



Neurosurgical challenges of open access publishing in LMICs

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Open access (OA) has emerged as a metamorphic force that is breaking down the walls of restriction to provide unimpeded access to scholarly research online to people around the globe at no cost. It not only disseminates knowledge to a much wider audience but also boosts visibility, transparency, citations, and quality assurance as its unrestricted access opens it to be critically assessed by a wider public^[1]. Evidence-based learning and care are particularly critical in the field of neurosurgery, and neurosurgical research has paved the way for enhanced patient care^[2]. Scientific and multidisciplinary research plays a crucial role in global neurosurgical services by characterizing the local liability imposed by neurosurgical diseases and formulating strategies to assess and tackle this burden^[3]. Low and Middle Income Countries (LMICs) are already burdened with a lack of funding and resources for carrying out viable research, which creates many difficulties for aspiring researchers and authors to be able to materialize their research^[1]. LMIC researchers who overcome the initial challenges of inadequate research resources within their institutions encounter subsequent financial hurdles in OA publishing in the form of high article processing charges (APC), compelling them to turn to traditional journals with limited access. Unfortunately, these traditional journals then become unavailable to the same researchers, creating constraints on academic information sharing^[1]. As a result of limited access,

more than a million scientific articles are pirated annually, with 69% of download requests coming LMICs^[4].

APC imposed by the publishers serve as the biggest obstacle for aspiring researchers in LMIC. The expenses associated with APC are so exorbitant that most authors are unable to afford them personally, while their institutions lack the resources to provide sufficient funding^[5]. The median fee for neurosurgical articles can be as high as \$3300^[6]. On the contrary, some other journals that claim to support authors by removing APC for publishing covertly impose substantial charges posed as editing service charges^[5]. These charges may seem trivial to larger institutions, but they pose a significant burden on smaller institutions present in LMICs, thus depriving neurosurgical students and neurosurgeons within the LMICs and around the globe of valuable research, which could have been able to supplement the knowledge of neurosurgery and aid in providing an overall improved neurosurgical service globally^[5]. As a result, high-income countries (HIC) contribute a significant proportion to the neurosurgical literature^[3]. Despite a recent bibliometric analysis indicating a hike in authorship from LMICs in global health-related publications, there persists a sizeable discrepancy between researchers in LMICs and HICs^[6–12]. It was deduced in a study that in the past 5 years, LMICs have contributed merely 8% of the overall OA publications across 18 neurosurgical journals^[1]. This is not fair; normally, an OA journal should reduce inequity and avoid problems and inequalities between LMICs and HICs where a lot of funding is available for research^[7]. However, OA cannot solve methodological or ethical problems in completed research or publications. That is why in LMICs it will be crucial to conduct a good quality of research as well as improvements in quantity, which will allow the authors from LMICs to be competitive for international fund raises to support their research and publish it in an OA journal^[8].

Therefore, the need for strengthening the capacity to produce relevant research work should be focused on LMICs. Unfortunately, authors from LMICs faced some challenges, such as implementation, funding, training, the development of adequate research methods, and being able to publish in an indexed OA journal and sometimes ends by publishing in predatory journal^[9,13,14]. However, it will be possible to overcome these challenges and increase the authorship rate from LMICs by providing training on research courses (from basics to experts), from student to physician, with adequate mentorship^[4,10,15–18]. There has been worthwhile efforts made by the WHO to facilitate free access of significant numbers of journals in LMICs. As part of the Research4Life initiative, WHO introduced the Health Inter Network Access to Research Initiative (HINARI) program that grants free electronic access to more than 3000 journals to

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institutions in LMICs^[19]. Similarly the international development organization INASP consistently advocates for access to published research by helping institutions in developing countries negotiate for free or discounted access to journals, hosting local OA journals, and supporting researchers in improving their skills^[20].

Furthermore, in LMICs, authors should improve the implementation of research from a single academic center to a multi-center, getting funding for research that will answer a relevant question or novelty. Also, they should promote local and regional OA journals to be indexed and establish collaboration between HICs and LMIC editorial staff for expertise.

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