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DO PRESIDENTIAL SPEECHES MATTER DURING UNCERTAINTIES? EVIDENCE FROM THE COVID-19 PANDEMIC

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Article Info	Abstract
	Purpose — This study contributes to the fight and management of the deadly COVID-19 pandemic by investigating the association between knowledge sharing through intermittent Presidential speeches and COVID-19 active cases and deaths in Ghana. **Methods —** The study relied on seemingly real-time quantitative time series secondary data and the ordinary least squares (OLS) regression method with robust standard errors for the estimation of the model. **Findings —** The results show evidence of a negative and statistically significant relationship between pre- and post-presidential COVID-19 speeches, and the number of COVID-19 active cases and deaths. **Conclusion & Recommendation —** Timely and periodic presidential speeches can be adopted as one of the management measures adopted to inform and educate citizens in the fight against the pandemic. **Keywords —** Presidential Address, Presidential Speech, COVID-19, Cases, Deaths, Ghana.

Introduction

The World Health Organisation (WHO) on 11th March 2020, declared the COVID-19 outbreak as a pandemic after it had spread rapidly to most countries on the globe with significant number of death cases registered (WHO, 2020). Globally, the total active and death cases which stood at 987 and 17 respectively on 22nd January 2020 rose to 967,782 and 45,487 respectively on 31st March 2020. Even though the spread of the disease was relatively slow in most African countries, elsewhere in Europe, Asia and some North African countries like Morocco and Egypt, and South Africa the spread was rapid and quite devastating.

Ghana registered its first two cases on March 12, 2020 (GHS, 2020). Subsequently, a public statement issued by the Ministry of Health indicated that both cases were imported from Norway and Turkey, and thereafter, the spread of the disease took a study increase with active cases peaking at 8585 (first wave) on 19th June 2020, and 8216 (second wave) on 13th February 2021 (Coccia, 2021). In response to the spread and proclamation by the WHO that the spread of the pandemic could be curtailed through early detection, isolation, effective treatment and contact tracing of patients and those who have come into contact with infected persons, the government through the Ministry of Health, Ghana Health Service, Noguchi Medical Centre and other health centres resorted to the '3T' strategy, namely Tracing, Testing and Treating to help arrest the spread of the pandemic.

Although, the containment and management of COVID-19 pandemic have presented a great and unique challenge to all governments, the effect in Ghana is relatively less severe. Faced with the urgency and mounting magnitude of the challenge the government realised the spread of the disease demanded a rapid policy response. These policies were directly communicated by the President to the nation. The

COVID-19 Presidential speech became a household name which was described by many as "Fellow Ghanaians" - the first statement made by the President in all his addresses.

In his maiden address to the nation, the President of Ghana placed restrictions on international travels and social gatherings with immediate effect. The common measures taken include mass and compulsory testing of international travellers, closure of international borders and ports to human traffic, closure of hotels and guest houses except those used for the quarantining of travellers, closure of schools up to the university level, ban of socio-cultural and religious gatherings such as funerals, weddings, parties and partial lockdown of the two main cities in Ghana (KPMG, 2020).

In addition, the President of Ghana periodically addressed the nation on new developments with regard to COVID-19 data (total, active and death cases), the strategies put in place to arrest the pandemic, precaution that must be taken to prevent the spread of the pandemic, successes chalked and to instil hope in the citizens that the pandemic can be defeated with a collective effort. The government communicated the policy approach through the periodic presidential speeches to the nation. Twenty-five presidential speeches have been delivered as of May 2021 since the first in March 2020 when two cases were discovered in Ghana (Appendix 1).

In Ghana, several studies have been produced on the COVID-19 pandemic since the first recorded cases in March 2020 on the economy (Aduhene & Osei-Assibey, 2021) and stock market performance (Tetteh et al., 2022). However, to the best of our knowledge, what has not been empirically investigated is the extent to which the Presidential speeches or addresses influenced the total number of active case and deaths.

The primary aim of this study is to investigate the extent to which the speeches delivered by the President of Ghana correlate with the trends in the number of COVID-19 total, active and deaths cases.

That is, the key question this study seeks to answer is: have the COVID-19 Presidential speeches created behavioural change that has led to reduction in COVID-19 total, active and death cases in Ghana?

The study proceeds as follows: The second section reviews presidential addresses and COVID-19 cases in Ghana. This is followed by a conceptual framework of the study. The fourth section captures the methodology employed for the study, followed by the findings of the study. The final section presents the discussion of findings, conclusion and policy implications to the study.

A Review of Presidential Addresses and COVID-19 Cases in Ghana

Due to the structure of government in Ghana, decisions about public policy takes a top-down approach. Generally, it starts at the level of the President and ends at the district/community levels for implementation. This places enormous authority in the President to influence behavioural decisions in Ghana.

Presidential address and Restrictions

After Ghana's first recorded COVID-19 cases, the President of Ghana on the 15th March 2020 presented his first address to the nation which was focused on restrictions as measures to reduce the spread of the virus. [1]Travel restrictions on nationals from other nations (excluding residence permit holders) entering Ghana from countries with at least 200 coronavirus cases, as well as a necessary 14-day self-quarantine for those who are otherwise permitted to visit Ghanaian territory, were among the measures taken. The President ordered the country's borders to be closed to human travel starting at midnight on March 22, 2020, as a result of an increase in imported cases. This was made known in the 3rd address to the nation (Refer to Appendix 1). The closure of Ghana's borders and the imposition of obligatory quarantine helped to reduce the number of imported cases registered from arrivals (GHS, 2020).

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[1] Information available at www.presidency.gov.gh. Accessed on 31/12/2021

Again, the President using the Imposition of Restrictions Act, 2020 (Act 1012), imposed a partial lockdown on the Greater Accra and the Greater Kumasi Metropolitan Areas which continued to record new cases of COVID-19 from infected persons who entered the country before the travel restrictions. This strategy was taken not just to reduce the spread of the disease, but also to make it easier to track down anyone who had contact with infected people, test them for the disease, and, if required, quarantine and isolate them for treatment if they tested positive. The lockdown was however lifted (Amoah & Amoah, 2021) after rigorous and satisfactory "3T" (tracing, testing, and treating) exercise had been done for a period of three weeks to avoid a spike of cases that could have wreaked havoc on the health-care sector (Sibiri et al. 2021). It is imperative to state that the worsening economic conditions of the poor and the vulnerable also contributed to the lifting of the lockdown (Assan et al., 2022).

Presidential Addresses and Health policies

Almost all the state addresses by the President contained health strategies and measures the government has put in place to fight the pandemic. In his first address to the nation, the President announced that two main medical research institutions have been equipped for the testing all international travellers to the country. Again, these travellers would be screened and quarantined for a mandatory 14 days. All those found to be positive will be sent to isolation and treatment centres for COVID-19 treatment, The intent is to isolate persons who are suspected of being infected with the virus as soon as possible in order to prevent the infection from spreading across the population (Sibiri et al., 2021). The private sector and other civil organisations, such as churches, have aided the government's efforts.

The President in his 5th national address made mention of some private sector interventions in the health sector to motivate health workers to contribute to the treatment of the growing number of infected persons. Commercial banks in Ghana, together with the central bank, the Bank of Ghana, provided a

loan facility and stimulus package of GHS3 billion to local businesses, notably those in the pharmaceutical, health, services, and manufacturing industries, to help cushion their production efforts[2]. Furthermore, an insurance package has been established for all health staff at the forefront of the pandemic fight. In addition, the President announced that all health professionals have been exempted from taxes on their income for three months. During the same time period, all frontline health personnel received an extra allowance of 50% of their basic salary. As announced by the President in his 5th Address to the nation on April 5, 2020, these incentives were extended for another three months (Refer to Appendix 1). The President also directed the Ministry of Transportation to provide free buses to transport health professionals to and from work along certain routes. Furthermore, the Ministry of Gender, Children, and Social Protection stepped up its efforts to educate Ghanaians on how to create hand sanitizers at home (MoGCSP, 2020).

The President in his 24th address to the nation on 28th February 2021, informed the nation that the first consignment of 600,000 doses of the AstraZeneca vaccine had been procured (WHO, 2021). On **7th May 2021,** Ghana again received additional 350,000 doses of the AstraZeneca vaccine through the COVAX Facility, with logistical support from UNICEF. The President revealed the intention of the government to vaccinate 20 million Ghanaians before the end of 2021. The vaccination campaign started on March 1, 2021, and to assure Ghanaians that the vaccine is safe, the President received his shot on the same day.

Presidential Addresses and Socio-economic Policies

According to Kugbey et al. (2021) and Amoah & Amoah (2021), COVID-19 pandemic has not been all gloomy, and that there has been some evidence of silver linings. That notwithstanding, it is worthy to acknowledge that the negatives have been severe and dire. Indeed, COVID-19 pandemic has not only

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[2] Information available at www.presidency.gov.gh. Accessed on 31/12/2021.

brought health hardships and suffering to humans, but it has also dealt a devastating blow to a significant number of businesses especially those in the hospitality, education, human resource and training sectors of the economy. To reduce these hardships socio-economic policies have been instituted by the government of Ghana to bring support to businesses and relief to the poor and vulnerable. In order to achieve this, the President in his address to the nation on 5th April 2020 revealed the government's response to the COVID-19 hardships with the establishment of the Coronavirus Alleviation Programme Business Support Scheme (CAPBuSS) purposely to deal with the pandemic's immediate adverse effects (**Abbey, 2020**). The CAPBuss aims at preventing job losses, preserving livelihoods, assisting small enterprises, and ensuring that the program is administered effectively and sustainably'. Small and medium firms, which account for approximately 85% of the Ghanaian economy and contribute roughly 70% of the country's GDP (Abor & Quartey, 2010), were suddenly given a ray of hope of being covered under the CAPBuSS.

The ban and restrictions have undoubtedly worsened the woes of Ghanaians in the informal sector which employs majority of Ghanaians such as street traders, food vendors, head porters, and the poor, aged and the vulnerable (Diwarkar, 2020). This situation necessitates a social protection system that gives certain benefits in order to address people's needs (ILO, 2020). To lessen the impact of the virus on the most vulnerable, the President in his 5th address announced the decision of the government to grant free water and energy subsidies for three months to Ghanaians as a social protection measure. To this end the government absorbed the water bills for all Ghanaians from April 2020 to June 2020. This was done to meet the WHO recommendation of hand washing and personal hygiene as one of the most effective strategies of preventing COVID-19 from spreading (Sibiri et al., 2021). Stoler et al. (2020) stress that inadequate water supply poses additional challenges to the fight against the pandemic.

In addition, in his 6th address to the nation, the President announced a three-month electricity relief package that included free power for the most vulnerable (life-line users) and a 50% discount for all other consumers. The water and electricity relief packages were extended to the end of 2020. It is worthy to state that in order to recover the COVID-19 expenditure and other related expenditures the Ghanaian Parliament has enacted the COVID–19 Health Recovery Levy, 2021 (Act 1068) to impose a special levy on imports and the supply of other goods and services.

Presidential Addresses and COVID 19 protocols

Almost all the presidential addresses mentioned the need to follow the three principal COVID-19 protocols: The continuous wearing of nose masks, washing and sanitizing of hands and social or physical distancing. The face mask has been one of the effective means of preventing the transmission of COVID-19 disease. COVID-19 has been proven to be transmitted by people who do not display symptoms of the virus. Maximal viral shedding has been found to occur early in the course of the disease (Javed et al., 2020). As a result, patients may be infectious before they show symptoms or know they have been infected. Again, transmission from pre-symptomatic and asymptomatic patients accounted for 40 to 80 percent of initial transmission. Available evidence suggests that the virus may spread by regular breathing and sneezing, and that even healthy people can shed massive volumes of the virus for further transmission. Constant wearing of the nose mask has been found to be one of the effective ways that can be employed to prevent the spread. Additionally, wearing a face mask lowers transmissibility per encounter by limiting transfer of contaminated droplets, as demonstrated in both laboratory and clinical settings (Howard et al., 2020). They claim that using face masks to limit the spread of the virus is most successful when compliance is high among larger population of a country. It is against this background that the President of Ghana re-emphasised the use of the nose mask by all Ghanaians who move out of their homes.

The President of the Republic of Ghana announced the domestic manufacturing of 3.6 million face masks, at a rate of 150 thousand each week, in his 6th address to the nation, to ensure the availability of nose masks for ordinary residents.

Conceptual framework

The conceptual framework adopted to fulfil the objectives of this research is presented in Figure 1. The purpose is to intuitively establish and explain the association between presidential speeches and COVID-19 figures through behavioural change. It also captures the researchers' point of view on the transmission mechanism through which the nexus between presidential addresses and behavioural changes is plausible.
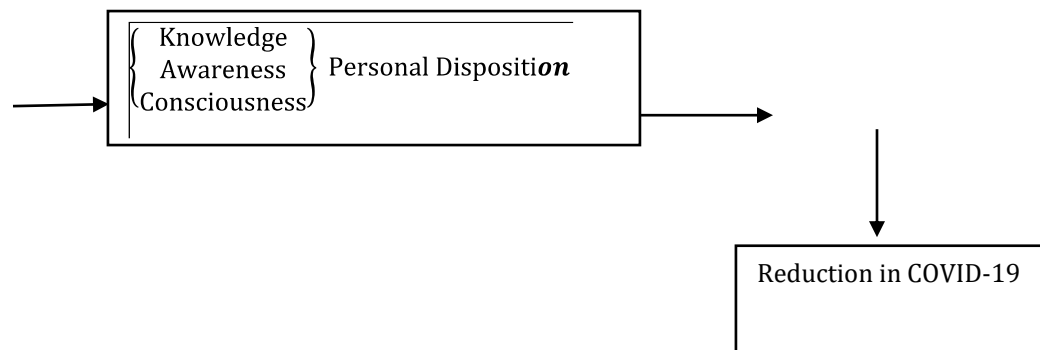

Figure 1: Information, Behavioural Change and COVID-19 Response

COVID-19 knowledge and behavioural change

Education is seen to be ubiquitous to change. Education as a process of gaining knowledge and self-awareness has been identified as a critical component or requirement for behaviour change. McDonald et al. (2016) have emphasised that, the "three Es of injury prevention" education, engineering, and enforcement, should be followed.

However, education on its own is insufficient to facilitate behavioural change, and rarely has desired effect on behavioural change (Arlinghaus & Johnston, 2018). For education to create awareness and have influence on behavioural change, it must offer people with an enhanced understanding of the personal significance of the information given. People are unlikely to change their behaviour because they have been educated about a disease and its implications. There is a high probability of behavioural change occurring if education enhances people's awareness of the consequences of contracting the disease and are personally encountering the effect of the disease. Education should be modified to ensure its content is more relevant to the individual. In addition, tailored education is more likely to contain an explanation of why the information is relevant specifically to the individual (Arlinghaus & Johnston, 2018).

Empirical evidence suggests a strong awareness of COVID-19 symptoms, as well as preventive actions. Siramaneerat (2021) found that having a high degree of awareness of COVID-19 leads to favourable attitudes about preventive behaviours, mild risk perception, and moderate precautionary behaviour adoption. Again, improving people's perception of benefits of COVID-19 prevention practices could lead to COVID-19 prevention behaviours. Furthermore, behavioural change is plausible with COVID-19 prevention guidelines.

COVID-19 awareness and behavioural change

Extant studies suggest that using social networking channels may be helpful in understanding behavioural change and protection against COVID-19. By circulating short messages to targeted population and communities, social networking sites may employ public health authorities as valuable instruments to improve public health awareness (Chauhan & Shah, 2020).

The global effect of the COVID-19 epidemic has been enormous. The disease has altered people's lives all around the world. Work at home, social isolation, the continuous presence of children at home, fear of infection, and the lack of physically interact with others have all negatively impacted on the love relationships of several people. Ibarra et al. (2020) investigated the influence of the COVID-19 pandemic on sexual behaviour in three distinct countries: Iran, Italy, and Spain. They suggest that the influence of the coronavirus is significant in people's sexual lives, and there is the likelihood of experiencing dramatic changes in relationships at all levels in the near future. Due to many contact constraints, the pandemic will have a detrimental impact on sexual behaviour. In employing a multiple regression analysis, Eger et al. (2021) found that health and economic fears as a result of the COVID-19 pandemic are linked to changes in behaviour of customers and influence conventional and online buying behaviour.

COVID-19 consciousness and behavioural change

The evidence for the impact of awareness on behaviour change is vast, adaptable, diverse, and empirically strong. Consciousness, on the other hand, has an indirect and delayed effect that is dependent on the interplay of conscious and unconscious processes. Consciousness appears to be especially crucial for allowing factors like as social and cultural information to influence behaviour, as well as for coping with several competing options. Probably, human behaviour is almost certainly the product of a combination of conscious and unconscious thoughts (Baumeister et al., 2011).

Consciousness is a distinguishing element of human life and experience, yet it is a difficult concept to grasp. Evidence of unconscious, automatic processes has grown over the past two decades, prompting some experts to wonder whether conscious cognition has any impact on behavioural change at all. During the behaviourist period, the concept that conscious cognition is an epiphenomenon was upheld

forcefully, and it has resurfaced owing to new studies of automaticity and the brain (Dijksterhuis et al., 2007). However, for a paradigm shift to occur, awareness of the current situation (COVID-19 pandemic) and its consequences is critical.

Presidential addresses – knowledge, health and economy

Presidential speeches have increased public awareness and understanding of current economic challenges (Sibiri et al., 2021). This link has been extended to other areas such as health in other studies. For instance, Allen (2001) highlights the importance of presidential speeches in bridging or eliminating health disparities. In addition, other researchers, such as Sibiri et al. (2021), have shown a link between presidential speeches and improvement in the management of diseases.

Material and Methods

Study design.

This study relies on a quantitative correlational research design which seeks to examine the relationship between presidential speeches and COVID-19 cases and deaths in Ghana.

Setting.

Ghana, officially the Republic of Ghana, is a country in West Africa. It has the Gulf of Guinea which is a portion of the Atlantic Ocean to the south, sharing borders with the Ivory Coast in the west, Burkina Faso in the north, and Togo in the east. Although several countries have suffered from the pandemic, Ghana's experience presents a unique case because of the frequency at which the government engages the citizens through periodic presidential speeches. Against this background, Ghana is considered as an ideal setting of this study.

Population

The study population was the total number of people infected with the COVID-19 in Ghana. However, the target population was the infected and reported as well as deaths cases in a recognised health facility. The GHS was mandated to validate all reported cases before making them public. Thus, all validated number of reported cases and deaths were used for this study. This may be described as a census approach.

Variables and Statistical Methods

Consistent with the conceptual framework (Fig 1), this study employs a regression approach to examine the correlation between COVID-19 presidential addresses in Ghana and COVID-19 pandemic measures in Ghana. The study assumes that knowledge acquired, awareness or a conscious-state stems from information shared which is the transmission mechanism through which behavioural changes that determines the measures of COVID-19 pandemic occurs. Based on this assumption which has its basis in the conceptual framework, a simple linear *event* model is specified as:

$$COVID - 19 = f(Presidential\ Speech) \qquad (1)$$

where COVID-19 is an outcome variable representing the three COVID-19 measures. These measures include the total number of COVID-19 cases, the total number of COVID-19 active cases as well as the total number of COVID-19 death cases. In this study, the *event* includes dates the COVID-19 speeches are given by the President. The COVID-19 presidential speech has two measures and are estimated differently for comparison purposes. First, address-day which is the address coded on the day of its delivery whiles post-address is the address coded after a week of its delivery by the President.

A priori, all else held constant, we expect the informative address as delivered by the president to have a negative effect on COVID-19 measures.

Bias

The study uses secondary data with no direct contact with humans. Nonetheless, this is prone to data modifications through the data validation processes. Similarly, under-reporting of cases and deaths is also possible due to traditional and religious practices.

Data Sources and Identification

The study relies on secondary data for all COVID-19 measures used in the study. These data were obtained from the Worldometer website[3] whiles the data on presidential addresses were obtained (25 addresses) from published presidential speeches[4]. The sample covers the period March 1, 2020, to May 31, 2021. These daily time series datasets (443 observations) are considered large enough for time series analysis.

Of course, presidential speeches in Ghana may be endogenous to COVID-19 measures. Two likely sources of endogeneity can be identified. The first is, the COVID-19 measures are expected to be real time reported figures. Unfortunately, that is not the case as the estimates are collated and validated before they are reported. That is, COVID-19 measures can influence the president's address leading to reverse causality. Second, the bivariate model estimated may have several behavioural and fixed effect variables excluded from our models for lack of data leading to endogeneity stemming from omitted variables bias. Due to data constraints, this study failed to account for endogeneity concerns and admits that the results must be interpreted as association and not causal impact.

Admittedly, stationarity is key for time series analysis (Kwablah et al., 2014). However, binary independent variables in a bivariate regression model, tend to spread in a stable manner which might exhibit stationarity. In effect, investigating the stationarity properties of a binary variable appears to be an exercise in futility. Next, we present the descriptive analysis in Table 1 before proceeding to estimate

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[3] Available at https://www.worldometers.info/coronavirus/ [Accessed on 31/10/2021)
[4] Available at https://www.moh.gov.gh/president-akufo-addo-addresses-nation-on-measures-taken-by-govt-to-combat-the-coronavirus-pandemic/(Accessed on 30/10/2021)

the ordinary least squares (OLS) regression with robust standard errors and present the results in Tables

2 and 3.

Results

Table 1: Descriptive Statistics

Statistics	Pre-Presidential Speech	Post-Presidential Speech	Total Number of COVID-19 Reported Cases	Active Number of COVID-19 Reported Cases	Number of COVID-19 Reported Deaths
Median	0.000	0.000	45655.00	1298.00	294
Standard Deviation	0.215	0.470	32869.25	2088.12	262.47
Skewness	4.211	0.729	0.18	1.16	0.65
Kurtosis	18.731	1.531	1.74	3.48	2.25
Min (%)	0(5%)	0(67%)	0	0	0
Max (%)	1(95%)	1(33%)	93962	8585	785
N	517.000	517.000	517.000	517.000	517.000

Table 2: Pre-Speech Regression Results

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) BS: OLS	(5) BS: OLS	(6) BS: OLS
	Death Cases	**Active Cases**	**Total Cases**	**Death Cases**	**Active Cases**	**Total Cases**
Presidential Speech Day	-1.2306**	-0.3752	-0.9676**	-1.2306**	-0.3752	-0.9676**
	(0.562)	(0.359)	(0.395)	(0.562)	(0.364)	(0.388)
Constant	10.0809***	7.2598***	5.2862***	10.0809***	7.2598***	5.2862***
	(0.096)	(0.063)	(0.069)	(0.094)	(0.067)	(0.068)
Observations	446	446	437	446	446	437

Replications	N/A	N/A	N/A	1,000	1,000	1,000
F-Test/Wald chi2(1)	4.79	1.09	6.01	4.79	1.06	6.21
R-squared	0.019	0.004	0.022	0.019	0.004	0.022

Dep Variable: lndeath
Dep Variable: lnactive
Dep Variable: lntotal
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The study examines the effect of COVID-19 presidential addresses on the COVID-19 pandemic fight in Ghana. It is expected that the addresses by the President should create awareness precipitating behavioural change and consequently a reduction in the harm caused by the pandemic. Using a correlational regression analysis with 446 observations, we estimated 6 models. Table 2 presents the regression results. The first three standard models employed the OLS approach with robust standard errors while the last three are the bootstrap OLS approach with robust standard errors. The first three and last three models present converging estimates hence any of them can be chosen for interpretation. Consistent with theoretical propositions, the results show that the coefficients of death cases, active cases and total cases are negative and statistically significant across all the models. Specifically, the findings indicate that COVID-19 presidential address-day is associated with a 1.2306% reduction in average number of death cases, 0.3752 % fall in average number of active cases, and 0.9676 % decline in average number of total cases. Clearly, the number of death cases appear to be more responsive to the President's speech compared to that of active and total cases.

Table 3: Post-Speech Regression Results

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) BS: OLS	(5) BS: OLS	(6) BS: OLS
	Death Cases	**Active Cases**	**Total Cases**	**Death Cases**	**Active Cases**	**Total Cases**
Post-Presidential Speech Day	-1.8577***	-0.5143***	-1.2691***	-1.8577***	-0.5143***	-1.2691***
	(0.216)	(0.145)	(0.150)	(0.214)	(0.146)	(0.150)
Constant	10.7228***	7.4356***	5.7028***	10.7228***	7.4356***	5.7028***
	(0.054)	(0.054)	(0.059)	(0.055)	(0.053)	(0.059)
Observations	446	446	437	446	446	437
Replications	*N/A*	*N/A*	*N/A*	*1,000*	*1,000*	*1,000*
F Test/Wald chi2	*74.19****	*12.60****	*71.96****	*75.66****	*12.48****	*71.86****
R-squared	0.198	0.036	0.179	0.198	0.036	0.179

Dep Variable: lndeath

Dep Variable: lnactive

Dep Variable: lntotal

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3 presents the post address regression results. The bootstrap OLS models indicate that the coefficients of death cases, active cases and total cases are negative and significant indicating a reduction in harm caused by the virus. The results show that the post-presidential day address is associated with 1.8577 % reduction in death cases, 0.5143 % fall in active cases, and 1.2691 % decline in total cases. Though, there is a general decline in association, however, the number of COVID-19 death cases are more sensitive to the post-presidential day address relative to the other measures. This could be explained by the fact that death is highly risky and irreversible as compared to being infected,

thus efforts toward avoiding death are intensified by the individual, family and government as compared to activities leading to being infected and reporting to the appropriate health facility.

Furthering the analysis by comparing the effect of the speech on the day the address is delivered and the post-presidential day address, it could be observed that the impact of the address is greater after the speech compared to the Presidential address day. The percentage change in death cases between pre and post presidential addresses dropped by approximately 51 percent and that of active cases declined by 37 percent while that of total cases fell by 31 percent. The results show differences in magnitude between the pre and post presidential addresses with respect to death, active and total cases. With the post-address reporting larger magnitudes as compared to the pre-address. The difference could stem from the post-presidential address sensitivity to health and socio-economic impacts and the degree of response by the citizenry. That is, whiles the people's attention was being drawn to the number of infected cases, deaths and socio-economic challenges, they were observed over-time to have responded positively through behavioural changes.

Discussion of Results

The objective of the study is to ascertain the degree to which the addresses by the President of Ghana correlate with death, active and total cases of the COVID -19 pandemic in Ghana. Using a correlational regression analysis, the study showed that pre-presidential speech led to a reduction in death, active and total cases in Ghana. This result is consistent with the findings of Sellnow (2015) who revealed that the provision of timely information during pre-crisis phase does not only prepare the minds of the citizens but also make them ready for the occurrence of a pandemic and has the potential of lessening the harm caused by the pandemic.

Similarly, the post presidential speech also led to the reduction in death, active and total cases. Thus, both pre and post presidential addresses correlates negatively with death, active and total cases. According to Baumgartner and Jones (1993), presidents are the main agenda–setters among political players, therefore citizens look up to the President for leadership. Thus, it is plausible that the speeches of the President might have shaped the opinion of the citizens regarding the pandemic thereby reducing the fatality associated with it.

The President's recommendation of the use of face mask, washing of hands, the use of hand sanitizers, good eating habits, regular exercise, staying at home and social distancing might have accounted for these reductions. Existing studies (Howard et al., 2020) revealed that the greatest reduction in viral infections occurs at the early stages of the disease and thus wearing of nose mask could help to prevent the spread or transmission of the virus. Howard et al. (2020) noted that the use of nose masks could be most effective at preventing the spread of the virus when compliance is high among larger populations.

Furthermore, the speeches which show areas with high prevalence and infection rates might have helped those communities or individuals to take prompt action to attenuate the effect of the virus. Moreover, revealing the severity of the virus and indicating the number of deaths associated with it might have sent a strong signal to the public that they stand a chance of being infected by the virus if care is not taken. Eger et al. (2021) noted that health and economic fears are closely related to behavioural change of customers and affect the purchasing behaviour of buyers associated with COVID-19.

Again, the President also touched on stigma which could aggravate the sufferings of infected individuals and discourage infected people from seeking medical attention thereby increasing the difficulty in dealing with the pandemic. This might have encouraged infected persons to disclose their COVID-19 status in order to receive timely treatment reducing the spread of the virus. Also, the closure of international borders and ports, schools, hotels and guest houses, ban on social and religious activities,

partial lockdown as well as tracing, testing and treatment of infected individuals might have also accounted significantly to the fall in death, active and total cases (GHS, 2020).

In line with the theoretical framework shown in Figure 1, it is likely that the address of the President might have triggered behavioural change via the education it provided about the COVID-19 pandemic and its implications leading to a reduction in death, active and total cases. It could therefore be argued that education through a well understood information shared is the channel through which behaviour could be modified. Interestingly, other studies have revealed that education is a necessary but not a sufficient condition for behavioural change (Arlinghaus & Johnston, 2018). They argued that for education to create awareness and modify behaviour, it must provide better understanding of the relevance of the information. Thus, having a high degree of awareness and enhanced perception of the benefits of COVID-19 prevention practices could lead to a positive behavioural outcome (Siramaneerat, 2021).

In as much as the evidence is robust, we cannot gross over some limitations associated with the study. Data on COVID-19 cases and deaths is seemingly real time and not actually real time because the figures have to be validated by the Ghana Health Service (GHS) before they are published. The process can be susceptible to political influence which could lead to under-reporting or over-reporting. Again, infection rate could be under-reported as asymptomatic patients may not have reported to health facilities for testing. Belief systems may have influenced underreporting. Some people may have decided to treat themselves at home using religious and traditional practices.

Conclusion

Ghana has been found to be among the countries that effectively controlled the spread and effect of the COVID-19 epidemic. Indeed, timely presidential speeches have been identified as one of the

management measures adopted to inform and educate citizens in a fight against the disease. However, the possible role of periodic addresses of the President in the fight against the pandemic has been unattended to by previous studies.

The study established that both pre and post presidential covid-19 addresses have impact on the COVID 19 pandemic even though the magnitude for the post-presidential COVID-19 addresses is found to be greater than pre-presidential COVID-19 addresses. Thus, a more pronounced effect on COVID-19 cases and deaths is realised in the "post" than in the "pre" COVID-19 presidential addresses.

The study posits that knowledge acquired, awareness and the state of consciousness of the citizens stem from information shared which is the transmission mechanism through which behavioural changes that determine the measures of COVID-19 pandemic occur. The study serves as an eye opener to both researchers and policy makers in the effectiveness of presidential speeches in fighting epidemics. For policy purposes, we highlight the relevance of leadership, responsibility and initiatives through presidential speeches or addresses as a key component in the fight against uncertainties such as COVID-19 pandemic. Further, this study emphasises the need for leaders not to trivialise their reassuring engagements with their citizenry as it matters in periods of uncertainties.

Competing Interest

The authors declare no competing interest.

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Appendix

Appendix 1: Policy responses Captured in the Presidential Addresses and their compliance

Dates	Presidential Address	Major measures - policy response and important feat.
11th March 2020	1	Screening and quarantining all travellers to Ghana for mandatory 14 days. Two main medical research institutions in place for testing. Ban on international travels by public officials. Emphases on preventive protocols.
15th March 2020	2	Ban on religious and social gatherings for four weeks. All schools closed till further notice. Offices, shops, commercial buses observe strict hygienic procedures and social distancing. Contact tracing to curb the spread and treat those infected.
21st March 2020	3	Continuation of previous policy responses. Ministry of Health is contracting newly trained and retired healthcare professionals.
27th March 2020	4	Partial lockdown for two weeks to enhance contact tracing.
5th April 2020	5	Clean ups and sanitization campaign.
12th April 2020	6	3-Ts, i.e. tracing, testing and treatment intensified. More samples taken for testing. Food items being distributed in Accra and Kumasi to the vulnerable and needy are being done through National Disaster Management Organization and Metropolitan and Municipal Assemblies
19th April 2020	7	Introduction of the use of drones to expedite the transportation of samples to laboratory centres. Introducing rapid results test. Enhancement of capacity of testing. Schools remain closed. Restrictions on religious and social gatherings still enforced Partial lockdown lifted. Recovery recorded in some health centres.
26th April 2020	8	Construction of 6 regional and 88 district hospitals in a year to contain future epidemics.
10th May 2020	9	Continuous ban on public, religious and social gathering. Soft loan scheme of GH¢600 million to support small and medium scale businesses, GH¢3 billion credit and stimulus package, to help revitalise industries, especially in the pharmaceutical, hospitality, services, and manufacturing sectors. Ghanaians advised to exercise and eat well to improve their immune system Seven more testing facilities established. More recoveries recorded.
24th May 2020	10	Ban on religious and social gatherings listed but limited to 100 people.
14th June 2020	11	Final year students of Universities and SHS to go back to school to complete programme following the laid down protocol. Ban on sporting activities still enforced. Contract tracing still enforced.
21st June 2020	12	Ban on gatherings still enforced.

		Contract tracing still enforced.
28th June 2020	13	Arrangements for students to go back to school to complete the term/ semester. Incentive package for health workers.
26th July 2020	14	COVID-19 safety protocols enforced in schools. Borders, by air, land and sea, remain closed. Ban on internal flights lifted. Restrictions on religious gathering lifted but duration under 2 hours and 25% capacity. National Unemployment Insurance Scheme to be established to provide temporary income support to workers that have lost their jobs. Establishing a Guarantee Scheme of GH¢2 billion to enable businesses access credit at more affordable rates so they can survive, and able to retain jobs. 100 bed Ghana. Infectious Diseases Centre established at the Ga East Municipal Hospital.
16th August 2020	15	Universities started teaching online. Borders by air, land and sea remain closed to human traffic.
30th August 2020	16	Passengers arriving in Ghana must be in possession of a negative COVID-19 PCR test result from an accredited laboratory in the country of origin. Upon disembarking from the aeroplane, each passenger will undergo a mandatory COVID-19 test at the airport terminal. Active cases continue to decline as majority of patients recover.
20th Sept 2020	17	Ban on sporting activities lifted but number of number of spectators limited. Testing of sportsmen and women, technical and management staff. Private burials, still, with a maximum of one hundred (100) persons. Borders, by land and sea, will remain closed to human traffic until further notice. Beaches, pubs, cinemas and nightclubs remain closed until further notice. All other institutions that have been cleared to function are to continue to do so in strict adherence to the COVID-19 protocols. More recoveries. Death cases dropped significantly.
18th Oct 2020	18	Kotoka International Airport was reopened to passengers. Testing of air travellers held. Expansion of COVID-19 testing facilities, 12 more established (now 16), which include those of private sector provider. Some hospitals across the country equipped with the capacity to test for COVID-19. More dedicated treatment facilities for dealing with the disease. More PPEs made available for our health workers. More COVID-19 patients recover.
8th Nov 2020	19	International passengers arriving in the country should submit proof of seventy-two (72)-hour old negative PCR test. Release of additional logistics to the Ghana Health Service for contact tracing. The use of technology to augment contact tracing efforts and monitoring of home care cases.

Date		Content
		Incentive package for health workers extended to the end of the year (2020). Active cases increase from 398 to 1,139 in 6th November 2020.
20th Dec 2020	20	Approval of COVID-19 vaccines, by the Food and Drugs Administration of the United States of America, and the Medicines and Healthcare Products Regulatory Agency of the United Kingdom. Provision of hope for Ghanaians. Social events are to be held outdoors or in very well-ventilated halls, rather than in closed, air-conditioned spaces. Persons with underlying ailments to pay particular attention to their immunity and health during the COVID-19 era. Active cases reduced significantly.
3rd Jan 2021	21	Kindergarten, primary and Junior High, in both private and public schools' re-opens. All institutions, public and private, are fumigated and disinfected. Institutions, with their own hospitals and clinics, will be equipped with the necessary personal protective equipment, and have isolation centres to deal with any positive cases. Those without their own health facilities hospitals, have been mapped to health facilities. Testing of traveller to Ghana, asymptomatic or not, and mandatory isolation and treatment at a designated health facility or isolation centre is still enforced' No mass gathering, no sporting activities.
17th Jan 2021	22	People cautioned to observe Covid-19 protocol. Strick sanctions foe offenders. Partial lockdown imminent. Increase in active cases.
31st Jan 2021	23	Restrictions reintroduced and tightened. Funerals, weddings, concerts, theatrical performances, and parties are banned. Private burials, with no more than twenty-five (25) people, can take place, with the enforcement of the COVID-19 protocols. Beaches, night clubs, cinemas, and pubs continue to be shut. Borders by land and sea remain closed. All workplaces must employ a shift-system for workers, in addition to the use of virtual platforms for business or work. Conferences and workshops advised to use virtual platforms. Active cases doubles in two weeks. Virus mostly occurs indoors, confined spaces with poor ventilation, where people talk, sing, or shout without their nose masks on.
28th Feb 2021	24	Arrival of 600,000 doses of the AstraZeneca vaccine. The first consignment of many more to come. 20 million Ghanaians to be vaccinated. Ghanaians assured the vaccine is safe.

		The Imposition of the Restrictions Act 2020 (Act 1012) remains in force and security agencies will continue to enforce it until the required number of Ghanaians have been vaccinated.
		The government has received additional 350,000 doses of AstraZeneca vaccines through COVAX.
16th May 2021	25	Significant reduction in active cases. Rate of infection also reduces drastically.