

# Need for Inclusion of Scientific Writing Skill Subjects in Indian Post Graduate Pharmacy Course

Patil J.S\*<sup>1</sup>, Kotnal R.B<sup>2</sup>, Birajdar R.P<sup>1</sup>, Marapur S.C<sup>1</sup> and Kadam D.V<sup>1</sup>

<sup>1</sup>Dept. of Pharmaceutics, <sup>2</sup> Dept. of Pharmaceutical Chemistry, B.L.D.E.A's College of Pharmacy, BLDE University Campus, Bijapur- 586103, Karnataka, India.

ABSTRACT

This article emphasize more on why we need stuffing of scientific writing skills in curriculum rather than how to write scientific articles. Writing scientific articles is a great obstacle for many people, or perhaps for most people. Scientific writing provides vital information with the creation and dissemination of research knowledge. In recent years, most of the Indian pharmacy research students are unable to publish their scientific data in peer reviewed journals. Reasons for this failure are numerous, few among these are not knowing how to begin, poor language and drafting skills. Lacking in basics of scientific writing skills and no motivation by the research guides/supervisors is the matter of concern today. In India, all the universities offering post graduate (PG) course in pharmacy are concentrating more on teaching the subject contents of respective specializations. The PG course is a blend of study of specialized subjects in part- I and research programme in part-II. The students need to write thesis of their dissertation work at the end. For writing the thesis students require scientific writing knowledge. Hence, it necessitates studying the subjects on scientific writing skills at part-I level. In this present discussion an attempt was made to explore the reasons which emphasize the inclusion of scientific writing subject/s in PG course and also tried to suggest the possible course structure which may become more appropriate for our present context.

**Keywords:** Scientific writing, publication, course structure, post graduate, pharmacy.

## INTRODUCTION

Good scientific writing skills open up many opportunities to the researcher: publications, conference or seminar attendance. They also lead to better patents, better research partnerships and better funded research. Clarity and efficiency in scientific writing bears witness to the quality of a researcher; it influences career promotion. As we are seeing many avenues for scientific writing, medical writing in healthcare, medical and R & D sector viz; pharmaceutical industry and Clinical Research centers. It is essential to have subject in the post graduate level of pharmacy course. For a researcher, scientific writing is a rewarding knowledge both professionally and socially. The idea and skill of writing help to publish scientific data in the peer reviewed journals. Publication of research articles is the measure of his/her productivity which may lead to upgrade the professional status especially for those from academic field<sup>1,2</sup>. Publishing the research results in scientific journals reaches the audience in larger extent and it contributes a significant influence on career development. The scientific writing is a well written report describing the results of overall original research work. Publication is the crucial end point of a research work to share

important information with the scientific community which results in personal contentment and professional advancement<sup>3</sup>. Writing is a skill born from practice. Before becoming a good writer it is essential to become an avid and careful reader. Most reputed institutes consider quality publications as a measure of research productivity and basic indicators of accountability. In recent days, number of good publications by Indian pharmaceutical scientists in reputed journals is drastically declining. The reasons for such failure are plenty. But this is really a serious concern and our educators need to think urgently to rectify this problem. Although, few research/academic institutions routinely conducting short term workshops and seminars on scientific writing skills in their institutions but the number of virtual beneficiaries are less. Most of the pharmacy institutions offering PG programme in India are teaching basic subjects of the respective specialization. Although a great deal of importance is given to teach such specialization subjects, no attention is paid in teaching scientific writing skills. It may be said without any exaggeration that scientific writing skill is one among the most crucial problems that plague the research oriented educational scene in India and there is almost no place for learning, coaching and motivation for scientific writing skills which is essential for PG students. In most of the institutions almost 90% students leave the college after completion of the course without even communicating their

scientific results for possible publication. Further, it is a matter of great regret that, scientific writing is not considered as one of the essential study tool for PG pharmacy students. That is why even though a large number of PG students are coming out every year, the number of publications in peer reviewed journals are very less. This aspect not only reducing the professional reputation and recognition but also reduces the scope of pharmacy post graduates heading high academic positions, editorial and scientific review opportunities.

Most modern universities in the world have begun to modify the course structure or entire study programme in various disciplines according to the present need and importance. Instructors tailor such course to many individuals, including medical students<sup>4</sup>, osteopathic residents<sup>5</sup> and scientific researchers<sup>6</sup>. Even in India, students studying in universities/institutions exposing to learning scientific writing skills through seminars and workshops in their campus have the benefit of a better eminence. However, most pharmacy institutions still continue with primitive and callous fashion of teaching and not thinking on importance and significances of scientific writing skills. This seems that there is need for inclusion of subject/s on scientific writing skills as a part of PG curriculum. Thus, the present study was done with the aim of discussing the need for inclusion of such subject/s with a possible proposal of course design.

*“But in science the credit goes to the man (or woman) who convinces the world, not to the man (or woman) to whom the idea first occurs”.* Sir Francis Darwin.

### **Reasons for inclusion of scientific writing subject/s**

Motives for the publication vary widely. Some students having a special driving force and well guided by their research supervisors are finally publish their scientific results in reputed journals. But this is all depends on special talent and skills. Scientific writing is easier when it is an integral part of the study and it is harder when it require a student to think and prepare a scientific paper. To motivate all the students towards publication habits it is essential to make scientific writing as a curriculum part. In the present Indian context, motives to scientific writing and publishing habits are poor. In the present discussion we focused mainly on the reasons which made to discourage the publishing habits in our PG students. These include,

In recent days, professional and technical teaching community suffering badly with grammatical English language. This is because most of us not considering that the language is necessarily grammatical in professional teaching field. This situation lacking behind in flourished writing activities.

A poor motives and encouragement to the student community pertaining to scientific writing and publishing habits. This may be because of the fact that the teachers/research guides themselves hesitate to write the papers due to their poor language and lack of writing skills.

Though some people interest to publish the papers of their research results, a primary obstacle is how to begin, even though the approaches to and procedure for writing a scientific paper is well defined<sup>7</sup>.

A poor or no clear vision for the institutions which are currently working on commercial base, such institutions has absolutely failed to attract a talented research supervisor who has basics of teaching and interest in research. This ultimately failed to achieve minimum scientific and educational standards in our research based educational system. The Indian universities seem to have not made publication as mandatory requirement for the PG students in the curriculum, although it is already exist in some universities for Ph D programme.

### **Benefits of scientific writing knowledge and publications**

Scientific writing skill and research publications give publicity to the scientist which may help him in many of the following ways. The recognition and publicity that gained by publications may result in getting consulting work and assignments such as resource person. Publishing the research results in scientific journals contributes a significant influence on career development. Publication may lead to professional recognition and job promotion. Publication is the crucial end point of a research work which results in personal satisfaction and professional advancement.

In the recruitment of faculty most reputed institutes consider quality publications as a measure of research productivity and basic indicators of accountability. Good scientific writing skills can bring many personal rewards such as getting research grants.

### **Suggested course design**

Acquiring good writing skill is a difficult task for the student community especially those who have not studied the 'English' as a first language. An issue always faced in teaching any specializations of professional communication is the bridge between technical knowledge and rhetorical skills. Teaching subjects like scientific writing skills is always suggested to concentrate on coordinating the theoretical knowledge and rhetorical skills, there by students are made more skillful candidates both in theory as well as in practical. All research process always begins with a standard protocol and concludes

with writing the scientific data in a systematic manner. A scientific writing describing an instance of the scientific process reflects the way that experiments are devised and carried out<sup>8,9</sup>. In this context, Indian universities are required to design the practical oriented course structure on scientific writing and research methodology subjects for post graduate pharmacy students. For this, we have to begin with constituting an expert committee comprising renowned educationists and subject experts who can design and tailor such subject suitable for our PG students. The Educationists constructing syllabi for such subjects have to describe the benefits and contributions of the subjects for their career advancement in a clear way. The course design proposed by us comprise two distinct parts covering the study on theoretical aspects as well as practical assignments and workshops pertaining to impart the knowledge of scientific writing skills.

### **Section- I: Theory Part**

Theory part comprises the comprehensive contents on fundamentals and applied aspects of scientific writing skills. The course structure has different sections;

Start with study of literature review procedures; because research programmes always begin with thorough literature review which provides a strong base for the proposed study.

The next important section is study on writing skills of research protocol, because research protocol is a brief plan of proposed work with established methods needs to submit for approval of the study. Hence, it is essential to study the design and writing skills of research protocol along with study on planning and execution of the research programme.

The theory part also contains a detailed study on abstract writing, knowledge on anatomy of a good abstract, use of rhetorical language in framing the abstract as well as whole scientific paper, criteria to identify the target journal, type of manuscript and authorship.

Further, the course also cover chapters on fundamental rules and techniques involved in framing the result and discussion parts of a scientific writing, statistical analysis of the data obtained, and use of various statistical softwares.

This part also includes the systematic study of bibliographic writing because it is vital part of a scientific writing. Different journal follow unique reference style. The study covers introduction of various reference styles. Hence, a thorough study on bibliographic writing helps the students in preparing the thesis or scientific paper.

Finally the course also cover study on preparation of posters and power point slides for oral presentation. Study of basic procedures involved in the preparation of poster and oral

presentations at various scientific conferences, seminars and conventions.

To make all these study components more familiar to students the commonest ways of teaching and to explore their views are in-depth counseling and group discussions. In depth counseling as one-to-one basis and group discussions are suggested to cover in the syllabus with respect to the study content.

In present day academic scenario it is worth important to follow the ethical principles in scientific publication rather than publishing good number of papers. Hence, it is very much essential to have a chapter on ethical principles to be stringently followed by every research students while involving in the scientific writing work.

To ensure successful teaching of this course, a periodic internal assessment and university examinations are to be conducted through a systematic evaluation procedures.

### **Section-II: Practical Part**

In the practical part of the subject design the vigorous practical assignments and workshops are suggested to conduct. Students receive a thorough introduction to the various theoretical aspects on scientific writing that provides the necessary context for practical writing assignments that complements the lectures and discussions.

A definite number of students in a group are to be allotted the specific scientific writing assignments. In these assignments students are supplied the results of different published papers asking them to interpret the data and write the results and discussion.

The journal articles provide source material from which the students can craft the research report using a template<sup>10</sup> provided in the theory class. Each assignments challenges the students to selectively organize the information found in published results.

The practical training provides student to practice the abstract, methodology, result-discussion, and reference writing. A series of stringent practical workshops are to be recommended on various aspects of scientific writing including the preparation of a scientific paper for publication as well as thesis writing exercises.

The students are made much aware about the existing reputed national and international journals and their reputation, importance of impact factor and its calculation and study on better understanding of instructions to authors followed by peer reviewed journals.

The institutes are also suggested to invite the reputed experts

working at editorial levels of various journals as resource persons to provide valuable knowledge pertaining to scientific writing skills.

During the study course, the students are to be motivated to publish at least a review article or short communication in a reputed peer reviewed journal.

At the end of the programme when the students start their research work in part II of the course the knowledge of scientific writing skills studied in part I make them more confident to proceed. Finally the students are expected to be able to write a scientific paper in a lucid and elegant manner after completion of their research programme.

## CONCLUSION

Writing is not an easy task for most students. The ability to write in 'second' language is mainly depends on ability of a student to understand and use grammar. Students who studied English as a second language often commit many errors while writing. This may be due to incomplete knowledge of the English language and its complexities. This is exactly true in case of Indian students who pursue post graduate study in any of the professional courses. Hence, there is an urgent need to introduce the subjects on scientific writing skills at the post graduate level in pharmacy education which in turn not only help them to write scientific papers in a elegant manner but also helps to establish the good and acceptable writing and communication skills along with enhancing credibility, competence and professionalism among the budding research scientists.

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### Address for Correspondence

J S Patil, Dept. of Pharmaceutics, BLDEA's College of Pharmacy, BLDE University Campus, Bijapur-586 103, Karnataka, India.

E-mail: pharmajspatil@gmail