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## *Editorial*

### Research Publications: Forensic Perspective

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#### Introduction

Research is fundamentally most important process for societal scientific growth with new or in depth knowledge on particular subject matter or scientific field. It facilitates the growth, driving advancement and enhancing deeper understanding in a field in scientific way. It facilitates to develop new knowledge and provides information to world on decision making and solves problems and ultimately facilitates improvement and better quality of life.<sup>1,2</sup>

It facilitates to expand knowledge and deepen the understanding on particular subject matter. It is the important bedrock of innovative ideas and development of new processes and products leading to scientific and technological advancement. It facilitates decision-making guidelines by fostering critical thinking attitude, with problem solving approach helps policy formation and addresses challenges and helps to improve quality of life. The ICMJE (International Committee of Medical Journal Editors) recommendations given standard guidelines which are followed by high prestige medical journals. These guidelines may be applied for writing research papers at par with international standards. Researchers using human participants as subject for their study need to follow international ethical standards. Indian national ethical standards are also similar to international standards.<sup>3,4</sup>

Various details are elaborated herewith under various headings in this article as follows-

#### 1. What is research?

- i. Oxford English Dictionary: "It is the systematic investigation into and study of materials, sources, etc., in order to establish facts and reach new conclusions
- ii. American Psychological Association (APA): "It is a systematic process of inquiry that involves the collection, analysis, and interpretation of data for searching an answer of a question or solve a problem."
- iii. Merriam-Webster Dictionary: "Research is a careful and systematic study and investigation into a subject, often involving the collection and analysis of data."

**In general, research** is a scientific, systemic, step-wise, original investigations or methodological enquiry carried out by the researcher/s on a topic/issue to find out more scientific knowledge, deeper understanding and discovery of additional or new interesting facts or principles in the concerned field.

#### 2. Key Characteristics

- i. Systematic: Research follows a deliberate and organized approach in scientific way.
- ii. Objective: Research aims to be unbiased and impartial.
- iii. Methodical: Research involves a careful and deliberate process of gathering and analyzing information.

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- iv. Analytical: It involves systemic investigations using critical thinking which used to analyse and interpretation of data.
  - v. Empirical: It relies on evidence and data.
- 3. Forms of Research:**
- i. **Exploratory Research:** It is useful for defining or identifying a problem or question.
  - ii. **Constructive Research:** It is a problem-solving methodology which tests theories and aims to propose novel solutions to the practical and theoretical problems or questions under research and further evaluates its effect.
  - iii. **Empirical Research:** It aims to gain knowledge through direct observation and experience by testing feasibility of solution using the observation or experience based evidence.
  - iv. **Non-empirical (Theoretical) research:** This approach relies on existing knowledge and develop theory in opposition to the observation and experimentation. It aims to seek solutions to problems with the help of existing knowledge.
  - v. **Basic and Applied Research:** Basic research usually comprising of quest for information without any target or specific objective. On the contrary applied research is aimed specifically towards the resolution of current issue of interest.
- 4. Major research designs in empirical research:**
- i. **Quantitative research:** It is an empirical, observation-based, systemic investigation of quantitative characteristics or measurable properties and phenomena and their relationships with collecting numerical data and further statistical analysis. Analyzes numerical data to identify patterns, trends, and correlations through methods like experiments, polls, and statistical analysis. Such results further helpful to establish causal relationships or existence of association between various independent variables. Qualitative studies include various research designs such as Correlational study design, experimental study design or descriptive (survey) study design. Data collection methods include random sampling, systemic sampling, structured data collection methods.
  - ii. **Qualitative Research:** It involves the detailed understanding of human behavior, reasons governing such behavior by collecting vast data in narrative formats as words or images or videos, etc. by asking broad questions which further analyzed. Explores attitudes, behaviors, and opinions through methods like interviews, surveys, and focus groups.
- iii. **Mixed type of research:** It includes of both types i.e., qualitative and quantitative research. In this type of research a more comprehensive understanding provided by combining the qualitative and the quantitative approaches within a single study.
- 5. Research Process**
- i. Problem Identification: Recognize a research problem or question problem through need analysis.
  - ii. Literature Review: Examine existing research on the topic to gain context and insights. This comprises the current scenario of the issue in research, effects of the issue, draws the ideas about the lacunae and about the methodology deployed to perform the research on particular topic.
  - iii. Research Methodology & Research Design: Choose a research methodology and design the study. Outline of this section includes study design<sup>5</sup> (type of study- experimental/ cohort/ case control/ cross sectional and logistical arrangements- prospective/ retrospective/ both), study population (time, place, person, inclusion & exclusion criteria), operational definitions, sampling procedure (convenience/ random/ systemic/ cluster), sample size, data collection procedures (who and how?), data analysis plan (data recording, software used, etc.), data safety and quality assurance plan, informed consent, human subject protection, confidentiality and ethical clearance.
  - iv. Results: It refer to the outcome of study which is presented in a clear and concise manner.
  - v. Conclusion: It summarize the main findings and implications.
  - vi. Take home message: Guides on community awareness or important message.
  - vii. Recommendations: Suggest future research directions or practical applications.
- 6. Literature review techniques:**
- i. Organizing Techniques: It includes concept Mapping, mind Mapping, outline Method, Matrix Method

- ii. Searching Techniques: It includes database Searching, Keyword Searching, Author Searching, Citation Chaining.
- iii. Evaluation Techniques: It includes critical appraisal, source evaluation, study design evaluation, risk of bias assessment.
- iv. Synthesis Techniques: It includes thematic analysis, meta-analysis, narrative synthesis, conceptual synthesis.
- v. Writing Techniques: It includes Summarization, Paraphrasing, Quotation, and Synthesis Writing.

## 7. Research Ethics

- i. Informed Consent: Ensure subject understand the research purpose, risks, and benefits.
- ii. Confidentiality: Protect participants' identities and data.
- iii. Anonymity: Keep participants' identities unknown, as possible.
- iv. Avoid Harm: Minimize risks and ensure participants' well-being.
- v. Objectivity: Maintain impartiality and avoid bias.

## 8. Common Research Methods

- i. Surveys: Self-report questionnaires or interviews.
- ii. Experiments: Controlled studies that manipulate variables.
- iii. Case Studies: In-depth examinations of a single case or phenomenon.
- iv. Content Analysis: Systematic analysis of texts, images, or videos.
- v. Observational Studies: Studies that observe participants without manipulating variables.

## 9. Research Tools and Software

- i. SPSS: Statistical analysis software.
- ii. Excel: Spreadsheet software for data analysis.
- iii. SurveyMonkey: Online survey platform.
- iv. EndNote: Reference management software.
- v. NVivo: Qualitative data analysis software.

## 10. Research Publication:

It is a process of disseminations or sharing of research findings, arguments, conclusion and recommendations with the academic community and the general public through various media, such as journals, conferences, and books.

Unpublished written output in printed format or just posted on internet without any peer review is called grey literature. To convert our exhaustive research work into a **scholarship**, it needs to be

published in peer reviewed, reputed academic journal.

## 11. Types of Research Publications:

- i. Journal articles: It includes of original research articles, original review articles, Survey paper, Systemic meta-analysis, case series, case report, short communication, editorial, letters, clinical trial, book review, commentary, etc.
- ii. Original research papers: Articles published bearing reports on the findings of study by the authors themselves in peer-reviewed journals.
- iii. Conference Papers: Research papers presented at various academic conferences.
- iv. Book Chapters: Contributions to edited books on scientific research topics.
- v. Books: Comprehensive monographs on research topics.
- vi. Theses and Dissertations: Research papers produced as part of academic degree requirements.

## 12. Publication Process:

- i. Writing and Editing: Research manuscript is prepared and refined.
- ii. Journal Selection: Researcher need to choose a suitable journal for publication.
- iii. Submission: Submit the manuscript to the selected journal.
- iv. Peer Review: Expert reviewers evaluate the manuscript for quality and validity.
- v. Revision and Resubmission: Address reviewer comments and resubmit the manuscript.
- vi. Acceptance and Publication: The manuscript is accepted and published in the journal.

## 13. Publication Ethics:

- i. Originality: It ensure the work is original and free from plagiarism.
- ii. Authorship: Authorship should reflect significant intellectual contribution. The contributor roles should be clearly defined in relation to the preparing study design, data collection, analysis, interpretation and manuscript writing.
- iii. Ethics review/ breach of confidentiality, fabrication and falsification, authorship, plagiarism, etc.
- iv. Conflict of Interest: Potential conflicts of interest need to be disclosed.
- v. Data Integrity: Accuracy and integrity of research data to be ensured.
- vi. Ethics in recent advances: The development of AI technology development in health sector is

being steered by the fundamental principles of ethics.<sup>6</sup>

#### 14. Benefits of Research Publication:

- i. Knowledge Sharing: Research findings will be disseminated to the academic community.
- ii. Career Advancement: Authors research reputation and career prospects will be enhanced.
- iii. Collaboration: It facilitate the collaboration and networking with other researchers.
- iv. Impact: It contribute to the advancement of knowledge and societal impact.

#### 15. Publication Venues for Forensic Medicine Research

- i. Forensic Science International: A leading international journal for forensic science research.
- ii. Journal of Forensic Sciences: A peer-reviewed journal covering various aspects of forensic science.
- iii. American Journal of Forensic Medicine and Pathology: A journal focusing on forensic pathology and related topics.
- iv. Journal of Forensic Medicine Science and Law (JFMSL) - It is an official publication of Medicolegal Association of Maharashtra.<sup>7</sup>
- v. Journal of Indian Academy of Forensic Medicine (JIAFM) - It is an official publication of Indian Academy of Forensic Medicine.
- vi. Forensic Medicine and Toxicology: A journal covering forensic medicine, toxicology, and related fields.

#### 16. Challenges in Research Publication:

- i. Journal Competition: There is a high competition for publication in top-tier journals.
- ii. Peer Review: It is a great task of navigating the peer review process and addressing the reviewer comments.
- iii. Time-Consuming: Researchers need to balance publication efforts with other research and academic responsibilities.
- iv. Limited Funding: Secure funding to support research and publication efforts is important.
- v. Access to Cases and Data: Obtaining access to forensic cases and data can be difficult due to confidentiality and security concerns.
- vi. Interdisciplinary Collaboration: Collaborating with experts from various fields can be challenging due to differences in terminology, methods, and perspectives.

vii. Staying Current with Advances: Keeping up-to-date with the latest advances in forensic science and medicine can be challenging due to the rapid pace of technological developments.

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