# Ethno-medical Narratives in COVID-19 Vaccination Programs in Alego-Usonga

<sup>1</sup>Austine Ochieng Dieto, <sup>2</sup>Prof. Violet Naanyu, <sup>3</sup>Dr. Willice Abuya

<sup>1</sup>Department of Sociology, Psychology and Anthropology; Moi University, Kesses, Eldoret, Kenya

<sup>2</sup>Associate Professor, Department of Sociology, Psychology and Anthropology;

Moi University, Kesses, Eldoret, Kenya

<sup>3</sup>Senior Lecturer, Department of Sociology, Psychology and Anthropology;

Moi University, Kesses, Eldoret, Kenya

Abstract: Traditional medicine shows potential benefits in treating COVID-19, including alleviating symptoms, improving immune response, and reducing the risk of severe illness. Traditional medicine emphasizesholistic and individualized treatment approaches. However, thereis still little appreciation of traditional medicine within the conventional health practice missing out on the opportunity to harness its holistic capability. The current study found that there was considerable reliance on traditional medicine in Alego-Usonga for COVID-19 treatment. This stemmed from Alego-Usonga'sstrong cultural roots with traditionalherbalists, cultural and spiritual leaders playing a critical role in the preservation of that legacy. That notwithstanding, there was community appreciation of the importance of conventional medical practices in the management of COVID-19. While individuals mentioned varying traditional remedies and therapies useful in the management of COVID-19, there was evidence of adherence to the calls for vaccination as well as a positive accurate understanding of COVID-19 vaccine effectiveness and safety. These results therefore demonstrate a rich combination of indigenous knowledge and modern medical practice putting to focus the need for integration of ethnomedical practices into modern COVID-19 health guidelines to provide for a holistic healthcare system to deal with the contemporary health challenges.

**Keywords:** Traditional medicine, Conventional medical practice, COVID-19 Vaccination, Integration

# I. Introduction

COVID-19 pandemic had a devastating impact on communities worldwide (Yao *et al.*, 2024). This prompted urgent efforts by governments and the scientific communityto develop appropriate vaccines to contain the disease (Chorev & Mutwafy, 2023). However, the vaccination program rolled out in Kenya,like in many parts of the word, encountered mixed reaction with somesocio-cultural factors driving vaccine hesitation or resistance (MOH, 2020; Orangi *et al.*, 2021). The mixed results thus provided the basis of this study to examine the complex interplay between culture and bio-medical technology in the context of COVID-19 vaccination programs.

Different societies embraced a variety of traditional methods for COVID-19 treatment at the height of the pandemic. For instance, in Africa, some communities came up with remedies such as turmeric, ginger and garlic, among other regimens to boost immunity as well as ameliorating the symptoms of COVID-19 (Osebe & Gachohi, 2020; Kamanyi *et al.*, 2025). There was also infusion of rituals and spiritual therapies performed in parts of Africa for prevention, boosting body's immunity and to support in recovery of COVID-19 patients (Mshana *et al.*, 2021; Nyemba& Mudzingwa, 2021; Ogunyemi & Ogunyemi, 2021).

Ethno-medicine which encompasses traditional medical practices and associated traditional values and beliefs play a significant role in shaping the quality of health intervention (Mfinanga, 2021). How diseases, their causes and treatments are interpreted are best analysedin relation to the deeply ingrained ethnomedical narratives (Janzen, 2021). In the context of COVID-19 vaccination, studies (such as Msuya *et al.*, 2023) have demonstrated that traditional values and beliefs could play a big role in vaccination uptake and that community dependence on traditional medicine could contribute to vaccine hesitance or skepticism. In many cultures, people regard illness not only from a medical standpoint but also from a spiritual one, with supernatural reality playing a unique role in defining their world (Obadare, 2022).

Appreciating this cultural paradigm is important in ensuring effective implementation of COVID-19 vaccination programs as it promotes integration thereby guaranteeing a more holistic healthcare system (Agyei, & Osei-Tutu, 2021). Such integration encompasses engagement between traditional healers, cultural leaders and conventional medical practitioners thereby bridging gaps that exist between ethnomedicine and bio-medical systems for better health outcomes (Lampiao *et al.*, 2019).

It is against this backdrop that the current study sought to understand the cultural configuration that played out during the rollout of COVID-19 in Alego Usongafocusing on how they exemplify community health

International Journal of Latest Research in Humanities and Social Science (IJLRHSS) Volume 08 - Issue 08, 2025 www.ijlrhss.com || PP. 82-88

seeking behavior. Various anecdotes have brought to the limelightAlego-Usonga's deep-rooted ethnomedical legacymaintaining a rich traditional medical heritage playing a critical role in prevention and treatment of various ailments under the stewardship of traditional healers and herbalists. However, there is very limited intellectual inquiry into Alego-Usonga's ethno-medical landscape which comprises of traditional medical practices, cultural beliefs and traditional healing practices. It was therefore important to bridge this gap by analyzing both the ethnomedical structures in Alego and how theethno-medical landscapeshaped societal attitudes towards COVID-19 vaccination.

This paper is guided by the following specific objectives:

- i. To gauge the current use of traditional medicine in COVID-19 treatment;
- ii. To understand the cultural narratives underpinning COVID-19 healing practices;
- iii. To evaluate influence of ethnomedical narratives on COVID-19 vaccination.

## II. Methodology

The study applied an ethnographic design employing purposive sampling of 35 community members determined through saturation. Additionally, the study designed key informants'interviews and FGDs which were complemented by handwritten notes, videos and audio recordings. Data was analysed through quotes, narratives and discourse analysis presenting community's interpretation of both ethnomedical and bio-medical aspects of the COVID-19 vaccination program.

#### **III. Results And Discussion**

# **Traditional Medicine and Therapies in COVID-19 Treatment**

The current study found that community members appreciated the role of traditional medicine in the treatment of COVID-19. The study established that several traditional medicines or cultural practices in Alego-Usongawere believed to be useful prevention or treatment of COVID-19. These included herbal remedies and steam therapies as captured in the following excerpts:

...we used ginger plus lemon, garlic and tamarin, mixed with water, boiled the concoction then drank. There are also herbs which can be sniffed thus reducing nasal congestion. These remedies helped at the peak of COVID-19

-Male, 73 -year-old farmer

We could boil traditional medicine and steam together as a family.... sometimes we could use the herbal remedies to bathe our bodies. There was specific herbal steam therapy that was used to cure respiratory ailments and also gained traction during COVID-19 pandemic.

-Male, 58-year-old smallholder farmer

These are practices that aligned people's behavior to COVID-19 social distancing as could not gather in social events. When someone dies and they are hurriedly buried, people don't gather for the send-off To minimize spread of COVID-19.

-Male, 66-year-old livestock trader

Further,rituals, traditional social distancing and isolation as well as traditional burial customs were also mentioned as the most common cultural practices used in Alego-Usonga to treat COVID-19 virus as captured in the following narratives:

...I have a brother who uses them (rituals) to treat people. He uses spirits to treat so when a COVID-19 patient visits him, he lets you sit down, and begins to conduct some checking on you. So, while seated, he begins engaging the spirits then asks you questions and you answer while engaging the spirits. The spirits are what directs him how to use the traditional medicine and the specific her to use for your treatment. He has taught me how to collect the different types of herbs and the use of specific herb or herbs for various ailments.

-Male, 58-year-old smallholder farmer

In the olden days, amongst our great grandfathers, when someone died, they would be buried immediately. That would have come in handy with this COVID-19 issue. People like my grandfather would die and a shallow grave would be dug swiftly and he would be buried. One of his bulls would be slaughtered and its hide used to cover him then he would be buried. There would be no room for disease transmission. Neither would there be any room for reckless spending during those days. Later on, elders would sit together and imbibe on traditionally brewed liquor- there were homesteads which would brew-

and the elders would consume the beer there as they taught each other. Those forefathers never sought conventional medicine. They used traditional medicine which they would drink with the traditional liquor residue. They never went to the hospital and that is why some elders lived long. Even now there are some Luos who resist conventional medicine, even here in Masumbi, there are people who are only forced to go to hospital. That is how the elders prevented disease. To date, there are some elderly people who cannot eat food prepared with oil. They are boiled food with very little salt. Even my grandmother avoided fried foods. Those are some things which can prevent COVID-19.

- George Omondi, Herbalist

The above findings resonate with previous findings (Such as in Su & Jiang, 2020; Karataş *et al.*, 2021) which observed that communities exhibited resilience in the face of the COVID-19 pandemic by embracing traditional medical practices to varying degrees. In order to prevent or treat a variety of illnesses, including COVID-19, communities supported a combination of traditional healing practices, including herbal remedies, steam therapies, spiritual interventions, and traditional burial practices. Similarly, in the current study it was established that combination of herbal remedies and steam therapies were used by the people of Alego in the treatment of COVID-19 bringing to focus on the importance of traditional medicine in offering alternative healthcare.

In a study conducted in China during the peak of the COVID-19 epidemic, Ni *et al.* (2020) discovered that Chinese traditional medicine had the capacity to significantly reduce disease symptoms and alleviate illness. The authors agreed with research indicating traditional medicine's efficacy in treating COVID-19. The need for integration of traditional medicine into healthcare systems is thus supported by these findings by Ni *et al.* (2020). Traditional Chinese Medicine (TCM) has been successful in treating and preventing COVID-19, according to Zhao *et al.* (2021). The authors discovered that these therapies have improved the immune system, reduced the severity of the illness, and eased COVID-19 symptoms. According to Zhao *et al.* (2021), *qigong* exercises can help in respiratory function and lower their stress levels, while herbal formulas like *Lianhua Qingwen, Shufeng Jiedu*, and *Jinhua Qinggan* have antiviral and anti-inflammatory qualities that can help fight COVID-19. Khadka *et al.* (2021) discovered that 78% of Nepalese people treated COVID-19 with herbal remedies. They recommended clinical trials to confirm the effectiveness of these medications and to encourage the evidence-based integration of traditional medicine into the healthcare system.

In a study conducted in Nigeria, Attah *et al.* (2021) noted the therapeutic potential of several plant species and suggested clinical studies to develop an approved medication for COVID-19. According to Ang *et al.* (2020), traditional medicine showed great promise in reducing COVID-19 symptoms, improving the general health of COVID-19 patients, and strengthening the immune system. Therefore, by demonstrating that herbal medicine is a feasible treatment choice for COVID-19 patients, either as a primary treatment in addition to regular medical care or as a complementary therapy, this research dispels stereotypes on traditional medical professionals.

Previously, Carrie *et al.* (2015) assessed the attempts to incorporate traditional medicine into the biomedical health systems in Nicaragua and identified significant obstacles to integration. The authors identified a number of obstacles, including the lack of cooperation between biomedical and traditional health professionals. Additionally, the authors ascribed the biomedical practitioners' lack of cooperation to the stigma and discrimination experienced by traditional practitioners, who mistakenly believed that their cultural techniques were backward. The study also showed a deficiency in training about ethnomedical systems and how to properly integrate them into the national healthcare systems. In order to successfully integrate traditional medicine for comprehensive national healthcare, Carrie *et al.* (2015) came to the conclusion that it was critical to address those obstacles.

#### **Cultural Narratives Underpinning the Preference of Traditional Medicine**

Several beliefs of the people of Alego supporting the use of traditional medicine in COVID-19 treatment were identified. They included the notion that traditional medicine was superior to conventional medicine; the notion that COVID-19 was a minor flu; skepticism towards COVID-19; as well as affordability and accessibility of traditional medicine as narrated as follows:

The reason people may be inclined to use of traditional medicine is because cultural practices since time immemorial have promoted the use of luo traditional medicine. Whenever somebody fell ill or even had a stomachache the immediate intervention was to look for herbal remedies which were prompt and a more cost-effective response. This greatly promoted the use of traditional medicine even amidst COVID-19 pandemic.

- Female, 37 -year-old Smallholder farmer

...The belief that it is just a common flu can encourage people to use traditional remedies

-Male, 50 -year-old shop keeper

...there are those who fear going to the hospital. There are those who even believe that if they use Hospital drugs, the disease can even worsen. That while they may be of good health, the drugs administered at the hospital may only bring new illness. So, they prefer traditional medicine

- Female, 38 -year-old Smallholder farmers

One of the benefits is that it is accessible. Noting that people in Alego have limited sources income so instead of spending time and resource going to the hospital some people may just prefer to collect herbs

- Male, 28-year-old unemployed graduate

In view of the foregoing narratives, it can be deduced that preference of traditional medicine in Alego-Usonga was deeply rooted in culture with the views on potency, accessibility and cost-effectiveness of traditional medicine remaining prominent. Ola (2022) and Kumar & Singh (2023) corroborate this preference for traditional medicine, partly linking it to the lack of anultimate cure in conventional medical practice and other socio-cultural influence. Additionally, Kazyoba *et al.*, (2025) observed that fears of adverse effects of COVID-19 vaccine as well as conspiracy theories, also reinforced reliance on traditional remedies

Further, the view that COVID-19 was like a minor flu also motivated that use of traditional medicine that the residents were familiar to which were applicable in the treatment of illnesses like colds and coughs. This normalised the position that COVID-19 could be managed through alternative herbal remedies and therapies. Studies (such as Motsumi and Makhubele, 2023) established that there were similar views in South Africa, where residents applied remedies like ginger and honey which were renowned for treating cold symptoms. Further the authors observed that ease in accessibility of traditional medicine played a significant role their utilisation as residents found it easier to access them as compared to seeking treatment from the conventionally, particularly in resource-constrained areas. Bhuda and Khazamula (2022) also concurred with the position, observing that affordability and ease of access made traditional medicine a primary healthcare choice in underserved areas.

## **Traditional Medicine Versus COVID-19 Vaccine Access**

The current study established that despite the considerable inclination by the people of Alego towards the use of traditional medicine, there was still an appreciation of conventional medicine. Vaccine acceptance was considerably driven by the perceived health benefits and the need to protect oneself from COVID-19. There was sustained confidence in formal healthcare systems. Alego people continued to believe that the vaccine was helpful in preventing disease, and neither reports of side effects nor cultural viewpoints were likely to influence widespread resistance to the vaccine's efficacy, as summarized as follows:

...it (COVID-19 vaccine) protects an individual from contracting the virus and in the event that one contracts the virus the gravity of the disease may not be severe because of the boosted immunity and against the disease.

-Female, 48 -year-old CHV

...upon vaccination I never experienced any illness that I would have attributed to COVID-19. I felt my immunity was boosted and I did not experience any difficulty. I do not see any downside of COVID-19 vaccine because I had a good experience with vaccination and I believe that the community outreach programs were helpful. It is said that prevention is better than cure, so it were to be left without vaccination the population would be at risk. Many people would have died. That underscores the importance of the vaccine

-Female, 58-year-old homemaker

It (traditional medicine) can't prevent people from seeking vaccination services, the reason why it can't hinder community members is because many people don't know the traditional medicine in-depth. For example, if it's known that malaria is treated in the hospital then you need to go to the hospital. So, after being told how to manage COVID-19, when someone visits the hospital and gets tested for COVID-19 and it turns positive, they start by vaccinating the person implying that it's a good decision that a person takes to go to the hospital and it equally serves the same purpose when someone decides to use traditional medicine. There is no way there is a competition as traditional medicine is not interfering with hospital medication.

- Male, 70-year-old smallholder farmer

International Journal of Latest Research in Humanities and Social Science (IJLRHSS) Volume 08 - Issue 08, 2025 www.ijlrhss.com || PP. 82-88

In view of the foregoing narratives, it corroborated that cultural preference for traditional medicine did not affect people's trust in the efficiency of vaccines. Lan and Jin (2024), also observed that community members did not show vaccine hesitation despite having offered traditional treatment. In a similar vein, participants in the current study thought COVID-19 was successful, underscoring the lack of connection between traditional medicine andnarratives opposing COVID-19 vaccination programs. In Tanzania, Kazyoba *et al.* (2025) observed that while there was a significant dependence on traditional medicine during the peak of the COVID-19 epidemic, hospitals continued to play a vital role in providing health services The authors also pointed out those medical facilities had integrated traditional treatments like steam inhalation, underscoring the significance of integration in preserving public confidence in the healthcare system. The results of the current study, which showed that despite the prevalence of traditional medicine in Alego, faith in formal healthcare organizations had been maintained, are consistent with those of Kazyoba *et al.* (2025).

Additionally, the current study demonstrated that while certain adverse effects, including headache, nausea, dizziness, fatigue, and arm pain, were noted, they were all transient and controllable:

The downside of vaccination is that because people are different, it may react negatively with one's body as was the case when I was vaccinated thus if can cause some fear promote the belief that vaccination leads to illness

-Female, 48-year-old CHV

...some people say that after getting vaccinated, they have been sick for close to a month without any health effect, some people are saying this...the vaccine need to be advanced to prevent sickness to be safer.

-Male, 58-year-old smallholder farmer

I don't see anything wrong with it as I didn't get any side effects after getting the vaccination. On its advantages I can't talk of any as wherever I go no one has ever asked me anything about the vaccine, of which I could have doubted myself that if I was not vaccinated, I could have gone to inquire about the vaccination. As Mary talking about COVID-19, it's a disease that I have not contracted. Thus, I know that the vaccine prevented the disease as we know that prevention is better than cure

Female, 40-year-old Salonist

The only limitation is the pain or discomfort experienced after the vaccination akin to a malaria patient
-Male, 36-year jua kali artisan

According to Hidayana *et al.* (2022), despite the limited worries about the side effects, locals were willing to get the COVID-19 vaccine. The Health Belief Model, which was used to illustrate the data, suggested that perceived advantages had a major role in vaccine acceptance. Despite some worries about vaccine adverse effects, there was still faith in formal healthcare systems

Therefore, there were still narratives in support of COVID-19 vaccination and a correct understanding of the efficacy and safety of vaccines, even though traditional treatments and therapies were helpful in managing COVID-19. This makes a compelling case for the use of traditional medicine in COVID-19 treatment as a workable strategy to advance all-encompassing healthcare that takes into account the distinct social dynamics of the Alego community and is sensitive to cultural differences.

#### Conclusion

The foregoing discussion provides balanced analysis of the current evidence on the use of traditional medicine COVID-19. Traditional medicine shows potential benefits in treating COVID-19, including alleviating symptoms, improving immune response, and reducing the risk of severe illness. Traditional Medicine emphasizes holistic and individualized treatment approaches. Various traditional regimens have potential applications in managing different stages of COVID-19. Integration of traditional medicine and convention medicine in COVID-19 treatment may have synergistic effects. It is therefore important to appreciate the importance of integration of traditional medicine in healthcare systems focusing on safe and effective use supported by research.

## Recommendations

There is need for integration of ethno-medicine into public healthcare system by incorporating traditional remedies and therapies to promote a holistic healthcare system. There is need to review health policy framework to facilitate integration, recognizing and regulating ethno-medicine and ensuring quality and safety standards

International Journal of Latest Research in Humanities and Social Science (IJLRHSS) Volume 08 - Issue 08, 2025 www.ijlrhss.com  $\parallel$  PP. 82-88

through collaborate with traditional healers and practitioners. Upon validation and authentication for safety and effectiveness, hospitals may use traditional remedies as part of COVID-19 treatment while at the same time leverage culture in developing appropriate messaging during public health initiates such as COVID-19 vaccination programs. Further, efforts such as documentation, institutional support, and collaboration with traditional practitioners can help preserve knowledge of traditional medicine. It is possible for cultural centers, Institutes or other relevant organizations to document and support traditional health practices as well. There is needs for preservation of ethno-medical knowledge through grassroot documentation initiatives by Community-based organizations

#### Reference

- [1]. Agyei, S., & Osei-Tutu, E. (2021). Integrating traditional medicine into the management of COVID-19: Perspectives from Ghana. *Journal of Ethnopharmacology*, 275, 114130. https://doi.org/10.1016/j.jep.2021.11413
- [2]. Ang, L., Song, E., Lee, H. W., & Lee, M. S. (2020). Herbal medicine for the treatment of coronavirus disease 2019 (COVID-19): a systematic review and meta-analysis of randomized controlled trials. Journal of Clinical Medicine, 9(5), 1583
- [3]. Attah, A. F., Fagbemi, A. A., Olubiyi, O., Dada-Adegbola, H., Oluwadotun, A., Elujoba, A., & Babalola, C. P. (2021). Therapeutic potentials of antiviral plants used in traditional african medicine with COVID-19 in focus: a Nigerian perspective. Frontiers in pharmacology, 12, 596855.
- [4]. Bhuda, N., & Khazamula, M. (2022). Coping with COVID-19 using traditional medicine: Perspectives from Joe Morolong, Northern Cape. South African Journal of Indigenous Knowledge Systems, 21(1), 45–60.
- [5]. Carrie, H., Mackey, T. K., & Laird, S. N. (2015). Integrating traditional indigenous medicine and western biomedicine into health systems: a review of Nicaraguan health policies and miskitu health services. *International journal for equity in health*, 14, 1-7.
- [6]. Chorev, N., &Mutwafy, S. (2023). Innovation contests, vaccine diplomacy, and health nationalism: The case of Kenya. *Sociology of Development*. Retrieved from *Sociology of Development* website.
- [7]. Hidayana, Z., Sari, D. M., & Suryani, E. (2022). Using a health belief model to assess COVID-19 vaccine intention and hesitancy in Jakarta, Indonesia. *BMC Public Health*, 22(1), 1–10.
- [8]. Janzen, J. M. (2021). The social fabric of health: Ethnomedical narratives and community perspectives on illness and healing. In J. R. M. Ward (Ed.), Anthropology of health and illness (pp. 123–144). Routledge.
- [9]. Kamanyi, E., Shagembe, M., Sambaiga, R., Onuekwe, C. E., Haonga, T., Kessy, A. T., &Mwengee, W. M. (2025). Sociocultural practices and COVID-19 prevention: A qualitative study of Mtwara, Shinyanga, and Arusha, Tanzania. *Journal of Public Health in Africa*, 16(3), Article a713. https://doi.org/10.4102/jphia.v16i3.713
- [10]. Karataş, Y., Khan, Z., Bilen, Ç., Boz, A., Özagil, E. S. G., Abussuutoğlu, A. B., & Rahman, H. (2021). Traditional and complementary medicine use and beliefs during COVID-19 outbreak: a cross-sectional survey among the general population in Turkey. Advances in Integrative Medicine, 8(4), 261-266.
- [11]. Kazyoba, P. E., Onuekwe, C. E., Makulilo, A., Haonga, T., Mwengee, W., &Saguti, G. (2025). Lessons and challenges of practice of traditional medicines as an alternative for COVID-19 vaccine in Tanzania. *Journal of Public Health in Africa*, 16(3), a708.
- [12]. Khadka, D., Dhamala, M. K., Li, F., Aryal, P. C., Magar, P. R., Bhatta, S., ... & Shi, S. (2021). The use of medicinal plants to prevent COVID-19 in Nepal. Journal of ethnobiology and ethnomedicine, 17, 1-17.
- [13]. Kumar, S., & Singh, R. (2023). Perspective toward complementary & alternative medicines in the prevention of COVID-19 infection. *Indian Journal of Community Medicine*, 48(3), 123–128.
- [14]. Lampiao, F., Chisaka, N., & Clements, A. (2019). Communication between traditional medical practitioners and Western medical professionals. *African Journal of Primary Health Care & Family Medicine*, 11(1), a2042. https://doi.org/10.4102/phcfm.v11i1.2042
- [15]. Lan, X., & Jin, X. (2024). Heritage and hesitancy: How preference for traditional Chinese medicine influences vaccine attitudes. *BMC Public Health*, 24(1), 1–9.
- [16]. Mfinanga, D. (2021). Contested or complementary healing paradigms? Women's narratives of COVID-19 remedies in Mwanza, Tanzania. *Journal of Ethnobiology and Ethnomedicine*, 17(57). https://doi.org/10.1186/s13002-021-00457-w
- [17]. Ministry of Health (MOH). (2020). *Kenya COVID-19 risk communication and community engagement strategy*. Retrieved from https://www.health.go.ke/wp-content/uploads/2020/11/Kenya-COVID-19-Risk-Communication-Community-Engagement-Strategy.pdf

International Journal of Latest Research in Humanities and Social Science (IJLRHSS) Volume 08 - Issue 08, 2025 www.ijlrhss.com || PP. 82-88

- [18]. Motsumi, M., & Makhubele, J. (2023). Coping with COVID-19 using traditional medicine: Perspectives from Joe Morolong, Northern Cape. *Health SA Gesondheid*, 28, 1–10.
- [19]. Mshana, G., Mchome, Z., Aloyce, D., Peter, E., Kapiga, S., & Stöckl, H. (2021). Contested or complementary healing paradigms? Women's narratives of COVID-19 remedies in Mwanza, Tanzania. *Journal of Ethnobiology and Ethnomedicine*, 17(1), 30.
- [20]. Msuya, S. E., Manongi, R. N., Jonas, N., Mtei, M., Amour, C., Mgongo, M. B., Bilakwate, J. S., Amour, M., Kalolo, A., Kapologwe, N., Kengia, J., Tinuga, F., Ngalesoni, F., Bakari, A. H., Kirakoya, F. B., Araya, A., & Mboya, I. B. (2023). COVID-19 vaccine uptake and associated factors in sub-Saharan Africa: Evidence from a community-based survey in Tanzania. *Vaccines*, 11(2), 465.
- [21]. Obadare, E. (2022, March 18). *The spiritual dimension of COVID-19 in Africa*. Think Global Health. https://www.thinkglobalhealth.org/article/spiritual-dimension-covid-19-africa
- [22]. Ogunyemi, D., & Ogunyemi, O. (2021). The role of spirituality and religious coping in mental health during the COVID-19 pandemic in Nigeria. *Journal of Religion and Health*, 60(6), 4073–4085. https://doi.org/10.1007/s10943-021-01351-0
- [23]. Ola, K. (2022). Role of traditional knowledge in the COVID-19 battle. *The Journal of World Intellectual Property*, 25(2), 279-291
- [24]. Orangi, S., Pinchoff, J., Mwanga, D., Abuya, T., Hamaluba, M., Warimwe, G., Austrian, K., & Barasa, E. (2021). Assessing the level and determinants of COVID-19 vaccine confidence in Kenya. *Vaccines*, 9(8), 936.
- [25]. Osebe, V., &Gachohi, J. (2020). Coronavirus disease (COVID-19) and Africa: Acclaimed home remedies. *IFAC-Papers OnLine*, 53(11), 11815–11820. https://doi.org/10.1016/j.ifacol.2020.10.004
- [26]. Ni, L., Chen, L., Huang, X., Han, C., Xu, J., Zhang, H., ... & Chen, H. (2020). Combating COVID-19 with integrated traditional Chinese and Western medicine in China. Acta Pharmaceutica Sinica B, 10(7), 1149-1162
- [27]. Nyemba, S., & Mudzingwa, T. (2021). The role of Zionist churches in spiritual healing and COVID-19 prevention in Zimbabwe. *African Journal of Traditional, Complementary and Alternative Medicines*, 18(3), 45–53. https://doi.org/10.4314/ajtcam.v18i3.6
- [28]. Su, S., Wang, Q., & Jiang, S. (2021). Facing the challenge of viral mutations in the age of pandemic: Developing highly potent, broad-spectrum, and safe COVID-19 vaccines and therapeutics. *Clinical and Translational Medicine*, 11(1), e284.
- [29]. Yao, X., Xu, Z., Škare, M., & Wang, X. (2024). Aftermath on COVID-19 technological and socioeconomic changes: A meta-analytic review. Technological Forecasting and Social Change, 202, 123322. https://doi.org/10.1016/j.techfore.2024.123322
- [30]. Zhao, Z., Li, Y., Zhou, L., Zhou, X., Xie, B., Zhang, W., & Sun, J. (2021). Prevention and treatment of COVID-19 using Traditional Chinese Medicine: A review. Phytomedicine, 85, 153308.