

DIFFICULTIES ENCOUNTERED BY PHARMACOLOGISTS WORKING IN AFRICA AND POSSIBLE SOLUTIONS

By

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1. Preamble

Difficulties are part of life and are experienced by individuals and groups alike, regardless of their nature, status, composition, developmental stage, etc. Thus, there's no gainsaying that from all over the world, individuals and groups encounter diverse challenges in the course of discharging their duties and responsibilities as pharmacologists. Another truism is that the first step to arriving at solutions to challenges, is to clearly identify the challenges. Below is a brief treatise on the main difficulties encountered by pharmacologists working in Africa and possible solutions, taken mostly from similar expositions by Kwanashie (2014, 2021) and Badr (2018a, 2018b, 2019). Spedding *et al* (2016) had previously addressed similar concerns outside the African continent.

2. Organization of Pharmacology and Pharmacologists in Africa

In Africa, only a few pharmacologists are engaged in industry and government sectors, most being in academia where they undertake relatively limited research, following their primary responsibilities of teaching pharmacology to university undergraduate and postgraduate students undertaking the following programmes of study: medicine, dentistry, pharmacy, nursing, pharmacology, medical laboratory science, physiotherapy, veterinary medicine, etc. Pharmacology is also taught at pre-degree levels e.g. to registered nurses/midwives and pharmacy/other technicians awarded ordinary and higher diplomas. Pharmacological research undertaken by Africans cover all areas but especially involve natural products research, using mostly traditional isolated tissues/organs and similar methodologies, and less in more modern fields such as molecular and immunopharmacology using *in vivo* and *in silico* modelling approaches.

As at 2022, the continent of Africa which is made up of 54 sovereign states with an estimated population of 1.426 billion (1.216 billion in 2016) has nine pharmacological societies serving it, three of which were based in Nigeria. These societies are national societies with the

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² Michael Spedding (PhD, Hon FBPhS) with his long association with IUPHAR Exco over several decades including as Secretary-General, and working with pharmacologists across continents particularly those comprising of low and medium income countries, has first-hand knowledge of the problems and prospects pharmacologists face on the African continent.

exception the West African Society for Pharmacology (WASP) / Société Ouest Africaine de Pharmacologie (SOAP) which is regional in its outlook, organizational structure and operations. The top three most vibrant of these societies, in decreasing order of age, are the 66-years old Egyptian Society of Pharmacology and Experimental Therapeutics (ESPET), 57-years old South African Society for Basic and Clinical Pharmacology (SASBCP), and 52-years old WASP-SOAP. It is informative that the formation of WASP-SOAP pre-dates that of the Economic Community of West Africa States (ECOWAS), indicating the foresight of pharmacologists within the sub-region.

Some of the new comers like the Kenya Society for Basic and Applied Pharmacology (KeSoBAP), Nigerian Society for Clinical Pharmacology and Therapeutics (NSCPT) and Nigerian Society for Pharmacological Sciences and Experimental Therapeutics (NISPET) are doing very well. Indeed, all the pharmacological societies in Africa have the potential to thrive. It is noteworthy that WASP-SOAP remains committed to being a regional society to carry along pharmacologists from member countries of the West Africa sub-region, many of which are too few to form national societies of their own. Established in 2006 and mostly administered by SASBCP formerly and informally, the Pharmacology for Africa (PharfA) is an initiative by African pharmacologists to promote and organise pharmacology on the African continent, and is so recognised by IUPHAR. Before PharfA, there was the now-defunct Union of African Societies of Pharmacology (UASPHAR) initiated by ESPET with strong support of WASP-SOAP. Amongst other laudable achievements (see below), UASPHAR and PharfA have organised seven highly successful African Congresses of Pharmacology - the so-called ACPs. Even more significant, is the fact that SASBCP and PharfA successfully organised and hosted the 17th World Congress of Basic & Clinical Pharmacology, the very first (and to date, only) world congress of pharmacology held on the African continent, in July 2014, in Cape Town, South Africa.

The exact number of pharmacologists on the continent is currently not known. However, this could be huge going by the fact that as far back as 2013, membership of WASP-SOAP alone was in excess of 400. It should be noted that many who do not have degrees in pharmacology but who are what WASP-SOAP refers to as ‘practitioners of pharmacology’ by virtue of their research interests and activities, are members of these African pharmacological societies, as also obtains outside Africa.

3. Core Challenges Pharmacologists Face in Africa and Possible Solutions

This write-up is primarily about difficulties pharmacologists encounter living and working in Africa. Table 1 below summarises the top ten difficulties and the possible solutions, thus preventing an otherwise verbose discourse. The challenges have been identified, and possible solutions preferred by African pharmacologists themselves, and are as mostly articulated by Kwanashie and Badr.

Table 1: Challenges Pharmacologists in Africa Encounter and Their Possible Solutions

SN	Challenges	Possible Solutions
1.	Debilitated infrastructure	Acquire modern equipment, access to new books and journals (both print and electronic) Setting up and maintaining adequate supplies of research animals including <i>Drosophila</i> laboratories Concentrate on, and raise funds for, tropical diseases
2.	Limited / Scarce resources	
3.	Insufficient international input into African pharmacology	Cross-pollination in studies and research including short and longer term visits to universities and laboratories in the more developed world; webinars
4.	Lack of enabling environment; inability to pool and share resources and expertise	Creation of a technical unit - well-staffed with skilled individuals Setting up a central digital library with appropriate subscriptions Maintaining a database of available resources, equipment and expertise Establishing within and between country collaborations
5.	Plagiarism, replicate publications, gift authorship	Setting up and maintaining best ethical and laboratory practices
7.	Poor laboratory practices & poor communication skills	Training and retraining (workshops, seminars and conferences for staff development) to hone skills in these and other areas
8.	Poor skills in proposal/grant writing, project execution, and manuscript preparation for publication	
9.	Language barriers	Where the population of non-English speakers are reasonably large, having multi-lingual structures and operations will advance pharmacology in the continent.
10.	Miscellaneous e.g. relics of colonial influences in all areas of pharmacology teaching, research and community service	Decolonising the curriculum for example and diversifying all aspects of pharmacology teaching, research and community service will address this challenge.

Sources: Kwanashie (2014, 2021) and Badr (2018a, 2018b, 2019)

Since the advent of covid-19, the *modus operandi* of many things have changed, and this applies to pharmacology in Africa as well. While everyone, including pharmacologists in the more developed world are also grappling to stay on top of the current situation, the difficulties are disproportionately higher for pharmacologists on the African continent. It is generally agreed that online teaching, distance research collaborations, virtual meetings/conferences, all sorts of hybrids, etc, collectively referred to as Open and Distance Learning (ODL), are the

new normal; and hence these novel difficulties are addressed in Table 2a with proposed strategies for mitigating the challenges detailed in Table 2b. Although, the overall number of persons surveyed for Table 2 was small (n=57), anecdotal and other information obtained through other means, align closely with these identified difficulties and proposed solutions, thus authenticating them.

Table 2a: Challenges Relating to Open and Distance Learning Faced by African Pharmacologists

Category of Challenge	Top 3 Spelt-Out Challenges for Each Category			Total = 57 (100.00%)
Internet connectivity	Unstable connection	Inadequate coverage	Poor access	21 (36.84)
Financial constraints	High data cost for individuals	Poor salaries	Inability of institutions to provide free or subsidized Wi-Fi	12 (21.05)
Power supply	Inadequate power supply	Frequent power failure	High cost of alternative power supplies	9 (15.79)
Attitude	Ignorance	Close-mindedness	Fear of exploring modern e-learning facilities	9 (15.79)
Infrastructure	Lack of ICT equipment	Inadequate infrastructure	Limited availability of e-learning facilities	6 (10.53)

Source: Kwanashie (2021)

Table 2b: Proposed Strategies for Mitigating Open and Distance Learning Challenges Faced by African Pharmacologists

Category of Challenge	Top 3 Spelt-Out Strategies to Mitigate the ODL Challenges		
Internet connectivity	Provision of strong stable connection	Good / adequate coverage	Widespread accessibility
Financial constraints	Funds for unlimited data for individuals	Access to internet at low cost	Institutions to provide free or subsidized Wi-Fi
Power supply	Regular power supply	Cost of electricity units to be reduced	Alternative power sources to be made available
Attitude	Advocacy to improve awareness	Training and retraining	Increase knowledge of computer use
Infrastructure	Government to have the political will	Provision of adequate infrastructure	Provision of mandatory ICT facilities in schools

Source: Kwanashie (2021)

4. Way Forward

Despite the aforementioned difficulties, without and within ODL, pharmacologists and pharmacological societies have made modest achievements at local, national and international levels. Among other achievements, annual scientific conferences and annual general meetings are seamlessly being held by the established societies. Some of the journals and the articles contained therein, are of very good quality; with the WASP-SOAP journal being bilingual so francophone members are fully carried along. Sadly, many of the societies do not pay their annual membership dues to IUPHAR - a situation that needs to change!

Furthermore, the voices of the pharmacological societies from Africa, were loud and clear in the prelude to setting up roles for two member-at-large positions in the 2022-2026 IUPHAR Exco - charged with identifying interests, needs, opportunities as well as responsibilities of pharmacologists not only from Africa, but also from other resource-limited geographical entities. As may be gauged from above, many of the aforementioned challenges are not insurmountable if there is determination and concerted efforts. An excellent example is the last (Year 2021)100% virtual All-African Congress of Pharmacology (7th ACP), which was a great success, and was organized in Kenya by the national society, KeSoBAP. The internet problems were overcome, enabling African and other scientists to give excellent oral presentations by Zoom in two parallel sessions in addition to an excellent poster session, all with a low registration fee, typifying a best way to build a community. If pharmacologists in Africa are willing to put in the required discipline and necessary hard work, IUPHAR will definitely support them to achieve their goals and full potential, whether as individuals or as a group such as a PharfA that is re-structured to function optimally and succeed maximally.

5. Conclusion

Pharmacology in Africa has many challenges, particularly structural difficulties, ranging from financial support to equipment, yet there is a great need to pharmacologists to address the health difficulties in Africa. COVID has underlined the need to pay attention to pandemics which may come from specific geographical circumstances. IUPHAR has - and can in the future - play a role in advancing African pharmacology via webinars, meetings, education and freely-available databases. The IUPHAR world congress in Cape Town was a good example, but continental organisations such as PharfA need support to keep momentum going.

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