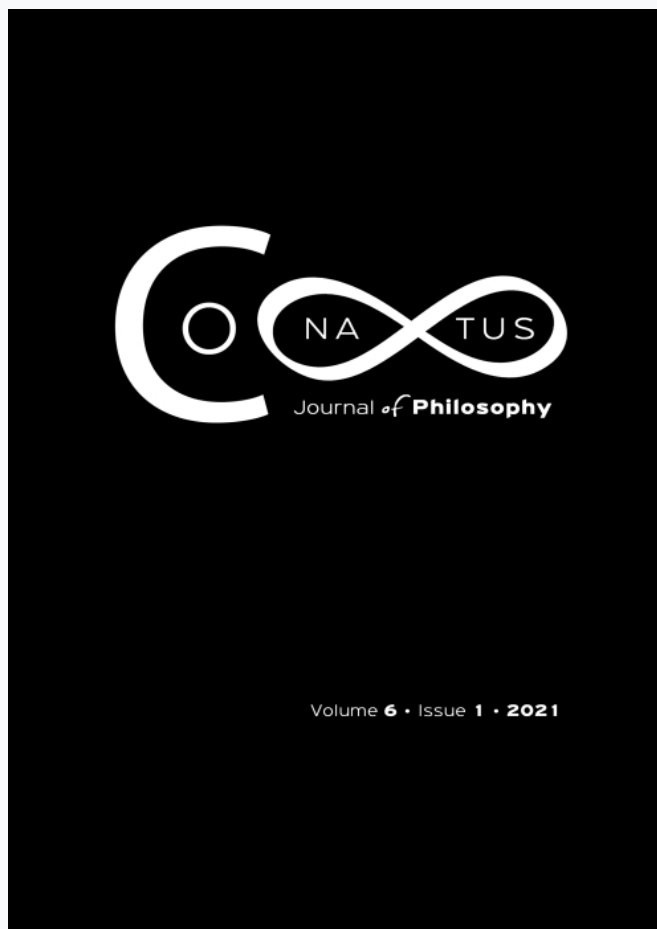


Conatus - Journal of Philosophy

Vol 6, No 1 (2021)

Conatus - Journal of Philosophy



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doi: [10.12681/cjp.24650](https://doi.org/10.12681/cjp.24650)

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To cite this article:

Ejike, C. E. (2021). COVID-19 and Other Prevalent Diseases in Africa: A Pragmatic Approach. *Conatus - Journal of Philosophy*, 6(1), 33–59. <https://doi.org/10.12681/cjp.24650>

COVID-19 and Other Prevalent Diseases in Africa: A Pragmatic Approach

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Abstract

The aim of this paper is to propose that the development and legitimization of African knowledge and validation systems on a pragmatic basis is an efficient and effective means of responding to a myriad of health problems plaguing Africans, particularly the COVID-19 pandemic. Whenever there is a novel disease outbreak, the norm is to wait for the development of scientifically proven vaccines for its treatment. However, the scientific validation of drugs is a rigorous and lengthy process, thereby inappropriate for dealing with health emergencies like the COVID-19 outbreak. The alarming rapidity with which the novel COVID-19 pandemic rages globally and decimates humanity has brought to the fore the need for Africa to look inwards in search of viable and efficient alternative approaches to the pandemic. In this paper, I examine pragmatism as a theoretical framework and relate it to proposed African epistemic and validation frameworks with a particular reference to homegrown orthodox and alternative/complementary medicines. I argue that the validation and approval of any knowledge claim based on pragmatism is a more expeditious mode of attending to COVID-19 and other prevalent diseases in Africa. The application of knowledge that brings practical success in dealing with health challenges in Africa without necessarily following rigid and lengthy scientific validation procedures will go a long way toward improving human conditions and well-being. I conclude that pragmatic considerations should ultimately inform local approval to homegrown African medicines for use in Africa.

Keywords: *Africa; COVID-19; diseases; pandemics; Pragmatism*

I. Introduction

The outbreak of the coronavirus disease (COVID-19) from the city of Wuhan, China in December 2019 has spread to other countries by leaps and bounds, resulting in a massive loss of lives and affecting individuals, families, communities, and countries economically, socially, politically, and psychologically. The pandemic outbreak and an alarming death toll of thousands recorded globally have disproved the invulnerability of the most developed nations, superpower nations in particular, as well as exposed the susceptibility of the developing nations, especially African ones. Currently, the priority of nations is to defend their own interests, with Africa being left to its fate.¹

Given Africa's fragile economies and poor social protection systems, it is not absurd to think that the African continent will be the arena the virulent pandemic will play its final and enduring havoc with humanity. It is standard practice to require scientific evidence to corroborate any claim for the discovery of an effective vaccine or drug for the treatment of extant and novel diseases. However, the scientific process of the verification and validation of new vaccines/drugs for medical treatments is usually strict and lengthy.² Vaccines have to undergo extensive clinical trials. They normally require at least two years of animal testing to ascertain their efficacy and safety before they are deemed safe enough for clinical trials in healthy human volunteers to determine their effectiveness in treating people.³

Such a rigorous process of establishing truth claim does not fit the bill in the case of the outbreak of virulent diseases like the COVID-19 pandemic. One may pose several questions. Can African countries afford to wait for the development of scientifically proven COVID-19 vaccines amidst the surging scourge and death toll of the pandemic in Africa? Is it not suicidal to wait for the rigorous and lengthy scientific processes of the verification and validation of COVID-19 vaccines, while the pandemic is fast scourging and decimating Africans? Given that the chief purpose of establishing a civil society is to protect lives and property and improve human welfare, is it not expedient to adopt any viable and efficient approach to the COVID-19 pandemic to save lives?

¹ Charles C. Soludo, "Can Africa Afford COVID-19 Lockdowns?" *Proshare*, April 24, 2020, <https://www.proshareng.com/news/NIGERIA%20ECONOMY/Can-Africa-Afford-COVID-19-Lockdowns----Chkwuma-Soludo/50636#>.

² Cyril E. Ejike, "COVID-19 and African Traditional Medicines," in *COVID-19 and Afrocentric Perspectives: Health and Economic Implications*, eds. Ikechukwu A. Kanu, Chiugo C. Kanu, and Ejikemeuwa J. O. Ndubisi (Maryland: The Association for the Promotion of African Studies, 2021), 2.

³ Ejike, 2.

Thus, looking inward in search of solutions to the pandemic is now at the forefront in the minds of well-meaning Africans. In response to the call for the adoption of a viable approach to myriads of health problems plaguing Africa, especially the novel COVID-19 pandemic, this paper aims at contending for the development, legitimization, and production of homegrown African medicines on a pragmatic basis as an ideal and positive response to COVID-19, subsequent pandemics, and other diseases that are rife in Africa. To this end, I will first explore pragmatism as a theoretical framework from which my arguments are developed. I will thereafter apply pragmatist theory in contending for the development and legitimization of Africa's epistemic frameworks with particular reference to homegrown African medicines. This is followed by demonstrating that a pragmatic approach to knowledge and ideas requires standard and functional healthcare systems and education to be successful. I will thereafter discuss ethical issues involved in the development, production, and distribution of synthetic COVID-19 vaccines. Finally, I will conclude that pragmatic considerations should ultimately inform the approval of homegrown African medicines and other medical products by national health authorities in African countries for use in Africa.

II. Pragmatism

Pragmatism is a philosophical system or theory propounded by Charles Sanders Peirce and developed and popularized by William James. John Dewey and Richard Rorty were also influential pragmatist thinkers. The theory has been known by various names, e.g., functionalism, instrumentalism, workability, experimentalism, and progressivism. Pragmatism holds that our knowledge, ideas, thinking, and propositions are true and meaningful if they have practical consequences. The utility of an idea, belief, or knowledge is a good measure of truth value. In other words, it is the practical usefulness of an idea or knowledge that makes it true and meaningful. Therefore, pragmatism uses practical consequences of knowledge and ideas as a standard for determining their values and truth.

Pragmatism was first used in 1878 in Peirce's article, *How to Make Our Ideas Clear*, where he states that "belief is a rule for action."⁴ In this regard, Rorty asserts that the function of human mind is to produce practical ways of living, thus truth is simply "what passes for good belief."⁵ Proponents of this theory agree that truth is the property of certain ideas,

⁴ Charles S. Peirce, "How to Make Our Ideas Clear," *Popular Science Monthly* 12 (1878): 291.

⁵ As quoted in Cheryl Misak, *Truth, Politics, Morality: Pragmatism and Deliberation* (London and New York: Routledge, 2002), 13.

but demand that such ideas must bear an action, that is, must be fruitful and useful in a sensible and practical way. James asserts thus:

The pragmatic method in such cases is to try to interpret each notion by tracing its respective practical consequences. What difference would it practically make to anyone if this notion rather than that notion were true? If no practical difference whatever can be traced, then the alternatives mean practically the same thing, and all dispute is idle. Whenever a dispute is serious, we ought to be able to show some practical differences that follow from one side or to the other's being right.⁶

Pragmatism, for James, is therefore

the doctrine that the whole 'meaning' of a conception expresses itself in its practical consequences either in the shape of conduct to be recommended or in that of experiences to be expected, if the conception be true....⁷

James explains that his pragmatic conception of meaning is grounded in Charles Peirce's work:

Mr. Peirce, after pointing out that our beliefs are really rules for action, said that, to develop a thought's meaning, we need only determine what conduct it is fitted to produce: that conduct is for us its sole significance...To attain perfect clearness in our thoughts of an object, then, we need only consider what conceivable effects of a practical kind the object may involve – what sensations are we to expect from it, and what reactions we must prepare. Our conception of these effects, whether immediate or remote, is then for us the whole of our conception of the object, so far as that conception has positive significance at all.⁸

An idea or knowledge does not count, for the pragmatist, if it has no practical bearing on our experiential world⁹ as, for James, "the possession

⁶ William James, *Pragmatism* (Cambridge: Harvard University Press, 1975), 90.

⁷ James M. Baldwin, ed., *Dictionary of Philosophy and Psychology*, vol. 2 (New York: The Macmillan Company, 1902), 321.

⁸ James, 28-29.

⁹ John A. I. Bewaji, *An Introduction to the Theory of Knowledge: A Pluricultural Approach*

of true thoughts means everywhere the possession of invaluable instruments of action.”¹⁰ Therefore, the focus of pragmatism is essentially the utility of ideas, knowledge, or beliefs. In discussing William James’ pragmatic theory of truth, Schmitt asserts that an idea or belief is “true just in case it has practical utility in life or belongs to a system of beliefs that has practical utility.”¹¹ Therefore, for the pragmatist, the test of truth is utility, workability, and successful results.¹²

For pragmatists, truth is something that happens to an idea and the idea becomes true when it produces a satisfactory result. While empiricists take every sense perception cognitively and continuously, whether it is practically useful or not, pragmatists accept only ideas that are practically useful. James explicates thus:

True ideas are those that we can assimilate, validate, corroborate, verify. False ideas are those we cannot. That is the practical difference it makes to us to have true ideas; that, therefore, is the meaning of truth, for it is all that truth is known as. This thesis is what I have to defend. The truth of an idea is not a stagnant property inherent in it. Truth happens to an idea. It becomes true, is made true by events, its verity is in fact an event, a process: the process namely of its verifying itself, its verification. Its validity is the process of its validation.¹³

What the aforementioned assertions mean is that our ideas are true if they can be met with desired success or be successful in meeting our expectations. Pragmatism, obviously, does not discard science. In fact, it adopts scientific attitude in terms of verification in seeking true knowledge and in attending to human existential problems. Pragmatism underpins science in that it holds that true knowledge and ideas are hinged on practical success. However, its point of departure is that it takes a multi-faceted approach to verification and validation rather than being limited to rigid scientific verification and validation procedures. For instance, James asserts that the proposition that God exists is verifiable in the sense that we can ascertain whether it provides

(Ibadan: Hope Publications, 2007), 238.

¹⁰ As quoted in Richard L. Kirkham, *Theories of Truth. A Critical Introduction* (Cambridge: The MIT Press, 1992), 92.

¹¹ Frederick F. Schmitt, “Truth: An Introduction,” in *Theories of Truth*, ed. Frederick F. Schmitt (Oxford: Blackwell Publishing, 2003), 9.

¹² Ben O. Eboh, *Basic Issues in Theory of Knowledge* (Nsukka: UNN, 1990), 44.

¹³ James, 97.

us with “vital benefits,” that is, satisfies our spiritual or religious needs.¹⁴ Such a proposition is true; it works satisfactorily, if it meets such needs. Therefore, the verification and validation of knowledge claims, ideas, or propositions must not rest on scientific testing or experimental procedures.

Pragmatism turns away from abstractions, a priori reasons, static knowledge, fixed principles, and closed systems, but turns toward concreteness, facts, and actions.¹⁵ Peirce maintains that our pragmatic approach to scientific, philosophical, or theological questions should be:

Consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object.¹⁶

Thus, James views pragmatism as a method that has no dogmas and doctrines apart from its method. What pragmatists are driving at in this regard is that formulations in philosophy, theology, and science should be seen as only approximations (verisimilitude), rather than as absolute truths or knowledge, for such formulations offer us no conclusive answers or solutions to our existential problems. A single fixed formula makes an account of truth rigid, authoritarian, and doctrinaire in pragmatists’ view. They therefore insist that there is no single fixed formula and absolute truth but many truths, as there are many concrete successful actions in the truth process.

Thus, James distinguishes between what he calls tough-minded and tender-minded approaches to truth. A tough-minded approach would consider more scientific behavior in the truth process, whereas a tender-minded approach would consider less scientific behavior in the truth process.¹⁷ Our approach to knowledge should be multi-faceted, for we know things from many different perspectives. The value of any theory, for pragmatists, does not rest in its internal verbal consistency, but in its ability to solve human problems. Thus, James asserts that for a theory or an idea to be meaningful, we “must bring out of each word its practical cash value,”¹⁸ that is, its experiential utility or usefulness, whether good or bad, the difference it makes for practical life.

¹⁴ Anthony Harrison-Barbet, *Mastering Philosophy* (London: Macmillan Education, 1990), 80.

¹⁵ Ome, and Amam, 330.

¹⁶ Peirce, 291.

¹⁷ Samuel E. Stumpf, and James Fieser, *Philosophy: History and Problems*, 6th ed. (New York: McGraw-Hill, 2003), 399.

¹⁸ As quoted in Stumpf and Fieser, 398.

Dewey, in his brand of pragmatism known as instrumentalism, holds that thinking and ideas are instrumental in solving practical human problems.¹⁹ He insists that inquiry into any knowledge claim should be empirical in method and practically motivated.²⁰ He explains further that the term pragmatic means “only the rule of referring all thinking, all reflective considerations, to consequences for final meaning and test.”²¹ The truth of any knowledge claim is thus based upon its usefulness. For Dewey, the best test of the value of any idea or theory is to ask:

Does it end in conclusions, which, when referred back to ordinary life-experiences and their predicaments, render them more significant, more luminous to us and make our dealings with them more fruitful?²²

For Dewey, the act that will bring about the most successful outcome is the most valuable. Hence, Dewey frowns upon any system of education that involves learning without doing or practice, as such education will have no practical usefulness. Dewey’s instrumentalism is governed by the presuppositions of science, which recognizes the intimate connection between reflection and experiment, thought and action.²³ Human minds are basically problem-solving instruments and the best ways to discover the instrumental means for problems are experience and experiment.

Overall, pragmatists consider ideas and knowledge to be true and meaningful if they can help us make successful connections among various life experiences and can be brought to bear on our existential problems. Truth is what works; an idea, a belief, or knowledge is true and only true if it is functional, that is, if it yields a satisfactory result. Put differently, it is the functional values of ideas, beliefs, and knowledge that make them true.

III. Pragmatism and COVID-19 in Africa

As was explained in the preceding section, pragmatism does not preclude scientific requirements, albeit science may exclude certain things that evidently work. James maintains that a pragmatic approach to knowledge could be tough-minded and tender-minded. For example, while a tough-minded pragmatist would seek a scientific sort of analysis of the effectiveness

¹⁹ Stumpf, and Fieser, 405.

²⁰ Ome, and Amam, 335.

²¹ Ome, and Amam, 336.

²² Stumpf, and Fieser, 405.

²³ Stumpf, and Fieser, 406.

of an herbal tonic from Madagascar in treating COVID-19 patients, a tender-minded one would only concern themselves with the efficacy of the medicine in determining its truth claim. For James, both approaches to truth are valid in their own ways, provided that the object of inquiry (Madagascar's herbal drink) fulfils its useful function. Therefore, a pragmatic approach to pandemics and other viral and common diseases in Africa must not involve rigorous and lengthy scientific validation processes.

Kuhn's seminal work, *The Structure of Scientific Revolutions*, has shown that science does not stand the test of time, as it undergoes periodic revolutions, which he calls a paradigm shift from which a new normal science emerges.²⁴ Truth is paradigmatic as it is determined by the prevailing paradigm. However, paradigms are always subject to change such that new truth emerges from the new paradigm. To this extent, truth is not always the same: what is true in a previous paradigm may not be true (at least in part) in a new paradigm. There is never a complete overlap between paradigmatic problems that can be solved by the previous and the new paradigms.²⁵ Kuhn's main contention here is that scientific knowledge does not rest on any foundation of a single absolute truth. There are more truths as there are more successful practical proofs, thus there will never be a complete collection of truths.

Given that scientific methodology is lengthy, rigorous, and does not offer us a cast-iron guarantee, it behooves Africa to be open to the application of what brings practical success efficiently without necessarily following rigid scientific procedures. It calls for the adoption of a pragmatic approach to pandemics and other diseases that are rife in Africa. African countries can achieve this by developing and legitimizing their own epistemic paradigm that will pragmatically attend to myriads of health problems plaguing their people. Misak explains that, for pragmatism, truth and objectivity are matters of what is best for the community of inquirers to believe, that is, what "best fits with the evidence and argument."²⁶ In the wake of the COVID-19 pandemic, Africans have demonstrated that their richly endowed medicinal plants could be exploited in attending to their multifarious health problems, if legislation enables this and they are given an environment to thrive in.

For example, Madagascar, one of the smaller African countries, has stolen a march on the West by developing an herbal tonic from a medicinal plant known as *Artemisia annua* for the treatment of COVID-19 patients to the consternation of the World Health Organization (WHO). The herbal remedy for COVID-19 produced by Madagascan herbal research institutes has been

²⁴ Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: The University of Chicago Press, 2012), 85.

²⁵ Ibid.

²⁶ Misak, 1.

practically tested and proved to be curative. The viability and efficacy of the herbal drink have led Presidents of some other African countries like Equatorial Guinea, Tanzania, Uganda, Egypt, Guinea-Bissau, and Senegal to recognize and promote it, while they ordered for it to be used for the treatment of COVID-19 cases in their respective countries.

Local medical researchers and scientists have also claimed to have discovered herbal medicines for the treatment of COVID-19. For instance, this is the case of the Iris Medical Foundation Drugs and Pharmaceutical founded by late Professor Paul Olisa Ojeih. This pharmaceutical company is committed to drug research, focusing on compounding drugs from plants and enzymes and synthesizing them into potent cures.²⁷ The company informed the Federal Government of Nigeria that it developed an organic phytomedicine, known as Venedi Elixir, which is effective in treating COVID-19. The alleged curative drug is derived from the enzymes of pharmaceutically engineered plants used to treat complex viral infections.²⁸ Moreover, in Nigeria, a Roman Catholic priest and one of the country's foremost traditional medical practitioners, Reverend Father Raymond Arazu has proclaimed that the Anambra Traditional Medicine Board headed by him has developed a cure for COVID-19.

Furthermore, a Benedictine monk and priest of the Roman Catholic Church, Reverend Father Anselm Gbenga Adodo, who is the founder of Nigeria's first alternative medicine and research laboratory enterprise in 1997 known as Pax Herbal Clinic and Research Laboratories in Ewu, Edo State of Nigeria, has announced that the research center discovered a clinical COVID-19 herbal drug and expressed their readiness to begin the mass production of the treatment drug immediately after its use has been approved.²⁹ Adodo also discloses that they have herbal medicines, which they have been producing for over 25 years, for many diseases plaguing Africans, such as malaria, typhoid fever, hypertension, tuberculosis, hepatitis B, diabetes, asthma, prostate problems, male and female infertility, etc.³⁰

Rather than pay attention to these claims, the Nigerian government is waiting desperately for experimental drugs to be used in testing prospective

²⁷ Paul O. Ojei, "Coronavirus Pandemic: The Curative and Politics," *PM News*, May 5, 2020, <https://www.pmnewsnigeria.com/2020/05/05/coronavirus-pandemic-the-curative-and-politics/>.

²⁸ *Ibid.*

²⁹ Rasheed Sobowale, "Why WHO Suspended Chloroquine Clinical Trial for COVID-19 Treatment," *Vanguard Nigeria*, May 29, 2020, <https://www.vanguardngr.com/2020/05/why-who-suspended-chloroquine-clinical-trial-for-covid-19-treatment/>.

³⁰ Rasheed Sobowale, "EWU on COVID-19, SARS, Ebola: Inside Catholic Research Centre where Monks Cure with Herbs," *Vanguard Nigeria*, May 17, 2020, <https://www.vanguardngr.com/2020/05/ewu-on-covid-19-sars-ebola-inside-catholic-research-centre-where-monks-cure-with-herbs/>.

volunteer COVID-19 patients. This constitutes a master-slave mentality that shows strong preference toward being a comfortable slave, rather than being a free man;³¹ this attitude stunts indigenous development in Africa. It could be recalled that when US President Trump asserted that hydroxychloroquine and chloroquine might help treat COVID-19, without any scientific evidence backing up the claim, many COVID-19 victims in Africa, including those that had not contracted the disease, rushed to purchase, and even store up the drug. In China, the US, and other countries where the drug has been used experimentally in COVID-19 patients, there is no satisfactory clinical evidence that chloroquine is effective in preventing and managing the pandemic.³²

Observational research led by Mandeep Mehra of the Brigham and Women's Hospital in the US, which was published on May 22, 2020, and other numerous scientific studies, suggest that chloroquine and hydroxychloroquine are ineffective in treating COVID-19 and might aggravate the disease and increase the death likelihood of COVID-19 patients, given the potentially serious side effects, particularly arrhythmias (irregular heartbeat) both drugs can produce.³³ No wonder it was reported in March 2020 that three COVID-19 victims were hospitalized in the Lagos State of Nigeria after taking chloroquine.³⁴ This huge rush to obtain the drug was mainly owing to the assertion made by someone from the West, a President of a superpower nation for that matter, despite the position of the WHO that any medication, the efficacy of which has not been proved based on clinical trials, should not be used to treat COVID-19.

It is high time Africa refused to be needlessly tied to the West's apron strings and took its destiny in its hands. Madagascar's COVID-19 herbal remedy should serve as a real eye-opener for Africans to believe in themselves and their vast natural resources, and look inward in search of viable solutions for COVID-19 and other viral and common diseases in Africa. Other African governments should take their cue from the Madagascan government that employs its own knowledge and expeditious validation system to verify and validate the efficacy and safety of its COVID-19 herbal solution and thus endorse it for use without waiting for scientific validation processes. African countries should be committed to intense COVID-19 research and give attention to claims of breakthrough in the cure of COVID-19 by African

³¹ Sunny Ikhioya, "The Master-Slave Syndrome," *Vanguard Nigeria*, May 27, 2020, <https://www.vanguardngr.com/2020/05/the-master-slave-syndrome/>.

³² Stephanie Busari, and Bukola Adebayo, "Nigeria Records Chloroquine Poisoning after Trump Endorses it for Coronavirus Treatment," *CNN*, March 23, 2020, <https://edition.cnn.com/2020/03/23/africa/chloroquine-trump-nigeria-intl/index.html>.

³³ Sobowale, "Why WHO Suspended Chloroquine Clinical Trial for COVID-19 Treatment."

³⁴ Busari, and Adebayo.

scientists and alternative medical practitioners, rather than rely only on the WHO for COVID-19 remedies and co-opt their people to be used as experimental guinea pigs and lab rats for the WHO's untested and unproven COVID-19 vaccines in support of its solidarity trials.

Claims by local researchers and scientists to have developed curative medicines, whether modern, herbal, or alternative/complementary medicines, should be subjected to evaluation protocols, grounded on pragmatism, by national health authorities in different African countries; if the medicines successfully pass practical testing and verification, then they should be approved forthwith. Empirical evidence is not only obtained from lengthy scientific validation, but also from other practical experiences. Locally manufactured COVID-19 equipment and other medical equipment should be equally subjected to evaluation and verification on a pragmatic basis for possible approval for use in Africa. What we are driving at is that subjecting homegrown African medicines to safety, toxicological, and efficacy tests as well as clinical trials on volunteer patients, must not follow rigorous scientific validation processes. To rise to the myriads of health challenges confronting Africa, a viable and efficient mode of measuring and determining the effectiveness of homegrown medicines should be developed by the national health authorities in African countries. Homegrown medicines should be approved for use in Africa if they prove to be viable and efficacious after practical testing and verification. It is not necessary for Africa to wait for the scientific validation of its homegrown medicines by the WHO that seems to neither believe nor show enough interest in traditional or herbal African medicines.

The Madagascan government has demonstrated that rigorous and lengthy scientific validation processes are needless in the case of a health emergency, by approving the use of its discovered herbal tonic for the treatment of COVID-19 cases based on its own knowledge and validation system. Similarly, the Israeli health authority has approved for use a series of efficacious vaccines developed by the Israel Institute for Biological Research using its own validation system.³⁵ In response, the Israeli President is planning to build a plant for the production of vaccines for the treatment of COVID-19 patients. In recognition of the need for heterodox approaches to the pandemic ravaging the world, the House of Representatives in Nigeria has called on the Nigerian government to ignore caution by the WHO against the use of any drug on COVID-19 patients the efficacy of which is not scientifically proven, and approve and support

³⁵ Tordue Salem, "COVID 19: Ignore WHO, Go for Local Cures, Reps Tell FG," *Vanguard Nigeria*, May 13, 2020, <https://www.vanguardngr.com/2020/05/covid-19-ignore-who-go-for-local-cures-reps-tell-fg/>.

the use of alternative locally developed remedies for the management and treatment of COVID-19 in Nigeria.³⁶

Although a theory yields certain practices by explaining the rationale behind the practices, sometimes theories do not precede practices. For instance, Africans' forebears used neem leaves (scientifically known as *Azadirachta indica*, but popularly known as *Dogoyaro* in the Hausa language) and other herbs to treat malaria for ages, but could not offer explanations for why the herbs worked. They did not know it was parasites that engendered the disease, how it got into the human blood system, and why quinine could cure the disease. However, today, we know that the disease is caused by malaria parasites, and that it enters the circulatory system when a female *Anopheles* mosquito infected with the parasite bites a person; the neem plant contains quinine that cures malaria and can also be used to treat similar diseases.

The practice of any discovery, such as the Madagascan COVID-19 herbal remedy, whose theoretical formulations (scientific explanations) are not yet developed, should be accepted on the grounds that it serves the purpose for which it is made, which in this case is to contain the COVID-19 pandemic. African herbal medicines and other homegrown medical products should not be dismissed because there is no available verifiable scientific knowledge of the whys and wherefores of their viability. The fact that a scientifically verifiable explanatory theory is not yet offered does not mean that it cannot be provided in the future. The efficacy of any medicine presupposes a workable theory behind it, albeit the explanation of such a theory may not be offered for the moment. Scientific explanations for why homegrown African medicines work can come later. Whatever passes the litmus test of pragmatism is a strong candidate for the test of scientificity. The success or effectiveness of the practical application of homegrown African medicines and other medical products should be the ultimate criterion for their endorsement for medical treatments in Africa. The fact that they pay off should be a justification for approving them, their scientific explanations pending.

IV. On Health

The global life or death situation brought about by the outbreak of the COVID-19 pandemic had started before the first COVID-19 case in Africa was recorded in Egypt on February 14, 2020. Prior to Africa's index case, the pandemic outbreak had become a cause for concern in the continent. The fact that the COVID-19 pandemic became a matter of considerable public concern was exacerbated by the weak healthcare systems of most African nations. Therefore, ultimately, Africa was apprehensive about its

³⁶ Salem.

level of preparedness and readiness to combat the virulent and deadly pandemic, especially when considering the fact that the pandemic had already overpowered robust health systems of some developed countries like Italy, Spain, and the United States.

Recently, African nations have somehow managed to tackle other disease outbreaks, such as Ebola virus disease, cholera, Lassa fever, and monkey pox outbreaks, without stepping up the medical treatments and preventive measures, or strengthening the respective health systems of the different nations. However, the COVID-19 pandemic is a completely different situation, as it overwhelms Africa and exposes its weak health systems. Thus, some African countries like Nigeria are already sitting ducks for the pandemic, given the plethora of understaffed, underequipped, and underfunded health care centers and hospitals that cannot provide the high quality and culturally appropriate healthcare services required to contain and manage the raging and ravaging pandemic.³⁷

The United Nations Development Programme's (UNDP) report on current expenditure on healthcare suggests that the healthcare sector is badly underfunded in many African countries. For instance, healthcare expenditure in terms of the Gross Domestic Product (GDP) percentage spent on healthcare in 2015 was 2.5 in South Sudan, 3.3 in Eritrea, 3.6 in Nigeria, 3.8 in Papua New Guinea, 4.0 in Benin, Senegal, and Ethiopia, 4.3 in the Democratic Republic of Congo, 4.5 in Guinea, 4.6 in Mauritania and Chad, 5.2 in Madagascar, 5.4 in Côte d'Ivoire, Mozambique, and Burkina Faso, and 5.8 in Mali.³⁸ Therefore, it is not surprising that the COVID-19 pandemic has put a huge strain on the limited health services of African countries.

Many Africans do not have access to basic healthcare due to dilapidated hospital facilities and poor health service delivery. The low government expenditure on healthcare over the past years does not meet the global healthcare standards, thus African nations have low-rated healthcare systems. For instance, the healthcare system of Nigeria currently ranks 187th out of 191 healthcare systems globally.³⁹ Drug research, development, and production are very expensive. Pharmaceutical research institutes across Africa cannot raise the funds required for drug research and development without the support of African governments and private investments that presupposes enabling laws and creating a favorable environment.

³⁷ Sola Ogundipe, "How COVID-19 Rediscovered Nigeria's Health Care System," *Vanguard Nigeria*, May 29, 2020, <https://www.vanguardngr.com/2020/05/special-report-how-covid-19-rediscovered-nigerias-health-care-system/>.

³⁸ United Nations Development Programme, *Human Development Indicators and Indices: 2018 Statistical Update Team* (New York: United Nations Development Programme, 2018), 52-53.

³⁹ Ogundipe.

Recently, the US government approved a budget of \$1 billion for AstraZeneca, a British-Swedish pharmaceutical company, to carry out research for a COVID-19 vaccine.⁴⁰ This is how a government's commitment to research and development is demonstrated. When drugs are developed and produced by local pharmaceutical industries, a high percentage of essential drugs will be available for domestic consumption, thereby reducing heavy dependence on the importation of drugs from foreign countries to meet local needs. This is necessary, especially in the case of a pandemic outbreak that can only be contained by lockdowns and border closure.

Some African countries like Nigeria that were affected the most by the COVID-19 pandemic, had a scarcity of essential drugs at the onset of the pandemic outbreak due to lockdowns and border closures in China and India, where most essential drugs are imported from. For a pragmatic approach to work, the healthcare systems of African nations must improve. It cannot be rightly gainsaid that Africa cannot respond to a pandemic and other prevalent African diseases, such as malaria, typhoid fever, cholera, Lassa fever, tuberculosis, diarrhea, small pox, hepatitis, yellow fever, measles, cancer, stroke, diabetes, and coronary heart diseases in a pragmatic way if healthcare, health workers, and health facilities are inadequate. This is mainly because the aforementioned are indispensable instruments for the practical application of homegrown African medicines. They are the means through which viable orthodox, alternative, and herbal medicines can be administered to people.

Therefore, the proposed pragmatic approach to Africa's multifarious health problems calls for the provision of adequate healthcare centers and hospitals, the employment of sufficient, experienced, and well-trained healthcare workers, and the provision of adequate and state-of-the-art medical facilities across states or regions in all African countries. Besides, government expenditure in healthcare as well as government and private investments in the pharmaceutical sector for the research, development, and production of drugs are critical to implement improvements in the various healthcare systems.

Monitoring and stemming the spread of a pandemic requires effective and early testing. Tedros Ghebreyesus, the Director-General of the WHO, discloses that "lack of testing is leading to a silent epidemic in Africa."⁴¹ Testing early and often ensures that carriers of the pandemic are detected and isolated to minimize the rate of contagion. By March 2020, when the COVID-19 pandemic had reached epidemic proportions in Europe, the fatality

⁴⁰ Ibid.

⁴¹ *Premium Times*, "WHO Fears 'Silent' Virus Epidemic unless Africa Prioritises Testing," May 26, 2020, <https://www.premiumtimesng.com/news/top-news/394580-who-fears-silent-virus-epidemic-unless-africa-prioritises-testing.html>.

rate of Germany was remarkably low (0.5%),⁴² compared to those of Italy (10%), Spain (8.9%), and France (5%). Drosten, whose team of researchers developed the first COVID-19 test that was publicly available, attributes the low fatality rate of Germany to the ability of his country to test early and often.⁴³ He discloses that Germany has been testing approximately 120,000 people a week for COVID-19 since late February 2020 which helped the country stand out among the worst hit countries in Europe.⁴⁴

To respond robustly and positively to COVID-19 and subsequent pandemics, testing sites must be created across states/regions of African countries. Africa must not wait until a new pandemic breaks out before it starts getting on the stick, for it is not good at flattening the curve. The most efficient means of achieving this is to set up ultra-modern molecular and diagnostic laboratories that have the capacity to undertake thousands of tests per day in all university teaching hospitals (UTHs) across states of African countries. The UTHs could easily be converted into testing centers during a pandemic outbreak, after receiving accreditation by the Center for Disease Control in each African country.

V. On Education

For a pragmatic approach to be effective, university lecturers must be encouraged and supported to be fully committed to research and development, through improved salaries and allowances as well as the provision of adequate research grants and educational facilities. Students, particularly those that take medical and pharmaceutical related courses, need a holistic experience and pragmatic education that involves learning and practicing, which will equip them with the necessary skills, knowledge, ideas, materials, and tools to excel in all spheres of their future careers and work in a pragmatic way in attending to future life challenges that may confront them and their people.

Africa needs medical and pharmaceutical lecturers and researchers in ivory towers to be at the forefront of research in viable homegrown medicines (modern or herbal) to tackle myriads of the health problems plaguing Africa. However, these ideals are not attainable unless there are improved conditions of service, an adequate provision of state-of-the-art laboratories and lab equipment, and an increase in governmental expenditure on research and development. Some groundbreaking medical research is lying

⁴² Rob Schmitz, "Why Germany's Coronavirus Death Rate Is Far Lower Than in Other Countries," NPR, March 25, 2020, <https://www.npr.org/2020/03/25/820595489/why-germanys-coronavirus-death-rate-is-far-lower-than-in-other-countries>.

⁴³ Schmitz.

⁴⁴ Ibid.

dormant in university libraries across Africa. Enormous funds are required for the development and production of medical discoveries.

Regrettably, education is chronically underfunded by African governments. The United Nations Children’s Fund recommends that developing countries should allocate no less than 15% of their annual budgets to education. However, over the past years, developing African countries have consistently failed to provide the bare minimum of allocation to maintain acceptable educational standards in Africa. Thus, the African education system is waning. In Nigeria, for example, there has been a steady decline in the education budget. According to the “2020 Budget Analysis and Opportunities” report, the budget for education was 12.3%, 9.3%, 7.3%, 7.1%, and 6.5% in 2015, 2016, 2017, 2018 and 2019, and in the pre-COVID-19 2020 budget, respectively.⁴⁵

The 2018 UNDP report on government expenditure on education measures in terms of the GDP percentage allotted to education during 2012–2017 shows that the education expenditures of South Sudan (1.8%), Guinea-Bissau (2.1%), Madagascar (2.1%), the Democratic Republic of the Congo and Uganda (2.3%), Guinea (2.4%), Mauritania (2.6%), Cameroun, Gambia, and Liberia (2.8%), and Chad (2.9%) were negligible.⁴⁶

VI. On Ethics

Morality is the basis of ethics and *eudaimonia* (happiness, welfare/human flourishing) is the standard of morality. Aristotle asserts that happiness is the supreme good for all human beings, albeit there is no general consensus as to what sort of life counts as happy or what happiness actually consists of.⁴⁷ However, in general, all human beings as moral agents have the right to life, liberty, and security, while the society of which they are parts has a moral obligation to protect these rights. Therefore, security and freedom to choose how to lead one’s life as well as treating all humans with care and respect are basic principles of a good society.⁴⁸

COVID-19 vaccine experimentation, development, production, and allocation as well as COVID-19 inoculation/vaccination raise certain ethical concerns. How could a limited supply of early vaccines be allocated or distributed fairly and effectively? Who should be prioritized in the vaccine

⁴⁵ *Vanguard Nigeria*, “How COVID-19 Can Help Nigeria Rethink Education Policy – AACCS,” May 27, 2020, <https://www.vanguardngr.com/2020/05/how-covid-19-can-help-nigeria-rethink-education-policy-%E2%80%95-aacs/>.

⁴⁶ United Nations Development Programme, 56-57.

⁴⁷ Aristotle, *The Nichomachean Ethics of Aristotle*, 10th ed., trans. F. H. Peters (London: Keegan Paul, Trench, Trübner & Co., 1906), 1094a.

⁴⁸ Barry Knight, *Rethinking Poverty: What Makes a Good Society?* (Bristol: Policy Press, 2017), 89.

distribution? What ethical values should guide the vaccine allocation to maximize benefits – the overall number of lives saved? Do the benefits of the synthetic vaccine outweigh the risks associated with its clinical trials and the pandemic inoculation/vaccination? Can we ever justify on moral grounds human lives wasted during inoculation? Are COVID-19 vaccines worth, in terms of their effectiveness, enormous public funds allocated for their research, development, production, and procurement?

As noted earlier, synthetic vaccines are required to pass rigorous safety and efficacy standards. It usually takes at least two years for the vaccines to undergo animal tests before clinical trials, thus vaccine research, development, and production could potentially take up to a decade. Experience from the 2009 pandemic influenza A (H1N1) virus as well as the onset of the COVID-19 pandemic shows that there is a proclivity for the world's leading economies to place their national interests in research, development, production, and distribution of vaccines above global interests.⁴⁹ Vaccine nationalism, which entails a desire and push by a nation to first get access to a vaccine supply and dictate vaccine production and distribution in its favor, raises some moral questions.

For instance, at the onset of the COVID-19 pandemic, superpowers, such as the US, China, and Russia, competed for the development of a COVID-19 vaccine and for who would become the first supplier. This intense rivalry among superpowers induced them to speed up their vaccine development and production with regard to clinical trials and pushed for quicker regulatory approval. For instance, the AstraZeneca and Moderna COVID-19 vaccines were approved for public use in November (which is less than a year after the pandemic outbreak) and December (which is just year after the outbreak of the pandemic), respectively. There are grave risks associated with hasty clinical trials and regulatory approval. The efficacy and safety scientific standards of COVID-19 vaccines might be compromised, thus constituting the vaccines unable to effectively treat the viral infection, protect people against it, and help achieve herd immunity; global herd immunity is achieved when a sufficient part of the population becomes immune to a virulent disease to such an extent that the spread of the disease is contained. If vaccines developed and produced in this manner turn out to be less effective, or have unconscionable harmful side effects, national vaccination plans would be complicated and global vaccine supply chains would be interrupted, thus frustrating further any globally coordinated efforts to contain the pandemic.

The AstraZeneca/Oxford vaccine is a case in point. Though the vaccine is widely used by most countries for large-scale vaccination programs, it

⁴⁹ Macro Hafner, et al., *COVID-19 and the Cost of Vaccine Nationalism* (Santa Monica, California, and Cambridge, UK: Rand Corporation, 2020), iii.

does not offer a guarantee of treating COVID-19. In a study, a volunteer suffered from a neurological condition known as transverse myelitis – a “possibly related severe side effect”⁵⁰ of the vaccine – after participating in a clinical trial. Furthermore, a 49-year-old nurse succumbed to severe bleeding disorders days after receiving the vaccine, which forced Denmark, Australia, Lithuania, and a few other countries to halt vaccinations with doses of the vaccine from the same batch.⁵¹ What is more, the UK report on the AstraZeneca vaccine disclosed that 547 people had died from adverse side effects of the inoculation between January 4 and March 9, 2021.⁵² Some other countries like France, Germany, Italy, Norway, and Sweden have suspended the use of the AstraZeneca shot due to reports of European Union (EU) countries citing its possible serious side effects, especially cases of post-jab hemorrhages.

In this regard, a rational mind may ask: Can we morally justify deaths and harm resulting from severe side-effects of the vaccine? Herein, we shall consider two ethical perspectives, namely, deontological and teleological theories. According to deontologists, certain actions, which border on human values like killing, are wrong ontologically, that is, in their very nature, and neither circumstances nor consequences can make them right.⁵³ Peschke contends that “the judgement of the morality of an action is not possible without a careful study of the nature of being, that is without due consideration of the deontological factors involved.”⁵⁴ In their view, the nature of a being and the nature of an action are ultimate criteria for making moral judgements. However, the circumstances and consequences (intended or anticipated) are also considered in making moral decisions. For the teleologists/consequentialists, the rightness or wrongness of an action is determined by the consequences (good or evil) resulting from the action,⁵⁵ regardless of the nature of an action or the means of achieving the end. This approach to making moral decisions considers an action as morally right if its good consequences outweigh bad ones. Teleologists want moral agents to focus only on the ultimate end or goal

⁵⁰ As quoted in *Vanguard Nigeria*, “Five Things to Know about the AstraZeneca/Oxford Vaccine,” March 11, 2020, <https://www.vanguardngr.com/2021/03/five-things-to-know-about-the-astrazeneca-oxford-vaccine/>.

⁵¹ *Medical Express*, “Five Things to Know about the AstraZeneca/Oxford Vaccine,” March 21, 2021, <https://medicalxpress.com/news/2021-03-astrazeneca-oxford-vaccine.html>.

⁵² Nneoma Benson, “275 Dead: UK Report on AstraZeneca Vaccine Sends Message of Caution to Nigeria, Others,” *The Whistle*, March 16, 2021, <https://thewhistler.ng/275-dead-uk-report-on-astrazeneca-vaccine-sends-message-of-caution-to-nigeria-others/>.

⁵³ Joseph I. Omoregbe, *Ethics: A Systematic and Historical Study* (Lagos: Joja Educational Research and Publishers Limited, 1993), 73.

⁵⁴ Karl-Heinz Peschke, *Christian Ethics*, 3rd ed., vol. 1 (Oregon: Wipf and Stock Publishers, 2012), 134.

⁵⁵ Ben O. Eboh, *Living Issues in Ethics* (Nsukka: Afro-Orbis Publishing Co. Ltd, 2005), 78.

of an act in making moral decisions. However, the ultimate end is very difficult to evaluate, as there are different definitions of ultimate goals resulting from different forms of teleology with different criteria and evaluation outcomes.⁵⁶ Besides, it is very difficult to determine all the proximate and remote consequences of an action and weigh them appropriately.⁵⁷

Deontologists will argue that the victims of the harmful effects of the COVID-19 vaccine possess dignity and rights to life and security as others, and they did not implore to be killed. Hence, it is unethical to denude them of their right to life unsolicitedly. For consequentialists, the death of the COVID-19 vaccine victims is an unintended consequence of the vaccine that is meant to save lives, thus the benefits outweigh the risks. However, a risk-benefit analysis in vaccine experimentation and pandemic inoculation/vaccination is very difficult to undertake. Such a task would require detailed information about the consequences of the vaccine, empirical insights, and knowledge of all contingencies. Thus, the risk-benefit ratio seems to be indeterminate. Besides, due to severe side-effects associated with synthetic vaccines, COVID-19 vaccine experimentation and inoculation against the pandemic present more than minimal risks. A risk is said to be minimal if

the probability and magnitude of harm or discomfort anticipated [...] are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.⁵⁸

Given that the risks associated with new synthetic vaccine experimentation and inoculation against a viral infection are anticipated and this incurs more than minimal risks, one may be inclined to think that it amounts to treating human subjects, who are ends in themselves by virtue of their inherent dignity, as a means to an end. This constitutes an affront to human dignity. In any case, nations of the world have to balance the need to protect the greatest number of people with the need to adequately understand how a new synthetic vaccine will perform (including its likely harmful side-effects) and protect people when administered. Regrettably, national governments have failed to balance this need as regards the development, production, allocation, and administration of COVID-19 vaccines.

Again, COVID-19 vaccines need not only to be effective but also to be administered to large portions of the global population to achieve

⁵⁶ Peschke, 128.

⁵⁷ Ibid., 131.

⁵⁸ As quoted in Vasantha Muthuswamy, "Ethical Issues in Clinical Research," *Perspectives in Clinical Research* 4, no. 1 (2013): 10.

herd immunity. Wealthier countries have signed direct bilateral deals with COVID-19 vaccine manufacturers to secure a stock for their own population.⁵⁹ The saying that he who pays the piper calls the tune still holds true. For instance, the AstraZeneca vaccine, which was first approved for use in Britain that earlier ordered 100 million doses of the vaccine, has been constantly supplied by the British-Swedish firm to Britain to meet its demand, while the firm delays the delivery of doses of the vaccine to other EU member states, thus frustrating their vaccination programs.⁶⁰ In January, the firm announced that “it could only deliver one-third of the 120 million doses initially promised the 27 EU member states in the first quarter,”⁶¹ which prompted the EU to invoke a Brexit deal protocol over export controls on COVID-19 vaccines. European Commission President, Ursula von der Leyen disclosed that the firm had delivered less than 10% of the doses ordered by other EU member states between December 2020 and March 2021, warning that other countries could block exports.⁶²

Thus, the vaccine may not be adequately allocated to low-income and middle-income countries that house approximately 85% of the global population.⁶³ Wealthier countries might even hoard vaccine doses above and beyond their populations’ needs; after all, they can afford it. As high-income countries scramble for limited vaccine supplies, low-income countries that could not fund vaccine production are abandoned to their fate. Consequently, early available vaccines are not equitably allocated, and poorer countries do not have access to them. However, what is the moral justification for spending humongous public funds on the research, production, and procurement of COVID-19 vaccines, if the global population is far from attaining herd immunity? Given the increasing health costs and financial constraints worldwide, traditional bilateral and multilateral African development partners do not have the financial wherewithal to wholly fund COVID-19 vaccination programs in Africa.⁶⁴

Therefore, African governments still have to allocate millions of dollars for the vaccine procurement to vaccinate/inoculate their teeming population.

⁵⁹ Hafner, et al., iv.

⁶⁰ *Vanguard Nigeria*, “Five Things to Know about the AstraZeneca/Oxford Vaccine.”

⁶¹ *Ibid.*

⁶² *Ibid.*

⁶³ Olivers J. Wouters, et al., “Challenges in Ensuring Global Access to COVID-19 Vaccines: Production, Affordability, Allocation, and Deployment,” *Health Policy* 397, no. 10278 (2021): 1025.

⁶⁴ Danielle Serebro, “COVID-19 Vaccine Financing and Purchasing in Africa: Wherefrom the Money?” *CABRI*, February 19, 2021, <https://www.cabri-sbo.org/en/blog/2021/covid-19-vaccine-financing-and-purchasing-in-africa-wherefrom-the-money>.

If the two-fold objectives of the vaccine, namely, the direct protection of a sufficient percentage of the global population and the containment of the viral transmission cannot be achieved, on account of vaccine nationalism and global competition, this then amounts to a waste of public funds that could have been channeled into cushioning the adverse economic effects of the pandemic on Africans through the provision of carefully planned and coordinated fiscal and monetary stimuli and job creations to enhance people's well-being. COVID-19 vaccines are designed for the treatment of the vast majority of patients and the protection of the global population so as to achieve herd immunity and improve the well-being of the human race. However, if economic power determines who and when gets the vaccines as well as the quantity allocated, then we can safely assert that the two-fold objectives are far from being achieved.

Besides, this "my nation first" approach to COVID-19 vaccine production means that low-risk individuals in high income countries get vaccinated or inoculated first before high-risk individuals in low-income countries who might even die before the vaccine is made available in their countries. Therefore, vaccine nationalism or global competition tends to prevent the vaccine from reaching relatively high-risk individuals early. One cannot help but wonder if there is any moral justification for administering COVID-19 vaccines first to low-risk individuals rather than high-risk individuals, regardless of their countries. Also, if the vaccines are meant to save lives, is it morally right to give priority to low-risk individuals on the basis of vaccine nationalism or global competition? Avoidable deaths and serious harm ensue from failure to prioritize relatively high-risk groups – vulnerable people and front-line workers – in vaccine allocation, irrespective of their countries. This problem is compounded by inequitable access to early vaccination in economically disadvantaged countries after the late and insufficient supply of vaccines, as these are not accessible and available to all people and only the affluent could afford them. According to Wu et al., "allocation guidelines must balance the obligation to assist individuals most likely to benefit against the obligation to secure the greatest aggregate benefit across the population."⁶⁵ Vaccine allocation should also be guided by considerations of fairness, which entails taking into account categories of people such as frontline health workers and vulnerable people who are suffering from chronic diseases like asthma, diabetes, and heart diseases and thus are more susceptible to COVID-19 infection. Therefore, early vaccine allocation and use seem to be devoid of any value of fairness.

However, these ethical issues involved in synthetic vaccines do not arise in the development, production, and administration of herbal and alternative/

⁶⁵ Joseph H. Wu, et al., "Allocating Vaccines in a Pandemic: The Ethical Dimension," *The American Journal of Medicine* 133, no. 11 (2020): 1241.

complementary medicines in Africa. For instance, the gaping inequality in synthetic vaccine distribution, access, and use is bridged in the distribution of herbal and alternative medicines in Africa, owing to their availability, variety, accessibility to all, and low cost. Moreover, herbal and alternative medicines are natural remedies with minimal or no harmful side-effects and they have been shown to be effective in treating and managing viral infections at their early stages in the human body. They have the capability to boost and regulate an innate immune system to respond effectively to harmful alien antigens of a virus and prevent the virus from attaching its spike protein to human cells, thus forestalling the propagation and replication of the virus in the human host. For instance, a study by Ngcobo et al. conducted to evaluate the effects of African herbal tonics on immune and inflammatory responses using peripheral blood mononuclear cells, THP-1 monocytes, and bacteria-infected rats, showed that the tonics stimulate the secretion of cytokines, which interact with innate immune system cells to regulate the body's response to viral infections as well as inflammatory responses without any significant toxicity.⁶⁶

It is no wonder that herbal extracts from *Andrographis paniculata* (commonly known as green *chiretta*) have been approved by the Food and Drug Administration (FDA) of Thailand to serve as alternative treatments for COVID-19, owing to their efficacy in curbing the viral infection and curtailing drastically the severity of inflammation. Thai's government official, Taweesslip Witsanuyotin, who is a spokesperson for the national COVID-19 response center, noted that human trials showed that if the herbal medicine is administered on a patient within hours of testing positive, his/her condition improves within three days of the treatment without side effects.⁶⁷ According to the chairman of the Bioresources Development Group, Professor Maurice Iwu, empirical data on InterCEDD, known as the "IHP Detox Tea," which contains *Andrographis paniculata* as its key ingredient, and is produced by the group, overwhelmingly revealed that the herbal drug is highly efficacious in treating COVID-19 at its early stage.⁶⁸

Furthermore, herbal and alternative/complementary medicines are extremely versatile in terms of their potential to treat and manage all kinds of viral infections and other diseases at their early stages in the human

⁶⁶ Mlungisi Ngcobo, et al., "The Immune Effects of an African Traditional Energy Tonic In Vitro and In Vivo Models," *Evidence-Based Complementary and Alternative Medicine* 63:10967 (2017): 10.

⁶⁷ As quoted in Chris Onuoha, "COVID-19: Iwu Restates Efficacy of Herbal Medicine," *Vanguard Nigeria*, January 10, 2021, <https://www.vanguardngr.com/2021/01/covid-19-iwu-restates-efficacy-of-herbal-medicine/>.

⁶⁸ As quoted in Onuoha, "COVID-19: Iwu Restates Efficacy of Herbal Medicine."

body; however, synthetic vaccines lack that versatility. A synthetic vaccine is basically developed and produced by attenuating or inactivating whole or fragmented structural proteins of a disease-causing virus that can induce immune responses and neutralize antibodies in infected humans. For instance, the AstraZeneca vaccine is made by modifying a portion of the spike protein (antigen) of the SARS-CoV-2 in order to stimulate the production of antibodies and an adaptive immune system that recognizes the novel coronavirus.⁶⁹ A synthetic vaccine is therefore designed to combat a particular pathogen and protect humans from it by developing adaptive immunity to an infection.

Accordingly, a synthetic vaccine within the context of viral infections is tailored to treat a specific strain of a virus and not all viral strains. Thus, the COVID-19 vaccine is prone to be less effective in treating other coronavirus variants. The emergence of a new coronavirus strain would therefore require further extensive research and studies to develop and produce a vaccine with all the accompanying extravagant financial demands and further clinical trials with great risks involved. For example, the Republic of South Africa (RSA) has paused the rollout of the AstraZeneca vaccine after a study showed that the vaccine offered “minimal protection against a mild and moderate new COVID-19 variant recently identified first in RSA.”⁷⁰ On the whole, the moral and pragmatic values of herbal and complementary/alternative medicines lie in their efficacy, versatility, availability, accessibility, affordability, and minimal or no harmful side effects.

VII. Conclusion

In this paper, I argued that a pragmatic approach to COVID-19 and other common diseases in Africa is among the most efficient and effective ways of dealing with myriads of health problems plaguing Africans. Pragmatism does not negate science, rather it affirms it. It only differs from science in that it insists that a practically verified successful idea/knowledge need not pass through rigorous and scientific processes of validation before it can be recognized and endorsed. It adopts a scientific attitude toward ideas and knowledge, but at the same time remains open to other modes of verification that can establish efficiently the workability of any idea, belief, or knowledge. Such a flexible approach to knowledge ensures that the approval

⁶⁹ *Vanguard Nigeria*, “Five Things to Know about the AstraZeneca/Oxford Vaccine.”

⁷⁰ *Vanguard Nigeria*, “UK Says Confident in COVID-19 Vaccines as S. Africa Pauses AstraZeneca Rollout,” February 8, 2021, <https://www.vanguardngr.com/2021/02/uk-says-confident-in-covid-19-vaccines-as-s-africa-pauses-astrazeneca-rollout/>.

of the utilization of any knowledge or idea that is practically successful is not delayed or rubbished by rigorous and lengthy processes of verification and validation.

Therefore, adopting a pragmatic approach to knowledge does not imply that Africa discards science, rather it suggests that Africa is opening its mind to other practical and efficient modes of testing and verifying the workability of any knowledge claim for the possible utilization of such knowledge in attending to Africa's existential problems. Empirical evidence does not only rest on scientific validation, but also on other practical experiences. Accordingly, if the practical application of any idea is successful, then it is empirical. Any pandemic outbreak is a matter of life and death. It is suicidal to wait for the lengthy scientific validation of new synthetic vaccines. Hence, Africa's approach to COVID-19 and other pandemics should be predicated on what works efficiently.

Just as the outbreak of COVID-19 breaks all cultural, social, economic, political, and religious protocols precipitously, an approach to the pandemic should breach scientific protocol, provided that the approach is practically effective and efficient. An African proverb from the Igbo people of Nigeria that desperate situations call for desperate measures (*Anu gba ajo ọsọ, a jujua ya ajo egbe*) gives credence to the aforementioned assertion. Therefore, it calls for the development and legitimization of Africa's epistemic system grounded in pragmatic principles. Pragmatic considerations should ultimately inform the approval of homegrown African medicines and other medical products by national health authorities in African countries for use in Africa. Homegrown orthodox and alternative/complementary medicines should be approved if they prove to be effective based on Africa's own knowledge and validation system. Ultimately, what matters is that the end-result is successful – the medicines work well in practice.

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