

# Report on the Online Workshop on Research Methodology and Biostatistics



The Department of Epidemiology at Tamil Nadu Dr. MGR Medical University, Guindy, conducted a one-day online workshop on **Research Methodology and Biostatistics** on **June 27, 2025**. This workshop, intended for MBBS Undergraduate students, was the fourth session in the annual series held between March and September.

The main objective of this workshop was to strengthen students' knowledge of research methodology and biostatistics, equipping them to apply these principles in both academic and professional settings. The workshop followed a systematic agenda, beginning with the display of a QR code for a pre-test on Research Methodology and Biostatistics. This was followed by a sequence of lectures combined with interactive discussions to promote active engagement and enhance participants' understanding. After the sessions, a QR code for the post-test and feedback was provided, allowing attendees to evaluate their learning and share constructive feedback.

## **WORKSHOP DETAILS:**

- **Organizing Institution:** Department of Epidemiology, The Tamil Nadu Dr. MGR Medical University
- **Mode:** Online
- **Target Audience:** 3rd year MBBS Undergraduate students

➤ **Total Participating Colleges: 4**

<b>S No</b>	<b>Name of the College</b>	<b>Number of students</b>
1.	K.A.P. Viswanatham Government Medical College	145
2.	Government Medical College and Hospital, Krishnagiri	35
3.	Madurai Medical College	175
4.	St. Peter's Medical College, Hospital & Research Institute	45
	<b>Total participants</b>	400



**K.A.P. Viswanatham Government Medical College**



**St. Peter's Medical College, Hospital & Research Institute**



**Madurai Medical College**



### **Government Medical College and Hospital, Krishnagiri**

#### **TOPICS COVERED:**

The workshop consisted of **five sessions**, covering various aspects of research methodology and biostatistics. The topics included:

1. **Research Ideas/Questions & Objectives** – This session was held by Dr.T.S. Guna Priya, Professor, Department of Anatomy, AIIMS, Nagpur. This session provided an overview of the research process, explaining the distinction between a research idea and a research question. She also highlighted the importance of conducting research, discussed the key components of a research question, and guided students on how to begin with a research question and effectively formulate research objectives
2. **Searching and Organizing Literature** –Dr. S.A. Rizwan, Scientist D from ICMR-NIE, Chennai, led this session. The session demonstrated effective techniques for conducting literature searches using PubMed, emphasizing important concepts such as the use of MeSH (Medical Subject Headings) terms. Participants were given a live, hands-on tutorial on using PubMed's advanced search features and how to cite research articles using Zotero.

3. **Research Designs** – by **Dr. A. Balaji**, Professor & Head of the Department of Community Medicine at Arunai Medical College and Hospital. The session provided a comprehensive overview of various study designs commonly used in health research, including descriptive studies (such as case reports, case series, and cross-sectional studies), analytical studies (case-control and cohort studies), and experimental studies (randomized controlled trials). The strengths, limitations, and suitable applications of each study design was explained. Important topics such as bias, confounding factors, and ethical considerations in research design were also addressed.
4. **Basic Biostatistics in Health Research** –by **Dr. Richard Kirubakaram**, Director of the Center for Biostatistics and Evidence-Based Medicine, This session provided an introduction to essential biostatistical concepts, covering topics such as types of data (qualitative vs. quantitative), measures of central tendency (mean, median, mode), and measures of dispersion (range, variance, standard deviation). Discussed the fundamentals of hypothesis testing, including the formulation of null and alternative hypotheses, understanding Type I and Type II errors, and outlining the steps involved in hypothesis testing, such as selecting appropriate tests, determining significance levels, and interpreting p-values.
5. **Research Protocol** – **Dr. K. Illavenil**, Assistant Professor at Karpagam Faculty of Medical Sciences and Research, led the session, highlighting the vital role of a research protocol in carrying out organized, ethical, and scientifically reliable research. The session outlined the fundamental components of a research protocol, which include the title and background, clearly defined objectives and hypothesis, detailed methodology, data collection procedures, statistical analysis plan, and ethical aspects to be considered.

## INTERACTIVE SESSIONS BY THE EXPERTS

9 participants typing 107

Develop a research question in the Broad research area: Sleep

Sleep 39 Medical student 20 Duration 15 Hour 15 Quality 14 Adult 10 Impact 9

How does monophasic and polyphasic sleep patter affect cognitive function in working adults

Anonymous Good morning mam

Anonymous Prevalence of GI and non GI malignancies in patients affected with intestinal sprue

Anonymous How does quality and quantity of sleep affect vigilance in class for undergraduate medical students?

Anonymous Does afternoon napping affect cognitive performance and academic productivity among undergraduate students?

Join at **slido.com**  
**#2482 088**

KAPV Government Medical College, Trichy

guga priya MEETING TNMGRMU

5 others Poornema Umasankar

guga priya (Presenting, annotating)

RESEARCH PROCESS

08 Research Report

07 Data processing

06 Data collection

05 Protocol writing

04 Selecting sample

03 Instruments for data collection

02 Research designs

01 Formulating a research Question

4

10:59 | DoE,TNMGRMU -UG RMBS Workshop

guga priya sindhu L Poornema Um...

KAPV Govern... 3 others MEETING ...

Type here to search Hot days ahead ENG 10:59 AM IN 6/27/2025

### Research Ideas /Questions & Objectives - Dr.T.S. Guga Priya

The screenshot shows a web browser window with a search history table and a video call interface. The search history table is as follows:

Search	Actions	Details	Query	Results	Time
#9	...	>	Search: #6 OR #7 OR #8	48,052	02:47:51
#8	...	>	Search: "duration of surgery"[Title/Abstract]	7,456	02:47:21
#7	...	>	Search: "Operation time"[Title/Abstract]	24,064	02:47:09
#6	...	>	Search: "Operative Time"[MeSH Terms]	21,125	02:46:53
#5	...	>	Search: "laparoscopic hysterectomy"[Title/Abstract]	2,866	02:46:29
#4	...	>	Search: #1 OR #2 OR #3	4,923	02:46:09
#3	...	>	Search: Colposhysterectomy[Title/Abstract]	96	02:45:14
#2	...	>	Search: "Vaginal hysterectomy"[Title/Abstract]	3,787	02:44:59
#1	...	>	Search: "hysterectomy, vaginal"[MeSH Terms]	3,246	02:44:10



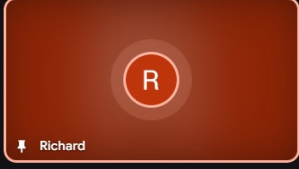
The video call interface shows a participant named Rizwan S.A. and a classroom setting with the text "KAPV Government Medical..." at the bottom.

**Searching and Organizing Literature – Dr. S.A. Rizwan**


The slide features a graphic on the left with the text "STUDY DESIGN: DEFINITION" and a definition on the right: "A study design is a specific plan or protocol for conducting the study, which allows the investigator to translate the conceptual hypothesis into an operational one." The video call interface on the right shows a classroom setting and participants including Balaji Arumugam, MEETING TNMGRMU, 3 others, and Poornema Umassankar.

**Research Designs – Dr. A. Balaji**

### Importance of Statistics



### Basic Biostatistics in Health Research – Mr. Richard Kirubakaran



Active poll 4

#### What should be part of a research protocol?

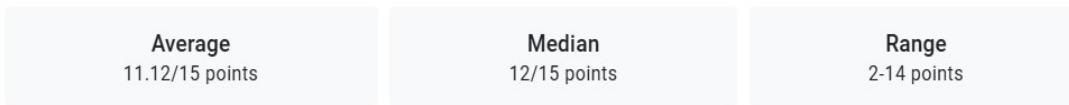
Title	100%
Methodology	100%
Aims & Objectives	100%
References	100%
Expected outcome	75%
Results	75%
Introduction	

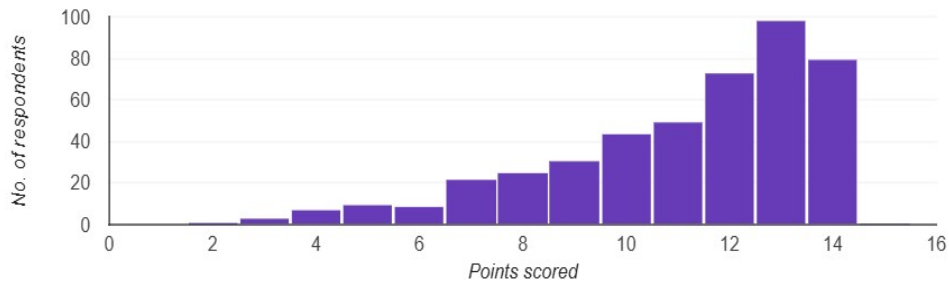
Join at  
**slido.com**  
**#8520 286**

### Research Protocols – Dr. K. Illavenil

## COMPARISON SCORES OF PRE-TEST AND POST-TEST

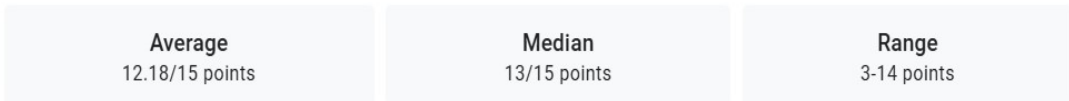


Total points distribution

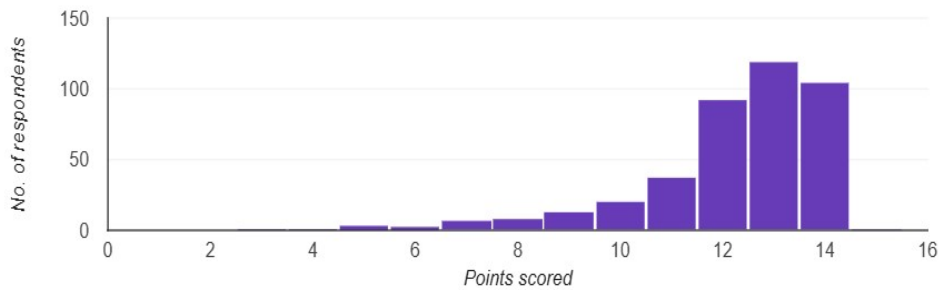


**N=448**

**Fig 1.Pre-test Score of Participants**



Total points distribution



**N=419**

**Fig 2. Post-test Score of Participants**

## **OVERALL FEEDBACK FROM THE STUDENTS**

The day was effectively initiated by **Dr. Jasmine S.Sundar Senior Assistant Professor** of Dept of Epidemiology, whose introductory session set an enthusiastic and insightful tone for the rest of the workshop. The majority of the participants found the sessions highly engaging and informative, with specific appreciation for the research protocol sessions, literature search demonstrations, research methodology, and the use of PubMed and MeSH terms. The interactive elements, such as quizzes and opportunities for student engagement, were particularly well-received. Several mentioned gaining clarity on research questions, study designs, and objectives, which sparked their interest in pursuing research. The practical examples, systematic teaching approach, clear explanations, and enthusiastic delivery by the faculty impressed many attendees.

Participants also highlighted that the sessions on formulating research questions, understanding research protocols, and exploring research designs were eye-opening and boosted their confidence in research. Many felt that the workshop simplified complex research concepts and made them more approachable. Common suggestions included making future sessions shorter and preferably conducting them offline. Participants also recommended incorporating more practical examples, group activities, real-life applications, and conducting workshops more frequently, especially for early-year MBBS students.

The overall organization, informative presentations, and interactive discussions made the sessions lively, fostering curiosity and motivating students to take part in research activities.