

**Report on Research Methodology – Biostatistics Workshop conducted at
Rajasthan University of Health Sciences, Jaipur
11th – 12th January, 2017**

Rajasthan University of Health Sciences, Jaipur organised two days workshop on biostatistics on 11th and 12th January.

The workshop aimed at enhancing the knowledge and skill of researchers, teaching faculty and other members of research community.

The workshop was inaugurated by Dr D K Gupta Pro Vice Chancellor, Rajasthan University of Health Sciences, Jaipur in presence of Dr V M Katoch, Former Director General, ICMR and presently on NASI ICMR chair on Public Health at RUHS, Dr Kiran Katoch and Dr Bharti Malhotra, Dean Faculty of Medicine, RUHS, Jaipur. On the first day of workshop, Dr Rajesh Sharma, Principal, RUHS College of Medical Sciences, Jaipur and Vice Dean, Workshop Coordinator welcomed the dignities and communicated about the importance of such workshops in promoting Research. 85 participants from different faculties participated in workshop.

- I. The inaugural session was addressed by Dr. Rajeev Gupta, Chairman, ARDU, Jaipur. In his talk "The role and need of Biostatistics in Medical Research", he gave the introduction of Biostatistics and the need of Biostatistics in Medical research. Then he discussed the book steps of statistical approach that included study design, statistical design, collection of data, data sorting & checking, grouping, descriptor statistics, correlatives statistics and analytic statistics.
- II. Dr. R.M. Pandey, Professor and Head, Department of Biostatics, AIMS, New Delhi began his talk by giving a brief introduction on clinical research. He discussed the topic "Identification of research Question". Its origin, FINER (Feasible, Interesting to investigator, Novel, Ethical, Relevant) characteristics of research question and its need. Dr. R.M. Pandey then emphasized on the process of developing a research plan. Variables, a very important term in the field of biostatistics and its types that included outcome variable, exposure variable and other variable was relevantly explained by Dr. R.M. Pandey. He concluded his talk by discussing on how to choose on appropriate statistical method.

- III. Dr. Abha Agarwal, NIMS (ICMR), Delhi addressed on the topic 'Concepts of Sampling Technique'. She began her talk by giving the introduction on concept in sampling that includes population, sampling designs & its need, sampling frame, process of sampling and factors affecting sampling. She also discussed standard deviation, standard errors, confidence interval. Dr. Agarwal explained different sampling techniques that included simple random sampling, systematic sampling, stratified sampling, cluster sampling, multistage sampling, inverse sampling and snowball sampling.
- IV. The post lunch session started with the talk by Dr. Abha Agarwal, NIMS (ICMR), New Delhi, on topic "presentation of Data and Variable". She gave an overview on the graphical presentation of data. Data can be qualitative or quantitative. She emphasised that qualitative data can be presented in the form of bar charts, pictogram, pie chart and map diagram whereas for quantitative data Pictogram, frequency polygon, frequency curve, line chart, normal distribution curve, cumulative distribution curve and scatter diagram are used. She also explained tabulation from of data. Dr. Abha Agarwal also described describe mean, median, mode standard deviation, standard error and correlation. She concluded her talk by encouraging the use of graphical form as it makes it possible to easily draw visual impression of the data. At the end of the first day of workshop, there was one hour interactive session between the resource faculty and delegates.

Second Day

- I. On the second day of workshop 12th January, the session started with the talk of Dr Arvind Pandey, Director-NIMS (ICMR), New Delhi on the topic "Approaches for Developing Research Plan: Study design and Methodology". In his talk, he first gave the brief introduction on areas in which medical researchers are interested such as understanding the disease occurrence, distribution, outcome, its causes ; to relate the output and impact of intervention programmes and so on. Dr Arvind Pandey also discussed different types of studies involved in research which includes observational studies, experimental studies and case studies. He further

- classified these studies and explains each study with suitable examples and its advantages and disadvantages. He also mentioned the basic difference between the two terms that is reliability and validity. A very important term confounding was explained. At the end of his talk, he explained the types of bias in descriptive studies, some of them are selection bias, admission bias, diagnostic bias, sample size bias and so on.
- II. Dr. Atul Juneja, NIMS (ICMR), New Delhi addressed on topic "Testing of Hypothesis". He began his talk by giving very relevant examples to explain the outline of the topic. Two types of hypothesis that is research hypothesis and statistical hypothesis were introduced by Dr Atul Juneja He then discussed the concepts of testing a Hypothesis that included null hypothesis and alternate hypothesis. A very important concept P value and power of test was mentioned in the talk. Dr Atul Juneja concluded the topic by discussing the various steps included in hypothesis test procedure.
 - III. Last talk of the workshop was addressed by Dr. Abha Agarwal, NIMS (ICMR), New Delhi on the topic "Sample size calculation". She started her talk by giving the introduction of three important parts of the sample size calculation that is "Estimation, Justification and Adjustification". Dr. Abha Agarwal emphasized on the importance of sample size calculation that included scientific reason, Ethical reason and economic reason. Dr Agarwal mentioned the factors that influence sample size like the objectives, the outcomes, the research design, and the research subjects; and also mentioned the factors influencing sample size calculation. Classic approaches to sample size calculation that included precision and power analysis and relevant formula for calculation was discussed. She ended her talk by mentioning the software's for sample size calculation.
 - IV. Post lunch session included an interactive session between resource faculty and participants .

The workshop ended with the thanks giving speech by Vice Dean, Workshop coordinator.