, is hardly contributing 5% of the output.

Only 27% of total health researchers in the world belong to developing countries, stated by the United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute of Statistics.[5] South Asia contains only 1.2% of all annual research on health-related topics.[6] With the time constrains, it is becoming difficult for doctors to act in accordance with the present scenario of publishing articles. Health Institutes in our country are running in bare minimum due to lack of resources. Both manpower and money, research is final indignity.

Planning a Research Project during Medical Training

To start any research, students should be aware of the right time and the pathway. The best way to start research from the scratch is to approach college or department to support in research. Showing enthusiasm or zeal to know may pave your way into it. Having a mentor in college is a great help. Having interests in the intricacies in medicine keeps the mentor and student on the same track. Research is not just a curriculum vitae building exercise, rather it keeps you much involved in the medical field.

Before we start out, the first thing to be decided is, the nature of the research work, which can be exploratory, descriptive, or explanatory. The approach of the research, which can be deductive, inductive, or abductive. Research design can be qualitative or quantitative. A research strategy is simply a plan for how you aim to achieve your research goal; hence, every research should have a research strategy. The type of research that can be undertaken includes survey, experiment, archival, case study, action research, and narrative inquiry. For example, surveys and experiments are types of research associated with quantitative design.

Beginning research is, for example, survey research, that is, information is gathered as a first step by asking questions, collected by interviewers from a subset of a population to be described (sample) rather than from all members (census). The advantages of survey research include versatility, efficiency, and generalizability (research can be extrapolated from a representative sample to a larger population without having to ask questions to every single person).

Potential Strategies

In research work, it is the people, ultimately, are taking the risk and coming out with results. Potential strategies include having a mentor in college, who guides them throughout the course, along with promoting research during the internship. Having a mentor can be great uphold and support for the students. Besides this, orienting students during the foundation course about the scope of research accounts for utmost importance as it is a way to incorporate in them from the beginning. Need for research, how it enhances knowledge about medicine, it is something that takes effort and patience and may not even yield a good outcome at times but still adds value. The delivery system of medical education needs revision with ideas such as the early introduction of a research in the undergraduate curriculum. Faculty should be aware enough to carry out population-specific research. It has to be informed and acknowledged that the mere publishing an article without any purpose other than personal gains should be discouraged at all possible levels.

Table 1: Opportunities for research for Indian medical students

Opportunities	*Organizations*
Short-term studentship	Conducted by Indian Council Medical Research (ICMR)
Research opportunities in India	Centre of Cellular and Microbiology (CCMB) The Otto Research Initiatives [Program by International Medical Graduate (IMG) for IMG]
Specialized programs conducted for medical students	World Health Organization (WHO)
Mentorship programs	Conducted by All India Institute of Medical Sciences (AIIMS)

Updating students about programs such as Comprehensive Research Experience for Medical Students (CREMS) Summer Research Program, the CREMS provides opportunities each year for medical students enrolled at the University of Toronto to participate in a full-time summer research project between their first and second year, or second and third year of medical school, under the supervision of a faculty mentor. There are many ways for Indian medical students that focuses on any student primarily beginning with their research as listed in Table 1.

Let's discuss on short-term studentship, for example. These research programs are conducted by ICMR where students have to choose a topic and are given a deadline followed by submitting it on the website, and if approved, they are given 2 months of time during which they receive a stipend to conduct their research and come to a conclusion. Also awarded with certification. The topics are such as stress levels during COVID-19 period among medical students, biochemical reactions and their effects on our body, etc.

Research helps us in understanding the concepts that we read in textbooks, for example, why a particular drug is of choice in a particular disease. Going into nitty–gritty or background helps to draw a conclusion so we stop taking things at face value.[7]

Conclusion

Research in medical field is at a crossroad and it is being scrutinized for validity and reproducibility. Errors are common that can jeopardize the health of people when involve millions. Sloppy research simply is a waste of time and resources. It plays a crucial role in discovering new treatments, while making sure that we use prior treatments in the best possible ways. Research helps us to explore the unknown, filling the gaps in existing knowledge and modifying the way that health care professionals work.

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