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Validation of Perception of Some Nigerians on the Origin and Use of Phyto-remedies in Management of Covid 19; An Overview of Social Media Respondents

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Abstract: *In 2019, a novel respiratory tract disease causing microorganism, SARS-COV 2 was reported with origin traced to some species of bat in Wuhan-China. The first case of this disease was reported in Nigeria on the 27th of February 2020. A lot of speculations were posted on social media on the origin, management and existence of COVID 19. This study is designed to assess the perception of some Nigerians on COVID 19 and to validate the claim on the use of some plants formulation for the treatment of this disease. An online view of the perception and speculation of some Nigerians were obtained from the surveymonkey URL https://www.surveymonkey.com/r/7T9KNSB. 10 structured questions were designed and administered to respondent with the aim of drawing information on the origin of COVID 19, public perception on the management of COVID 19 with phytomedicines and prevention approach against COVID 19. The validation of the origin of SARS-COV 2 virus and its management was sustained by available literature. This study reveals that little or no knowledge on the origin of SARS-COV 2 was demonstrated by the respondents. The claim management approach of the COVID 19 did not correspond with the existing literature relating the activities of the plants phytochemical constituents on various viral species.*

Key Words: *COVID 19, Phytochemicals, SARS-COV 2, MERS-CoV*

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1.0 Introduction

The outbreak of a novel human coronavirus which has devastating effect was identified in 2019 (Peng, *et, al*, 2020, She, *et, al*, 2020). This new disease caused by SARS-COV 2, is responsible for great global health challenges. Nigeria reported first case on the 27th of February 2020, after an Italian business man returnee was tested positive for the virus (NCDC, 2020). The manner and way of approach by international and local health governing bodies (WHO, Country's ministry of health) toward preventing the spread of COVID 19 has warranted a lot of speculations by people all over the world on the origin, and management of this disease (Ohia, *et, al*, 2020). The most documented origin of COVID 19 is related to the large population of infected people who have history traced to exposure to animal's meat market in Wuhan city of China (She, *et, al*, 2020). It was speculated that this disease could possibly be a zoonotic (Hussin and Siddappa, 2020). One can contact the virus through interaction with the person who has it already, or coming in contact with the droplet of an infected person (Zou, *et al*, 2020). There is no globally acceptable treatment approach for COVID 19, however, management of symptoms exhibited by people infected with the virus have been successful by some antimicrobial in combination with some antiviral drugs (Rabby, 2020). There have been several speculations trending in the social media on the use of some plant's formulation in treatment of COVID 19. This study is designed to assess the perception of some Nigerians on COVID 19 and to validate the claim on the use of some formulations from plants source.

Coronavirus is responsible for many respiratory tract infections ranging from the common cold to severe acute respiratory syndrome (SARS) (Lai, *et, al*, 2020). Notable epidemic emerges in 2002 claiming over 750 lives credited to SARS and another in 2012 which was linked to Middle East respiratory syndrome coronavirus, MERS-CoV (Liu, *et, al*, 2020, Gao, *et, al*, 2020). In 2019, the current corona virus disease known as Covid 19 was reported in Wuhan city in China and extended to

several countries of the world recording high infection and mortality rate (Luo, *et, al*, 2020, She, *et, al*, 2020). On January 30, 2020, the World Health Organization (WHO) declared COVID-19 as a public health emergency of international concern (WHO, 2020).

COVID-19 is transmitted through contact with droplet, oral mucous or having physical contact with an infected person (WHO, 2020). The incubation period of the virus is 2-14 days (Stephen *et, al*, 2020), with no established drugs or vaccine for for its treatment (Rabby, 2020). In Nigeria and other African countries, lockdown, social distancing, hygiene and isolation of the suspected persons are the steps adopted for prevention of COVID 19 (Nigeria PTF on COVID 19, 2020).

In many cases, poor palliative distribution to vulnerable and poor citizens in Nigeria has generated misconceptions and arguments between the government and the public during the lockdown period. There were several disputes by the Nigerians who believed initially that COVID 19 is a disease for the rich people, others believed that it was politically motivated. The state of health of asymptomatic carriers of the COVID 19 has also sparked doubt among people in the isolation centers and this became a trending news captured by the media. These factors among others led to the rapid spread of infection and subsequent extended community transmission.

The perception of people on COVID 19 can be affected by knowledge shared on the media and their belief concerning the government of the day (Cori, *et, al*, 2020). However, the level of knowledge and perceptions of Nigerians toward the origin and management of COVID-19 is x-rayed in this work. Validation of the claims by some Nigerians with respect to the origin and therapeutic approach of COVID 19 was also investigated. To achieve this, online survey was distributed through the social media across the country with the hope of analyzing their opinion regarding COVID 19.

2.0 Materials and Method

2.1 Survey instrument and dissemination

A SurveyMonkey was sent to ten selected social online groups one on the authors contact while 9 off the author contact zone. The survey instrument was allow to run for 3 weeks (3rd to 24th May, 2020) and there was no specific demography of interest rather it was the opinion of people using social media that was targeted. A 10 item survey instrument was developed using NCDC materials National Strategy to scale up access to coronavirus disease testing in Nigeria (NCDC, 2020). The survey was intended to target the respondent's knowledge and perceptions related to origin and managements of COVID-19. The developed survey instrument was made available through a link and was distributed to 60 evenly distributed in the six geopolitical zones in Nigeria (including federal capital territory). The primary respondents also generated secondary respondents and thus the sample size was increased. Furthermore, Extent of clarity, relevance, acceptability, and time required to answer the survey were evaluated earlier by 10 participants who were not included in the research. Observations were taken into consideration and corrections were effected where necessary to enhance better understanding and to reorganized the questions before the survey was finally sent to the respondents via URL link https://www.surveymonkey.com/r/7T9KNSB https://www.surveymonkey.com/results/.SM-JFXTCT6N7/#

2.2 Content of the survey instrument

The survey instrument consisted of 9 multiple choice option with one open-ended question. The 10 items was categorized into knowledge on the origin of COVID 19 (1 item), perception of the management of COVID 19 with phytomedicines (6 items) and prevention approach against SARS-COV 2 virus (3 items).

The validation of the origin of COV 2 virus will be provide base on the available literature reviewed in this work. On the other hand, the validation of the perception of the respondent toward the managements of the COVID 19 will be subjected to information from literature on the phytochemical study of plants.

3.0 Results and Discussion

321 whatsApp users were targeted, 100 participants completed the questionnaire within time frame. The group participants consisted of those in academic environments, community, youth and religious affiliations. Each of these groups had their perception on the origin and management of COVID 19 diseases.

Table 1 shows that 75 % (n= 75) of the respondents accepted that COVID 19 was produced from the laboratory, while 7 % believed it was from bush meat market, 5 % agreed that it was originated from bats and 12 % had no knowledge of the origin of the disease.

On the cure for COVID 19 (Table 2), 64% of respondents believe there is cure for COVID 19 while, 11 % agreed that there is no cure for the disease. However, 21 % were not sure that COVID 19 has a cure. From, Table 3, it is seen that 47 % of the population affirmed that COVID 19 can be cured with herbal remedies, 28 % claim ignorant of the cure for the disease. Surprisingly, those who believe that hydroxychloroquine and Remdesivir can provide cure for the disease constitute insignificant population of the respondents, that is, 7 and 4 % respectively. 10 % of the respondent have different opinion from what was provided in the questionnaire options. Their imputes revealed that COVID 19 can be cured by certain antibiotic and vitamins, combination of orthodox and herbal. Other suggested that vaccines and management of symptoms are the only option that can be employed to manage COVID 19. Some of the respondents who believed that herbal remedy can cure COVID 19 selected Tumeric, Ginger and Lemon as the main plant remedies for the treatment of the disease, this is also presented in Table 4. Other respondent opinion suggested that eating Garlic or Ginger only can do the magic. "On others" option, the respondent indicated that combination of Garlic, ginger and lemon can cure COVID 19, some opted for Camphor, Awolowo grass (*Chromolaena odorata*) or siame weed, morringa (*moringa oleifera*) seed, banana (*Musa acuminata*) inner stalk, Lemon grass (*Cymbopogon citratus*) and Black seed (*nigella sativa*). In Table 5, respondent believed that the spread of the disease can be prevented through; good body hygiene and using hand spray or sanitizer (40 and 39 % respectively). Insignificant number of the respondents accepted that dropping of normal saline in the nose and mouth can prevent the spread of the virus. Those who had different opinion suggested that frequent use of face mask, physical distancing, cough hygiene, environmental hygiene, herbal prophylaxis, good nutrition, total lockdown and increase in herd immunity can reduce the spread of the virus visa-vis COVID 19.

Perception of respondent on availability of herbs with possible cure for COVI 19 is reported in Table 6. 53 % of the respondent claimed that these herbs are readily available in their vicinity, while 24 % claimed not available at all. 11 % confirmed that these plants were available before the COVID 19 pandemic but got depleted during the pandemic, whereas 7 % have confirmed their availability in the neighboring communities. Aside herbal remedy, only 9 % of the respondents claimed that they know other substances such as Azithromycine, ascorbic acid (vitamin C), loratidine and other activities which can build the body immune system. These substances were recommended by 9 % of the respondent as other substances which can cure CoVid 19. In Table 7, 45% of the respondents believe there is no other substances that can cure COVID apart from the ones provided above while 27 % of the respondents were extremely confident that boosting of immune system is a natural way of protecting one from contracting the disease, 43 % are very confident while 14 % are somewhat confident (Table 8).

Table 9 is the report of the respondent on immune boosting against COVID 19. 64 % of the respondents agreed that consumption of common fruits such as orange, pineapple and apple can boost human immune system. Morringa and garlic were also believed to have the ability to build human immune system as agreed by 12 and 11 % respectively of the respondents. "Others option" as reported by 11 % of the respondent agreed that the use of black seed, vegetables, lemon, multivitamins, consumption of natural food and daily exercise can also boost the immune system.

Table 1: Perception of Respondents on the Origin of Covid 19

Choice Source	% Respondents
Laboratory	74 %
Bush meat market	7 %
From Bats	5 %
I don't know	12 %
It doesn't matter	1 %
(others)	1 %

Table 2: Perception of Respondents on the Availability of Cure for Covid 19

Choice answer	%Respondent

Yes	64.00%
No	11.00%
Not sure	21.00%
No idea	4.00%
I don't care	0.00%

Table 3: Perception of Respondents on what the Cure for Covid 19 is

Choice Cure	% Respondents
Hydroxy chloroquine	7.00 %
Remdesivir	4.00%
Herbal remedy	47.00%
Daily exercises	4.00%
I don't know	28.00%
Other (please specify)	10.00%

Table 4: Perception of Respondents on Herbal Remedy as Cure for Covid 19

Choice Cure	% Respondents
Garlic, moringa leaves and bitter cola	15.00%
Tumeric, ginger and lemon	40.00%
Galic only	4.00%
Ginger only	2.00%
Not sure	37.00%
Tumeric only	3.00%
Other (please specify)	12.00%

Table 5: Perception of Respondents on Approach for prevention of Covid 19 Spread

Choice answer	% Respondents
Dropping Normal Saline into the nostrils	2.00%
Constant use of hand spray or sanitizer	39.00%
Washing of clothes frequently	0.00%
Good body hygiene	40.00%
Not sure	7.00%
Other (please specify)	12.00%

Table 6: Perception of Respondents on Availability of Herbs for Treatment of Covid 19

Choice answer	% Respondents
Readily available	53.00%
Not available	24.00%
Available before the pandemic	11.00%
Available in another community near to me	7.00%
Other (please specify)	5.00%

Table 7: Perception of Respondents on other substances that can be used to treat CoVid

Choice Answer	% Respondents
Yes	9.00%
No	45.00%
Not sure	34.00%
Many substance	3.00%
(no label)	0.00%
Other (please specify)	9.00%

Table 8: Perception of Respondents on immune boosting as natural way of protecting one from contracting the Covid 19

Choice Answer	% Respondents
Extremely confident	27.00%
Very confident	43.00%
Somewhat confident	14.00%
Not so confident	11.00%
Not confident at all	5.00%
Other (please specify)	0.00%

Table 9: Perception of Respondent on what could boost immune system

Choice Answer	% Respondents
Oranges, Apple, water melon etc	64.00%
Moringa	12.00%
Garlic	11.00%
Ginger	2.00%
Raw egg	0.00%
Other (please specify)	11.00%

At the end, respondents dropped their views on speculations that herbs can cure COVID 19. Some claimed that herbs can cure any type of disease at the same time based on the fact that most drugs are produced from herbs. Other respondents fall back to historic claim on the effect of herbs on flu, malaria and hepatitis diseases. Respondents who sounded professional, believed that, because of the presence of zinc in ginger, viral replications can be inhibited. Turmeric on the

other hand is an anti-inflammatory agent therefore, it can be administered to stops inflammation. Garlic is anticoagulant or blood thinner as such can prevent the coagulation of blood (blood cloth) which result from COVID 19 complication, aside being used to treat respiratory tract infections. Some categories of the respondents claimed they were convinced on the social media that herbs have been used in other countries to treat COVID 19.

Genomic analysis revealed that SARS-COV-2 is phylogenetically related to severe acute respiratory syndrome-like (SARS-like) bat viruses. Therefore, bats could be the possible primary reservoir (Muhammad, 2020). Viruses related to the novel human β-coronavirus EMC/2012 were detected in Nycteris and Pipistrellus bats. Their genetic relatedness indicated EMC/2012 originated from bats (Augustina, *et, al*, 2013), and also proffers that bats are the key host and transmitting medium of the virus. In all the literatures and other evidences available, none pointed to COVID 19 originating from laboratory. Similar perception was agitated on the source of HIV virus with many still claiming is a product of scientific manipulations. This study shows that the speculations on social media is that COVID 19 ~~is~~ originated from laboratory is not ascertain in this study. However, since bats are not the major source of meat for humans, it is necessary to identify intermediate zoonotic source which is responsible for the virus transmission to human.

Contrary to the respondent's perception, COVID 19 has no cure neither has vaccine been discovered at the moment. Study is underway to finding drugs that could provide cure for the virus. The available approach for the management of critically ill COVID 19 includes; oxygenation, ventilation, and fluid management (Liu, *et, al*, 2020). COVID 19 infected patients are given supportive care which will reduce the symptoms. Others are, combination therapy of low-dose systematic corticosteroids and anti-virals and atomization inhalation of interferon (Liu, *et, al*, 2020). Study of handsome number of antiviral agents, body immune building agents, and vaccines are underway. This also shows how ignorant is the respondent whose large population (64 %) claimed that there is cure for the novel corona virus disease.

During the SARS-COV epidemic, traditional chines medicine gained wider acceptability has for the treatment of the disease in some part of China. However, some degree of selection is eminent indicating that the use of general herbal remedy in the management of COVID 19 may not present curative results as expected because even within the ambient of the Chinese herbs and its wide spread relieve, good number of dead were still linked to the COVID 19 infection (Luo, *et, al*, 2020). Therefore, herbal remedies may have some provision for alleviating some signs and danger associated with COVID 19 but researches is ongoing. In view of the above, it is evident that 47% of the respondents do not have sufficient knowledge on the use of herbal formulations to treat COVID 19 patients. However, few numbers of the respondents agreed that Remdesvir is the most effective drug for treatment of COVID 19. It is pertinent to know that there is no standard regime drugs for management of this disease yet. On the other hand, remdesivir, a popular antiviral drug has acquired emergency use authorization (EUA) from the Food and Drugs Administration (FDA), it was shown to have yielded faster recovery time by patients on admission in the hospital (David, 2020). Currently, remdesivir has been subjected to clinical trials in some institutions in China. This drug has been in use for prevention of MERS-COV (Lai, *et, al*, 2020). Hydroxy chloroquine and chloroquine phosphate, have shown promising efficacy in inhibiting the exacerbation of pneumonia because of its dual activities as both anti-viral and anti-inflammatory agent (Gao, *et, al*, 2020).

Studies conducted in China reveal that during the SARS-COV outbreak, some plants were investigated for possible curative properties against COVID 19. The investigated plants included *Astragali Radix (Huangqi), Glycyrrhizae Radix Et Rhizoma (Gancao), Saposhnikoviae Radix (Fangfeng), Atractylodis Macrocephalae Rhizoma (Baizhu*), and *Lonicerae Japonicae Flo* (Luo, *et, al*, 2020). There is no literature which shows the efficacies of garlic (*Allium sativum*), turmeric (*Curcuma longa*), lemon (*Citrus limon*), ginger (*Zingiber officinale*) and morringa (*morringa oleifera*) on any of the diseases cause by the corona virus family as claimed by the respondents. However, what provide evidence for curative

properties of plant extract against COVID 19 or any other diseases is the phytochemical constituents of the plant. Therefore, phytochemical constituents of speculating plants extract (garlic (*Allium sativum*), turmeric (*Curcuma longa*), lemon (*Citrus limon*), ginger (*Zingiber officinale*) and morringa (*morringa oleifera*)) are hereby review in order to provide baseline information for future research.

4 % of the respondents claimed that garlic, in combination with other herbs can cure COVID 19 led to the examination of its phytochemical constituents as follows. Garlic (*Allium sativum* L.) is one of the commonent spices in Nigeria, whose biological active molecules have been extensively evaluated to include allicin, alliin, diallyl sulfide, diallyl disulfide, diallyl trisulfide, ajoene, and S-allyl-cysteine (Ao, *et, al*, 2019). Several researches have indicated that the bioactive components in garlic are responsible for therapeutic use of this herbs as, antioxidant, anti-inflammatory, antibacterial, antifungal, immunomodulatory, cardiovascular protective, anticancer, hepatoprotective, digestive system protective, anti-diabetic, anti-obesity, neuroprotective, and renal protective properties (Ao, *et, al*, 2019). In spite of the numerous therapeutic activities of garlic, there is no recent evident that qualifies its fot used in treating COVID 19 patients.

Tumeric

Turmeric (*Curcuma longa*) is widely used in food industry as spice, preservative and colouring of food and beverages. Pharmaceutical industries also utilize turmeric for production of various products. Several research works showed that the rhizome has some potentials as anti-inflammatory, anti-retroviral, anti-bacterial, antioxidant, anti-nematocidal, antiparasitic, antispasmodic and anticarcinogenic. Chemical composition of various parts of turmeric (*Curcuma longa L*.) have been reported by Li, *et, al*. (2011) to be dominated by phenolic and terpenoids as the primary compounds. The major terpenoids are diarylheptanoids and diarylpentanoids, while phenylpropene is the main phenolic compound. Other compounds present in small quantities includes; monoterpenes, sesquiterpenes, diterpenes, triterpenoids, sterols, alkaloids, which contribute to the bioactivities of the turmeric. Pure curcumin has more potent superoxide anion scavenging activity than demethoxycurcumin or bisdemethoxycurcumin. Curcumin acts as a pro-oxidant in the presence of transition metal ions (Cu and Fe) and is a potent bio-protectant with a potentially wide range of therapeutic applications (Abhishek and Dhan, 2008). From the above review, there is no existing evidence that approves the application of turmeric in the management of disease cause by corona virus family, although there are some promising content of the plant that is currently undergoing researches on possible anti-HIV activity.

Moringa Oleifera

Moringa Oleifera is a plant majorly cultivated in Africa and some part of Asia. Several studies reported its medicinal properties resulting from the activities of diver's bioactive constituents of the plants. *Moringa Oleifera* contains vitamins, phenolic acids, flavonoids, isothiocyanates, tannins and saponins as the major chemical constituents of the plant. The leaves of *moringa Oleifera* are the most studied part of the plants and has proven efficacies in managing several life-threatening diseases such as hypercholesterolemia, high blood pressure, diabetes, insulin resistance, non-alcoholic liver disease, cancer and inflammation. (Vergara-Jimenez, *et, al*, 2017). With all the medicinal efficacies attributed to *moringa oleifera*, there was no substantial evidence that can support its anti-corona virus activity. However, this call for further studies as the plant shows more potential constituents with numerous health benefits. From the work review, it appears that the bioactive constituents of *moringa oleifera* are good in challenges associated with metabolic disorder and seldom infectious disease. Therefore, the speculations by the respondents (15 %) that this plant can be used in managing COVID 19 is not valid.

Ginger

Ginger is widely used as spice and contains adequate bioactive compounds with promising antimicrobial activities. Available studies have revealed the use of ginger as anti-carcinogenic, anti-diabetic, arthritis, stomach upset, asthma, diabetes, menstrual irregularities and anti-tumor (Mele, 2019, Singletary, 2010). Additional report shows that ginger has tendency to alleviate the feelings to vomit during pregnancy, surgery, cancer therapy, or motion sickness. However, it is not known whether

ginger can be channel to tackle diseases cause by corona virus family or current COVID 19 disease. This suggest that the claimed by the respondents (2 %) is not true.

Lemon

Lemon belongs to the most important plant citrus, it ranks third most important in that family. Lemon is sometimes recommended by nutritionist because of its ability to promote health. It contains some bioactive components such as phenolic compounds as well as vitamins, Flavonoids, acids, caffeine, pectin, minerals, dietary fiber, essential oils (limonene, citral, limonene, terpineol, geranyl acetate, linalyl) and carotenoids (Molina, *et, al*, 2020). Tamara, *et, al*, 2018, reported the medicinal activities of lemon being, anti-microbial, antifungal, anti-inflammatory, anti-cancer, depurative and antiscorbutic. Another report claims that lemon has the ability to Prevent kidney stones, Bring down a fever and Balance pH (Chaturvedi, *et, al*, 2016). Going by the review work shown so far, it has become clear that lemon does not have the ability to treat Covid 19 as claimed by 40 % of the respondents.

4.0 Conclusion

From the result and findings of this study, it can be concluded that the speculation circulating in social media has no scientific basis and that the only document available as reviewed reveals is that COVID 19 is zoonotic, meaning it was transmitted from animals to humans. Contrary to the belief that COVID 19 originated from laboratory research, respondent perception on the cure for the virus is in line with what was contained in several therapeutic journals. It became worrisome when the respondent believed that COVID 19 can be manage by concocted solution of garlic, lemon, ginger and other plants remedy without providing the sources of these claim. The review in this study shows that these plants has never been use for the treatment of known viral infection.

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