

**Title of the practice:** Introduction of Research Methodology in Under-Graduate curriculum

### **Objectives of the practice**

Inclusion of Research Methodology in the under-graduate curriculum has been a topic of discussion since long. But, very little effort has been directed at achieving this aim. Research experience at the under-graduate level is limited to doing a research project or two under the guidance of a faculty. It is just about following the instructions of the guide and it is less likely that they will learn about finer aspects of doing research. As the research is an integral part of any educational system, it is imperative that medical students should also know in detail about doing research. Hence, we introduced some sessions of Research Methodology in routine curriculum to provide foundation and instil excitement for research among under-graduate students and to familiarize the under-graduate students with research skills and application of this knowledge to healthcare decision making.

### **The context**

Research is recognised as a major output for any educational institute. But at the same time, teaching of research methodology has received a limited amount of attention. In the under-graduate curriculum, research methodology and epidemiology is taught under Community Medicine. Unfortunately, not too much importance is given either by the teachers or by the students at the undergraduate level. It is only when a medical students enters into a post-graduate course, he is exposed to research and is expected to do the thesis / dissertation as a mandatory requirement. Also, the opportunities are few and far between to learn research methodology during postgraduate teaching. Hence it is important to learn research methodology for undergraduate students for a stronger foundation for their future. Also, in today's world of technology, the medical information is flowing at a greater speed, bombarding medical students. Everyday dozens of articles are published in different journals and databases, which continue to fuel medical knowledge. All this information in digital format is available for the undergraduate medical students. By providing them with the basic and appropriate knowledge about research methodology, we try to reduce the gap between information available and comprehension by the students.

### **The practice**

The Institution has established the Research Cell through which all the research related activities are being carried out. The Research Cell is conducting monthly research meet, where along with the research paper presentations by the postgraduate students and faculty, one undergraduate student also make a small presentation about a medical scientist / researcher / physician who has contributed in the medical field by his/her research. This activity is proved to be very inspiring for the undergraduate medical students as most of the medical students in second, third and final professional course attend those monthly meets. Since the last academic

year, one small topic related to research methodology has also been presented during the monthly meets.

## Monthly Research Cell Meet



A one day sensitization workshop is arranged for the undergraduate medical students to introduce them to the research, create interest and enthusiasm about the research, give them a brief introduction and make them aware about the scope of research in medical field.



As the research methodology is not a part of regular curriculum, separate teaching hours have been allotted for the learning of principles of research methodology. Firstly didactic lectures are organised for the undergraduate medical students. A total of 16 sessions are conducted on introduction to research methodology, research question, hypothesis, objectives, different study designs, types of variables and data management, sampling method and sample size determination, descriptive and inferential statistics, literature search, ethics and softwares used in research. All these lectures are conducted beyond the regular teaching hours and the attendance was not made mandatory.



The educational aim of teaching research to the undergraduate medical students is not only to transfer the content and knowledge but to stimulate the critical thinking, application and creative problem solving. For this Team-Based Learning (TBL) module has been adopted which created an engaged learning process by emphasizing on application rather than just memorization. As the didactic lectures are started, students are divided into a team of four to six. Each team is asked to select a research topic which is refined after group discussion and considering the factors like novelty and feasibility. As the topics are covered in each week, the team will work on the topic that they have selected and accordingly form a research question, hypothesis and objectives. This activity helps the undergraduate students to learn many practical aspects of research like literature search, preparing questionnaire, obtaining informed consent, etc. Students can seek any kind of help anytime during the activity.



On 05<sup>th</sup> March 2020, Institution has successfully organised the third MUHS State Level Research Competition and National Research Conference. This was an attempt to give an opportunity to the undergraduate students to expose their talent and learn few things about research from the various eminent speakers.



The Institution has developed Research Museum which is one of its kinds. The Research Museum has statues and information about the great researchers in the medical field along with some famous quotes. This inspires the undergraduate students to undertake a research project which is supplemented by providing suitable environment in the campus. Some ancient instruments help students to learn about how the technology has evolved over a period of time.



Apart from this, Institution has designed a **“Research Guide – A Complete Book for your Research Journey”** authored by the faculty of the Institution. This book has really helped the students to gain insight about research methodology. Many of the under-graduate students have referred this book and they found it very useful.

The National Medical Commission has started Competency Based Medical Education since 2019 and added ‘Electives’ as a separate two months duration in the curriculum to boost the research among undergraduates; but the Institution has already started the Research Cell in 2018 and promoting the students to undertake the research.

Institution has its own scientific journal named VIMS Health Science Journal. This gives an opportunity to the undergraduate students to get their research published.

Ethics is one of the most important parts of any research. We also emphasize the ethical consideration while teaching the research to under-graduate students. Institution has well established Ethics Committee approved by the DGHS, Govt. of India. In addition to this, few of the teachers from our Institution have been appointed as a member of Ethical Committee at other institutions.

Institution also organizes the research quiz competitions, competition on writing a research protocol on a given topic are conducted in the Institution for the undergraduate medical students. This also helps in creating an enabling and supportive environment for research among undergraduate students.

The department of Anatomy, Biochemistry and Pathology of the Institution has been recognised for the Ph. D. admissions.

### **Evidence of success**

Most of the medical students have research potential. Apart from “big name” professors, there is definitely a place for medical students in research. Almost every medical student is a researcher since the beginning of their career and most of them are unaware of it. Being in a professional course, when the students have a question about a subject, they have to do the research, analyse the result and answer the original question; in short they are doing a small research project. By introducing the research in the undergraduate curriculum, we are providing them with the proper

direction and creating interest and enthusiasm among the undergraduate students to do the active research by understanding the basic principles of research methodology.

At the end of the academic year, the Research Cell organises Annual Prize Distribution Ceremony for the presentations made during monthly research meets. The best presenters across various categories are awarded during this function. This boosts the confidence of the students to do better next time in the field of research.



The number of research projects undertaken by undergraduate students has increased. There were only four research projects sent by the undergraduate students for the Indian Council of Medical Research (ICMR) – Short Term Studentship (STS) in the year 2019. Out of which three projected were selected and two were approved by the ICMR for studentship. This number has increased to eight for the year 2020. One student has received Short Term Research Grant (STRG) from the MUHS and one faculty has received Long Term Research Grant (LTRG).

Many students are now participating in the AVISHKAR – Inter-University Research Project Competition. In the year 2018, 38 undergraduate students participated and presented research project in the AVISHKAR. In 2019, two undergraduate students also got selected in this competition to compete at higher level in the year 2019.

Undergraduate students also participate in various other research project competitions like MUHS State Level Research Competition, INVENTUM, TRINITY, etc.

The undergraduate students have developed some models which are well appreciated and they are kept in the research museum.

As the Institution has successfully hosted and organised the Third MUHS State Level Research Competition in March-2020, the active participation and enthusiasm shown by the undergraduate students during the organisation of this competition was noteworthy. All the presentations made during the conference were compiled as **‘Research Compendium’**.

This novel approach not only inspires the undergraduate students but the faculty is also influenced by this and around 20 faculties from the institution have either completed Ph.D. or currently joined as Ph.D. scholar. Every year, Research Cell of the Institution conducts Basic Course Workshop in Research Methodology for the postgraduate students and teachers. All the participants enthusiastically participate in this workshop and it helps both postgraduate students and teachers to learn about research methodology. Till date more than 400 participants have attended this workshop. In addition to this, 07 faculty members have also undergone Advance Research Methodology Workshop conducted by the MUHS, Nashik. Some of the faculties are also the resource person at various research conferences and workshops within and outside the Institution.

### **Problems encountered and resources required**

The master time-table of the teaching curriculum is prepared as per the directions of regulatory authority. There is no separate teaching hours allotted for the research. Hence, the teaching-learning activities for the research have to be carried out after the routine teaching hours. The teaching staffs have to devote extra hours for this activity. Also, it requires support from management to use the resources and infrastructure during the extra hours.