**Name of Journal:** *World Journal of Experimental Medicine*

**Manuscript NO:** 88674

**Manuscript Type:** FIELD OF VISION

**COVID-19 mortality paradox (United States *vs* Africa): Mass vaccination *vs* early treatment**

Kelleni MT. COVID-19 mortality paradox

Mina Thabet Kelleni

**Mina Thabet Kelleni,** Department of Pharmacology, College of Medicine, Minia University, Minya 61111, Egypt

**Author contributions:** Kelleni MT is a sole author.

**Corresponding author: Mina Thabet Kelleni, MD, PhD, Assistant Professor,** Pharmacology Department, College of Medicine, Minia University, Main Road Shalaby Land, PO Box 61519, Minia, Egypt. mina.kelleni@mu.edu.eg

**Received:** October 4, 2023

**Revised:** December 16, 2023

**Accepted:** January 4, 2024

**Published online:**

**Abstract**

The coronavirus disease 2019 (COVID-19) mortality rate in 55 African countries is almost 4.5 times lower than in the coronavirus disease 2019 (COVID-19) despite Africa having over 4.2 times more people. This mortality paradox is also evident when comparing Nigeria, a heavily populated, poorly vaccinated and weakly mandated country to Israel, a small, highly vaccinated and strictly mandated country. Nigeria has almost 4 times lower COVID mortality than Israel. In this Field of Vision perspective, I explain how this paradox has evolved drawing upon my academic, clinical and social experience. Since April 2020, I’ve developed and been using the Egyptian immune-modulatory Kelleni’s protocol to manage COVID-19 patients including pediatric, geriatric, pregnant, immune-compromised and other individuals suffering from multiple comorbidities. It’s unfortunate that severe acute respiratory syndrome coronavirus 2 is still evolving accompanied by more deaths. However in Africa, we’ve been able to live without anxiety or mandates throughout the pandemic because we trust science and adopted early treatment using safe, and effective repurposed drugs that have saved the majority of COVID-19 patients. This article represents an African and Egyptian tale of honor.

**Key Words:** COVID-19; Early treatment; Kelleni’s Protocol; Mandates; Mortality Paradox; SARS-CoV-2; Nucleic acid based vaccines

Kelleni MT. COVID-19 mortality paradox (United States *vs* Africa): Mass vaccination *vs* early treatment. *World J Exp Med* 2024; In press

**Core Tip:** Coronavirus disease 2019 (COVID-19) has claimed the lives of millions of people worldwide. Paradoxically, the highest mortality numbers were encountered in countries that adopted the Western approach of mass nucleic acid based vaccination and rapidly approved drugs such as remdesivir, molnupiravir and nirmatrelvir-ritonavir (Paxlovid). In contrast, most developing countries that adopted early treatment using uniquely repurposed safe immune-modulatory drugs, as best scientifically documented in Kelleni’s protocol, experienced the lowest COVID-19 mortality rates. In this field of vision perspective, I aim to explain the COVID-19 mortality paradox by demonstrating our African scientific approach which rejected compulsory vaccination with nucleic acid based vaccines as well as many other Western mandates. Early treatment using Kelleni’s protocol has saved the lives of geriatric, immune-compromised and other comorbid COVID-19 patients, while young and otherwise healthy patients lost their lives in developed countries like the United States.

**INTRODUCTION**

As of October 1, 2023 severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is still evolving and the potential to return to square one remains valid[1]. Unfortunately, very few lessons have been learned since November 2019, if any[2] despite the fact that coronavirus disease 2019 (COVID-19) global mortality has approached seven million people, to be noted that this abstract and underestimated number[3] can never reflect the personal suffering of millions of families. Moreover, the repeated COVID-19 imposed lockdowns have severely affected the global economy[4] and have led to increased poverty[5]. Additionally, numerous psychological disorders have affected children who have been isolated at home or constrained at schools as well as adults who have experienced repeated lockdowns[6]. Several mandates especially compulsory vaccination have been strictly implemented, resulting in job loss, defamation, stigmatization, intimidation or censorship of individuals who refused to comply[7,8] or exposed potential fraud[8,9].

Remarkably, most African countries, including Egypt, have managed to avoid this catastrophic situation. We were fortunate as we initially had no access to the newly introduced “experimental” nucleic acid based (mRNA and adenovector-ed) vaccines and other expensive “experimental” drugs such as remdesivir, molnupiravir, Paxlovid and numerous monoclonal antibodies[10-12]. These drugs were very rapidly approved and distributed first in Western and wealthy countries despite scientific concerns about their outbalanced risk-benefit ratio[11], their evolutionary pressure leading to more virulent SARS-CoV-2 variants[3], biased approval standards[9,13], and even delayed carcinogenicity risk[11,14,15].

Furthermore, we, Africans, have defied many mandates and have enjoyed a relatively COVID-free life. Nonetheless, the total number of COVID-19 deaths in 55 African countries as of October 1, 2023 was almost 4.5 times lower than in the United States, despite the fact that Africa has over 4.2 times more people than the United States[3] (Figure 1). Similarly, the mortality paradox is quite evident when comparing Nigeria, a heavily populated country with over 216 million people, relatively low vaccination rates and weak mandates to Israel, a small country with less than 10 million people, high vaccination rates and strict mandates. Nigeria has almost 4 times lower COVID deaths compared to Israel. Similar observation can also be made when examining the case of Haiti, a Caribbean with a population of over 11 million people. Despite having a negligible COVID-19 vaccination rate, with only 5% of the population choosing to receive it, Haiti has experienced almost no COVID burden or mortality[3]. This perspective aims to provide some reasons that may explain this paradox while drawing upon my academic, clinical and social experience.

**EARLY COVID-19 TREATMENT USING KELLENI’S PROTOCOL IN EGYPT HAS PERFECT SUCCESS RATE**

My first correspondence regarding COVID-19 was sent to the New England Journal of Medicine in March 2020 (ID 20-06753), but it was rejected without comment. In this correspondence, I aimed to expose what I called a pseudoscientific global scam that denied millions of patients access to lifesaving nonsteroidal anti-inflammatory drugs (NSAIDs), including ibuprofen, for the management of their COVID-19[16]. For months, nearly a dozen reputable journals denied me the opportunity for a peer review. However, an honorable editor in chief and the editorial board of a reputable journal offered me this opportunity and my work was eventually published[17,18].

Meanwhile, in April 2020, my first peer-reviewed publication was released. It explained for the first time globally why nitazoxanide is best suitable to manage COVID-19 and why it’s superior to ivermectin regarding safety and efficacy[19]. It has also explained why azithromycin should be the antibiotic of choice when COVID-19 patients need one and a pioneering protocol was first suggested[19]. At that time, there was no ivermectin “obsession”. However, when the full real-life immune-modulatory Kelleni’s protocol using safe, effective and economic repurposed drugs was first fully published as a preprint in June 2020 (after prior preprints were published in May 2020); many editors of reputable medical journals were still skeptical. They repeatedly denied me fair opportunity for peer review. Additionally, my call to adopt randomized clinical trials of my protocol was completely ignored, despite hundreds of emails sent to scientists, ministers of health, prime ministers, journalists, the United States Food and Drug Administration (FDA) and other health care officials. I’ve kept records of these attempts, urging them to consider that an Egyptian and African protocol is safely, effectively and economically saving the lives of Egyptian patients of all ages as later was evident by numerous publications published at reputable journals[16,18,20-23]. Unfortunately, I’ve never received a single response from any of these hundreds of official recipients around the world, regardless of the number of reputable publications supporting my claims. This made me realize that during times panic and pandemic, medicine in Western countries serves politics rather than people. Ironically, I also realized that most ministers of health in the West are not physicians or scientists and their main aim is probably to win votes rather than save lives.

However, since April 2020, myself and many of colleagues who read my early publications and adopted the simple clinical approach of Kelleni’s protocol, have almost saved every single life that was not previously exposed to remdesivir and the iatrogenic high dose of methylprednisolone used in hospitals that claimed to adopt the Western protocols[24]. Many of these cases suffered from moderate to severe COVID-19[21,23,25]. Notably, it took me almost a year and a half to have some of my COVID-19 preprints peer reviewed and published. In these numerous papers I’ve explained why the highly economic and extremely safe immune-modulatory Kelleni’s protocol is highly effective and I’ve also demonstrated the molecular, genetic, immune mechanisms[16,22,26] together with real-life case reports of tens of patients including severe COVID-19 cases and how I used a personalized approach in their management[21,25]. Hence, this is how the name Kelleni’s protocol has been coined[18,20,27].

Notably, at the start of the pandemic, I was working in Saudi Arabia, away from my family and patients in Egypt. This is why I initially relied on telemedicine. However, I soon resigned and returned home to be among the impoverished Egyptian patients and near my family members. I reopened my traditional clinic focusing mainly on COVID-19 and Post COVID syndrome; I named it Kelleni’s COVID Clinic. I have been fully dedicated to the clinic until mid-December 2022 when knowledge about my protocol has spread, especially after appearing in three TV shows. At that point, I decided to take a break, return to telemedicine and traditional medicine in charitable clinics to have more time to resume my academic activity and share my updated clinically gained knowledge globally[1,3,20,27,28]. Importantly, my family; especially my parents in their 80s and my young daughters were the guiding light in my quest for a safe cure, as well as to repurpose a safe old vaccine which we all received it once[29]. Fortunately, I soon realized that we don’t need a vaccine for this highly evolving respiratory virus. Early treatment using the immune-modulatory Kelleni’s protocol has remained the most effective tool against all SARS-CoV-2 variants and subvariants.

**IN AFRICA WE AVOIDED HOSPITALS THAT ADOPTED THE WESTERN COVID-19 PROTOCOLS**

Moreover, it was quite astonishing to encounter, at a very early stage in the pandemic, how almost every time an Egyptian celebrity or high ranking official was treated in governmental or private hospitals using Western protocols that included remdesivir and dexamethasone, the ultimate outcome was death or, at best, disability[24]. Meanwhile, geriatric people with multiple co-morbidities were safely treated using Kelleni’s protocol mostly at home[21,25]. Subsequently, the “business” of monoclonal antibodies have flourished[24], followed by the introduction of relatively unsafe and potentially ineffective yet highly profitable drugs like favipiravir and molnupiravir[10,12]. These drugs were widely introduced to the African pharmaceutical market without most of the Western restrictions, and there was no fear of legal consequences. I claim that the Western COVID pharmaceutical industry has gained hundreds of billions of dollars while exploiting people’s fear and ignorance. Notably, Western top politicians protected and nourished this business using mandates, along with a fierce media that defamed or at best ignored any attempt to expose potential corruption. They simply ignored the loss of precious souls and probably considered them collateral damage, or at best a necessary sacrifice to save the globe[7]. Notably, I’ve been permanently banned from Twitter twice and temporarily banned from Facebook seven times whenever I argued against the dogma of “perfectly safe and effective nucleic acid based vaccination”. No matter how badly the Western countries were being severly hit by COVID-19, not a single stakeholder, politician or journalist replied to my repeatedly sent updated emails and scientific publications, except for one thank you email from a high-ranking FDA official after I’ve exposed another very recent potential scam[28].

I repeatedly argued, with fervent decline of any opportunity for peer review, that mass vaccination campaigns, drugs like remdesivir, dexamethasone, favipiravir, molnupiravir, monoclonal antibodies as well as Paxlovid are inducing the evolution of more and more virulent immune-evasive SARS-CoV-2 variants that could prolong and worsen the global misery and division in which we live[3,12]. Meanwhile, I also repeatedly advocated for the use of immune-modulatory drugs such as those used in Kelleni’s and Expanded Kelleni’s protocol[1,18,20,25,27] as the right approach to treat and abort SARS-CoV-2 infection and end this pandemic. Moreover, I occasionally used Kelleni’s protocol (nitazoxanide and/or NSAIDs) in successful post-exposure prophylaxis of close contacts of SARS-CoV-2 patients. I’ve also administered the immune-modulatory Bacillus Calmette-Guérin vaccine to myself and my family to boost our natural immunity[29]. We’re not and have never been “antivaxers” as stigmatized by the biased sponsored media, indeed we are the ones who trust real science[3].

**IN AFRICA WE DEFIED THE UNSCIENTIFIC MANDATES**

As mentioned previously, in Africa we enjoyed our lives during most of the pandemic after only a few months of the initial global panic. My father, who is in his eighth decade of life, has seldom put a mask on his face despite my early recommendation to wear one. The vast majority of poor people in Africa have acted similarly, either because they can’t afford the additional costs of “masks” or, like my father, because they simply want to enjoy breathing without restrictions as they have done all their lives and they trust their natural immunity. Later, I allowed my two little daughters not to wear masks, which is a voluntary choice in most Egyptian kindergartens and schools. I considered the inevitable infection as a natural vaccine when early properly treated[3].

However, we had a very difficult time when some African governments wished to sell imported vaccines and distribute late “gifts” coming from rich countries. These countries falsely promoted another scam, claiming that their overall failure with the new vaccines/boosters and the increasing number of death among “vaccinated” people was because of the unvaccinated individuals, including those living in poor Africa. Unfortunately, some African governments threatened poor employees with their jobs if they were not vaccinated and people were denied entry of any governmental facility unless they showed a vaccination certificate. Ironically, many employees were forced to sign a legal document stating that “they received the vaccine of their own free will and exempting the government and vaccine manufacturers from any adverse effect whether known unknown and whether immediate or future”. Moreover, there was absolute silence and denial when we early witnessed the deaths of numerous young healthy adults, including health care professionals, soon after receiving the “vaccines”[11]. While some Western governments later paid huge compensations for “COVID vaccine victims” or their families, this has never been and probably will never be an option for most of the poor people in Africa, as it’s almost impossible to find a civil court that will condemn a sovereign mandate that led to these tragedies. In Egypt, one private newspaper initially published my call not to mandate these vaccines and in some YouTube videos and one TV show, I urged the consideration of a personalized risk benefit ratio, but to no avail.

During this struggle, I’ve published several preprints that highlighted the potential hazards of mandate nucleic acid based jabs including a call to immediately suspend Pfizer-BioNTech mRNA vaccine though knowing that this was almost impossible. I even suggested to the manufacturers that they should decrease the dose of the vaccine in order to mitigate some risks and they later practically adopted this approach in the “boosters”. However, after a year of absolute denial of peer review from numerous medical journals, an article has been published to explain why I consider mandatory nucleic acid based vaccination a crime against humanity as it poses potential hazards in both the short term for some victims and the long term for others[11]. Fortunately, some African health care workers, despite their low rank, acted with mercy and provided people with the required governmental papers confirming vaccination while secretly disposing these vaccines in the trash.

In contrast, it was disheartening to witness high-ranking officials in the West ignore to fairly investigate the claims made by whistle blowers who exposed severe medical malpractice in Pfizer-BioNTech mRNA clinical trials[9]. The denial of people’s free will in deciding whether or not to be injected with a new technology was another global tragedy. Furthermore, when an editor of the well-known Journal “Science” falsely and shamelessly promoted vaccine mandates among college students, he denied me the opportunity to present a counterargument and I preprinted it. Even the European Court of Human Rights ruled that compulsory vaccination with nucleic acid based vaccines would not violate human rights law[11].

I argue that the COVID mortality paradox has originated when a biased scientist and his followers manipulated desperate American and other Western politicians to approve, integrate and mandate highly profitable drugs[10,30] and vaccines with outbalanced risk benefit ratio, at least for currently proven and undisputed numerous victims[11,15,31-34]. Although these serious adverse effects labeled as rare, yet can’t be predicted[31,35,36]. Some have described it as a “Russian roulette” game and I agree especially considering that Africa has managed COVID-19 better without nucleic acid based vaccines. Additionally, there may be a yet unknown and properly uninvestigated or dismissed as co-incidence adverse effects associated with these vaccines as mentioned earlier. Moreover, the ongoing evolution and mutation of SARS-CoV-2 may be directly and indirectly attributed to the suppressed natural immunity and the administration of pro-mutant vaccines and drugs. I strongly suggest that these biased stakeholders, not SARS-CoV-2, are responsible for most of the COVID-19 mortality, which primarily affects their own citizens in their home countries. These stakeholders should be held accountable and prosecuted[11].

**IN AFRICA WE ENJOY A HEALTHIER LIFESTYLE**

Despite poverty being a major problem in Africa, one can buy large quantities of antioxidant-rich fruits and vegetables for just one United States dollar[37]. This highly healthy and nutritious food comes at with minimal cost and it was a huge surprise when I travelled abroad and found how expensive similar items are in Western countries. Additionally, air and water pollution are much lower in many African countries compared to the West, and obesity is also less prevalent in Africa. All these factors, along with simpler mental and better spiritual well-being, contribute to better natural immunity in African citizens compared to their Western counterparts.

**CONCLUSION**

Africa has been fortunate to avoid the expedited, toxic, ineffective and potentially mutagenic Western COVID-19 interventions. These interventions, including experimental vaccines and drugs developed or repurposed by biased Western scientists, have been promoted by politicians, pharmaceutical companies and other stakeholders who control most of the mainstream media and social networks. On the other hand, early treatment using Kelleni’s protocol has successfully managed every Egyptian COVID patient regardless of its initial case severity. Unfortunately, the majority of the world remains blind to the possibility of being manipulated by these stakeholders who are well aware that if this possibility is thoroughly examined, they might face serious ethical and legal consequences beyond losing their political, academic or financial positions.

**ACKNOWLEDGEMENTS**

I would like to acknowledge the example set by my great grandfather, Saint Athanasius of Alexandria, also known as “contra-mundum”. In the fourth century AD, he chose to stand firm with my brave Coptic ancestors against a corrupt and powerful global coalition that included emperors, potentates and top-ranked bishops. Together we, Egyptians, defended what we believed to be right, noble and just. Despite being an apparently powerless minority, we eventually emerged victorious. I would also like to express my gratitude to OSF Preprints for preprinting an earlier version of this article which included many other citations supporting the claims mentioned.

**REFERENCES**

1 **Kelleni MT**. The African Kelleni's roadmap using nitazoxanide and broad-spectrum antimicrobials to abort returning to COVID-19 square one. *Inflammopharmacology* 2023; **31**: 3335-3338 [PMID: 37326756 DOI: 10.1007/s10787-023-01263-4]

2 **Nkengasong JN**. COVID-19: unprecedented but expected. *Nat Med* 2021; **27**: 364 [PMID: 33723449 DOI: 10.1038/s41591-021-01269-x]

3 **Kelleni MT**. Evolution of SARS CoV-2 Omicron subvariants BF.7 and XBB.1.5: Time to follow Africa and abort all COVID restrictions. *J Infect* 2023; **86**: 405 [PMID: 36702311 DOI: 10.1016/j.jinf.2023.01.027]

4 **Yamaka W**, Lomwanawong S, Magel D, Maneejuk P. Analysis of the Lockdown Effects on the Economy, Environment, and COVID-19 Spread: Lesson Learnt from a Global Pandemic in 2020. *Int J Environ Res Public Health* 2022; **19** [PMID: 36232169 DOI: 10.3390/ijerph191912868]

5 **Dzawanda B**, Matsa M, Nicolau M. A catastrophic threat to the already vulnerable towards 2030: Impact of COVID-19 lockdown on livelihood outcome of informal cross border traders in Gweru, Zimbabwe. *Soc Sci Humanit Open* 2022; **6**: 100316 [PMID: 35959465 DOI: 10.1016/j.ssaho.2022.100316]

6 **Martínez-Vélez NA**, Arroyo-Belmonte M, Tiburcio M, Natera-Rey G, Fernández-Torres M, Sánchez-Hernández GY. Psycho-Emotional Factors Associated with Depressive Symptoms during Lockdown Due to the COVID-19 Pandemic in the Mexican Population. *Int J Environ Res Public Health* 2023; **20** [PMID: 36901346 DOI: 10.3390/ijerph20054331]

7 **Shir-Raz Y**, Elisha E, Martin B, Ronel N, Guetzkow J. Censorship and Suppression of Covid-19 Heterodoxy: Tactics and Counter-Tactics. *Minerva* 2022: 1-27 [PMID: 36340971 DOI: 10.1007/s11024-022-09479-4]

8 **Elisha E**, Guetzkow J, Shir-Raz Y, Ronel N. Suppressing Scientific Discourse on Vaccines? Self-perceptions of researchers and practitioners. *HEC Forum* 2022: 1-19 [PMID: 35587319 DOI: 10.1007/s10730-022-09479-7]

9 **Thacker PD**. Covid-19: Researcher blows the whistle on data integrity issues in Pfizer's vaccine trial. *BMJ* 2021; **375**: n2635 [PMID: 34728500 DOI: 10.1136/bmj.n2635]

10 **Kelleni MT**. Tocilizumab, Remdesivir, Favipiravir, and Dexamethasone Repurposed for COVID-19: a Comprehensive Clinical and Pharmacovigilant Reassessment. *SN Compr Clin Med* 2021; **3**: 919-923 [PMID: 33644693 DOI: 10.1007/s42399-021-00824-4]

11 **Kelleni MT: SARS CoV-2 Vaccination Autoimmunity,** Antibody Dependent Covid-19 Enhancement and Other Potential Risks: Beneath the Tip of the Iceberg. International *Journal of Pulmonary & Respiratory Sciences* 2021; 5 [DOI: 10.19080/ijoprs.2021.05.555658]

12 **Kelleni MT.** Paxlovid and Molnupiravir Approved to Manage COVID-19: A Countdown for SARS CoV-2 Variant Apocalypse. OSF (preprint) 1031219/osfio/qsfkh 2021 [DOI: 10.31219/osf.io/qsfkh]

13 **Fraiman J**, Erviti J, Jones M, Greenland S, Whelan P, Kaplan RM, Doshi P. Serious adverse events of special interest following mRNA COVID-19 vaccination in randomized trials in adults. *Vaccine* 2022; **40**: 5798-5805 [PMID: 36055877 DOI: 10.1016/j.vaccine.2022.08.036]

14 **Seneff S**, Nigh G, Kyriakopoulos AM, McCullough PA. Innate immune suppression by SARS-CoV-2 mRNA vaccinations: The role of G-quadruplexes, exosomes, and MicroRNAs. *Food Chem Toxicol* 2022; **164**: 113008 [PMID: 35436552 DOI: 10.1016/j.fct.2022.113008]

15 **Parry PI**, Lefringhausen A, Turni C, Neil CJ, Cosford R, Hudson NJ, Gillespie J. 'Spikeopathy': COVID-19 Spike Protein Is Pathogenic, from Both Virus and Vaccine mRNA. *Biomedicines* 2023; **11** [PMID: 37626783 DOI: 10.3390/biomedicines11082287]

16 **Kelleni MT**. Early use of non-steroidal anti-inflammatory drugs in COVID-19 might reverse pathogenesis, prevent complications and improve clinical outcomes. *Biomed Pharmacother* 2021; **133**: 110982 [PMID: 33197762 DOI: 10.1016/j.biopha.2020.110982]

17 **Kelleni MT**. ACEIs, ARBs, ibuprofen originally linked to COVID-19: the other side of the mirror. *Inflammopharmacology* 2020; **28**: 1477-1480 [PMID: 32920716 DOI: 10.1007/s10787-020-00755-x]

18 **Kelleni MT**. NSAIDs and Kelleni's protocol as potential early COVID-19 treatment game changer: could it be the final countdown? *Inflammopharmacology* 2022; **30**: 343-348 [PMID: 34822026 DOI: 10.1007/s10787-021-00896-7]

19 **Kelleni MT**. Nitazoxanide/azithromycin combination for COVID-19: A suggested new protocol for early management. *Pharmacol Res* 2020; **157**: 104874 [PMID: 32360581 DOI: 10.1016/j.phrs.2020.104874]

20 **Kelleni MT**. Real-life practice of the Egyptian Kelleni's protocol in the current tripledemic: COVID-19, RSV and influenza. *J Infect* 2023; **86**: 154-225 [PMID: 36513168 DOI: 10.1016/j.jinf.2022.12.007]

21 **Kelleni MT.** NSAIDs/Nitazoxanide/Azithromycin Immunomodulatory Protocol Used in Adult, Geriatric, Pediatric, Pregnant, and Immunocompromised COVID-19 Patients: A Real-World Experience. *CJM* 2021; **3**: 121-143 [DOI: 10.33844/cjm.2021.60511]

22 **Kelleni MT**. COVID-19, Ebola virus disease, and Nipah virus infection reclassification as novel acute immune dysrhythmia syndrome (n-AIDS): potential crucial role for immunomodulators. *Immunol Res* 2021; **69**: 457-460 [PMID: 34357535 DOI: 10.1007/s12026-021-09219-y]

23 **Sobhy A**, Saleh LA, AbdelAtty MEI, Refaat SA, M K. Early Use of Ibuprofen in Moderate Cases of COVID-19 Might be a Promising Agent to Attenuate the Severity of Disease: A Randomized Controlled Trial. *The Open Anesthesia Journal* 2023 [DOI: 10.2174/25896458-v17-e230403-2022-26]

24 **Kelleni MT.** Recent Western Updates in COVID-19 Pharmacotherapy (January - April 3, 2022): An Afro-Egyptian Perspective. OSF (preprint) 1031219/osfio/txb2m 2022 [DOI:10.31219/osf.io/txb2m]

25 **Kelleni MT.** Personalized Expanded Kelleni’s Immunomodulatory COVID-19 Protocol Safely Used to Manage Severe COVID-22: A Case-Report. OSF (preprint) 1031219/osfio/ysfr2 2022 [DOI: 10.31219/osf.io/ysfr2]

26 **Kelleni MT**. NSAIDs/nitazoxanide/azithromycin repurposed for COVID-19: potential mitigation of the cytokine storm interleukin-6 amplifier via immunomodulatory effects. *Expert Rev Anti Infect Ther* 2022; **20**: 17-21 [PMID: 34088250 DOI: 10.1080/14787210.2021.1939683]

27 **Kelleni MT**. Real-world practice of the Egyptian Kelleni's protocol amid changing tropism of SARS-CoV-2 omicron BA.5.2.1.7, XBB 1.5 and CH.1.1 subvariants: a multi-purpose protocol. *Inflammopharmacology* 2023; **31**: 1559-1560 [PMID: 36928633 DOI: 10.1007/s10787-023-01180-6]

28 **Kelleni MT.** Peg-interferon Lambda Single Dose Treatment for COVID-19: A Call to Avoid another Hydroxychloroquine Fiasco (Version 3). OSF (preprint) 1031219/osfio/5xd6q 2023 [DOI: 10.31219/osf.io/5xd6q]

29 **Kelleni MT.** Repurposing BCG Vaccine to Protect my Parents, Children, and my Family against COVID-19: A Real-life Experience. OSF (preprint) 1031219/osfio/z2qw6 2022 [DOI: 10.31219/osf.io/z2qw6]

30 **Kelleni MT.** Remdesivir-gate for COVID-19. Acta Sci Gastrointest Disord 3(8):01 2020 [DOI: 10.22541/au.160677059.91320681/v1]

31 **Maiese A**, Baronti A, Manetti AC, Di Paolo M, Turillazzi E, Frati P, Fineschi V. Death after the Administration of COVID-19 Vaccines Approved by EMA: Has a Causal Relationship Been Demonstrated? *Vaccines (Basel)* 2022; **10** [PMID: 35214765 DOI: 10.3390/vaccines10020308]

32 **Patel YR**, Louis DW, Atalay M, Agarwal S, Shah NR. Cardiovascular magnetic resonance findings in young adult patients with acute myocarditis following mRNA COVID-19 vaccination: a case series. *J Cardiovasc Magn Reson* 2021; **23**: 101 [PMID: 34496880 DOI: 10.1186/s12968-021-00795-4]

33 **Helms JM**, Ansteatt KT, Roberts JC, Kamatam S, Foong KS, Labayog JS, Tarantino MD. Severe, Refractory Immune Thrombocytopenia Occurring After SARS-CoV-2 Vaccine. *J Blood Med* 2021; **12**: 221-224 [PMID: 33854395 DOI: 10.2147/JBM.S307047]

34 **Eom H**, Kim SW, Kim M, Kim YE, Kim JH, Shin HY, Lee HL. Case Reports of Acute Transverse Myelitis Associated With mRNA Vaccine for COVID-19. *J Korean Med Sci* 2022; **37**: e52 [PMID: 35191229 DOI: 10.3346/jkms.2022.37.e52]

35 **García-Grimshaw M**, Ceballos-Liceaga SE, Hernández-Vanegas LE, Núñez I, Hernández-Valdivia N, Carrillo-García DA, Michel-Chávez A, Galnares-Olalde JA, Carbajal-Sandoval G, Del Mar Saniger-Alba M, Carrillo-Mezo RA, Fragoso-Saavedra S, Espino-Ojeda A, Blaisdell-Vidal C, Mosqueda-Gómez JL, Sierra-Madero J, Pérez-Padilla R, Alomía-Zegarra JL, López-Gatell H, Díaz-Ortega JL, Reyes-Terán G, Arauz A, Valdés-Ferrer SI. Neurologic adverse events among 704,003 first-dose recipients of the BNT162b2 mRNA COVID-19 vaccine in Mexico: A nationwide descriptive study. *Clin Immunol* 2021; **229**: 108786 [PMID: 34147649 DOI: 10.1016/j.clim.2021.108786]

36 **Oueijan RI**, Hill OR, Ahiawodzi PD, Fasinu PS, Thompson DK. Rare Heterogeneous Adverse Events Associated with mRNA-Based COVID-19 Vaccines: A Systematic Review. *Medicines (Basel)* 2022; **9** [PMID: 36005648 DOI: 10.3390/medicines9080043]

37 **Kelleni MT**. Resveratrol-zinc nanoparticles or pterostilbene-zinc: Potential COVID-19 mono and adjuvant therapy. *Biomed Pharmacother* 2021; **139**: 111626 [PMID: 33894625 DOI: 10.1016/j.biopha.2021.111626]

**Footnotes**

**Conflict-of-interest statement:** The author declares that he has no conflict of interest.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: https://creativecommons.org/Licenses/by-nc/4.0/

**Provenance and peer review:** Invited article; Externally peer reviewed.

**Peer-review model:** Single blind

**Peer-review started:** October 4, 2023

**First decision:** December 6, 2023

**Article in press:**

**Specialty type:** Infectious diseases

**Country/Territory of origin:** Egypt

**Peer-review report’s scientific quality classification**

Grade A (Excellent): 0

Grade B (Very good): 0

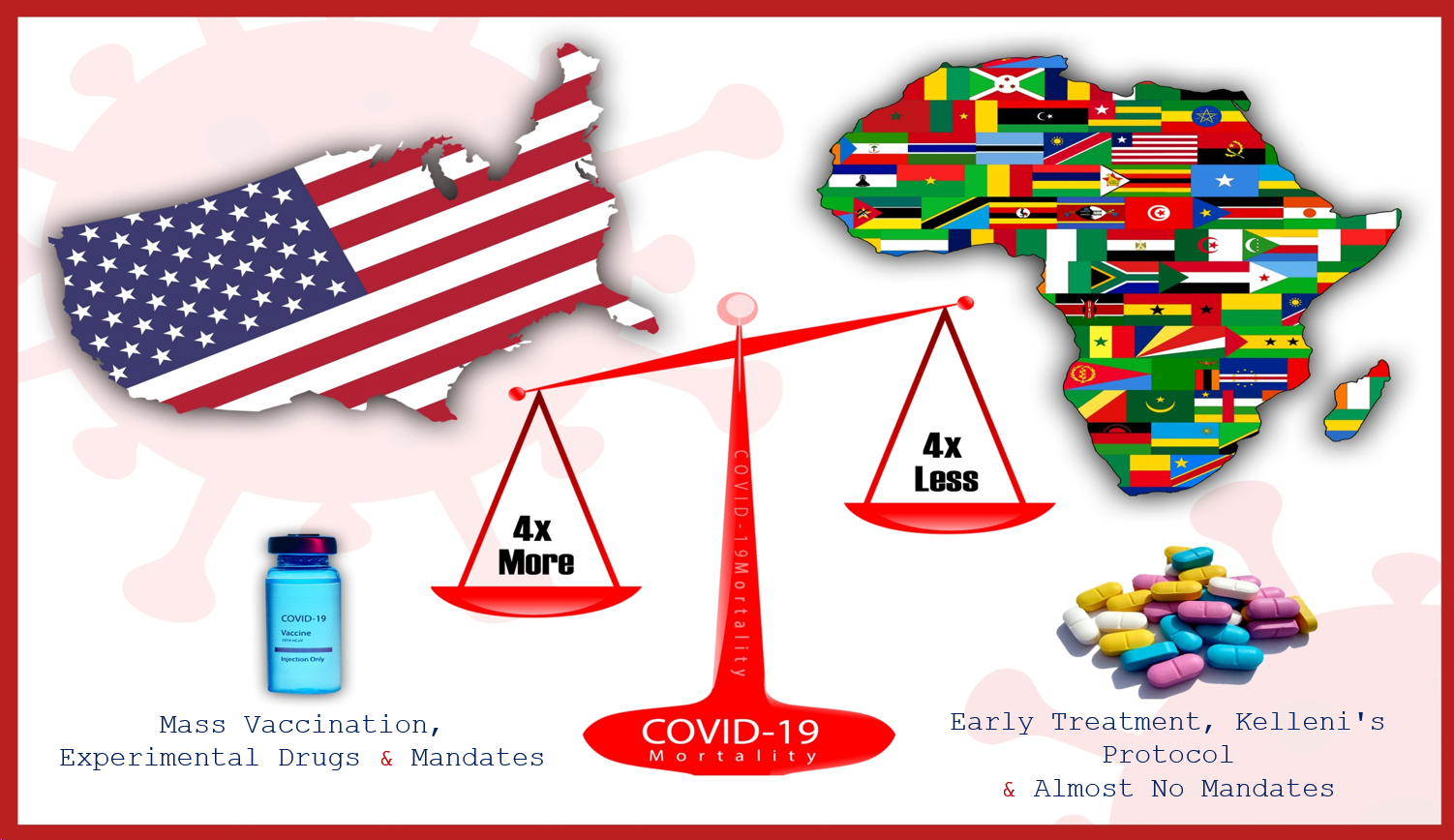
Grade C (Good): C

Grade D (Fair): 0

Grade E (Poor): 0

**P-Reviewer:** Liu YC, China **S-Editor:** Liu JH **L-Editor:** A **P-Editor:**

**Figure Legends**



**Figure 1 The coronavirus disease 2019 mortality paradox.** The United States has tackled coronavirus disease 2019 (COVID-19) by heavily relying on mass vaccination, rapidly approving experimental drugs and implementing strict mandates. In contrast, Africa has chosen to adopt early treatment using safe repurposed drugs as best scientifically revealed in Kelleni’s protocol and has abandoned mass vaccination and mandates. Despite Africa having a population over four times larger than the United States, its COVID-19 death toll has been four times lower.