QUESTIONING DEFINITION OF RESEARCH IN INDIA

Dr. D. K. Jain¹, Dr. Himanshu Sharma², Dr Raj Kumar Arya³

¹Associate Professor, Pharmacology, BMC, SAGAR.
²Assistant Professor, Pharmacology, BMC, Sagar.
³Associate Professor, Pharmacology, GRMC Gwalior.

ABSTRACT

In India, there is misunderstanding and confusion about meaning of research and category of original research paper. This discussion is important because in India, research papers are made compulsory for promotion of medical teachers. There is no uniform policy regarding publications. All medical journals have different pattern regarding titles and publications. There should be uniform pattern of all medical journals. Innovative thoughts, new ideas, and arguments which prevent pollution in the field of research work should be promoted by the editors. Thanks to editor, WJPR, who really understands what research is? All editors of different medical journals should follow policy of WJPR.

KEY WORDS: Research, Publications, experimental work, Editors, impact factor.

INTRODUCTION

In India, there is a big misunderstanding about meaning of research. This discussion is very important because Medical Council of India made research paper compulsory, for the purpose of promotion from the post of Assistant Professor to Associate Professor and from the post of Associate Professor to Professor. In Medical Journals, various type of articles are published, with different headings. These are Review article, Education forum, Research article, Short communication, Letter to editor, case report.

"Medical Council of India mentioned in its regulations, for promotion of medical teachers, research papers accepted/published in Index/national journal as first/second author are required."¹ Medical Council of India mentioned research paper. It is not clear in its
regulation, what type of research article should be accepted as research paper required for promotion. Members of higher administrative medical bodies, senior medical faculty members, members of committee set up by Government for promotion and higher government officers do not understand, what research is and what should be the research papers. Private medical institutions usually consider all type of research articles as research paper required for promotion as directed by Medical Council of India but in Government Medical Institutions all type of research articles, published in Medical journals are not being accepted as required research papers for promotion. They consider only those research articles which publish under the heading of research paper or original article. They do not consider, letter to editor, short communication, case study, review as a research paper. Another problem is also related with the publication. Many editors of Indian Medical Journals usually do not understand what actually research is? They are confused. They presume, experimental researches are only original research and other form of research articles are not original research papers. These editors give weightage to experimental research paper only as original research paper. They also give other conditions for original research papers. There should be method, observation table, statistics and conclusions, then only they consider it as an original research paper. These editors do not understand difference between experimental research and original research. They also do not understand that original research work might be in any form. It may be letter to editor, review or short communication. And they also do not know that any article, have original research quality without experimental work could be published with the title original research article. Thanks to editor, WJPR, who is wise, intelligent and who really understands what research is and what should be the research papers and he also understands difference between experimental research papers and original research work.

What is Research
"Ever since the down of civilization, man has been prompted by his instinct of curiosity to understand the change going on in the world around him. He has been conscious of these changes through his senses of hearing, sight, smell, taste and touch. He has further been trying to correlate and generalise the changes. Thus in the course of time man accumulated an immense storehouse of isolated facts extending over the entire realm of nature. He arranged, rearranged and classified the known facts in order to emphasize the elements of similarity and
identify in them. The systematised store of humane knowledge about nature, thus acquired, is named science."[2]

Human has inherent tendency to discover knowledge and it is his aim to make society more comfortable for new coming generation. This is the reason why society today has enormous knowledge, technology and developed medical science. That's why it is the duty of society to develop and create knowledge continuously for the welfare of mankind. Research can be defined as "A careful study of a subject, especially in order to discover new facts or information about it"[3]. Definitions of invention will clearly tell what the meaning of research paper is and what research papers should be? "Invention is the act or operation of finding out something new; the process of contriving and producing something not previously known or existing by the exercise of independent investigation and experiment. Also the article or contrivance or composition so invented. Invention is a concept; a thing involved in the mind; it is not a revelation of something which exists and was unknown, but is creation of something which did not exist before, possessing elements of novelty and utility in kind"[4].

Actually research is an invention creating something which did not exist, and was not known before, and which can be made useful and advantageous in the pursuits of life, or which can add to the enjoyment of mankind. With these explanations, it is clear, that any idea, query, suggestion or conclusion which is helpful in advancement of knowledge is research. But there should be one condition, "Not every improvement is invention, but it must be the product of some exercise of the inventive faculties and it must involve something more than what is obvious to persons skilled in the art to which it relates."[4]

Similarly, any research paper with any title; letter to editor, review, short communication, case study; having components of invention should be included in research paper. And any article of such quality with or without experimental study should be published with the title research article.

**What Is Experimental Research?**

In experimental study, "the sampling data are collected from a population or universe sufficiently large and representative of the population understudy chosen by a standard sampling technique. The population or universe must clearly be defined."[5]
"Medical research covers a wide field and it is often divided into three components basic, epidemiological and clinical. Basic research is usually carried out in a lab and can involve biochemical, immunological, genetic and other type of investigation. Such research is often carried out on samples from patients but also includes animal experimentation. Epidemiological and clinical research tend to be more patient and subject centered. Most epidemiological or clinical studies involve the comparison of groups and can be broken up into two broad categories, distinguished by the design approach. Experimental studies are based on a process of randomization where-by subjects are assigned by the investigator to the comparison groups. Most questions in medical research can be answered by examining an association between two variables."[6] In experimental study, "statistics is used in pharmacology.

1. To find the action of drug, it is given to animals or humans to see whether the changes produced are due to the drug or by chance.
2. To compare the action of two different drugs or two successive dosage of the same drug.
3. To find the relative potency of a new drug with respect to a standard drug."[7]

In Indian Medical Journals, in the original research article section, only those articles are published which have comparative studies, material method, and use of statistics to show comparative results. Usually there is a fix pattern of original research article in Indian Journals. "Editors expect a fix pattern of methodology in original research article. They demand that experimental method should be described in detail. The number of subjects, the number of groups, the study design, source of drugs with dosage regimen, statistical method and ethical aspects must be mentioned under this section."[8]

Editors clearly mention that articles in format of review, letter to editor, case report, short communication can never be published with the title original research paper.

**Comparison Of Original and Experimental Research**

Many editors and scientific personnel have the view that experimental research is only original research. They do not understand any new idea, new view, new conclusion which help in evolution of knowledge or a concept which removes superstition and unscientific concepts from the society should be accepted as original research work. Simple observations of the event were responsible for important inventions and discoveries in the world which caused advancement of science and we can proud on them.
**Discovery of Penicillin:** "In 1928 Alexander Fleming at St. Mary's Hospital, London, observed a contamination of a culture plate of staphylococci by spores of penicillium mold. In this particular instance, the culture plate contained staphylococcal colonies which had been well developed and now where showing sign of dissolution. This extraordinary and unexpected finding prompted further investigation"[9] and it was the base of development of chemotherapeutic agents. This was the simple observation.

**Beginning of General Anaesthesia:** "In 1772 Joseph Priestley, the discoverer of oxygen, made nitrous oxide or laughing gas. In the year 1800 Sir Humphrey Davy remade Priestley's gas and in a letter to one of his friends, Davy wrote as follow "I remade this gas that Joseph Priestley discovered, inhaled it, and my pulse jumped 20 strokes. I danced around my laboratory like a mad man". He suggested to the medical profession that in all probability this substance might be useful in the alleviation of pain produced by surgery"[10]. This letter again has more weightage as original research than 100 of experimental work using plant components without isolating active ingredients. This simple letter gave path to development of general anaesthesia.

"Important discoveries started by simple observation"[11] in 1897, the discovery by a German Chemist, E Buchar that a cell free extract of yeast can convert sugar in to alcohol (Fermentation without the presence of living cell) marked the beginning of biochemistry.

Similarly, virus was also identified. These infective agents are the cause of numerous ailments in plants and also among animals.

Knowledge about proteins, DNA, RNA was observations by electron microscopy and X-ray crystallography.

In 1950s, Crick and Watson discovered the double helix structure of the DNA molecule. In 1980's and 1990's, genetic engineering helped scientists to develop several new proteins such as human insulin, interleukin 2, blood clot dissolver and a vaccine for Hepatitis B.

Avogadrow hypothesis, Darwin's law of evolution, Mandleef's periodic table, Newton's law of gravitation, Faraday's law of electric induction, Archimedes law were important milestones in development of science, were simple observations, changed the path of evolution of science.
In this way, thousands of discoveries can be mentioned, where simple observation changed the history of science.

**Approximately one Thousand Original Research Papers Showing Antidiabetic Effect or Single Letter Which Point Out Defect In Diabetic Model.**

Approximately one thousand experimental researches have been published as original research papers showing antidiabetic effect of herbal products by using alloxan induced diabetic model. But "One author pointed out defect in alloxan induced diabetic model. He writes, some herbomineral products, which have antidiabetic effect in animal models, were not effective in humans as an antidiabetic. There are inconsistencies in doses of drug, route of administration, duration and severity of diabetes and methodology in alloxan induced diabetic models, which make its accuracy controversial. Alloxan induced diabetic model is a doubtful model for antidiabetic studies."\(^{[12]}\) This view of author was published as a letter to editor which is not being accepted as an original research work. Later on, another author did work on alloxan induced diabetic model and writes, "We used alloxan to induce diabetes in rats and rabbit for screening the antidiabetic activity of test compounds. However we experienced an inconsistent and unpredictable response with alloxan, similar to that discussed by Jain et al. We, therefore, agree with the view point of Jain DK."\(^{[13]}\) These both articles were published as letters to editor and not accepted as original research work by medical community while one thousand experimental researches were accepted as original research work while they all were inaccurate. Actually these both letters to editor have one thousand times more research quality than combined one thousand experimental original research papers showing antidiabetic effect by using alloxan induced diabetic model.

**Clinical Controlled Trials on Homeopathic Drugs or Analyzing Homeopathic Principles in Context of Knowledge of Modern Medical Science.**

Many Homeopathic Journal are published and clinical controlled studies are being done to show effectiveness of Homeopathic drugs. These clinical controlled studies are published as original research papers. "One author analyzed Homeopathic principles and compare it with the whole knowledge of medical science and concluded that these principles are wrong, absurd and against the modern medical science."\(^{[14]}\) Then what is the use of doing clinical controlled study on Homeopathic drugs when conclusion has been drawn. Actually review is more important and has more research element than one experimental research work. In review, one concept is analyzed and its accuracy is judged with the help of enormous quantity
of knowledge. While in experimental research work, one concept is compared with another concept with extremely narrow vision with the help of statistics. That's why review should be considered as greater research work than experimental research work but Indians do not accept this reality.

**Impact Factor Is An Indicator Of Authenticity And Acceptance Of Medical Journals.** Review is not accepted as a original research paper but when impact factor is considered, review journals have highest impact factors. In a review, one person fights alone with millions of soldiers, while in experimental research or clinical trials there is a fight between two persons. One review, in established journal, may have 500 to 1000 references, while one experimental research causes only one reference. Impact factor of some established journals:\(^\text{15}\):

<table>
<thead>
<tr>
<th>S.No.</th>
<th>JOURNAL</th>
<th>YEAR</th>
<th>IMPACT FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Physiol. Review</td>
<td>2008</td>
<td>35</td>
</tr>
<tr>
<td>5.</td>
<td>J. Physiol. London</td>
<td>2008</td>
<td>4.60</td>
</tr>
<tr>
<td>7.</td>
<td>NAT Rev. Drug Discov.</td>
<td>2008</td>
<td>28.69</td>
</tr>
<tr>
<td>12.</td>
<td>DRUGS. 4.206.</td>
<td>2008</td>
<td>4.128</td>
</tr>
</tbody>
</table>

Journals contain experimental research have less impact factor while review Journals contain review articles have highest impact factors. Then it can be concluded that review has more authenticity, applied and research content. But it is sad that review article is not accepted as a original research work.

**Medical Journals Have No Uniform Policy**

Medical Journals have no uniform policy regarding publication and there is no clear demarcation between research contents and non-research contents of publications. Different editors include one research publication in to different category according to their own independent policy, which create confusion and incoherence. Experimental work can be
published in original research work, or in short communication or in letter to editor category. "One experimental research work," evaluation of anti-inflammatory activity of Typhaanguistifolia pollen grains extracts in experimental animals, published with the title short communication."[16] Another experimental research work "In vitro antioxidant and antiinflammatory potential of Polyalthialongifolia in rats"[17] published with the title letter to editor. While original research articles usually contain experimental research work. It creates problem for authors. If it is published in original research category, it will be accepted as a research paper for promotion and if same research work is published with the title, letter to editor, it will not be accepted as research paper required for promotion. Review is more applied and has more authenticity but it is not accepted as a research paper for promotion.

In journals of pharmacology & its associated branches, herbal experimental research works are usually published with the title original research work. In original research category, maximum articles belong to herbal experimental work on animals. But what is the use of this work. We are not able to discover single drug molecule from these herbal experimental studies. It is just wastage of time and energy. "In spite of increasing research in herbal medicines ... there is still no product, no drug that has made a difference to therapeutics"[18] "Studies show that animal studies are poor predictors of effects in humans"[19] But "in 2007 and 2008 among the articles published in IJP, 84% were animal studies"[20] Because of this futile herbal experimental work publication as original research paper, actual research material is not getting place in original research paper category. This is very poor condition for propagation of actual research thought in the country. Different journals have different policies regarding categories of publication."One journal of pharmaceutical science has only two categories. One is research paper and another is short communication"[21] "Pharmacological review contains only review articles"[22] "One journal of biochemistry, does not categorize articles in to different title, it has no category, only paper category is mentioned."[23] Another journal belongs to experimental biology also has the same policy[24]. "One journal of biological science does not mention any title."[25] "Journal of review only contains review articles."[26] While "One well known journal of medicine has no original research category. It also contains Comment, World Report, Clinical Picture, Series and Perspectives categories"[27] "One journal of water also does not mention any title, which is published by WHO"[28] "Another Journal of biological science does not mention any category"[29] "One journal of pathology mentions only original contributor and case
Medical Council of India directed that research publications are must for the purpose of promotion of medical teachers in medical colleges. It is wrong prevalent concept that only research papers are research publications. Medical Journals publish different category of articles. Different articles are published in different sections of medical journals. These all articles; review articles, short communication, case studies, education forum, letter to editor should be considered research publication, necessary for promotion of medical teachers in medical colleges. Because following arguments are in favour of my statement.

1. The methodology of preparation of articles, published in medical Journals is the same for all section of research article.
2. All section of articles require abstract, key words, running title, word limit, tables, figures and references.
3. All manuscripts for publication are reviewed by editorial board and reviewers. It may be letter to editor or short communication or research paper.
4. In section of research paper, only those articles are published which contain experimental or clinical trial work or clinical trials. But research does not mean only experimental work. According to Oxford Dictionary - Research is a careful study of a subject especially in order to discover new facts or information about it. It concludes all publications in medical journal should be considered research publications.
5. In section of letter to editor in medical journals, sometimes papers contain experimental work, are also published.
6. In many medical journals, there are no demarcations among different articles. All articles are published in one heading - research publication or papers or research articles or original articles or reviews.
7. Letter to editor/correspondence means a small research communication or a commentary on a contemporary issue or remarks on a recently published article. It clearly proves that letter to editor or correspondence is also a research paper.
8. Pharmacological review, physiological review, pathological reviews are very creditable journals. Papers published in these journals do not have experimental work. Review articles in these journals contain more than 1000 references. Publication of such article
should have more weightage than any other publication. But reviews are usually not accepted as original research papers.

CONCLUSION

Research publications are required for promotion in medical colleges, therefore uniform policy should be adopted by editors of different medical journals.

1. All publications should be accepted as research publications, or,

2. There should be no category in publication as adopted by many journals, or,

3. There should be only two categories. One belongs to research content and second belongs to informative nature. Article of informative nature should not be considered as research articles. Any innovative idea or any thought or logical argument which point out wrong methodology or wrong concept in research field, should be considered as research work. Development of new knowledge and removal of pollution from ocean of knowledge should have equal weightage.

4. Editors should analyse innovative observation, thought or idea in articles, even it is simple letter of few lines. If it has novelty, applied and invention quality then it should be considered original research paper. “Viennese physician, Ignaz Semmelweis keen observation in 1844, could prevent infection during childbirth permitted him to make a far-reaching discovery. In 1847, he instituted the requirement of thorough cleansing of the hands and arms and washing in chlorine water in the maternity ward of the Vienna general hospital. As a result of this requirement, a dramatic reduction in the incidence of childbed fever occurred, with a spectacular decrease in mortality.”(33) Invention of washing of hands by physician to deliver the mothers, decreased the mortality. This simple observation of Ignaz Semmelweis in 1847, was original research work even it would have been written in 4 lines in letter to editor. All editors should pay attention to this fact.

ACKNOWLEDGEMENT

Thanks to editor WJPR who really understands what research is. Editors of different medical journals should follow policy, adopted by WJPR. We appreciate and congratulate, editor WJPR, for valuable contribution given by him for propagation and accepting actual research work.
REFERENCES


11. Haque MA, Patnaik HS, Mandal PK. Contemporary world History. 1st ed. new Delhi; NCERT; 2003: 255-256


15. Indian J. Physiol Pharmacol 2010; 54(3).


