
Contents

1. Overcoming Barriers to Research in the Indian Scenario 1

Yash Pal Munjal, Anupam Prakash

Overview of Research in India 1

Barriers to Research 2

2. Ethics in Research 8

Ghan Shyam Pangtey, Babita Pangtey

History of Development of Medical Ethics 9

Important Ethical Issues 9

Ethics Committee 14

3. Plagiarism..... 17

Anupam Prakash, Narinder Pal Singh

Introduction and the Present-day Scenario 17

Origin and the Historical Perspective 18

Understanding Plagiarism 19

Types of Plagiarism 20

Avoiding Plagiarism 23

The University Grants Commission Regulations 2017 24

Plagiarism Detection Tools 25

Intellectual Property, Copyrights, Patents and Trademarks 26

4. Performing a Literature Search 29

Bineeta Kashyap, NP Singh

Why is a Good Literature Search Required? 29

Developing a Search Strategy: Getting Started 30

Formulating a Question 30

Generating the Keywords 30

Process of Literature Search 31

Online Biomedical Databases 34

The Search Itself: Further Refining 36

5. Writing a Research Grant Proposal.....	39
<i>Bhupen Barman, Kaustubh Bora</i>	
Steps in the Grant-Writing Process	39
6. Citation and Referencing	44
<i>Tanuj Kanchan, Rutwik Shedge</i>	
What are Citations and References?	44
Why Do We Require Citations and References?	46
What are the Essential Components of a Reference?	46
How to Efficiently Cite and Reference?	47
What are the Different Methods of Citations?	48
What are Reference Managers?	50
7. Formulation of Research Question.....	52
<i>Ashish Goel, Arun Kumar N</i>	
Writing a Good Research Question	53
Journey from the Topic to a Research Question	54
8. Defining Objectives in Research Paper	59
<i>Amitesh Aggarwal</i>	
What to Do	60
What not to Do	61
9. Study Designs for Research	62
<i>Aruna Nigam, Pikee Saxena</i>	
Study Designs	62
Observational Study	63
Experimental Study Design	66
Meta-analysis	68
10. Randomized Controlled Trials.....	71
<i>Sameer Gulati, Anu Maheshwari</i>	
Introduction: What is Randomized Controlled Trial?	71
Need for Randomized Controlled Trials	71
How are Trials Managed?	72

Situations Where RCT are not Valid	72
Randomization: What, How and Types	72
Types of Randomized Controlled Trials	73
Bias in Randomized Controlled Trials	77
Assessing Quality of Randomized Controlled Trials	78
11. Sample Size	80
<i>Shivali Suri</i>	
Information Required for Sample Size Determination	80
Formulae for Calculating Sample Size	83
Softwares for Sample Size	87
12. Sampling Methods.....	89
<i>Ravneet Kaur</i>	
Probability Sampling	90
Nonprobability Sampling	97
13. Bias, Error and Confounding.....	100
<i>Anita S Acharya</i>	
Principles and Types of Biases	100
Confounding	105
How to Minimize Bias?	106
14. Designing A Research Questionnaire.....	109
<i>Piyush Jain</i>	
Types of Questionnaire	109
Instructor Administered versus Self-administered Questionnaires	111
Language of Questions	111
Sequence of Questions	112
Pilot Test	113
15. Types of Observations	114
<i>Nitin Sinha</i>	
Entering Data in Statistical Package for Social Sciences	116
Importance of Knowing about Types of Observations	119

16. Normal Distribution, P Value and Confidence Interval..... 120*Vaibhav Shukla, Priyanka Shukla*

Normal Distribution 120

P Value 122

Confidence Interval 124

17. Tests of Significance: What, When, How? 126*Nupur Jain*

Hypothesis and Normal Distribution 126

Tests of Statistical Significance:

Parametric and Nonparametric 127

Parametric Tests 128

Nonparametric Tests 129

18. Ensuring Patient Safety in Clinical Research 132*Anupam Prakash, Sachin K Jain, Somyaa*

Clinical Trials 132

Measures to Ensure Subject Safety 134

Index..... 141