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ESSENTIALS OF RESEARCH METHODOLOGY

for all Physiotherapy and Allied Health Sciences Students



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Contents

Part 1: Fundamentals of Research

1. Introduction to Research 3
2. Research in Physiotherapy 16
3. Research Process 27
4. Research Problem and Literature Review 36
5. Research Design 46
6. Sampling Design and Sampling Distributions 56
7. Measurement, Scaling, Data Collection and Processing 73
8. Ethics in Research 86
9. Research Reporting 99
10. Experimental and Non-experimental Research Designs 109
11. Analysis of Variance Study (ANOVA) Designs 123
12. Pilot Study in Research 133
13. Psychometric Properties of Tools 141
14. Qualitative Research 153
15. Survey Research 160

Part 2: Statistics in Research

16. Descriptive and Inferential Statistics in Research 173
17. Hypothesis Testing 184
18. Non-parametric and Parametric Tests 192
19. Correlation, Regression and Multivariate Analysis 201
20. Interpretation of Statistics 211

Part 3: Understanding and Publishing Research

21. Evidence-based Physiotherapy 223
22. Research Proposal 236
23. Understanding a Research Article 249
24. Methodology in Research Article 267

25. Critical Appraisal Tools 274
26. Critical Appraisal of Clinical Trials 284
27. Systematic Review and Meta-analysis 295
28. Journal Club 313
Question Bank *321*
Further Reading *325*
Glossary *333*
Appendix *347*
Index *355*

CHAPTER

4

Research Problem and Literature Review

Chapter Highlights

- Research Problem
- Characteristics of a Problem
- Necessity of Defining the Problem
- Criteria for the Selection of the Problem Suggested by Good and Scates
- Statement of Purpose and Objectives of Research Problem
- Problem Statement Models
- Theoretical Framework of the Problem
- Merits of Describing a Research Problem
- Review of Literature
- Purpose of Review of Literature
- The Process of Review of Literature
- Sources of Review of Literature
- Strategies for Review of Literature
- Principles of Writing Literature Review

RESEARCH PROBLEM

A research problem, in general, refers to some difficulty which researchers experience in the context of either a theoretical or practical situation or wants to obtain a solution for the same.

A **research problem** is a statement about an area of concern. The selection of a problem is governed by reflective thinking (convergent, divergent, reflective and scientific thinking). In reflective thinking individual conceived a new solution for an old problem. An identified research problem needs to be framed into appropriate worded statement.

CHARACTERISTICS OF A PROBLEM

Before defining a problem, it is essential to understand what constitutes a problem. Figure 4.1 mentions four distinctive ways that a given statement can be considered a problem.

NECESSITY OF DEFINING THE PROBLEM

It is very important that the researcher define a problem for the following reasons:

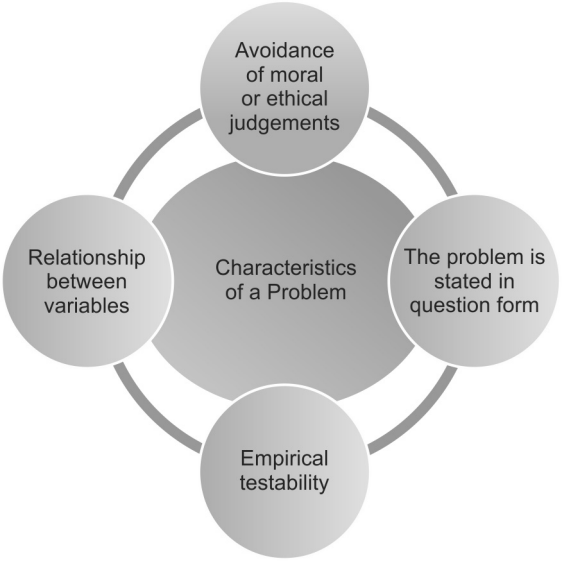

Figure 4.1: Characteristics of a problem.

- To avoid deviating from the goal, the definition of a problem sets the direction of the study
- To derive the objectives the study
- Proper selection of methodology for the study
- Selection of variables for the study
- Clarity for the readers about what is going to be discussed in the study article
- The definition helps the researcher to control subjectivity or biases of the researcher
- Makes the study feasible.

STATEMENT OF RESEARCH PROBLEM

Statement is a clear and concise written description of the issue. Normally the statement is one or two sentences in length which briefly outlines the problem addressed by the study.

A good **problem statement/Research-worthy problem statement** should address all six questions: what, how, where, when, why, and who.

CRITERIA FOR THE SELECTION OF THE PROBLEM SUGGESTED BY GOOD AND SCATES

Good and Scates defined following criteria for a specific issue to be considered as a problem.

- Novelty and avoidance of unnecessary duplications
- Importance for the field represented and implementation
- Interest, intellectual curiosity, and drive
- Training and personal qualifications
- Availability of data and method
- Special equipment and working conditions
- Approachability of the sample
- Sponsorship and administrative cooperation
- Hazards, penalties and handicaps
- Cost and returns
- Time factor.

STATEMENT OF PURPOSE AND OBJECTIVES OF RESEARCH PROBLEM

Once it is identified that the research problem is a gap in the knowledge, to satisfy the main criteria mentioned above, a statement of purpose on it would give an idea of expanding it further exploration. Statement of the problem should contain three components (Fig. 4.2):

1. It should state the given background of the problem.
2. The new assumption of the researcher in that area of research.
3. The intention (objective) of the researcher in the current research.

Example:

Excess body weight is related to significant morbidity and mortality among the people. However, less is known about the relationship of body weight to health-related quality of life (HRQOL), especially for

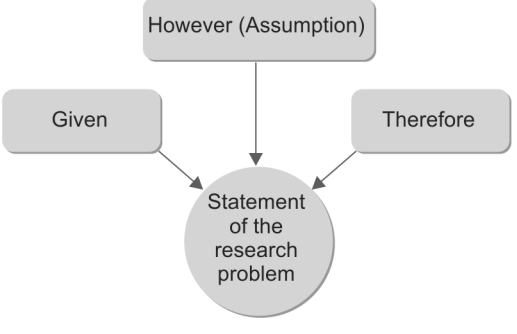

Figure 4.2: Statement of the research problem.

Indian populations. In the statement above, the given problem is there any relationship between excess body weight and HRQOL. Therefore, the aim of the study was to find out the relationship of excess weight and HRQOL in a general population sample from Surat, Gujarat.

The new assumption may be, from the researcher's experience and his knowledge search, that there is no relationship or some other factors may be responsible apart from excess bodyweight. This is the second step in the statement of the problem.

Thirdly, the ways and means by which the researcher intends to carry out the research forms the third statement of the problem. This represents the objective the researcher intends to find by addressing the problem.

In any narration, presentation of statement in the right way is very important. Kerlinger has identified three criteria of good Problem Statements.

1. A problem should be concerned with relation between two or more variables.
2. It should be stated "clearly and unambiguously in question form".
3. It should be amenable to empirical testing.

PROBLEM STATEMENT MODELS

This is the underlying principle on which any problem statement is based on. Any problem statement can be zeroed into the below mentioned three models. As it is not the purpose of this book to explain in detail about the statement only three models are mentioned below.

1. Action-knowledge conflict model.
2. Knowledge-knowledge conflict model.
3. Policy-Action conflict (knowledge void) model.

THEORETICAL FRAMEWORK OF THE PROBLEM (FORM OF PROBLEM)

These are ways in which the researcher can view the direction that the problem can be taken.

If it is applied to the above mentioned example for problem statement, then, one way of looking at it is "body weight and mortality are related" in one kind of population. Similarly the same can be applied so many different populations. Also another theory that can be formed is "if there are any other factors that are related to morbidity and mortality apart from excess weight. Thus theory of a problem can be developed in two fundamental ways.

Extending a previous work by studying new populations in new setting and in different cultural and socioeconomic group	Extending a previous work by adding new variables

MERITS OF DESCRIBING A RESEARCH PROBLEM

Merits of a research problem give an insight into the direction of the research that the researcher is undertaking and align the real understanding to the statement of purpose. The below mentioned guide may be useful for the researcher to make valuable conclusion regarding the research that he/she is undertaking. Hildreth Hoke McAshan has proposed an objective guide for judging the merits of a problem. They are:

- Is the problem really important for the field of research?
- Is the problem interesting to the other people of the field?
- Is the problem a real and concurrent one? And display originality and creativeness?
- Does the researcher really concerned with finding the solution?
- Does the researcher able to state hypotheses from the problem in a testable form?
- Will the researcher learn something new from this problem?
- Does the researcher understand the relationship of this specific problem to the broader problem area?
- Does the researcher able to generalize results to some population?
- Will some other intelligent person be able to replicate the study?
- Is there any practical application of results?

REVIEW OF LITERATURE

Review of literature is a step in every learning curve, in which we look back into the evidences on the knowledge on a particular topic. The author or person interested to know information on a particular topic go back and forth in time to retrieve, assess, analyze the knowledge that has been gained on the topic of interest and has led to the current level. Hence reviewing is an essential step in bridging knowledge gap and new dimension in our understanding of a particular thing. The following are the objectives, features and intended outcomes of the review of literature.

- The studies found in the literature related to selected area

- The review should describe, summarize, evaluate and clarify this literature
- Theoretical basis for the research
- The framework for topic/subject area. It defines key terms, definitions and terminology
- The main types of literature reviews are: *evaluative*, *exploratory*, and *instrumental*
- A careful literature review is usually 15 to 30 pages and could be longer.

PURPOSE OF REVIEW OF LITERATURE

The purpose of literature review is to explain and inform the process, its findings and what can be done on the issue of interest. The following bullet points describe about the experiences that a person undergo, understand and the benefit of doing a literature review—in other words the purpose of doing a literature review.

- Explaining to the reader what the problem is that you're tackling
- Explaining which approaches have been tried before
- Explaining why they failed (otherwise it would be solved and no longer a problem)
- Explaining what your approach will be
- Explaining the background to your approach (previous work, etc.)
- Provide a context for the research
- Justify the research
- Ensure the research hasn't been done before (or that it is not just a "replication study")
- Show where the research fits into the existing body of knowledge
- Enable the researcher to learn from previous theory on the subject
- Illustrate how the subject has been studied previously
- Highlight flaws in previous research
- Outline gaps in previous research
- Show that the work is adding to the understanding and knowledge of the field
- Help refine, refocus or even change the topic.

THE PROCESS OF REVIEW OF LITERATURE (WHAT YOU SEARCH; WHAT YOU SEARCH IT FOR; HOW YOU SEARCH IT)

The process of reviewing the literature requires different kinds of cognitive activities and ways of thinking from the researcher. The

higher functions that are involved are generally listed below while doing a review.

Benjamin Bloom's revised taxonomy of the cognitive domain (ways of thinking)

- Remembering
- Understanding
- Applying
- Analysing
- Evaluating
- Creating

SOURCES OF REVIEW OF LITERATURE

Literature review doesn't limit itself to the current sources of knowledge base such as internet and its contents. Rather review can trace as far back as possible to the written literatures and evidences in any form related to topic of interest. However, as far as scientific knowledge is concerned, the existing information can mostly be traced to written and internet sources. Table 4.1 Below mentions the list of internet sources which provide information on various subjects and commonly used for literature review. The development of computer, World Wide Web or online database has enabled the review of literature much easier and comprehensive with proper search strategy. Otherwise the search for knowledge was mostly hand search which used to be cumbersome as the many times it used to be limited in the resources that are traced as the search strategy could not be widened due to physical limitations. A short description on search strategy is mentioned in the subsequent sections.

Table 4.1: Sources of review of literature

Sources	Used in
Medline, science direct, Biomed central	Medicine
Embase	Biomedical and pharmacology
CINAHL	Nursing and allied health
Psych INFO	Psychology
ERIC	Education related
Pedro	Physiotherapy related
World cat database. WWW.worldlib.com www.Qspace.library.queensu.ca www.inflibnet.ac.in, www.vidhyanidhi.org.in, www.mgutheses.in, www.sodhganga.in, www. openthesis.org.	For dissertations, theses and abstracts

Contd...

Contd...

Sources	Used in
Archives of physical medicine and rehabilitation	For conference publications
Index of scientific and technical proceedings (ISTP)	For published contents in conferences

STRATEGIES FOR REVIEW OF LITERATURE

As mentioned above the search strategy has to be as wider as possible to collate the best of knowledge to make us reach to the reality of the current problem that we have chosen to study. Algorithm of search strategy for internet related sources can be found in internet. For example, Google, Youtube offers a wide range of advices on how to do literature search in a practical manner so that relevant sources are not missed or left out.

Strategies for review of literature (Kirby S, Greaves L, Reid C 2006):

- Start with handbooks, overviews and review their references
- Track the authors and their works
- Use library guides
- Record the key words and their contexts
- Establish a personal search pattern (Data bases, types of materials, track strategy, etc.)
- Narrowing of searches and finding key authors
- Use citation indexes and manage references.

PRINCIPLES OF WRITING LITERATURE REVIEW

Literature review can be written as a part of a Research paper, Proposal, Thesis or Dissertation, to learn the topic, to improve understanding of the topic, to develop new ideas, to demonstrate the researcher's knowledge about the topic.

Starting the Write up of Literature Review

- Find a relevant research question. And make the statement of the research question as specific as possible.
- Search for articles and books which are related to the context of the research using the library or an online database (http://scholar.google.com.tr/) to find general reference tools, primary and secondary sources. General reference tools guide us to where

to look to locate other sources. In the Indexes and abstracts we can find a brief summary, Author, Title, Place of publication of articles. Primary sources (Journals and Reports) and Secondary sources (Textbooks) also provide information about the problem of concern of the searching researcher.

To collect relevant source of information follow the below instructions

- Read headings carefully to know about the whole paper
- Read abstracts for the extract summary of the paper
- Read conclusion, to see the results of the study
- Read reference pages to find more sources related to that topic of interest.

The Process

Read the abstract and conclusion then the whole paper again and again. Try to take some notes soon after reading the articles and describe articles you have read by a summary. Description summary includes the following: Relationships between sources, Major themes and concepts of the study and any gaps and disagreements. Use mind maps or literature matrix while reading sources in order to understand theory, concepts and the relationships between them.

Literature matrix is an organizational tool which is very much used to display the relationship or common attributes of the studies e.g. table, chart or flow chart.

Mind map is an organizational tool which is very much used to visualize the relationship between themes.

Structure of the Literature Review

Identify the key themes and organize the concepts and documents in accordance with the key themes or use the literature matrix. Then the researcher can integrate the information by:

- Synthesis of key concepts
- Using helpful phrases to integrate key concepts
- Using direct quotations (cite the author, date and page number of the quote)
- Paraphrasing (acknowledge with a citation).

FURTHER READING

1. Fraenkel JR, Wallen NE. How to design and evaluate research in education (6th ed.). Boston, MA: McGraw Hill, 2006.
2. Hart C. Doing a literature search: A comprehensive guide for the social sciences. Thousand Oaks. CA: Sage; 2001.
3. Koh ET, Owen WL. Research Problem and Literature Review. In: Introduction to Nutrition and Health Research. Springer, Boston, MA, 2000.
4. Ridley D. The Literature Review: A step-by-step guide for students, (Los Angeles: Sage), 2008.

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Essentials of Research Methodology

for all Physiotherapy and Allied Health Sciences Students

Highlights

- Serves as a ready reckoner for the physiotherapy students to get acquaintance with the research scenario
- Useful as a handy resource for physical therapists in the area of research
- Covers a wide range of contents in the relevant area
- Contains concise and comprehensive text information
- Provides attractive schematic representations
- Emphasizes on systematic approach to analysing and answering the examination questions
- Contains simple and easily understandable language.

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