Psychol Stud (July–September 2021) 66(3):259–269
https://doi.org/10.1007/s12646-021-00607-w

RESEARCH IN PROGRESS

African Perspective of Social Distancing in Pandemics: Adoption Challenges

Benjamin Osayawe Ehigie [1] · Rebecca Ibhaguelo Ehigie[2] · Adeniyi Muyiwa Sholarin[3] · Olowookere Elizabeth[3] · Benedict Agoha[3]

Received: 20 August 2020 / Accepted: 1 June 2021 / Published online: 5 October 2021

Abstract In public health, social distancing is a set of non-pharmaceutical interventions or measures intended to prevent the spread of a contagious disease, by maintaining a physical distance between people. During the COVID-19 pandemic, the World Health Organization suggested the term, 'physical distancing,' as opposed to 'social distancing', arguing that it is a physical distance which prevents transmission; people can remain socially connected via technology. This paper discusses the concepts of social distance, social distancing, physical distancing, self-quarantine, self-isolation, symptomatic, asymptomatic and parasymptomatic cases as they relate to COVID-19 and African perception of pandemic diseases. Although the idea of social distancing is not novel to the Africans, but a challenge in its implementation is that historically, social distancing is rather applied to non-infectious cases like mental illness, epilepsy, infertility, aging, victims of sexual violence and the like. The paper utilizes health-related theories and pertinent empirical findings to explain African perspective of social distancing and the challenges of adoption in pandemic situations. The theories on health risk perception reviewed include the protection motivation theory, the health belief model, the extended parallel process model and the precaution adoption process model. From consumer psychology background on product adoption, a conceptual model for 'social distancing' adoption in pandemics was advanced. These ancient and novel health-related theories and models were applied to explain the erroneous understanding, perception and adoption challenges of social distancing in Africa, leading to possible increase in the spread of the coronavirus.

Keywords Social distancing · COVID-19 pandemic · Adoption · Vulnerability · Africa

Introduction

Social distancing evolved in the Public Health profession, as a set of non-pharmaceutical interventions or measures devised to prevent the spread of a contagious disease, like the coronavirus, by maintaining a physical distance between people and reducing the number of times people come into close contact with each other (Johnson et al., 2020). It includes the avoidance of gathering together in large groups (Centers for Disease Control and Prevention, CDCP, 2020). During the COVID-19 pandemic, the World Health Organization (WHO, 18 March, 2020) preferred physical distancing to social distancing, arguing that it is physical distance that prevents transmission.

The preference for physical distancing is based on the idea that people can remain socially connected via technology, while maintaining physical distancing (Tangermann, 2020). By reducing the possibility of an uninfected person coming in contact with an infected person, the disease transmission can be stifled, resulting in fewer deaths (WHO, 18 March, 2020). To slow down the spread of infectious COVID-19 diseases, especially in the absence of pharmaceutical measures, several social distancing measures used include the closing of schools, workplaces, churches and mosques. Also introduced were isolation,

✉ Benjamin Osayawe Ehigie
benosang@yahoo.com; benosang18@gmail.com

[1] Department of Psychology, University of Ibadan, Ibadan, Nigeria

[2] National Examinations Council, Ibadan, Nigeria

[3] Covenant University, Ota, Nigeria

quarantine, restricting the movement of people and the cancelation of mass gatherings.

Social Distancing and COVID-19 Pandemic

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus, severe acute respiratory syndrome (SARS-CoV-2). This virus commonly causes shortness of breath, fever and dry cough (WHO, 12 March, 2020). The corona virus is reported to have originated in Wuhan, China, where wild animals, including bats and snakes, are traded illegally (Guo et al., 2020). The first case was detected in the area on December 8, 2019 (Wu et al., 2020). In a short pace of time, the virus spread to many countries and continents, including Africa.

In the African continent, five countries account for over 70% of the total confirmed cases of COVID-19 pandemic. These are South Africa, Egypt, Nigeria, Ghana and Algeria (The Guardian, 2020). The disease was imported into the African continent, with most of the identified imported cases arriving from Europe and America, rather than from China where the virus originated (MaClean, 2020). The first confirmed case in Africa was in Egypt, reported on February 14, 2020; it involved a Chinese national (Egypt Today, 2020). The first case in Algeria was confirmed on February 25, 2020, of an Italian man who arrived on 17 February (Reuters, 2 March, 2020). In sub-Sahara Africa, the first reported case was in Nigeria, where an Italian citizen who traveled through the Lagos Airport, first tested positive for the virus, as announced on February 27, 2020 (Nigeria Centre for Disease Control, NCDC, 2020). In South Africa, the first confirmed case was announced on March 5, 2020; a South African who returned from Italy (CNBC Africa, 2020). Ghana reported its first two cases on March 12, 2020; these were people who returned back to the country from Norway and Turkey (Duncang, 2020).

Due to poor healthcare systems in Africa, connoisseurs are worried about the state of COVID-19 pandemic, with the fear that it could be difficult to keep under control and could cause huge economic problems if it spreads widely (NPR.org, 2020). The problems African nations could suffer with COVID-19 pandemic are numerous. MaClean (2020) identified possible shortages in supply of ventilators, soap and water in some parts of the continent. NPR.org (2020) reports fears that hand washing, physical distancing and lockdown may not be possible, and the situation could be worsened by the prevalence of diseases such as malaria, AIDS, tuberculosis and cholera. Increased risk of famine is also anticipated (Picheta, 2020). The WHO has raised an alarm at the spread of COVID-19 pandemic in Africa, stating that South Africa's surging numbers could be a precursor for further outbreaks across the continent (News24, 2020). A recent report holds that Africa may become the next epicenter of the pandemic (Mwai, & Giles, 2020).

Consequent upon the success of human behavior in curtailing previous pandemics, like the Spanish Flu of 1918–1919 and the 2001–2002 Ebola outbreak, WHO advices the public on social/physical distancing as one of the preventive measures against this virus. But the challenge is always with compliance of the people.

Social Distance and Social Distancing

Social distance is a concept used in the social sciences to express how people accept others that seem socially different from them, and the readiness to socially interact with them. Crossman (2019) sees social distance as a measure of social separation between groups, caused by perceived or real differences between groups of people. In Africa, common areas where social distance is played include perceived differences in social class, education, ethnicity, culture, religion, gender and age, among others. Three key types of social distance reported in the literature (Bogardus, 1947; Karakayali, 2009) include the normative, affective and interactive distance. The normative, affective and interactive components of social distance are, respectively, similar to the cognitive, affective and behavioral components of attitude presented by Ehigie (2005a, 2007).

Social distancing evolved, as measures to stop or slow down the spread of infectious diseases. It is a set of methods for reducing frequency and closeness of contact between people in order to decrease the risk of transmission of disease (CDCP, 2020). This is analogous to interactive social distance earlier presented. In the midst of the 2019–2020 coronavirus pandemic, the CDCP revised the definition of social distancing to include: 'remaining out of congregate settings, avoiding mass gatherings and maintaining distance (approximately six feet or two meters) from others when possible.'

From the definition and views of the proponents of social distancing, the concept looks more like physical distancing than social distancing. Being physically distant does not necessarily imply being socially distant, especially in the age of technology, where video facilities are available. The key reason for 'social distancing' is to reduce the spread of the virus by physical contact, not necessarily social contacts. In the period of distancing, social interactions via communication technology are possible.

From the social scientific perspective, what is intended by 'social distancing' is actually 'physical distancing,' as people could be physically distant but not actually socially distant. In social scientific terms, therefore, social distancing entails the normative, affective and interactional

components of social distance identified by Bogardus (1947) and Karakayali (2009), while physical distancing is majorly the physical interactional component of social distance. Hence, public health professionals' view of social distancing is different from that of the social or behavioral scientists' view. It follows as well that Africans' opinion of social distancing might be different from the conventional view.

Symptomatic, Asymptomatic and Parasymptomatic COVID-19 Pandemic Classifications and Physical Distancing

In the management of COVID-19 pandemic, the silent spreaders of the coronavirus are classified as symptomatic, asymptomatic and presymptomatic (WHO, 2020). A symptomatic case is when someone has the common symptoms associated with the disease or condition. It is asymptomatic when people carry the active virus in their body but never develop any symptoms. The presymptomatic case is when the person is infected but the immune system fights it out that symptoms are never noticed. All these are normative labels that qualify the victims for physical distancing. However, with the average African, these labels that call for distancing are not sufficiently justifiable for such act. This is because for the asymptomatic and parasymptomatic cases for instance, there are no obvious symptoms of illness to justify distancing. For the symptomatic also, the symptoms are very much similar to the known malaria fever in Africa. These elucidate why it might be difficult for social distancing to be adopted in Africa, thereby increasing vulnerability level.

The affective dimension of social distance, though subtle in the definition of 'social distancing,' it is challenging to implement by Africans, because of their communal way of living. Despite the labels assigned to the infected persons, and the implications of having physical contact with them, much feelings of sympathy or empathy are shown for them. The inherent affective nature of the African is contradicted by the idea of 'social distancing' toward the victims, resulting in increased desire to interact with persons infected. Even when sufferers died of the coronavirus, close family members and friends interacted with the corpses, as expressions of affection toward the dead, regardless of possibility of contacting the disease. For those living but infected, there would always be attempts at concealing the victim's illness and travel records, especially to avoid isolation, until when the case worsens to the point of death, before disclosure. All these attitudes make the Africans more vulnerable to the disease.

The interactive social distance seems closest to the social distancing concept advanced by the public health practitioners, which canvasses for decreased frequency and intensity in interacting with the infected. This is actually the dimension of social distance that qualifies for physical distancing. To a large extent, Africans were able to comply to this, under stringent measures from the authority of countries, in the absence of which it would have been difficult and they would have been more vulnerable to the disease.

Social Distancing, Self-quarantine and Self-Isolation

The three critical interventions put in place to limit the spread of coronavirus were 'Social distancing,' 'self-quarantine' and 'self-isolation.' These measures are believed to slow the spread of the virus, and by implication, slow the rate of infection in a town, community or even the entire country. 'Social distancing,' to some, is encompassing and includes self-isolation of the sick, home quarantine of the exposed individual, contact tracing, school closures, improvements in the skeletal workforce or prohibition of mass gathering and movement (Mahtani et al., 2020). These measures are believed to be effective instruments for controlling the spread of infectious diseases (Adolph et al., 2020). Others see social distancing, self-isolation and self-quarantine as separate, describing them as three types of possible social alterations during pandemics (Suppawittaya et al., 2020).

Social distancing (also known as physical distancing) is applied by placing adequate physical space between people. It is intended to minimize interactions between people, where individuals have tendencies to be infectious but have not yet been identified (Mack et al., 2007). The CDCP (2020) recommends for individuals to be apart from one another for at least 6 feet. This is necessary because the disease can be transmitted by respiratory droplets (Wilder-Smith & Freedman, 2020). The WHO (2020) explains that when someone coughs or sneezes, small liquid droplets are usually emitted from the nose or mouth which may contain the virus. If a person is too close to another who has the coronavirus, with mouth or nose not covered during coughing or sneezing, there would be increased probability of spreading the virus. The droplets can also fall on objects and surfaces where people may touch. But with physical distancing in place, the contact rate or vulnerability is reduced, and by inference, the spread of the virus is reduced.

Self-quarantine is a term used for people who are presumed to have been exposed to a contagious disease but are not ill, either because they did not become infected or because the disease is still in the incubation period which is approximately 6.4 days, ranging from 2.1 to 11.1 days

(Backer et al., 2020). In implementing self-quarantine, the Nigeria Center for Disease Control (NCDC, 2020), for instance, encouraged people who return from a country with widespread community transmission of COVID-19 to stay at home and isolate themselves for 14 days. The WHO (2020) also advised those who had direct contact with any infected people, traveled to countries with widespread ongoing transmission and had symptoms including fever and coughing after traveling to crowded areas to perform self-quarantine. Quarantine may be applied at the individual or group level which normally involves restriction to their home or a designated facility (Cetron & Landwirth, 2005). Self-quarantine may be applicable to the asymptomatic and the parasymptomatic.

Self-isolation refers to the separation of ill persons with contagious diseases, from others for the purpose of protecting non-infected persons. It involves avoiding close contact with other people as much as possible. For persons infected, like the symptomatic persons, self-isolation is best in hospital settings under the care of medical experts. It is advised for patients to be situated in a private negative pressure room with airborne-droplet-contact precautions in order to prevent transmissions via aerosols (Marchand-Senécal, et al., 2020). For other people who are still not infected, it requires staying apart from the infected ones for the prevention of the disease.

Theories on 'Social Distancing'

Some health-related theories provide credence to explaining how Africans perceive 'social distancing' and their consequent behavior towards the COVID-19 pandemic.

The Health Belief Model (HBM)

The health belief model (HBM) is a social psychological change model developed in the 1950s (Janz & Becker, 1984) by Rosenstock, Hochbaum, Kegeles and Leventhal to explain and predict health-related behaviors (Siddiqui et al., 2016). The theory was initially developed in order to understand the failure of people to adopt disease prevention strategies or screening tests for the early detection of disease, but later extended to patients' responses to symptoms and compliance with medical treatments. The HBM proposes that the likelihood of a person to adopt health-related behavior is a function of a person's belief in the personal threat of an illness or disease and effectiveness of the recommended health behavior or action. The HBM explains further that people's beliefs about health problems, perceived benefits of action and barriers to action, self-efficacy and a stimulus, or cue to action, explain engagement or lack of engagement in health-promoting behavior (Janz & Becker, 1984; Siddiqui et al., 2016).

The HBM is founded on two components of health-related behavior, which are the desire to avoid illness, or get well if already ill, and the belief that a specific health action will prevent or cure illness. Nonetheless, all depends on the person's perceptions of the benefits and barriers related to health behavior. To elaborate the HBM model, six constructs are enunciated:

Perceived susceptibility This is a subjective assessment of the risk of developing a health problem (Carpenter, 2010; Janz & Becker, 1984). The HBM predicts that individuals who perceive that they are susceptible or vulnerable to a particular health problem will engage in behaviors to reduce their risk (Rosenstock, 1974). Individuals with low perceived susceptibility or vulnerability may deny the existence of the disease or believe that they would not likely be infected even if it exists (Janz & Becker, 1984; Rosenstock, 1974). Thus, persons who believe they are less vulnerable at developing an illness, like COVID-19 disease, are more likely to engage in unhealthy or risky behaviors, like neglect of 'social distancing,' whereas those who perceive a high risk or vulnerability are more likely to engage in behaviors like 'social distancing,' to decrease their risk of getting infected. Perceived threat of a disease, like COVID-19, is a combination of perceived severity and perceived susceptibility (Glanz et al., 2008), and the duo is dependent on the knowledge about the disease (Rosenstock, 1974).

Perceived severity This refers to the subjective assessment of the severity of a disease, like the coronavirus, and its potential consequences, like death (Glanz et al., 2008). The HBM proposes that individuals who perceive a disease as serious are more likely to engage in behaviors, like 'social distancing,' to prevent the health problem from occurring (or reduce its severity). Perceived seriousness includes beliefs about the disease itself (e.g., whether it is life-threatening or may cause disability or pain), as well as broader impacts of the disease on functioning in work and social roles (Glanz, et al., 2008; Janz & Becker, 1984).

Perceived benefits Health-related behaviors, like 'social distancing,' are influenced by the perceived benefits of such behaviors (Glanz, et al., 2008). Perceived benefits refer to an individual's assessment of the value, or efficacy of engaging in such behavior to decrease risk of disease (Janz & Becker, 1984). If an individual believes that 'social distancing' will reduce susceptibility to COVID-19, or decrease its seriousness, then he or she would likely engage in the behavior.

Perceived barriers Engaging in health-related behaviors, like 'social distancing,' is a function of perceived barriers to taking the action. Perceived barriers refer to an

individual's assessment of the obstacles to the behavior change (Glanz, et al., 2008; Janz & Becker, 1984). Even if an individual perceives a health condition as threatening and believes that a particular action will effectively reduce the threat, barriers may prevent engagement in the health-promoting behavior. Perceived barriers to taking action include the perceived inconvenience, expense, danger and discomfort involved in engaging in the behavior (Rosenstock, 1974). For behavior change to occur, the perceived benefits must outweigh the perceived barriers (Janz & Becker, 1984). This is where 'social distancing' may suffer some setbacks in Africa, because, while the benefits of engaging in 'social distancing' are not so palpable (just to prevent the spread of a pandemic), the barriers are enormous, including loss of social activities, revenue, job, personal relationships, social activities, recreation and the like.

Modifying variables These are more like intervening variables to the success of health-related behaviors. The HBM suggests that modifying variables affect health-related behaviors indirectly by affecting perceived seriousness, susceptibility, benefits and barriers (Glanz, et al., 2008). Individual characteristics including demographic, psychosocial and structural variables (Rosenstock, 1974) could be modifying variables, by affecting a person's perception of COVID-19, in areas of perceived seriousness, susceptibility, benefits and barriers to 'social distancing.'Rosenstock (1974) opine that demographic variables include age, sex, race, ethnicity and education; psychosocial variables include personality, social class, peer and reference group pressure; structural variables include knowledge about a given disease and prior contact with the disease.

Self-efficacy To better explain individual differences in health-related behaviors, Rosenstock et al. (1988) added self-efficacy to the four components of the HBM (perceived susceptibility, severity, benefits and barriers). Self-efficacy refers to an individual's perception of his or her competence to successfully perform a behavior, like 'social distancing.' Developers of the model recognized that confidence in one's ability to effect change in outcomes (i.e., self-efficacy) was a key component of health behavior change.

Cues to action The HBM posits that a cue, or trigger, is necessary for prompting engagement in health-related behaviors (Carpenter, 2010), like 'social distancing.' Cues to action can be internal or external. Internal cues include physiological cues (e.g., pain, symptoms), while external cues include events or information from close others, the media or health care providers promoting engagement in health-related behaviors like 'social distancing' (Janz & Becker, 1984). The cues need to attain a threshold value to be efficacious, and the intensity needed to prompt action varies between individuals, depending on perceived susceptibility, seriousness, benefits and barriers (Rosenstock, 1974).

Protection Motivation Theory (PMT)

Protection motivation theory originated from the work of Richard Lazarus, on how people behave and cope during stressful situations (Lazarus & Folkman, 1984). In a cognitive approach to explaining coping with stress, Lazarus opine that people differ in their sensitivity and vulnerability to certain types of events, as well as in their interpretations and reactions (Monat & Lazarus, 1991). The PMT proposes that people protect themselves from infectious diseases, based on four factors; perceived severity of a threatening event, the perceived probability of the occurrence or vulnerability, the efficacy of recommended preventive behavior and perceived self-efficacy (Rogers, 1975). These four are reduced into two appraisal systems; the threat appraisal and the coping appraisal. The threat appraisal assesses the severity of the situation, like COVID-19, and examines how serious the situation is, while the coping appraisal is how a person responds to the situation, like engaging in 'social distancing.'

The threat appraisal process consists of both the severity and vulnerability of the pandemic. It focuses on the source of the threat, like contacts with infected persons, and factors that increase or decrease likelihood of maladaptive behaviors (Plotnikoff & Trinh, 2010), like not complying with the 'social distancing' rule. Severity refers to the degree of harm from the unhealthy behavior (non-compliance to 'social distancing'), while vulnerability is the probability that one will experience harm (coronavirus infection). Another aspect of the threat appraisal is the positive aspects of starting or continuing the unhealthy behavior, referred to as rewards. The theory explains that to calculate the amount of threat experienced, take the combination of both the perceived severity and vulnerability and then subtract the rewards.

The coping appraisal consists of both efficacy and self-efficacy. Efficacy is the individual's expectancy that carrying out preventive recommendations, like 'social distancing,' can remove the threat, while self-efficacy is the belief in one's ability to execute the recommended courses of action successfully (Rogers, 1983). The coping appraisal consists of the response efficacy, self-efficacy and the response costs. Response efficacy is the effectiveness of the recommended behavior in removing or preventing possible harm. Response efficacy concerns beliefs that adopting a particular behavioral response will be effective in reducing the disease's threat, while self-efficacy is the belief that one can successfully perform the coping response (Van der

velde & van der Plight, 1991). The response costs are the costs associated with the recommended behavior. The coping appraisal process focuses on the adaptive responses and a person's ability to cope with and avert the threat. The coping appraisal is, thus, the sum of the response efficacy and self-efficacy appraisals, minus any physical or psychological "costs" of adopting the recommended preventive response (Rogers, 1975).

The Extended Parallel Process Model (EPPM)

The extended parallel process model (EPPM) is a framework developed to predict how individuals will react when confronted with fear-inducing stimuli, like the coronavirus. EPPM is based on Leventhal's danger control/fear control framework and on Roger's protection motivation theory (Witte, 1992). The EPPM identifies four key factors essential in predicting outcome of communications involving a fear appeal. First, self-efficacy which is the perception an individual has of being competent to perform the tasks needed to control the risk, like being competent to execute 'social distancing' to prevent the coronavirus spread. Second, response efficacy which is the perception an individual has that the action, if carried out, will successfully control the risk, like carrying out 'social distancing' to control the coronavirus. Third, susceptibility which relates to the perception an individual has of how likely the threat would make impact. Fourth, severity which is the perception the individual has of the magnitude of the threat.

Precaution Adoption Process Model (PAPM)

The precaution adoption process model (PAPM) is a psychologically focused model that is most useful in describing how a person comes to a new decision, like that of social distancing, and how that person can take the decision and make it become an action (Weinstein & Sandman, 2002). The PAPM model describes behavior change as dynamic and that changes occur over time through the process of adoption (Elliot et al., 2007). In the PAPM model, there are seven stages of behavioral change adoption (Weinstein & Sandman, 2002):

1. A person is entirely unaware of some issues, like COVID-19.
2. The person becomes aware but still does not take it as a problem.
3. The person becomes aware and starts engaging in decision making, like searching for solutions.
4. The person may decide not to take action, like 'social distancing' (the person terminates the PAPM here). On the alternative, the person re-enters the decision-making process again.
5. After the decision-making process, the person decides to accept the fact that there is an issue.
6. After acceptance of the issue, the person then begins a new behavior ('social distancing').
7. The person accepts the behavior and continues to maintain that behavior over time. This is the stage of adoption.

A Proposed Conceptual Model for Social Distancing in Pandemics

From the theories reviewed thus far, a social distancing adoption model (SDAM) for pandemics is proposed in this presentation, guided by the consumer product decision process (Ehigie & Babalola, 1995; Ehigie, 2000, 2006a, 2006b) and the innovation change process model (Ehigie, 2002; Ehigie & McAndrew, 2005). Taking a consumer psychology perspective to understanding the acceptance or rejection of 'social distancing,' the implementer of 'social distancing' is considered as a consumer in this context. A consumer is a person who buys and/or makes use of a product (Ehigie, 2006b, 2019). A product could be a good, service, idea, place and anything that could be presented for others' consideration for acceptance and use (Ehigie & Babalola, 1995). In the context of a pandemic, 'social distancing' is an idea presented by health professionals as a pandemic (COVID-19) preventive measure, for adoption by people (the consumers) to reduce its spread. The SDAM explains how 'social distancing' could be adopted or not adopted (Fig. 1).

The consumer product decision process is in five phases (Ehigie, 2006a, 2006b), which include perception of a need or problem, search for related information, evaluation of alternatives, decision to buy, and post-decision behavior. In the innovation change process model (Ehigie, 2002; Ehigie and McAndrew (2005) , five stages expressed include creativity, invention, innovation, diffusion and adoption. Adoption is explained as the acceptance and continuous use of a product. The activities of creativity, invention and innovation lead to the development of a new product, and in this case, it is 'social distancing.' Following the difficulty with devising pharmaceutical cure for pandemics, including COVID-19, 'social distancing' evolved, as an innovation for the novel virus, COVID-19.

By the social distancing adoption model (SDAM), the process of adopting 'social distancing' begins with the perception of COVID-19 or any pandemic, as a problem or

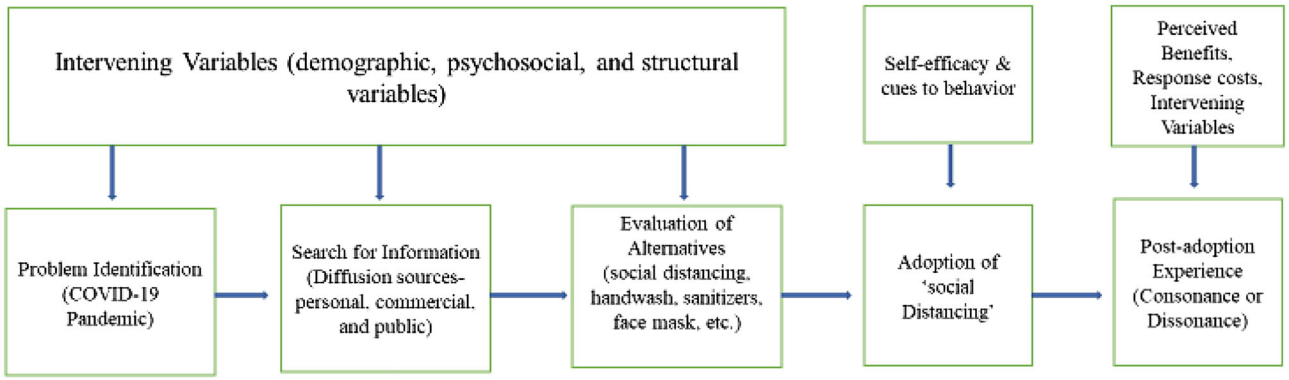

Fig. 1 Social Distancing Adoption Model for Pandemics

not a problem. If it is perceived as a problem, then follows search for solution, leading to information search. The possible sources for information are classified as personal, commercial and public (Ehigie & Babalola, 1995; Ehigie, 2006a). Personal sources include family, friends, neighbors and acquaintances; commercial sources include advertisements for personal protective equipment (PPE), fumigation materials and safety precaution materials; public sources include professional and government gazettes. All these are the probable sources for diffusion (Ehigie & McAndrew, 2005) or spread of information on pandemic preventive measures (e,g., 'social distancing,' hand washing, use of face mask and sanitizers, etc.), gaining knowledge of non-pharmaceutical cure or vaccines for COVID-19.

The third phase is the evaluation of the alternative preventive measures outlined by WHO, based on information received and processed. The first three phases could be influenced by intervening variables, referred to as modifying variables in the HBM. Certain demographic, psychological and structural variables could influence the perception of COVID-19 as a problem or not a problem, influence the sources and type of information sought, and interpretation of information received; leading to acceptance, continuity or discontinuity of a pandemic preventive measure ('social distancing').

The fourth phase is the acceptance of any of the preventive measures (e.g., 'social distancing') as adequate solution to the earlier perceived problem and implementing its guidelines; this is the adoption phase. Adoption could be influenced by self-efficacy and cues to behavior, as advanced in HBM, PMT and EPPM. The fifth phase is the post-adoption experience, where there is evaluation of the decision made, in terms of weighing the gains and possible loss following. This is similitude to 'perceived benefits' coined in HBM or 'response cost' captured in PMT. The outcome will determine loyalty or disloyalty (Ehigie, 1995, 2000; Ehigie et al., 2015) to 'social distancing.' There is loyalty to 'social distancing' and continuous implementation where the implementer (consumer) experiences cognitive consonance, based on Festinger's theory of cognitive dissonance (Festinger, 1957). Cognitive dissonance could result in disloyalty in implementing 'social distancing' due to variables like the intervening variables explained in HBM.

Application of the Theories and Model to 'Social Distancing' among Africans

The health belief model (HBM) and the protection motivation theory (PMT) are very much similar in approach. In relation to 'social distancing,' as a health-related preventive behavior for COVID-19 pandemic and other pandemics, both agree on many terms. HBM argues that the adoption of 'social distancing' for combating the spread of the coronavirus is a function of a person's belief in the personal threat of the virus, and belief in the effectiveness of 'social distancing' in the combat. These are expressed in the PMT as two appraisals of the pandemic situation, which are the threat appraisal and the coping appraisal. The factors accounting for these appraisals are lump together as modifying variables influencing the first three stages in SDAM. It implies that a person's belief in the threat of COVID-19 pandemic and belief in 'social distancing' as a control measure could predict adoption or non-adoption of the measure, as explained in the PAPM and SDAM.

From the components of the HBM and PTM theories, the idea of perceived susceptibility suggests that an African would subjectively perceive low risk in getting infected of the coronavirus. The self-efficacy of the Africans seems high, in terms of their subjective perception of the risk of acquiring the disease. By their cultural and religious orientations, the average African scarcely sees self as susceptible to any disease, especially the coronavirus that is perceived as 'foreign disease.' At its advent in Africa, it was believed to be an imported disease of and for 'the

rich,' because those infected were majorly travelers from abroad and their associates. Although it has now spread down the socio-economic ladder in Africa, but when a person is not infected with the disease, the risk perception level of acquiring the illness is low. Moreover, there is a common saying among Africans that 'disease does not kill a black man.' Above all, the availability of herbs and belief in religious activities like prayers, fasting and miracles encourage a downplay of the pandemic nature of the coronavirus, thus predisposing many Africans to the disease and increasing vulnerability.

The perceived severity of the coronavirus is another challenge in vulnerability of Africans to the disease. This could be observed in the attitude of some Africans toward the corpse of some who died of the virus; there was no observance of distancing, and corpses were carried with bare hands. Some possible intervening variables, expressed in the SDAM, that could explain low perceived severity of COVID-19 by Africans are religion and education. Some religious teachings profess that death is inevitable and could come whenever the Almighty wishes; not a factor of preventive measures. The poor educational background of majority of the Africans denies them access to information, where available the poverty level divest accessibility, and with less checks on information sources many false information are disseminated. These lead to wrong perception of COVID-19 pandemic as a problem, thus, undermining the severity of the coronavirus and low submission to 'social distancing.'

Perceived benefits from 'social distancing,' weighed with consequences of the action as perceived barriers, are additional factors for vulnerability of the Africans to the coronavirus. 'Social distancing' is assessed by Africans by the perceived benefits and accruing loss from the action. A situation where people are deprived of social gatherings that characterize celebrations like birthday, wedding, burial and the likes, an African would not be disposed to accepting such measures as realistic in curbing a disease. The poor economic situation faced by most Africans predisposed them to more abject poverty with the pandemic 'social distancing,' especially as many are engaged in blue-collar jobs and petty trades that call for frequent social interaction. On the positive aspect, 'social distancing' could result increased sense of well-being from time spent with family or the ability to focus on self-care, and a greater sense of altruism as individuals learn to view social distancing as a way to protect others from illness and harm. But weighing the two sides of the coin of social distancing, the negative aspects may carry more weight for the African, especially with loss of income, hence, possible increased vulnerability to the corona virus.

To the entire globe, the COVID-19 pandemic is novel and the idea of 'social distancing' is as well novel; hence, everything associated with COVID-19 pandemic is an innovation. In the innovation change process (Ehigie, 2002; Ehigie & McAndrew, 2005) and the SDAM, diffusion is considered important, involving activities in getting an innovation adopted. Diffusion is the process of getting the innovation to the end-users. Although there is intensive effort to diffuse the idea of 'social distancing' within the African continent, especially through the social media, but there is several polluted information that would not make the recipient well equipped for adoption to take place. Moreover, the information is limited to the educated and those financially stable. The low educational and poverty level of many Africans hinder access to information and limit the diffusion of information for adoption of 'social distancing' idea.

The adoption of 'social distancing' is as well hindered by the African belief system, as expressed in the HBM, PMT and SDAM, based on the African myths. The idea that a pandemic, like COVID-19, is transmissible through social contacts is difficult to comprehend by the average African. By the African myths, what are accepted as contagious are ailments like mental illness, epilepsy and the likes. Adewuya and Makanjuola (2005) reported that social distances toward the mentally ill people were higher among African participants than these from the western culture. Causes of distancing include perceived supernatural causation and 'dangerousness' stereotype of the mentally ill (Adewuya & Makanjuola, 2008).

Epilepsy also remains a stigmatized disease, especially in sub-Saharan Africa. This stigmatization stems from the fact that the traditional African belief views epilepsy as a spiritual disease (Ekeh & Ekrikpo, 2015). McQueen & Swartz (1995) assert that in Africa, epilepsy may be attributed to spirit possession or transgression of ancestral taboos; hence, social distance is encouraged. In central Ethiopia, 45% of those interviewed believed epilepsy could be transmitted by physical contact at the time of the attack, and three-quarters would not allow a family member to marry a patient with epilepsy and would not employ such a person (Tekle-Haimanot et al., 1991). Africans have the beliefs that epilepsy is a contagious disease transmitted by insects and/or saliva and/or by touching a person during seizures (Dolo et al., 2018). By these myths, traditionally, what Africans consider as contagious is different from what the medics consider as contagious and named 'pandemics.' Invariably, these could make the average African vulnerable to the coronavirus, as compliance guidelines to 'social distancing' would not be in effect.

The idea of 'social distancing' being a preventive measure and not a cure is another possible challenge to the Africans. If it is a curative measure, it could easily be tested and the potency confirmed, leading to adoption. By the SDAM, adoption supervenes where a decision proffers

solution to the problem identified. A situation where 'social distancing' is not a cure for the disease but a 'mere' preventive measure, adoption by Africans would be challenging. The African communal or collective pattern of living makes 'social distancing' novel and anti-cultural.

Conclusion

The perception of an entity would determine the attitude and behavior towards it. After 118,000 positive cases of COVID-19 across 114 countries, it was clear that the coronavirus has surpassed the definition of an epidemic, and hence, the WHO (2020) labeled it as a pandemic. Due to the challenge of curtailing pandemics, especially where pharmaceutical interventions are not insight, behavioral change patterns have been used successfully, among which is 'social distancing.' Although social distancing is not a novel behavioral concept in Africa, but there is difference between the public health professionals' view of social distancing and the African view of social distancing. While the public health professionals recommend social distancing for pandemics, because of its contagious nature, historically the Africans recommend social distancing for certain ailments that are culturally considered as contagious, though not contagious. These are plausible reasons why 'social distancing' as used in modern medicine might be a challenge for implementation in Africa, thus, increasing the vulnerability of Africans to the COVID-19 pandemic.

Authors Contributions The paper conception and sections design were developed by Benjamin O. Ehigie (Corresponding Author). Each other co-author (Rebecca I. Ehigie, Adeniyi M. Sholarin, Elizabeth Olowookere, Benedict Agoha) contributed to the writing of the sub-sections, which were harmonized by the Corresponding Author. All the co-authors read, commented and a final version emerged and was approved as the final manuscript.

Funding None.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethics Approval (Include Appropriate Approvals or Waivers) Not Applicable. The manuscript is a position paper.

Consent to Participate (Include Appropriate Statements). Not Applicable. This is not an empirical paper, so there were no research participants.

Consent for Publication The manuscript has the consent of the authors for the publication.

References

Adewuya, A. O., & Makanjuola, R. O. A. (2005). Social distance towards people with mental illness amongst Nigerian university students. *Social Psychiatry and Psychiatric Epidemiology, 40*(11), 865–868.

Adewuya, A. O., & Makanjuola, R. O. (2008). Social distance towards people with mental illness in southwestern Nigeria. *Australian and NewZealand Journal of Psychiatry, 42*(5), 389–395.

Adolph, C., Amano, K., Bang-Jensen, B., Fullman, N., Wilkerson, J. (2020). Pandemic politics: Timing state level social distancing responses to COVID-19. *Journal of Health Politics, Policy and Law*. https://doi.org/10.1215/03616878-8802162.

Backer, J. A., Klinkenberg, D., & Wallinga, J. (2020). Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China, 20–28 January 2020. *Eurosurveillance, 25*(5), 2000062.

Bogardus, E. S. (1947). Measurement of personal-group relations. *Sociometry, 10*(4), 306–311.

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication, 25*(8), 661–669. https://doi.org/10.1080/10410236.2010.521906.PMID21153982

Centers for Disease Control and Prevention (CDCP, 4 April, 2020). Social distancing, quarantine, and isolation. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html.

Centre for Disease Control and Prevention (CDCP, 3 May, 2020). *Cases in the US*. https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html.

Cetron, M., & Landwirth, J. (2005). Public health and ethical considerations in planning for quarantine. *The Yale Journal of Biology and Medicine, 78*(5), 329.

CNBC Africa (5 March, 2020). South Africa confirms first case of COVID-19. https://www.cnbcafrica.com/news/2020/03/05/south-africa-confirms-first-case-of-covid-19/.

Crossman, A. (3 July, 2019). Definition and Examples of Social Distance in Psychology: Overview of Three Types: Affective, Normative, and Interactive. https://www.thoughtco.com/social-distance-3026589.

Dolo, H., Mandro, M., Wonya'Rossi, D., Ngave, F., Fraeyman, J. Siewe, J. N., Suykerbuyk, P., & Colebunders, R. (2018). Community perceptions of epilepsy and its treatment in an onchocerciasis endemic region in Ituri, Democratic Republic of Congo. *Infect Dis Poverty*. https://doi.org/10.1186/s40249-018-0498-0.

Duncan, J. (12 March 2020). Two cases of coronavirus confirmed in Ghana. *Citi Newsroom*. https://citinewsroom.com/2020/03/two-cases-of-coronavirus-confirmed-in-ghana.

Egypt Today (14 February 2020). Egypt announces first Coronavirus infection. https://www.egypttoday.com/Article/1/81641/Egypt-announces-first-Coronavirus-infection.

Ehigie, B. O. (2000). Consumer purchase conflict and post-purchase dissonance: Psychological issues for marketing management. *Marketing Journal, 5*(2), 30–35.

Ehigie, B. O. (2002). Creativity and industrial/organizational development in Africa: A psychological perspective. In Y. Nasidi, T. Abubakar, B. Alisah, & S. Kafewo (Eds.), *New directions in African Humanities Studies.* Ahmadu Bello University, Press.

Ehigie, B. O. (2005). Ethnic differences and perceived marginalization as psychological issues of conflict in Nigeria. *Nigerian Journal of International Affairs, 31*(1), 67–90.

Ehigie, B. O. (2006a). Psychology of marketing and advertising. In S. Balogun, B. Ehigie, & A. Sunmola (Eds.), *Managerial*

psychology: An overview (pp. 167–215). Department of Psychology, University of Ibadan.
Ehigie, B. O. (2006b). *Flying without crashing: The worth of customer loyalty. A faculty lecture series*. Faculty of the Social Sciences, University of Ibadan.
Ehigie, B. O. (2007). Roles of ecological attitudes and knowledge on consumer choice of green products. In B. A. Chokor & A. O. Ozo (Eds.), *Environment and society in Nigeria* (pp. 170–182). Environment and Behaviour Association of Nigeria (EBAN).
Ehigie, B. O. (2019). The King, Chief Priest, and gods in Psychology of Marketing. The 477th Inaugural Lecture of the University of Ibadan. Ibadan: University of Ibadan.
Ehigie, B. O., & Babalola, S. S. (1995). *Understanding Consumer Behaviour*. Newbourne Enterprises.
Ehigie, B. O., & McAndrew, E. B. (2005). Innovation, diffusion and adoption of Total Quality Management (TQM). *Management Decision, 43*(6), 925–940.
Ehigie, B. O., Alarape, A. I., & Chine, B. (2015). Product sales promotion techniques. In B. O. Ehigie (Ed.), *Consumer, Marketing, and Advertising Psychology* (pp. 437–454). University Press.
Ekeh, B. C., Akpan, E. E., & Ekrikpo, U. E. (2015). The knowledge, attitude and perception towards epilepsy amongst health workers in a Tertiary Hospital in Uyo, Southern Nigeria. *Journal of Advances in Medicine and Medical Research, 11*(3), 1–10. https://doi.org/10.9734/BJMMR/2016/19812
Elliott, J. O., Seals, B. F., & Jacobson, M. P. (2007). Use of the precaution adoption process model to examine predictors of osteoprotective behavior in epilepsy. *Journal of Seizure, 16*(5), 424–437.
Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.
Glanz, K., Barbara, K. R. & Viswanath, K. (2008). *Health behavior and health education: Theory, research, and practice* (PDF) (4th ed.). San Francisco, CA: Jossey-Bass. pp. 45–51. ISBN 978–0787996147.
Guo, Y., Cao, Q., Hong, Z., Tan, Y., Chen, S., Jin, H., Tan, K., Wang, D., & Yan, Y. (2020). The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak—an update on the status. *Military Medical Research, 7*(1):11. https://doi.org/10.1186/s40779-020-00240-0.
Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education and Behavior, 11*(1), 1–47. https://doi.org/10.1177/109019818401100101
Johnson, C. Y., Sun, L., & Freedman, A. (2020-03-10). Social distancing could buy U.S. valuable time against coronavirus. *The Washington Post*. https://www.washingtonpost.com/health/2020/03/10/social-distancing-coronavirus. Accessed 19 July 2020.
Karakayali, N. (2009). Social distance and affective orientations. *Sociological Forum, 23*(3), 538–562.
Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company Inc.
Mack, A., Choffnes, E. R., Sparling, P. F., Hamburg, M. A., & Lemon, S. M. (Eds.). (2007). *Ethical and Legal Considerations in Mitigating Pandemic Disease: Workshop Summary*. National Academies Press.
Maclean, R. (17 March 2020). Africa Braces for Coronavirus, but Slowly. *The New York Times*. https://www.nytimes.com/2020/03/17/world/africa/coronavirus-africa-burkina-faso.html.
Mahtani, K. R., Heneghan, C. & Aronson, J. K. (March 19, 2020). What is the evidence for social distancing during global pandemics? https://www.cebm.net/covid-19/what-is-the-evidence-for-social-distancing-during-global-pandemics.
Marchand-Senécal, X., Kozak, R., Mubareka, S., Salt, N., Gubbay, J. B., Eshaghi, A., & Ozaldin, O. (2020). Diagnosis and management of first case of COVID-19 in Canada: Lessons applied from SARS. *Clinical Infectious Diseases*. https://doi.org/10.1093/cid/ciaa227
McQueen, A. H., & Swartz, L. (1995). Reports of the experience of epilepsy in a rural South African village. *Social Science & Medicine, 40*(6), 859–865. https://doi.org/10.1016/0277-9536(94)00148-M.
Monat, A., & Lazarus, R. (1991). *Stress and coping: An anthology*. Columbia University Press.
Mwai, P. & Giles, C. (30 July, 2020). Coronavirus: How fast is it spreading in Africa? BBC Reality Check. https://news.yahoo.com/coronavirus-fast-spreading-africa-232332271.html.
News24.com (21 July, 2020). Covid-19: Situation in SA 'a warning' for the rest of the continent—WHO. https://www.news24.com/news24/southafrica/news/covid-19-situation-in-sa-a-warning-for-the-rest-of-the-continent-who-20200721.
Nigeria Centre for Disease Control (NCDC, 15th March 2020). Public health advisory to Nigerians on coronavirus disease (#5). https://ncdc.gov.ng/news/240/15th-march-2020%7C-public-health-advisory-to-nigerians-on-coronavirus-disease-%28%235%29.
NPR.org. (2020). African countries respond quickly to spread of COVID-19. https://www.npr.org/sections/goatsandsoda/2020/03/21/818894991/african-countries-respond-quickly-to-spread-of-covid-19.
Picheta, R. (22 April, 2020) Coronavirus pandemic will cause global famines of 'biblical proportions,' UN warns. CNN. https://edition.cnn.com/2020/04/22/africa/coronavirus-famine-un-warning-intl/index.html.
Plotnikoff, R., Trinh, L. (2010). Protection motivation theory: Is this a worthwhile theory for physical activity promotion. *Journal of Health Psychology*. https://doi.org/10.1097/JES.0b013e3181d49612
Reuters (2 March 2020). Algeria reports two new coronavirus cases, bringing the total to five. https://www.reuters.com/article/us-health-coronavirus-algeria/algeria-reports-two-new-coronavirus-cases-bringing-the-total-to-five-idUSKBN20P2YK.
Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology, 91*(1), 93–114. https://doi.org/10.1080/00223980.1975.9915803.PMID28136248
Rogers, R. W. (1983). Cognitive and physiological processes in fear appeals and attitude change: A Revised theory of protection motivation. In J. Cacioppo & R. Petty (Eds.), *Social Psychophysiology*. Guilford Press.
Rosenstock, I. (1974). Historical origins of the health belief model. *Health Education and Behavior., 2*(4), 328–335. https://doi.org/10.1177/109019817400200403
Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education and Behavior, 15*(2), 175–183. https://doi.org/10.1177/109019818801500203.hdl:2027.42/67783.PMID3378902
Siddiqui, T. R., Ghazal, S., Bibi, S., Ahmed, W., & Sajjad, S. F. (2016). Use of the health belief model for the assessment of public knowledge and household preventive practices in Karachi, Pakistan, a Dengue-Endemic City. *PLOS Neglected Tropical Diseases, 10*(11), e0005129. https://doi.org/10.1371/journal.pntd.0005129 ISSN 1935-2735. PMC 5104346. PMID 27832074.
Suppawittaya, P., Yiemphat, P., & Yasri, P. (2020). Effects of social distancing, self-quarantine and self-isolation during the COVID-19 pandemic on people's well-being, and How to cope with it. *International Journal of Science and Healthcare Research, 5*(2), 12–20.
Tangermann, V. (20 March 2020). It's officially time to stop using the phrase social distancing. *Science alert*. https://www.sciencealert.com/who-is-no-longer-using-the-phrase-social-distancing.

Tekle-Haimanot, R., Abebe, M., & Forsgren, L. (1991). Attitudes of rural people in central Ethiopia towards epilepsy. *Social Science and Medicine, 32*(2), 203–209.

The Guardian (12 June 2020). Global report: WHO warns of accelerating Covid-19 infections in Africa. https://www.theguardian.com/world/2020/jun/12/global-report-who-warns-of-accelerating-infections-in-africa-but-says-severe-cases-not-going-undetected.

van der Velde, F. W., & van der Plight, J. (1991). AIDS-related health behavior: Coping, protection, motivation, and previous behavior. *Journal of Behavioral Medicine, 14*(5), 429–451. https://doi.org/10.1007/bf00845103 PMID 1744908.

Weinstein, N. D., & Sandman, P. M. (2002). The precaution adoption process model and its application. In R.J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.) Emerging theories in health promotion practice and research strategies for improving public health (pp. 16-39). San Francisco: Jossey-Bass.

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine, 27*(2), 1–4.

Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs, 59*(4), 329–349.

World Health Organization (12 March, 2020). WHO announces COVID-19 outbreak a pandemic. https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic

World Health Organization (18 March, 2020). Coronavirus disease (COVID-19) advice for the public. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public.

World Health Organization (6 April, 2020). Coronavirus disease (COVID-19) advice for the public. 2020. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200416-sitrep-87-covid-19.pdf?sfvrsn=9523115a_2.

Wu, D., Wu, T., Liu, Q. & Yang, Z. (2020). The SARS-CoV-2 outbreak: What we know. *International Journal of Infectious Diseases, 94*, 44–48. https://www.sciencedirect.com/science/article/pii/S1201971220301235.