Medical education is prized in India. The competition to gain entry into government medical colleges is fierce, while admission to most private medical schools costs a fortune. It is also well known that there is a marked variability in the standards and settings of medical education across the country. Nevertheless, training in evaluating scientific literature and in medical writing is poor across medical schools, often nonexistent. Even the best medical colleges neither train their undergraduate and postgraduate students in scientific and medical writing nor do they empower their faculty to discuss and debate local and relevant issues in medical literature. Despite publications from the country in some of the best National and International Journals, the general quality of medical writing from India is poor. The paucity of role models, the absence of a strong academic environment, minimal publication requirements for promotions of academics, and a dearth of formal training in medical writing all contribute to low standards of medical writing in India.

Nevertheless, islands of academic excellence do exist; however, these are often driven by specific individuals, who seem to create a learning and academic environment around themselves; they engage with local issues, break out of their disciplinary straight-jackets, and challenge existing paradigms. On the other hand, medical schools do not emphasize the importance of the need to study locally relevant issues, document regional conditions, varied contexts, unusual comorbidity, differing outcomes, the need for distinctive treatment strategies, and to communicate complex issues. They also do not empower young physicians, during medical training, to question conventional wisdom and to view issues from a perspective that is different. The majority of academic publications from India replicate Western findings and doctrines; these are often produced only to meet the extremely low standards required for academic promotions in the country. Attempting to attain mastery in written communication, to think differently, and to highlight distinct patterns is rare, even in the best medical institutions.

Much blame for the failure to empower young physicians lies with senior faculty, who preside over impoverished academic environments. They perpetuate cycles of mediocrity and often destroy bright young careers with their failure to facilitate and promote growth among younger colleagues. The Indian cultural emphasis on rote learning encourages parroting of medical trivia rather than stimulating critical thought, thereby stifling creativity and innovation. It inculcates bad attitudes even among those with reasonable intellectual and language skills. Even the few who take up the challenge of serious academic pursuits often fail due to the lack of support from colleagues, mediocrity of scholastic milieu, low academic standards, minimal requirements for academic advancement, and the absence of a critical mass of proficient teachers and role models. The lack of such exemplars in Indian academia mandates the need for more Ekalavyas, who are able to build ideal role models in their imagination and follow them.

**IDEAS AND CONFIRMATION**

John Snow, considered the father of epidemiology, is recognized for his contribution to the identification of the spread of cholera in London. The story of the “death map” and the “broad street pump” is history. However, these also beg the question “who was the real John Snow?” Was he the one convinced that cholera spread through water after he drew the map of the residents of Soho, who were infected with cholera? Alternatively, did he suspect that cholera was
a water-borne disease even before the Broad Street episode? Evidence suggests the latter, arguing that many ideas are gained through experience and reasoning; however, they require formal confirmation using appropriate study designs and analyses.

While disciplinary straight-jackets often stifle innovative thought, Indian academia faces a more daunting challenge. Despite close to seventy years of independence from the British Raj, our minds continue to be colonized by the West. Western and international frameworks dominate the academic discourse to such an extent that unexpected findings, which do not neatly fit into accepted models, are discounted or brushed under the carpet. Alternative hypotheses and approaches are rare, as much effort is devoted to replicating findings in Western literature and slavishly submitting to supposed universal truths, despite evidence of major differences in local reality. Many studies are also limited by diffidence in interpretation of new findings and the timidity of authors to pursue alternative hypotheses based on the evidence generated.

Academic promiscuity is another ill that plagues many individuals involved in research in India. Attempting to be jack-of-all-trades results in limited mastery of the many areas studied. The failure to examine different aspects of a particular issue in detail makes for poor understanding of the complexity of problem involved. The focus on the number of papers produced results in thinly sliced salami publications and superficial studies, rather than rigorous and in-depth work that could result in substantial progress.

**ENVIRONMENT AND PRACTICE**

The postdoctoral working environment generally seems to determine the future trajectory of academic and scientific careers. Settling into departments with limited academic output often puts the seal on many promising careers. The sole aim of meeting requirements of universities and the Medical Council of India with regard to publications required for promotions, which sets the bar extremely low, is guaranteed to breed mediocrity. The absence of local mentors often demands creation of a virtual college of physicians and scientists, who are serious about their academic life and work. Attending workshops, utilizing training fellowships, and study and sabbatical leave opportunities can help kick-start the quest for excellence and allow one to escape the cycle of mediocrity. Needless to say, such initiatives require a tremendous amount of hard work and discipline, far beyond what many faculty members in Indian institutions are usually willing to invest.

The adage that “practice makes perfect” cannot be over-emphasized. Many opportunities are available in one’s career to exercise skills in academic writing; these include writing of case reports, case series, project proposals, dissertations, theses, and grant applications. Use of such opportunities allows young faculty members to practice their writing skills. The numerous publications available in the age of the Internet also mean that there are journals waiting to publish papers, even those with limited scientific merit, allowing for practice in writing and communicating ideas. The ability to identify suitable journals and match them with manuscripts, with regard to the quality of the study, reader’s interest, and topicality, will allow publication of even the most inane research and ideas; this will provide practice in improving written language and writing skills.

Studying impact factors of journals, their focus (e.g. general scientific/general medical journal/specialty publications), and the target audience (e.g. international/national/regional) will help place studies appropriately on their eventual publication platforms. Compiling lists of potential journals and going down such a list is useful. No data obtained, however limited the methodology used or humble its message should be filed into drawers without publication. A listing of the limitations of the study in the manuscript will allow for improvement in future designs, analysis, and interpretation. On the other hand, the failure to send material for publication would not allow for many learning experiences and growth. Making decisions on sending a manuscript to different sections within journals (for example, full article, short reports, correspondence, etc.) also helps. One has to believe that there are journals waiting to publish the study, and the task is often of identifying the right publication.

**SUGGESTIONS FOR WRITING**

Reviewing relevant literature, identifying a problem, stating a hypothesis, understanding study design, adopting robust and appropriate methodology to address the research question (s) being asked, meticulously carrying out the study, interpreting data obtained, presenting evidence in text, tables, and graphs, and developing a logical discussion and conclusion are crucial parts of the process of preparing a manuscript. Studying the journal format, style guidelines, instructions, and checklists for authors is a good start [Box 1]. Examining similar papers for templates is also useful. Reviewing standard guidelines to include the necessary details for standard study design, analysis, and presentation (e.g. CONSORT for randomized trials, STROBE for observational studies, STREGA for genetic association studies, etc.) is helpful.

Writing an outline for a manuscript helps provide structure to it. Identifying the available material under various heads and sub-heads helps focus the writing. Recognizing ideas and themes for specific paragraphs is a useful strategy. While a perfect first paragraph will take time to develop, completing a rough first draft of the whole paper will increase confidence and allow for a sense of satisfaction.
Understanding issues related to plagiarism, and avoiding for step-by-step corrections and improvement. These will hinder personal and academic growth. Choosing education, and publication, outsourcing medical writing to While many professional organizations help with writing, in one's writing. High costs of printing mandate brevity and precision the focus of the writing should be on content and technical standards, have in-house facilities to improve language, use of active voice improves presentations. Brevity and precision are appreciated. The use of short sentences with simple structures. Use of active voice improves presentations. Brevity and precision are appreciated. Connect the first and last sentences in each paragraph to connect and allow for progression of ideas and for continuity. Check spelling. Customizing word processing programs for exhaustive grammar check and check presentation. Check readability statistics to make presentations easy to read. Focus on content and technical detail, as good journals will often help with writing after acceptance.

**Box 1: Basic suggestion for improving writing skills**

- Study the journal format and its instructions and checklists for authors
- Examine similar papers for templates
- Review standard guidelines to include the necessary details for study designs, analysis, and presentation (e.g., CONSORT for randomized trials, STROBE for observational studies, STREGA for genetic association studies, etc.)
- Write an outline for the paper to provide structure
- Identify heads and sub-heads to help focus the writing
- Identify ideas and themes for specific paragraphs
- Check for logical flow of ideas
- Complete a rough first draft of the whole paper (rather than wait to produce the ideal first paragraph)
- Use short sentences with simple structures
- Use of active voice improves presentations
- Brevity and precision are appreciated
- Connect the first and last sentences in each paragraph to connect and allow for progression of ideas and for continuity
- Check spelling
- Customizing word processing programs for exhaustive grammar check and check presentation
- Check readability statistics to make presentations easy to read
- Focus on content and technical detail, as good journals will often help with writing after acceptance

CONSORT – Consolidated Standards of Reporting Trials;
STREGA – STrengthening the REporting of Genetic Association Studies;
STROBE – STrengthening the Reporting of Observational Studies in Epidemiology

about progress made. Revising and editing one’s written work multiple times is often necessary to improve the quality of the finished product, and requires patience and attention to detail. Breaking one’s mental set by working on multiple papers or projects simultaneously allows for a change of content, context, and frame of mind, and often results in a fresh and different approach to the topic and to its writing.

The use of short sentences with simple structures is cardinal. Checking the presentation for logical flow of ideas is necessary. The use of active voice improves presentations. Spell checks are mandatory. Customizing word processing programs, by changing default settings, for an exhaustive grammar check is useful for beginners; rating the article using readability statistics, now available with many word processors, and attempting to improve the scores are useful. Since many journals, particularly those of good standards, have in-house facilities to improve language, the focus of the writing should be on content and technical detail. High costs of printing mandate brevity and precision in one’s writing.

While many professional organizations help with writing, editing, and publication, outsourcing medical writing to these will hinder personal and academic growth. Choosing a local mentor, to guide one through the process, will allow for step-by-step corrections and improvement.

Understanding issues related to plagiarism, and avoiding it by learning to cite previous work correctly, is critical to progress as a writer and author. The temptation to plagiarize, surely and certainly, leads authors to mediocrity as it ensures the failure to understand basic principles of thinking and writing, and prevents personal and academic growth.

**ADVANCED RECOMMENDATIONS**

While medicine and science may be complex, most people assume that such complexity is inevitable and difficult to explain. However, such difficulty need not (and should not) lead to ambiguity or obscurity of expression; clarity of thought and lucidity of writing can illuminate scientific issues without erroneously oversimplifying them. Nevertheless, the writer must fully understand the readers’ needs to clearly and effectively communicate what they wish to. Readers, including journal editors and reviewers, do not simply read; they also analyze the content and make interpretations. Consequently, issues related to context and reader expectations are crucial for effective communication.

Information is more easily interpreted when readers find it in places they expect. Readers, including journal editors and reviewers, do not simply read; they also analyze the content and make interpretations. Consequently, issues related to context and reader expectations are crucial for effective communication.

Readers should neither have to work hard to decipher the content of paragraphs nor should they be made to guess what the author may mean. Convoluted sentences are best avoided. Simple sentences, with short separation between subject and verb, make for easy understanding. Arranging emphatic information at the end of sentences, as readers commonly lay more emphasis to material placed there, allow writers to communicate new or important information. Alternatively, a whole list can be placed in such “stress positions,” if they are announced at the beginning of the sentence. In addition, breaking the sentence using colons and semi-colons can create secondary stress positions. These useful rhetorical principles suggest the need for the following general rules: (i) Grammatical subjects should be followed as soon as possible by their verbs, (ii) every unit of discourse (for example, a sentence/paragraph) should make a single point, and (iii) information, which needs to be emphasized, should appear at the stress position, usually closing the argument.

Although proverbial wisdom states “save the best for last” to argue for emphasis, the proverbial contradiction states
“first things first” to contend that new topics need to be clearly introduced.\(^7\) Introductions and first sentences should provide perspective, linkage, and context; old information provides context, whereas new information emphasizes the author’s message. Clearly stating the hypothesis under question and then providing evidence for or against is required. Attention to detail is critical for success.

The fact that readers interpret what they read suggests that authors can increase the odds of effectively communicating their intended meaning to a majority of their readers. Content of thought process and expression of thought are intertwined.\(^7\) Awareness of writing rules will improve the structure of the prose and the quality of the scientific argument. While there are no absolute rules for good scientific writing, writers who make consistent choices and improve sentence construction and structure, improve their communication over time.

**HANDLING REJECTION**

Rejection is a fact of life for every academic. Managing emotional reactions to rejects is crucial for successful academic careers. Understanding and respecting the process of peer review and placing oneself in the reviewers’ and editors’ shoes and re-examining issues related to merit, journal focus, audience, reader’s interest, and topicality will allow authors to better match their articles to possible platforms for publication. While we may be critical (and resentful) of the reasons for rejection, we have to accept that peer review is the best system we currently have for research and publication.

The challenge, in handling rejections, is to choose a wise path between modification and completely rewriting of papers. Incorporating reviewers’ comments is mandatory. Including modifiable suggestions, while acknowledging limitations for changes that are not possible, is useful. Even the most mundane criticisms may deserve incorporation as it suggests that the text was unclear, making it difficult for the average reader to fully understand the issues. Quickly moving on to submission to other journals suggests an understanding of the peer review and publication process and of emotional maturity.

**PHILOSOPHY**

Academic careers, with their emphasis on scholarship and research, mandate innovations in thought, effective communication of ideas, and being engaged with study and research in the field one has chosen. India needs role models, who practice, persevere, and attempt to move toward perfection, thus, breaking the cycle of mediocrity. The key to success is focusing and enjoying the process of questioning the status quo, generating new ideas, testing different hypotheses, collecting and analyzing data and communicating results rather than on counting the number of papers published; these will allow for personal and academic growth and enable one to move from being a student to a leader in the field.

Scientific and medical writing is both an art and a science, like the practice of medicine. India needs many more clinicians, teachers, researchers, and academics who can present their ideas to larger audiences and mentor their younger colleagues in critical thought and in clarity of communication. Reflection and writing should not only be lifestyle choices for academics, but also part of the work ethic of institutions.

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