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Article 1

COVID-19 Response in Ghana: Missed Preventive Behavioral Opportunities and Lessons through Relevant Psychological Conceptual Frameworks.

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Abstract

The COVID-19 pandemic has negatively impacted the global community in ways unimaginable. The Ghanaian COVID-19 response has been touted as effective to a large extent from the viewpoint that the government provided leadership based on scientific data with collaboration from traditional leaders, faith based, civil societies etc. This article discusses inadvertent “omissions and commissions” on the part of the government and the people of Ghana defined as “missed preventive health and behavioural opportunities” that would possibly have reduced the current morbidities and mortalities. Important lessons are drawn and recommendations made for future national responses to epi-and pandemics. Using secondary data, extant relevant publications (peer – reviewed articles, online blogs etc.) on the subject were retrieved, critically appraised to complement the authors’ ideas in this special article. The study found among others, some missed preventive opportunities included delayed mandatory quarantine, border closures, too flexible partial lockdown, facemasks wearing as an afterthought of COVID-19 protocol, and non-enforcement of executive instruments on the part of government. Moreover, a significant proportion of the citizenry has remained non-compliant with the President’s instituted protocols to date. The study recommends that Governments should strengthen their nations’ disease surveillance systems, be willing to initiate stringent, unpopular but effective and uncompromising public protection protocols to mitigate such outbreaks. These may include closing borders and entry ports promptly (or a more regulated one), imposing lockdowns, instituting aggressive public education in collaboration with relevant bodies. On the part of the citizenry, executive instruments must be enforced to the latter with commensurate understandable education. Finally, traditional leaders, faith based and civil societies, should embark on mass education, national drives for necessary PPE’s and food for the poor and vulnerable as they collaborate with the authorities on other relevant fronts.

Keywords: *COVID-19, Response, Missed-preventive behaviours, Behavioural opportunities, Ghana.*

Introduction

Pandemics have come and gone and history teaches us that the outcome is poor in terms of loss of human lives when governments and countries work in disarray as exemplified by the 1918 influenza episode. Without doubt, the coronavirus disease, (COVID-19), caused by a newly discovered strain of coronavirus which originated in Wuhan city, China, in late 2019 and acknowledged in early 2020 as a public health emergency of international concern (PHEIC) as a pandemic (WHO, 2020a), has negatively impacted the global community in a way unimaginable. It is an invisible and invincible enemy that has caused an unfathomable emotional and economic pain to humanity. It has revealed serious weaknesses of health systems of most global communities; even developed nations touted as robust with the best resources to deal with any serious health problems have not escaped unscathed. COVID-19 has virtually brought the whole

world to a halt, infecting and fatally inflicting millions of people, forcing various authorities to elicit desperate responses including the strict primary preventive behavioural measures, aspects of which is the subject of this current paper.

From the time of the outbreak to the initial write-up of this article on the 29th of July 2020, 16,708, 920 COVID-19 cases and 660,123 mortalities had been reported. However, as of the final edit on the 13th of October, 2020, 37,875,422 cases and 1,081,632 deaths had been recorded globally according to the European center for disease prevention and control, (ECDC, 2020). **Also**, there was an increase from 873, 331 cases, 18,471 deaths to 1,585,643 cases, 38,217 deaths for the African continent and 34,406 cases, 168 deaths and 47,030 cases, 308 deaths for Ghana respectively. Between the initial write-up and editing of this article, the five countries with the highest recorded cases on the African continent had changed from South Africa with 459,761 recorded cases; Egypt, 92,947; Nigeria, 41,804; Ghana 34,406 and Algeria 27,973 to South Africa 692,471; Morocco, 153,761; Egypt, 104,648; Ethiopia, 85,136 and Nigeria, with 60,430 cases. In Ghana the 9,418 confirmed cases in the last 14 days as of write-up had reduced to 548 according to ECDC, (2020).

COVID-19 is highly infectious and has been assessed to infect by a function of 4.08 by Cao et al (2020), implying four new cases will arise from every case of COVID-19 (Wang et al., 2020). Although COVID-19 as a beta-coronavirus can be transmitted to humans by means of intermediary hosts such as bats, (Paules, Marston & Fauci (2020), the growing consensus among researchers of definite method of spread from human to human are via virus-laden respiratory and buccal droplets from both symptomatic and asymptomatic individuals expelled up to one-to-two metres during sneezing, coughing and speaking onto fomites. Research evidence have suggested that the virus can survive for varying durations outside a host depending on the kind of surface. Thus, it can survive up to four hours on surfaces made of copper, three hours in the air, two days on cardboard, and for three days on rubber and anything made of stainless steel, (Bonful et al., 2020; van Doremalen et al., 2020). Again, recent research evidence suggests that the human eyes could serve as a transmission orifice for the COVID-19 virus (Wu et al., 2020). At the time of writing this article, the pandemic had no effective vaccines available for its prevention or established cure yet. Most infected people recover spontaneously or are treated symptomatically by providing mechanical respiratory support when it is severe or with conventional antiviral therapies Cirrincione et al., (2020). So far, the best preventive methods outlined by the World Health Organization (WHO) are mostly behavioural methods e.g. social or physical distancing, wearing of face masks, frequent and consistent hand washing and sanitization of hands using 70% alcohol-based sanitizers etc., (WHO, 2020).

Objectives of the study

The major aims of this study are:

1. To examine the Ghanaian government and its citizens' preventive practices and behaviours that the authors perceive as 'missed preventive opportunities' to the COVID-19 pandemic.

2. Analyze the consequences of the missed preventive opportunities with the aim of eliciting the important lessons
3. To discuss guidance for the management of future episodes of pandemics so that the suffering and unpleasant outcomes from them will be minimized.

Important definitions and behavioural or attitudinal change conceptual frameworks

It is very imperative to define the important concept to be used in this study to minimize politicization of its main thrust. The study will then briefly look at an overview of the important conceptual frameworks to make sense of the Ghanaian COVID-19 response in the discussion.

It must be stated that the government of Ghana has done its maximum best with its Covid-19 response; at least the point of view propagated is that it acted on technical advice and based on scientific data as the president puts it. That notwithstanding, the authors argue from a biopsychosocial perspective that, certain preventive health responses would have enhanced the outcome of the Ghanaian response so far, hence the reference to missed preventive behavioural opportunities. Missed preventive behaviour opportunity in this study is defined as an inadvertent omission and commission on the part of the government and the people of Ghana, which from the viewpoint of the authors, needed to happen to mitigate the negative impact of COVID-19. Also, Ghanaian response is defined as the action or reactions from "...government, political parties, citizens, scientists and academia, corporate entities, faith based organizations, traditional rulers etc..." p.1 (Asantewah Nkansah, 2020).

To be able to critically discuss the missed preventive opportunities, it is important to explicate on relevant behavioural and attitudinal change conceptual frameworks to guide the ensuing discussion, by defining relevant variables, their interrelationships and provide what researchers expect to find, Swaen (2015). These conceptual frameworks include:

1. The Social Cognitive Learning Theory (SCLT)
2. Health Belief Model (HBM)
3. Theory of Planned Behaviour (TPB)
4. Diffusion of Innovation Theory (DOI) and
5. Prochaska and DiClemente (1982s)'s Trans-Theoretical Model (Stages of Change).

All the above frameworks have been concisely and brilliantly summarized under different tabs at the Boston University School of Public Health's website, USA, by LaMorte, (2019), and a link for each, provided in the references for by readers.

1. The Social cognitive learning theory (SCLT)

The SCLT theory by Albert Bandura (1986) advances the view that learning takes place in a social setting within a dynamic reciprocal interaction of the person, environment, and behaviour. It reflects an individual's past experiences which in turn impacts reinforcements, expectations, and anticipations all of which influence the probability of a behavioural, (LaMorte 2019; Bandura,

1986). Details of all important constructs and the limitation of SCLT have also been summarized Boston University School of Public Health's website link in the references.

2. Health belief model (HBM)

The HBM was advanced in the 1950s by Hochbaum and modified by Becker, & Rosenstock (1984) to help explain people's failure to adopt behaviours to prevent illnesses. According to LaMorte, it "...suggests that a person's belief in a personal threat of an illness or disease together with a person's belief in the effectiveness of the recommended health behaviour or action will predict the likelihood of the person adopting the behaviour..."p.2, (2019). Six variables that are of essence when considering whether an individual will adopt a preventive health behaviour are perceived susceptibility, perceived severity e.g., to COVID-19 and perceived benefits e.g., of adopting preventive measures. The rest are perceived barriers e.g., feeling towards obstacles of say cost or benefit analysis of purchasing preventive gears such as masks, cue to action e.g., personal physical symptoms and/or death and illness of significant other of COVID-19. That last variable is Self-efficacy which denotes the extent to which a person is personally convinced of his or her own abilities in meeting demands a particular situation presents.

3. The Theory of planned behaviour (TPB)

TPB by Ajzen (1991) is a current version of the theory of reasoned action which evolved in the 1980's. It envisages an individual's intent to elicit a goal directed behaviour and was developed to explain the control people have and exert to exhibit a behaviour. According to TPB, the propensity for an individual to elicit a behaviour depends on intentions in terms of motivation and behavioural control and differentiates between three types of beliefs - behavioural, normative, and control (Ajzen (1991; LaMorte, 2019). Six variables that all together contribute that person's actual control over the behaviour have been summarized and of these, three, namely; subjective norms (i.e., whether most people approve or disapproved the behaviour in question; perceived power (i.e., factors that facilitate or impede behaviour) and perceived behavioural control are relevant for this article. Also, attitude by way of favorable or unfavorable evaluation and behavioural norms (i.e., motivational factors) are equally important constructs as represented in the diagram 1 below

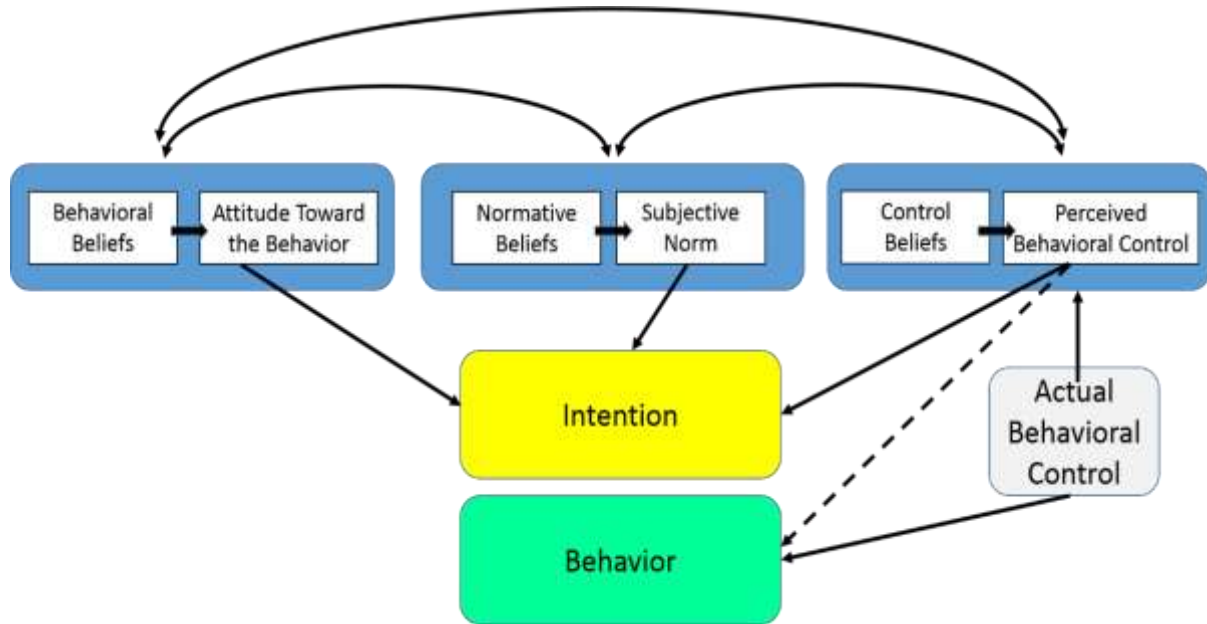


Diagram 1: Illustration of Theory of planned behaviour (TPB), adapted from Ajzen, I. (1991)

4. Diffusion of Innovation Theory (DOI)

DOI theory by Rogers (1962), was developed from communication principles to describe how an idea spreads over time in a population or community forcing an adoption or otherwise, of a novel idea, behaviour, product, e.g., mask wearing behaviour etc. This reminds health promoters that there is a section of populace that will either hinder or enhance acceptance of novelty and that researchers have established that individuals who embrace an innovation promptly have different characteristics than people who adopt an innovation later, (LaMorte, 2019; Rogers, 1962). Five groups of adopters have been established by researchers and have been distinctly described with the limitations of the DOI theory at the link provided above.

5. The Trans-Theoretical Model (TTM)

The (TTM) referred to as the “stages of change model”, was by Prochaska and DiClemente (1982) from extensive scrutiny of experiences of drug addicts who quit on their own volition and those who required help to do same. Thus, TTM as a model works on the notion that people do not modify behaviours timely and decisively; rather, change in habitual behaviour, occurs relentlessly through a cyclical process and postulates that they go through six stages of change: pre-contemplation, contemplation, preparation, action, maintenance, and termination (Prochaska and DiClemente, 1982). At the pre-contemplation stage individuals are often not aware that their behaviour is unacceptable and do not have any intentions of changing their behaviour in the conceivable future. At the contemplation stage people become aware that their behaviour is problematic and contemplate the adoption a healthy behaviour as they begin to consider the pros

and cons doing so, on equal terms which may engender ambivalence. They then move on to readiness with smaller steps to launch into actual action to change when they move to preparation determination phase to actual action stage where they eventually adopt healthier behaviours. Maintenance stage is the next when they persevere in their new behaviour for a more than 6 months and begin to actively prevent relapse and then to the final stage called termination which was a late addition to this conceptual framework. Here people are certain that they will not relapse to the unhealthy behaviour. The TTM is illustrated in the diagram 2 below:

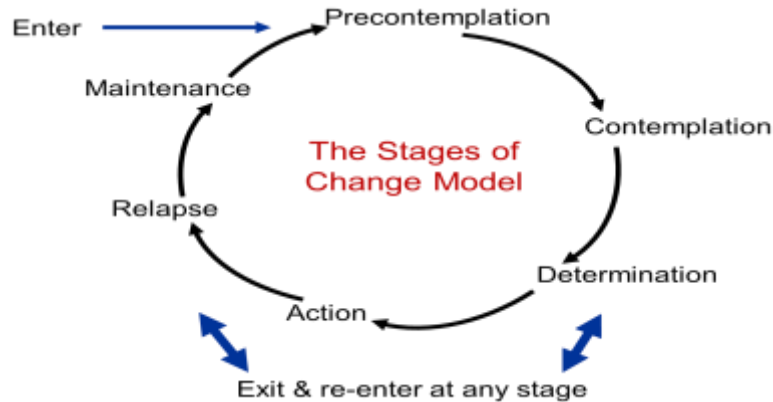


Diagram 2: Illustration of Prochaska and DiClemente’s trans-theoretical model (TTM), adapted from LaMorte (2019).

Having completed the important definitions of missed behavioural preventive opportunities and the overview of the important behavioural and attitudinal change conceptual frameworks, we turn our attention to the chronology of the Ghanaian response to guide the discussion.

Discussion

a. Missed Preventive Health Behaviour

The main objective of this article is to discuss the missed preventive behavioural opportunities in the Ghanaian response to the COVID-19 pandemic with the aim of providing the nation and readership with important lessons for future responses to potential epi- and pandemics.

First and foremost, and as documented in Asantewaa Nkansah’s blog contribution in July 2020 which chronologically outlined the Ghanaian response to Covid-19, the President visited important landmarks such as Accra International Airport and Tema General Hospital, between 4th and 11th March, to inspect Ghana’s readiness to respond to the pandemic in all 16 regions (ibid). On 11th March 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic.¹ The President on the 12th of March gave his first of a series of speeches assuring Ghanaians that all points of entry including land borders and airports were to get ready to lockdown to all incoming travelers; Ghana had not closed its borders yet. By the 13th of March, 2020, when the President addressed the nation and officially announced the nation’s first Covid-19 two cases, Ghana had

still not closed its ports of entries, and not instituted the 14-day mandatory quarantine and testing for all travelers from the so called “countries with more than 200 COVID-19 cases”. By the 21st of March, 2020 Ghana had recorded 19 cases. Could Ghana not have closed its borders earlier – a missed preventive opportunity?

Though judging by all standards inside-and-outside of the country and even by WHO’s standards, the Ghanaian government did well in its preparedness and response towards the COVID-19 pandemic, however, from the authors biopsychosocial point of view, it waited far too long to institute the most important initial preventive health behaviours - the mandatory testing and the 14-day quarantine of travelers from the so called countries with more than 200 COVID-19 cases on the 21st of March, 2020 when Ghana had recorded 19 cases. This delay constituted one of the most important preventive behavioural opportunity Ghana missed as a country in its COVID-19 response. Retrospectively, the country should have locked down completely on 12th March 2020. Without being privy to the technical advice that informed the President’s decisions, the Ghanaian response could best be described by the authors as “wait and manage attitude” which is reactive instead of active in nature. This ‘wait and manage’ attitude was possibly attributable to several reasons. Two of these reasons could perhaps be the lessons and experiences from the Ebola outbreak in which Ghana did not record any confirmed case (GhanaWeb, 2021), and the technical advice the President received. The Ebola experience may be explained by the SCLT which among others, postulates that our past learning experiences affect our future behaviour (Bandura, 1986). In this context, the fact that Ghana did not record any Ebola case does not mean that the outcome may be the same with post Ebola pandemics. This constitutes a big lesson going forward.

Concerning technical advice, even though WHO has replaced its previous strict biomedical approach which emphasizes curative measures in dealing with diseases with the biopsychosocial model, most health systems around the globe still operate at the secondary preventive level of disease management according to *World organization of national colleges, academies and academic associations of general practitioners/family physicians* (Wonca, 2003). Following the failure of the afore-mentioned preventive behaviours, the authorities resorted to contact tracing to curtail further spread of the highly contagious virus. That would have sufficed if the COVID-19 was a contagious illness with a known vaccine or cure. Unfortunately, at the time of writing this article (July, 2020), this notorious pandemic had no vaccine or cure. Therefore, the best preventive management strategy was to institute the primary preventive behavioural measures by way of mandatory testing, 14 day-quarantine of all travelers whether the outbound country had recorded a case or not. This, the writers believe, would have minimized the pressure we put our meagre healthcare system and the hassles as well as the stresses (e.g., fatigue from overwork, risk of infection etc.) we put our health personnel through.

From hindsight, we posit that it would have been better to avoid the first few imported cases, than to engage in and over-emphasize on contact tracing which is even more expensive and stressful for an already distressed healthcare system. Important follow-up questions are what treatment

method were our health authorities using? And “did the developed nations with better healthcare resources not engage in contact tracing?” In essence, the Ghanaian response, even though based on “technical advice”, could arguably be described as having gambled on the Ghanaian healthcare resources. Fortunately, it apparently paid off because of some unknown reasons, which need investigating. Probably Ghanaians are not as vulnerable as their counterparts in the western world who have the best healthcare facilities, yet recording very high COVID – 19 mortalities. With the current 47,030 cases, 308 deaths as at the final review of this article on 13th October 2020, what would have happened if Ghanaians had been as vulnerable in terms of morbidity and mortality of COVID-19 as recorded in Spain, Italy, UK, USA, India and the rest of the western world?

b. Lessons and Attitude from Previous Ebola Experiences

It is also possible that the “wait and manage attitude” on the part of the Ghanaian authorities which delayed mandatory lockdown and border closures may have been as a result of past experiences from the Ebola outbreak between 2014 and 2016 during which Ghana fortunately never recorded a single case. As mentioned above, this could be corroborated by the Social Cognitive Theory that takes into account a person's past experiences which in turn influences reinforcements, expectations, and expectancies, to determine whether behavioural action (e.g. COVID-19 preventive behaviours) will occur (Bandura, 1986). Another possible reason may have been the authority's fear of disrupting normal Ghanaian economic activities through rapid imposition of certain preventive behaviours, thereby slowing down the economic growth rate and becoming unpopular. Whatever it is, the lessons to be learnt here is that, when it comes to dealing with protection of the population, imposition and, or application of all necessary preventive behavioural measures on the population should be done swiftly but informed by the available scientific evidence and facts than to wait and react belatedly to a ruthless pandemic, like COVID-19.

c. Missed Preventive Opportunities from Initial 2-week Partial Lockdown and Lessons

What important role has the Ghanaian government's response in the form of consistent Presidential addresses and interaction with the population played in Ghana's response to the COVID-19 pandemic? By 2nd of October 2020, there had been 17 Presidential state addresses which did not only share information with the population but also gave behavioural directives as to how to best contain the pandemic. Out of those broadcasts, important timelines in the Ghanaian response had objectively been the indefinite closure of universities, schools, churches and mosques, restrictions on all public gatherings on 15th March, 2020 and lockdowns on 27th March 2020, of the Greater Accra and Kumasi metropolitan Areas - the two epicentres (Asantewah Nkansah, 2020).

The preventive behavioural lesson to learn has to do with the manner in which the lockdown was imposed by the president and his administration. There was a two-day lapse of time between the announcement date and the start date of the actual lockdown. This two-day period potentially could have been a leeway for infected individuals with the corona virus to commute from their epicentres

to their “uninfected” hometowns within the country and thus disseminate the virus. The authors are of the opinion that apart from the fact that an opportunity to halt the virus from being introduced into the country by inbound-travelers from the rest of the world was missed by the delay, the lockdown could have been swift and total, instead of partial with a two-day leeway. This view was shared by the Ghana Medical Association which initially advocated a total lockdown. Again, the authors are of the view that the government should have been incisive enough to announce an immediate total lockdown with travel ban which could have been followed by “controlled commuting” back to citizens’ hometowns across the country. This could have allowed for strict enforcement of public behaviours, like wearing of face masks and personal distancing that were believed to mitigate the spread of the virus from person to person.

Even though we do not condone human rights abuses and oppressive communist undemocratic rule, evidence from the literature suggest that the Chinese Communist party enforced the preventive measures more swiftly than most democratic governments. Thus, three weeks into the epidemic, the Chinese Communist government in an unprecedented move to retard the spread of the virus, imposed a lockdown on Wuhan on 23 January, with travel restrictions. Within days, the quarantine was extended to additional provinces and cities, affecting more than 50 million people in total (Wang, 2020). That is to say, not only did the Chinese government impose all the necessary preventive behavioural measures with strict travel ban, it imposed quarantine affecting an area with a population of inhabitants higher than that of Ghana. Probably, a swift more humane but strict and decisive preventive approach would have slowed down the pandemic in Ghana - a missed behavioural opportunity.

d. Missed Opportunities during the Implementation of Preventive Measures

The government did well to announce a very comprehensive lockdown approach by including some preventive behavioural measures such as regular hand washing, social distancing, use of sanitizers, wearing of face masks, coughing and sneezing into tissue papers and disposing off them. The government inadvertently missed important opportunities that could have made all the difference. The preventive behavioural interventions would have been more effective if wearing of face masks had been enforced right from the outset since it is one of the most effective preventive behavioural measures so far as advocated by disease control experts. Unfortunately, face masks enforcement was not an initial feature of the preventive behavioural directives. Even though it became a regular feature later, the delay in inclusion and enforcement of face masks was an initial omission that constituted a missed opportunity from a preventive behaviour point of view. The delayed adoption of wearing of face masks by the Ghanaian populace also leaves much to be desired and constitutes a serious missed preventive behaviour to be discussed below using some of the conceptual frameworks above.

e. Ghanaian Citizens’ Missed Preventive Behavioural Opportunities

This section critically discusses missed opportunities on the part of Ghanaian citizens with emphasis on their attitude towards use of face masks, hand washing, and public gatherings, use of

public transports, attendance at churches, funerals, frequenting drinking bars, etc. Little research has been done on the general Ghanaian citizens' attitude and adherence to the preventive behavioural measures such as hand washing, use of sanitizers and social distancing announced by the Government and its health authorities. However, a recent study by Bonful et al, (2020) in March 2020 which audited a sample of 45 Ghanaian public transport stations, to assess the citizens' compliance with prescribed preventive behavioural measures found that, hand washing was either not practised or not frequently practised. Alcohol-based sanitizers were available at only 1 out of the 45 audited stations and therefore not used as recommended. Social distancing was practised in only 2% of the stations audited and a few of the passengers wore face masks. The authors concluded that, the Ghanaian adoption of such novel preventive behavioural measures had been slow to catch up (ibid).

These findings are in line with the Health Belief Model (HBM) of attitude (Becker, M. H & Rosenstock, 1984) reviewed above. Thus, a person's perception of threat and severity from COVID-19, perceived susceptibility to it, benefit of adopting preventive measures and the worst outcome (death) of contracting it, may all inform the persons' practice of such preventive behavioural measures. Perceived barriers such as feelings towards the recommended behaviours and cost-benefit analysis of purchasing preventive gears or masks and having to engage in economic activities, may be of important determining factors in their practice of preventive health behaviours. According HBM perspective, Ghanaians apparently relaxed in upholding the Government's recommended preventive health behaviours, especially mask wearing and maintaining safe distance - another missed preventive behaviour opportunities on the part of the citizens.

f. Ghanaian Citizens' Attitude towards Managing Oral and Nasal Droplets Evidenced as the Mode of Transmission

Sneezing into a handkerchief, elbow pit or tissue paper and wearing face masks have been recommended by public health experts as behaviours that should be practised to prevent droplets from spraying from the nostrils and mouth of infected individuals onto others, to slow down the spread of the invincible corona virus from person to person. Prior to COVID-19, the Chinese and their neighboring countries were noted for wearing face masks but this practice is new to majority of Ghanaians except for some Moslems who are used to wearing veils. At the height of the pandemic, a minority of Ghanaians found it necessary to appropriately use masks and was visibly seen wearing them. Incidentally, the non-mask wearing majority either did not have masks or had them but kept them in their pockets. A third group had masks alright but wore them beneath their chins. Anecdotally, while some explained that they felt uncomfortable wearing them, others said they could not express themselves verbally well while wearing the masks. Others convincingly claimed that they did not have money to buy the masks but a significant group felt they did not see the need to wear them. Probably, the last group believed the virus for that matter the pandemic, was a hoax. For whatever reason Ghanaians gave for not engaging in the recommended preventive behaviours, the above compromised non-compliant behaviours, particularly with mask-wearing

protocols, are consistent with three of the reviewed conceptual frameworks namely: Diffusion of Innovation Theory (DOI), Theory of Planned Behaviour (TPB), and The Trans-Theoretical Model (TTM), reviewed earlier under introduction of this article.

DOI postulates that the adoption of innovation such as preventive mask wearing during COVID-19 does not happen simultaneously in social systems but rather some people are apt to adopt much earlier than others. According to TTM researchers, both early and slow adopters of innovative preventive measures like mask-wearing have completely different characteristics and they advocate same when promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation to be able to achieve the desired results (LaMorte, 2019; Prochaska & DiClemente, 1982). From the writers' viewpoint, these two frameworks; DOI and TTM, in the context of how Ghanaians behaved towards the recommended preventive protocols suggest that, maybe a comprehensive but simplified media education led by popular and influential celebrities as exemplified by the President and free distribution of appropriate and effective face masks, should have been intensified and enforced from the outset of the pandemic - another missed behaviour opportunity.

From TPB framework, behaviour like mask-wearing could be influenced by factors such as the intention, motivation and active control of that behaviour. Intention is influenced by belief and attitude about expected outcome of a given behaviour. This can be dissected further under normative and subjective norms and risk-benefit analysis. The subjective norm has to do with beliefs in whether most people in the social system approve or disapprove of the index behaviour and social norm refers to societal customary codes. In the case of COVID-19 prevention, adopting mask wearing depends on the person's intention, actual ability to engage in it, e.g., affordability and, whether the larger society and its cultural practices permit it.

Lastly, from TTM, it is to be expected that various sections of the populace will always be at various levels of Prochaska and DiClemente's 6 stages of the cycle of change shown in their popular diagram 2 above. Thus, while some Ghanaian citizens have already understood the risks associated with COVID-19 and heeding to the president's recommended practices to slow down and prevent the pandemic, others may be contemplating on whether to or not to heed to the recommendations - the first pre-contemplative phase. From the synthesis of the conceptual frameworks above, it stands to reason that, merely announcing preventive health measures does not mean that citizen will follow through and immediately adopt the new measures.

The lessons here are that the authority must ensure that:

1. The populace is well educated about the new measures through intensive public education
2. The authorities take steps to minimize any behavioural control factors such as poverty and educational status that may prevent any well-meaning Ghanaian from following the prescribed preventive measures. Another missed opportunity here was not providing free high quality face

masks for every Ghanaian either exclusively by the government from the COVID-19 trust fund or by non-governmental initiatives or both.

Also, the government did well by invoking the necessary public health executive instruments to facilitate effective enforcement of certain COVID-19 protocols that democratically, will be unacceptable to the citizens at 'normal times. It passed 4 executive instruments (E.Is) which were E.I 64 gazetted on 23rd March 2020, for the 'establishment of emergency communications system instrument, and for imposition of restrictions (COVID-19 pandemic) instrument 2020, E.I.65 gazetted on 30th March 2020 for imposition of restrictions instrument (COVID-19 pandemic) (No.2) and E.I. 66 gazetted on 3rd April for the imposition of restrictions (Coronavirus Disease (COVID-19) pandemic (No.3) (Asantewah Nkansah, 2020). The writers are of the opinion that there was a gross lack of prompt and effective enforcement of these EI's and legislations meant to regulate certain behaviours of Ghanaians so as to mitigate the spread of the virus. For instance, the law enforcement agencies could have been deployed into the communities to ensure that such behaviours announced by the president were followed. These behaviours were therefore compromised and constitute a serious missed opportunity in the Ghanaian COVID-19 response which is another subject for a follow-up article.

Conclusions

This article acknowledges the fact that the Ghanaian response to COVID-19 has been praised as one of the best in Africa and the Economic Community of West African States (ECOWAS) sub-region. However, there were several missed preventive health opportunities that could have impacted favorably on the outcome of the pandemic, discussed in this current article. Among others, we have discussed the fact the government's most important initial preventive responses such as the closure of borders and mandatory testing and quarantine of all travelers into the country were instituted rather late. Secondly, the partial lockdown was imposed in a too flexible a manner, to have allowed too much time for some infected individuals to potentially infiltrate and spread the virulent pathogen to other parts of the country against the advice of the Ghana Medical Association. Thirdly, even though initial preventive behavioural measures were instituted, they were done with some missed preventive behavioural opportunities as discussed in detail earlier on using some behavioural conceptual frameworks. For example, an important preventive measure as important as mask wearing almost became an afterthought, albeit featuring more prominently later on. It appears that the public health education messages on behaviours meant to slow down the spread of the virus e.g., mask usage, should have been repackaged and simplified to suit the average educational status of the Ghanaian population.

Finally, on the part of the response from the citizenry, a significant proportion was non-compliant at all with the president's directives for adoption of COVID-19 preventive protocols to mitigate the spread of the pandemic. As per the behavioural conceptual frameworks discussed above, there are some recalcitrant individuals who were determined not to accept and practise the protocols

which required the law enforcement apparatuses to act swiftly to enforce the preventive health Legislations to deal with such emergencies.

Recommendations

Various lessons to improve the approach to management of future pandemics and disasters, have to be learnt from the unfortunate lessons learnt from this COVID-19 experience. The first lesson is that responsible authorities must act decisively and promptly to ensure successful prevention of future pandemics even if the recommended actions cause a bit of discomfort for the minority e.g., the few travelers who would be affected by total lockdown. There is an urgent need for the government to commission a bio-psychosocial enquiry into why Ghanaians came out more resilient than most Western citizens. For example, was it a different strain of the virus, Ghanaian environment, special immunity, special psychosocial traits etc. that rendered Ghanaians relatively less vulnerable? The results of such an enquiry for example could be used to promote Ghana, example as a safe tourist destination. Also, in the near future, the government may do well to involve professionals such as Psychologists and sociologists to advice, behaviorally analyze and repackage the appropriate WHO's messages and recommendations into simpler preventive behaviours for our citizens.

Another important lesson related to the above is the need for Ghana, to technically verify the WHO's technical information and advice unit, if possible, by direct collaboration and communication with the appropriate officials (e.g., Centre for Disease Control wing at WHO) and making sure that it is visibly and palpably represented in the dissemination of the preventive measures and not merely contracting any ordinary advertising agent to come up with ineffective advert for education. For example, it appears from WHO's website, that the global health body seemed to advise against possible visual transmission (Wu et al., 2020; Cirrincione et al., 2020) evidenced by their bullet 4 of advice for public while some bodies were contradicting this that the virus cannot be transmitted through the eyes. Such ambiguities in public health education engender distrust in the populations and outcome of such education.

Another point is that, future executive instruments (EIs) for preventive behaviours should be framed with penalties that may benefit the nation and not the orthodox penalties such as jail terms that may compound the nation's prison problems. All laws, no matter the intent and purposes must be promptly and persistently enforced. It is the hope of the authors that future global, continental, regional and sub-regional responses to threats such as COVID-19, will involve preventive behavioural change measures through relevant conceptual framework from the relevant professionals or experts, in order to maximize the beneficial outcomes for Ghanaians, Africans and humanity. The evidence of the subject of this special article is in the recent Indian complacency resulting in the deadly resurgence in their COVID – 19 morbidities and mortalities with far reaching negative consequences on the entire South-Asian sub – region. For us, prevention is better than cure.

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