

Capacity Building in Research on Traditional Medicine: Experience of a Workshop Conducted under the Aegis of the Indian Council of Medical Research

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ABSTRACT

Training healthcare professionals in research methodology is essential to promote research and innovation. This is particularly relevant in India, where there is a wealth of potential drug candidates from Indian Traditional Medicine (TM) systems that await exploration and scientific validation using modern medicine principles. Surprisingly, there is a lack of reported activities to train modern medicine practitioners in TM research in the literature. Recognising this need, a structured training program was planned and conducted under the auspices of the Indian Council of Medical Research (ICMR) to train modern medicine practitioners in TM research. A survey was conducted among modern medicine practitioners to assess training gaps and identify key areas to be covered in the workshop modules. The workshop received a positive response, as evidenced by the numerous registration applications and positive feedback from participants. The present article shares the experiences of conducting the pilot workshop, which may serve as a valuable resource for planning similar workshops.

Keywords: Clinical research, Education, Research design, Traditional medicine research

INTRODUCTION

There has been a rapid surge in the number of research articles published in India over the last decade [1]. In 2020, India's contribution to the global research output in science, including health sciences, engineering, and other fields, was about 5.07%, compared to 3.12% in 2010 [2]. However, the quality of medical research studies from India, as estimated by the citations received, leaves much to be desired [3]. One crucial step to enhance the quality of medical research and meet globally acceptable standards is the training of researchers. Since 2019, training in research methodology for postgraduate medical students and faculty has been made available online through the National Programme on Technology Enhanced Learning (NPTEL) platform by ICMR [4]. However, its short-term and long-term impact has not been systematically evaluated [5,6].

To add to these challenges, research in Traditional Medicine (TM) is far from satisfactory. A quick search on PubMed using the search term "TM" in the title or abstract fields and the filter 'Clinical Trial/Randomised Controlled Trial' yielded only 224 results from 1989 to the present. Among these 224 results, only seven were from India, while the rest were from Chinese and Persian TM systems [7]. This is a concerning situation, considering that the Indian traditional system of medicine has been in existence for thousands of years. It has been widely discussed that TMs should undergo scientific validation to gain global acceptance. In fact, there is a wealth of potential drug candidates within Indian traditional systems of medicine that need to be explored using modern research methods.

Therefore, it is necessary to focus on TM research, particularly in therapeutic areas where modern medicine treatments have failed or have limitations, and there is an unmet clinical need. In one study, clinicians identified arthritis, diabetes mellitus, backache, and malignancy as conditions requiring better treatment options [8].

It is evident that there is a lack of systematic experimental or clinical studies evaluating the role of TM [9,10]. It is often emphasised that coordinated multidisciplinary efforts are necessary, and researchers

with a genuine interest and determination to pursue TM research should receive appropriate training.

The World Health Organisation (WHO) TM Strategy 2014–2023, which aims to support Member States in strengthening the role of Traditional Medicine (TM), emphasises the importance of education and the integration of modern medicine and TM systems to enhance Traditional Medicine Research (TMR). According to a World Health Organisation (WHO) survey on research on traditional and complementary medicines, Member States identified technical guidance on research and evaluation of safety, quality, and efficacy as areas of high priority requiring support from WHO [11].

Literature does not report any training activities or courses for modern medicine practitioners to promote more inclusive research collaboration [12]. Recognising this gap, ICMR identified the need for a structured training program in clinical pharmacology research. In 2018, the Department of Pharmacology and Therapeutics at Seth GS Medical College was recognised as the 'Advanced Centre for Capacity Building of Young Investigators in Clinical Pharmacology Research in TM' to conduct this program. The objectives of present program were to develop standardised training modules for TMR, validate these modules with experts, conduct workshops across the country using these modules to identify strengths and deficiencies, and further strengthen the modules for wider dissemination. The program also aimed to encourage partnerships among clinicians, pharmacologists, and public health professionals during and after the workshops. Permission was obtained from the institutional ethics committee for the project.

Execution of the Programme for Capacity Building of Young Investigators in Clinical Pharmacology Research in Traditional Medicine (TM)

A survey was conducted to assess the training needs of young investigators. The questionnaire used in present survey consisted of two domains: Basic Research Methodology and TM Research. From the survey, it was observed that the participants had received

adequate training in basic research methodology, but many expressed a willingness for further training. Although the participants had a very limited experience in conducting research on TM, they expressed interest in TM research. The need for funding to support TMR studies was also expressed by the participants. The survey played a crucial role in identifying gaps in training and areas where emphasis was necessary [13].

In the first year of the project (2018-19), the training modules were designed in consultation with subject experts and revised using an iterative approach. Potential resource persons to deliver these sessions were identified.

Pilot Training Workshop

In the second year of the project (2019-20), a pilot training workshop was conducted on a virtual platform in November 2020 to December 2020. The workshop aimed to provide advanced guidance to those who had already received training in basic research methodology. Therefore, it was expected that all participants would have the same level of knowledge before delving into research in TM. Due to the participants being junior doctors who were busy providing their services during the Coronavirus Disease-2019 (COVID-19) pandemic, the schedule was modified to six half-day sessions spread over two weeks instead of three full-day sessions. This adjustment did not affect the total duration of the training. The change also took into account the limited attention span for online meetings and prevented the possibility of virtual fatigue.

The response to the workshop was overwhelming, with 205 applications received within two days of opening registration. To facilitate better interactions among participants, the number of participants was limited. Twenty-six participants were shortlisted based on their interest, inclination, and experience in the field of TMR. The shortlisted participants consisted of five associate professors, twelve assistant professors, six senior residents, and three junior residents. Two participants belonged to the specialty of Community Medicine, while the rest were from the specialty of Pharmacology. Representation from various regions of the country was ensured, including Gujarat, Haryana, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Puducherry, Punjab, Telangana, Tamil Nadu, and Uttar Pradesh. The selection process was designed to create an environment for the exchange of ideas among participants from diverse backgrounds, such as different age groups, specialties, geographical zones in India, research experience and institutes. This set-up aimed to facilitate peer-learning.

The workshop covered topics based on the previously designed modules [Table/Fig-1]. Recognising the multidisciplinary approach required for TMR, the panel of resource persons included experts from modern medicine, Ayurveda, and senior experienced scientists from national organisations to share their knowledge and experiences.

At the end of the workshop, hands-on training was provided on designing a protocol. The participants were divided into six groups and tasked with designing a protocol in a given therapeutic area, using the knowledge gained during the workshop. The therapeutic areas assigned to the groups were osteoarthritis, diabetes mellitus, wound healing, COVID-19, piles, and stress. Each group was instructed to design a clinical study to evaluate a Traditional Medicine (TM) of their choice that claimed to be effective for the assigned condition. To facilitate collaboration, the participants in each group were encouraged to communicate with each other through social media platforms, where they could brainstorm and exchange ideas. Additionally, each team was assigned an Ayurvedic physician from the Ayurveda Research Centre of the Institute to provide inputs related to Traditional Medicines.

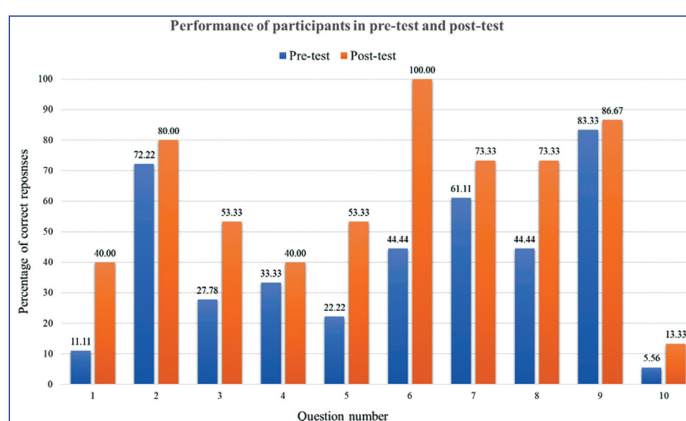
The groups presented their protocols to an expert panel consisting of a clinical research expert, a TM expert, and senior clinicians from the institute. Participants from other groups were encouraged

| S. No. | Topic |
|--------|---|
| 1. | Introduction, need and opportunities |
| 2. | Principles of and approach to research in Traditional Medicine (TM) |
| 3. | Conducting Literature Search for Traditional Medicine Research with Demonstration |
| 4. | Formulating a research question with respect to Traditional Medicine (TM) |
| 5. | Government Initiatives for Traditional Medicine Research: Financial support schemes and writing a research proposal |
| 6. | Research in health promoting strategies |
| 7. | Quality control of Traditional Medicines (TM) |
| 8. | Developing protocol for clinical pharmacology research in traditional medicine (TM) |
| 9. | Ayurveda practice and pharmacoepidemiology |
| 10. | Questionnaire designing and focus group discussion |
| 11. | Challenges in conducting clinical trials in traditional medicine |
| 12. | Studies on Pharmacokinetics (PK) of Traditional Medicines (TM) |
| 13. | Ayurveda practice and pharmacovigilance |
| 14. | Regulatory guidelines for research on Traditional Medicines: Development of phytopharmaceuticals |

[Table/Fig-1]: Topics covered in the training workshop.

to ask questions to the presenting group and/or the experts. In-depth discussions during these sessions were the highlight of the workshop and were unanimously appreciated by all participants.

A pre- and post-test, containing the same set of 10 questions, was sent to the participants as a Google form. The participants were given 10 minutes to complete the test before and after the workshop. A comparative analysis, based on the percentage of participants giving correct responses, is shown in [Table/Fig-2]. An appropriately designed pretest also serves as a stimulus to the learner and helps them anticipate the contents of the program. The test included various types of questions such as multiple-choice, short descriptive, true or false, and 'enumerate'. The test questions were relevant to the scientific program of the workshop and covered topics such as the components of a focused research question, funding sources for TM research, adequacy of sample size, reporting adverse drug reactions due to herbal drug formulations, and the definition of a phytopharmaceutical drug, among others.



[Table/Fig-2]: Comparative analysis of pre and post-test results.

Participants' feedback was collected through a Google form. A majority of the participants expressed that the workshop was a valuable learning experience and emphasised the need for conducting similar workshops regularly. The group activity on protocol designing received the highest rating. Most participants felt that the topics covered in the workshop were appropriate to their needs and appreciated the good coverage. They also found the allotted time for sessions and Q and A discussions to be optimal. The smooth conduct of the online workshop, including the registration process, received positive feedback. However, one critical comment suggested that the speakers should provide more real-life examples to explain the concepts. Some of the overall

feedback comments from participants included: "I gained valuable insights into Traditional and Modern medicine research", "The sessions were well-organised and interesting", and "I learned new things about the basics of research in traditional medicine." One participant was particularly motivated and sought guidance from one of the speakers on starting a dedicated research unit at their institute. The feedback from the sessions was also shared with the respective speakers.

A general observation for virtual workshops is the challenge of ensuring full participation at all times. Recognising this, the speakers made special efforts to maintain a high level of involvement comparable to a face-to-face workshop. Mini-assignments were given during sessions on formulating a research question and conducting literature searches. Participants were also asked to share their personal experiences in research. These activities, along with the protocol designing assignment, enhanced their learning experience. Although it is common for participants to be physically absent or engaged in other activities during online workshops, the majority of participants in this workshop attended all the sessions by adjusting their COVID-19 duties. Two participants cancelled their registration at the last minute, and 17 participants were unable to consistently attend during the second week due to unavoidable changes in their COVID-19 duty schedules.

The present pilot training workshop, which was the first of its kind to train modern medicine practitioners in Traditional Medicine Research (TMR), was well-received. Based on the positive feedback and the results of the evaluation of the pre- and post-tests, the workshop objectives were achieved. However, it is important to assess the long-term impact of the training program on the learners. Ideally, the outcomes should be evaluated through the implementation of research activities, completion of projects, publication, and dissemination of training by the workshop participants.

There were multiple registration requests from practitioners of Traditional Medicine (TM). However, as the focus of this workshop was to provide training to modern medicine practitioners for conducting research in Ayurveda, practitioners of TM could not be included. Using this model, similar capacity-building workshops can be planned for modern medicine practitioners interested in research in other Traditional Medicine systems under Ayurveda, Yoga and Naturopathy, Unani, Siddha, Homeopathy (AYUSH). Continued support from the ICMR will be necessary to expand such capacity-building activities.

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