



Report on
Research Methodology and Biostatistics Workshops
(June 2019 to November 2019)

Theme: 'How to do a good dissertation & publish'

Organized by: Department of Epidemiology
The TamilNadu Dr.M.G.R. Medical University,
Guindy, Chennai 600032, India

A Series of workshops on 'Research methodology and Biostatistics' : '**How to do a good dissertation & publish**' was organized at TheTamilnaduDr.MGR Medical University from June 2019 to November 2019 by the Department of Epidemiology for the benefit of post-graduate MD/MS/MCh/MDS students. The primary aim of organising theseworkshops was to equip the post-graduate students of Medical / Dental Colleges of Tamil Nadu to conduct a good relevant research as their postgraduate dissertation and publish.

The workshop was designed as a three days programme, to instil ideas on research methodology and also to assist the interested participants to provide mentorship for the dissertation and to pursue their works further to publish. The core learning objective of the workshop was to equip the participants with a set of skills to identify the right topic (based on relevance & feasibility), choose the appropriate research design, sample, and statistical analysis and to interpret the findings for the ultimate dissemination of their study effectively. Thus the workshop is designed to offer the most practical guidelines and to direct the researchers in all the stages of research from identifying a research problem to the submission of a dissertation and writing a manuscript and to finally publish the article. By the end of the programme they are expected to develop conceptual clarity and practical knowledge to undertake or at least interpret 'quality research' to enable them to gain confidence in understanding good research papers, field-reports and project proposals etc.

Course Contents:

- Choosing the Right Research Topic
- Literature Search & Zotero Basics
- Formulate the Research Question
- Ethics in Health Research
- Describing and Displaying Data
- Selecting an appropriate Research Design
- Data collection & Questionnaire Development
- Methods of Sampling & Sample Size Estimation
- When to do What test
- Writing a Research Protocol
- Data Management
- Writing dissertation
- University Guidelines for Dissertation submission
- Critical Appraisal of Journal Article
- How to get the Research Article published?

A total of ten workshops have been conducted between 12th June 2019 and 22nd November 2019 in The TamilNadu Dr M.G.R. Medical University premises and 1912 candidates mostly post graduates of Medical, Dental Students and Ph.D. guides & Ph.D. students from affiliated institutions have participated. The breakdown is as below:

WORKSHOP NO.	DATE	TOTAL PARTICIPANTS
1	12.06.2019 – 14.06.2019	162
2	24.06.2019 – 26.06.2019	122
3	10.07.2019 – 12.07.2019	102
4	24.07.2019 – 26.07.2019	171
5	06.08.2019 – 08.08.2019	190
6	20.08.2019 – 22.08.2019	180
7	04.09.2019 – 06.09.2019	198
8	18.09.2019 – 20.09.2019	193
9	23.10.2019 – 25.10.2019	188
10	06.11.2019 – 08.11.2019	206
11	20.11.2019 – 22.11.2019	200
	TOTAL	1912

The various institutions which participated are as follows:

S.NO	COLLEGE NAME
1	AdhiParasakthi Dental College
2	AdhiParasakthi college of nursing
3	AdhiParasakthi college of Pharmacy
4	Chengalpet Medical College, Chengalpet
5	Christian Medical College
6	Coimbatore Medical College
7	CSI Dental college, Madurai
8	Department of Transfusion Medicine, The TamilNadu Dr MGR Medical University
9	DhanalakshmiSrinivasan Medical college
10	ESIC, PGIMSR, Chennai
11	Govt. Dharmapuri Medical College, Dharmapuri
12	Govt. Mohan Kumara Mangalam Medical College
13	Govt. Vellore Medical College
14	Govt. Villupuram Medical College, Villupuram
15	KarpagaVinayaga Institute of Medical Sciences
16	Kilpauk Medical College
17	Madha Dental college
18	Madras Medical College
19	Madurai Medical College
20	PSG Institute of Medical Sciences and Research
21	Ragas Dental College
22	SreeMookambika Institute of Medical Sciences, Kulasekaram
23	SreeMookambika Institute of Dental Sciences, Kulasekaram
24	Sri Ramakrishna Dental College, Coimbatore
25	Stanley Medical College
26	Tagore Dental College
27	Tamilnadu Government Dental College
28	Thanjavur Medical College
29	Thoothukudi Medical College
30	Trichy SRM Medical College
31	Tirunelveli Medical College
32	Vivekananda Dental College



Hon'ble Vice Chancellor, Dr. Sudha Seshayyan, The TN Dr MGR Medical University addressed the attendees at the inaugural of workshop series on research methodology and biostatistics

The resource persons, who lectured in the workshops were experts in their respective fields and associated with the institutions of eminence like National Institute of Epidemiology, National Institute of Research in Tuberculosis, Madras Medical College, Stanley Medical College, MeenakshiAmmal Dental College, Christian Medical College, ESIC-PGIMSR, Chennai Dental Research Foundation and The TN Dr. MGR Medical University.

The workshop had a focussed schedule. It began with the pre-test on Research Methodology and Biostatistics. This was followed by the lecture series which were reviewed and ensured to be thoroughly comprehensive. At the end of every lecture, there were interactive Sessions. A group discussions and mock exercises were also given and reviewed.

Day1

Session 1 - Research Ideas and Research Questions

The first session focused on how to get research ideas and to formulate a research question based on the existing pool of knowledge. It is emphasised, that, from the known source one needs to think ideas that could further be developed to enhance the existing. The ideas should be fixed on the basis of research type and convert them to research question involved in it. The researcher should decide on the topic based on the plausibility and feasibility of the research with ethical considerations.



Dr. Srinivas, Prof & HoD, Dept. of Epidemiology

Session 2 - Literature Search & Zotero Basics

The importance, availability of various literatures available and their general validation, and the methods to explore the literature were discussed. All the participants were emphasised that the literature search is the first thing to do, when one decides to write a dissertation. All the relevant literature on the topic should be thoroughly reviewed, before planning the study. They were told that while writing their dissertation, to quote all the citations and reference, as it is not only ethical but mandatory to avoid copyright issue/plagiarism. While quoting references and writing references, available different styles and methods of writing and to adopt respective styles, while preparing manuscripts to a specific journal or publisher as dictated by the publication. A thorough insight of handling innumerable articles through the web was taught. A software demonstration in order to ease and enhance the citation and of the research was given.



Dr. Ganesh Kumar, P Scientist – C at NIE, ICMR

Session 3 - Writing a Research Protocol

One of the most challenging and difficult tasks is writing a research protocol as it is a new area for the majority of postgraduates and new researchers. The protocol should navigate concept sheet and synopsis in order to answer the research question. The research design must be sound enough to yield the expected knowledge. It should discuss the methods and all the materials to do the study and arrive at analogous conclusions. It should propose the sample size which again should be practically possible to study and statistically acceptable and the scientific design is adequately described.



Dr. P. Nedunchelian, Prof (Retd) ICH, Chennai

Session 4 – Ethics in Health Research

The students were educated on the importance of ethics in medical research. It is an understanding of the nature of conflicts arising from moral imperatives and how best we may deal with them. Ethics in medical research deals with the conflicts of interest across various levels. Ethical Guidelines which have been proposed for standardized ethical practice throughout the globe were inculcated among the students. The four fundamental principles of ethics autonomy, non-maleficence, beneficence, and justice were well explicated. The need for Institutional Review Board and how the student should present themselves for such meetings were also discussed.



*Dr. Mini Jacob, Prof & HOD
Dept. of Experimental medicine*

An overview on the basic biostatistics were given emphasizing how to describe and display data. Data can be qualitative or quantitative. The way how the qualitative data and quantitative data will be presented via diagrams and graphs were very well imbibed to the participants. Also how to describe mean, median, mode standard deviation, standard error and normal distribution were well explained. The session concluded how statistics helps to achieve evidence based research.



Dr. Shyam, Associate professor

Group Discussion:

The participants were divided into 10 – 15 groups based on their specialties. The group had a facilitator to discuss the topic chosen by the group. Each group were asked to work on the selected topic and to choose a representative to present the full protocol on the chosen topic on the day 3 of the workshop.



Day 2

Session 5 - Selecting an appropriate Research Design

To select the appropriate research design, a researcher should have the clarity on the research questions and feasibilities.



*Dr. Jasmine, Asst Prof.
Dept. of Epidemiology*



*Dr. Arun Murugan, Prof.
Govt Stanley Medical College*

Session 6 - Data collection & Questionnaire Development

Questionnaire is a type of instrument in survey research. It is commonly used to explore knowledge, attitude, perception or belief of a well-defined population. It is usually concise and information oriented. The Speaker discussed the importance of the **pilot study**, pre-testing the questionnaire and reliability test. Also it was explained the types of question related to a particular research and advised to discuss with the peer group before implementing the questionnaire to the study participants.



*Dr. Joseph, Sr Asst Prof.
Dept. of Epidemiology*



*Dr. Kalpana S, Research officer
Dept. of Epidemiology*

Session 7 - Methods of Sampling & Sample Size Estimation

Sampling were elaborated on two methods- probability and non-probability sampling technique in which sample is selected for the collection of data. Detailed lecture were given on each type of sampling techniques within probability and non-probability sampling with examples. Also the participants were enlightened on sample size determination as one important aspects in research design. Data interpreted and conclusion drawn from inadequate sample size may be questionable and misleading. On the other hand, over sampling is a mere waste of resources. The participants were made to understand the science behind sample size calculations and to be able to carry out sample size calculations confidently using the **OPENEPI** which is a free, open sourcesoftware, that is both web based and application based.



*Dr. Parameshwari, Registrar/Prof.
Dept. of Epidemiology*



*Dr. S Valarmathi, Research Officer (Statistics)
Dept. of Epidemiology*

Session 8 - When to do what test?

The speaker discussed the various available statistical tests like parametric statistics and non-parametric statistics and their indications and differences. Statistical tests are based on certain assumptions and results will be meaningful only if assumptions are satisfied. This insight and the basis is discussed.



Dr. Kritika Datta, Associate Professor

Group Discussion:

Each group will discuss on the protocol components of the topic chosen and prepare the presenter in order to present the topic on day 3. The facilitator of the group discussion will help and guide them to bring out a good concept paper. Also he will make sure that the each group participant will present the topic on the very next day.



Day 3

Session 9 - Data Management

The knowledge and skills that are needed to manage data more effectively were well explained in order to equip participants of the workshop. Helped participants to recognize the importance of good practice in managing research data in general and apply it within the research carried out for dissertation or publication. The participants of the workshop were educated to enhance skills in managing and visualizing data with the help of freely available tools like Epidata and EpiInfo.



Dr. C Ponnuraja, Scientist E, NIRT, ICMR

Session 10 - Writing dissertation & University Guidelines for Dissertation

A dissertation is a 'formal' document and there are 'rules' that govern the way in which it is presented. It must have chapters that provide an introduction, a literature review, a justification of the data selected for analysis and research methodology, results, conclusions and recommendations. The speaker treaded the participants through the dissertation process. He gave tips on the time management as well the guidelines for submission of dissertation. Finally the speaker explained how important to write the dissertation in a good standard of clear English using appropriate academic terms, citation and referencing style.



*Dr. P .Saravana Kumar, Associate Prof,
Govt. Stanley Medical College*

Session 11 - Critical Appraisal of Journal Article

Critical appraisal is the process of carefully and systematically examining research evidence to judge its trustworthiness, its value and relevance in a particular context. It allows clinicians to use research evidence reliably and efficient. Each participant were circulated an article and the speaker gave the critiques of that article which was well received by the audience.



Dr. Vijay Prasad G, Asst Prof, ESIC, PGIMSR

Session 12 - How to get your Research Article published?

The speaker gave an insight to the medical and paramedical students' about academic writing for publication. In his introductory remarks he mentioned the importance of academic publication which has been universally acknowledged as a source to enhance as well as enrich the existing pool of knowledge. In this line, academic publication is considered as an inevitable aspect for professional growth in academic career. It was suggested by the speaker that the entire exercise of writing research paper may go to shelves, if one could not find an appropriate place for publication. He gave an overview that the participants to make a decision on selection by comprehending the expertise of the academic journal/book, etc. and thereafter structuring rationality to the same.



Dr. Manoj Muthukuru, Clinical Scientist



Dr. Manickam P, Scientist, NIE, ICMR

Group Work: Presentation by the Participants

It was a thoughtful exercise as a part of re-orienting postgraduates towards developing a research protocol as a synopsis in the topic chosen by the group with the inputs they have received in the form of different session conducted in the workshop. The topics chosen by the respective groups to develop a protocol were announced during the day 1 of the workshop, and one participant from each group was asked to present their protocol. Each of the presentation received a critical discussion and inputs from the participants as well as the available resource persons.



Post-Test:

After the group presentation on the final Day 3, post-test was taken by the participants.

Recap:

At the beginning of every day, two voluntary participants were asked to summarize the previous day's session from their attentive listening to the lecture series. This helped every other participant to brush up and recall the previous day's sessions and also made them to be more attentive in the forthcoming sessions.



Feedback Evaluation:

Each day the participants were given a questionnaire consisting of likert scale as well open ended questions in order know the feedback of the workshop

Feedback:

1. All the topics were clear.
2. Most of the speakers were interactive
3. The Information shared by the speakers will be useful to the students
4. Overwhelmed in knowing the software available which they unaware earlier.



Outcome:

Students have developed an understanding on various kinds of research, objectives of doing research, research process, research designs and sampling. The students were made aware of data analysis and hypothesis testing procedures. Most students were confident enough at the end of the workshop to prepare themselves on the outlines of dissertation writing. The participants were engaged actively throughout the course. A strength as well as challenge of this course was the diversity of candidates from mixture of specialties participated. The success of the workshop is to motivate the postgraduates to do a good dissertation and gain confidence in writing an article for publication. All participants were encouraged to approach the Department of epidemiology and assured continual support to complete their dissertation and to publish their work.

