Report on Research Methodology for Doctors

Venue: Nizam's Institute of Medical Sciences (NIMS), Hyderabad
Target Audience: Medical Doctors
Duration: Eight weeks (Saturday In-person sessions)

No. of participants: 127

Date: 11 October 2025 to 13 December 2025

Introduction

A Short Course on Research Methodology was conducted for doctors at Nizam's Institute of Medical Sciences (NIMS), Hyderabad, with the objective of strengthening research capacity among medical professionals. The course aimed to enhance participants' understanding of formulating research questions, selecting appropriate study designs, and determining sample size, developing research tools, and applying statistical methods for data analysis.

Research Progress Overview

Participants represented various clinical departments and were at different stages of their research journey, ranging from early conceptualization to ongoing thesis or project work. Many participants had preliminary research ideas but required structured guidance in refining research questions, selecting study designs, and planning methodology. The course provided foundational clarity and practical insights to support progression from idea generation to implementation.

Course Content and Sessions

Formulation of Research Questions- Dr. Raghupathy Anchala

The PICOT and FINER frameworks were discussed in detail for developing robust research questions. These frameworks were illustrated using examples drawn from participants' proposed research topics. Emphasis was placed on refining clinical questions to ensure feasibility, relevance, and scientific rigor. Although the sessions were largely didactic in nature, limited participant interaction was observed.

Goal Setting in Research- Dr. Sirshendu Chaudhuri

Participants were introduced to the SMART framework for goal setting—Specific, Measurable, Achievable, Relevant, and Time-bound. Practical applications of SMART goals in healthcare research were explored. The session emphasized clarity, feasibility, alignment with research objectives, and outcome-focused project design, encouraging structured and systematic thinking.

Study Designs and Classification

Dr. Sirshendu Chaudhuri provided a comprehensive overview of study designs and their classification. Quantitative study designs were discussed in detail, including:

Descriptive designs: Cross-sectional studies, case reports, and case series

Analytical designs: Case-control studies, cohort studies

Ecological studies: Population-level analyses

Laboratory-based designs: Diagnostic accuracy studies and in vitro studies

The session highlighted the importance of selecting an appropriate study design and its implications for sample size, feasibility, and validity. Various forms of bias in research were also discussed.

Qualitative Research Methods – Ms. Gracy Andrew

Mrs. Gracy Andrew guided participants through qualitative research designs, contrasting them with quantitative approaches. The logical and iterative nature of qualitative research was emphasized. Key qualitative methods discussed included:

In-depth interviews

Focus group discussions

Observational methods such as participant and direct observation

This session provided participants with a balanced understanding of both quantitative and qualitative research paradigms.

Observational Studies and Measures

Different types of observational study designs—cross-sectional, case-control, and cohort studies—were elaborated upon. Their respective advantages and key epidemiological measures such as prevalence, odds ratio, incidence, and relative risk were discussed. The influence of study design on sample size estimation was emphasized.

Sampling and Sample Size Determination – Dr. Varun Agiwal

Concepts related to study population and sampling were explained in detail. Participants were introduced to sampling and non-sampling errors and their impact on research quality. Components of sample size determination were discussed, along with step-by-step methods to calculate sample sizes for cross-sectional and case-control studies. Hands-on demonstrations using online sample size calculation tools were conducted.

Research Tools and Data Collection

Sessions on research tools covered the following aspects:

Types of study tools

Development of research instruments

Validity, reliability, and pretesting

Quantitative versus qualitative tools

Open-ended and closed-ended questions

Structured, semi-structured, and unstructured tools

Modes of administration

Ethical requirements related to data collection tools

Participants gained clarity on selecting and designing appropriate instruments for data collection.

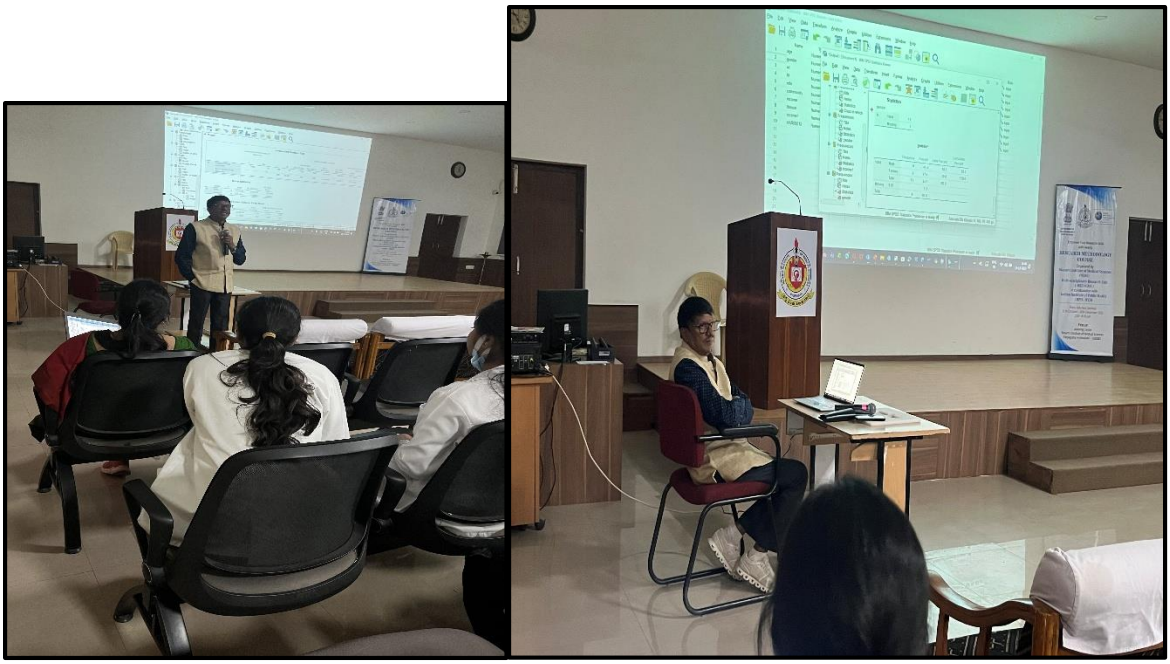
Data Analysis and Interpretation – Dr.Varun Agiwal

Participants were oriented to summarizing collected data using appropriate descriptive statistics. The application of suitable inferential analyses, when required, was discussed. Emphasis was placed on drawing valid and reliable conclusions based on study objectives and data characteristics.

The last session was of Dr.JK Lakshmi on **Ethical Principles** and focused on Ethics, Ethics in research (and practice) over time, undertaking and demonstrating ethical research.

SPSS Training – Dr. M. Vishnu Vardhana Rao

The Vice Chancellor of IIPH-H, Dr. M. Vishnu Vardhana Rao, conducted an enriching hands-on session on SPSS software. Participants received practical training in data entry, basic statistical analysis, and interpretation of outputs, enhancing their confidence in handling research data.



- **Challenges Faced During Research**

Participants reported several challenges, including:

- Difficulty in framing clear and feasible research questions
- Limited understanding of study designs and sample size calculation
- Lack of confidence in statistical analysis
- Time constraints due to clinical workload
- Limited access to mentorship and statistical support

- **Motivation to Pursue Research**

Despite challenges, participants expressed strong motivation to pursue research to:

- Improve patient care and clinical outcomes
- Fulfill academic and professional requirements
- Contribute to evidence-based medicine
- Enhance career advancement and academic credentials

- **Aspirations**

Participants aspire to:

- Conduct high-quality, publishable research
- Present findings at national and international conferences
- Develop long-term research collaborations
- Acquire advanced skills in research methodology and biostatistics

Self-Reported Needs of Participants

- Participants identified the following needs:
- Continued hands-on training in research methodology
- Advanced training in biostatistics and software applications
- Mentorship for protocol development and publication

Conclusion

The Short Course on Research Methodology at NIMS, Hyderabad, successfully provided a comprehensive foundation in research concepts for doctors. While the sessions were largely didactic, the course effectively addressed core methodological aspects and highlighted areas requiring further support. Strengthening interactive components and providing sustained mentorship may further enhance the impact of future programs.