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A Descriptive Study on Modalities for Prevention and Control of Corona Virus Disease: Strategies by Kisumu County, Kenya

Patrick Angala

Ph.D. Student, School of Business and Economics, Maseno University, Kenya

Omulele Salome Sungu

Ph.D. Student, School of Business and Economics, Maseno University, Kenya

Oduor Juma Paul

Ph.D. Student, School of Business and Economics, Maseno University, Kenya

Omino Peresia Akoth

Ph.D. Student, School of Business and Economics, Maseno University, Kenya

Mildred Bakhoya Wanyama

Ph.D. Student, School of Business and Economics, Maseno University, Kenya

Eric Wafula Wanyonyi

Ph.D. Student, School of Business and Economics, Maseno University, Kenya

Donald Gulali

Lecturer, School of Business and Economics, Maseno University, Kenya

Abstract:

Corona Virus (COVID 19) is a disease that has affected the world with countries facing uncertainty on effectiveness of mitigation measures including quarantine to influence behavior. Kenya is among the vulnerable countries considering its strategic position. Kisumu County is one of the 47 counties with a devolved health system.

During the pandemic, counties were tasked to lead the COVID 19 mitigation measures. This paper describes the key mitigation measures undertaken between March 2020 to December 2021 which includes establishment of a mitigation taskforce, enforcement of WHO and Kenya country measures. KHIS data for the period reveals a decline in reported cases an indication on the success by the county.

Keywords: *Strategies, Strategic Management, Covid 19 mitigation, Kisumu County, Kenya*

1. Introduction

Corona Virus (COVID 19) is a disease that was declared a pandemic by the World Health Organization (WHO) in January 2020 and is of global concern (Rothan & Byrareddy, 2020). By March 2020, COVID 19 had spread to over 114 countries with over 45,171 infections and killing over 4,000 people (Kannan et al., 2020). Countries having faced with uncertainty of COVID 19 have adopted mitigation measures including quarantine to influence behavior (Motta Zanin et al., 2020).

Kenya is among the countries identified at moderate risk with varying levels of vulnerability to COVID 19 (Kannan et al., 2020). By April 2020, the country had reported over 100 cases (Aluga, 2020). The risk of infection by 2021 in Kenya was 27%, risk of hospitalization was 43% and risk of death was 17% (Boonsaeng et al., 2021). The global COVID 19 tracker as at 19th August 2021 shows that by December 2021, Kenya had recorded over 300,000 infections and over 5,000 deaths¹. The tracker indicates that Kenya is among the top 10 countries on reported death cases. The World Health Organization (WHO) also records a total of 4,354 deaths as of 18th August 2021².

During this pandemic period, the Kenya government through the Health Ministry rolled out various public health measures to contain COVID 19 which included creation of public awareness on the disease, advocating for use of masks in public places, practicing hand hygiene by hand washing or sanitizing and social distancing (Aluga, 2020). Additionally, there were international travel bans and cessation of movements in May 2021 in and out of areas that exhibited high rates of infections (Osuri et al., 2021) which included Kisumu County³.

Kisumu County is one of the 47 counties in Kenya with a devolved health system (McCollum et al., 2019)(McCollum et al., 2019)(Kenya National Commission on Human Rights, 2017). According to 2019 National Census Kisumu County has a population of 1,155,574 among them 48% (556,942) male and 51% (594,609) female. The county is defined as urban with

¹ <https://graphics.reuters.com/world-coronavirus-tracker-and-maps/countries-and-territories/kenya/>

² <https://covid19.who.int/region/afro/country/ke> (19th August 2021)

³ <https://ke.usembassy.gov/government-of-kenya-announces-new-restrictions/>

rural setup. The county hosts the third largest city in Kenya, Kisumu city. In May 2021, Kisumu County was identified as a high transmission zone continuously recording high infection rates in the country⁴.

2. Literature Review

2.1. Social Distancing

Although the term social distancing was not introduced fully until the 21st century, social distance measures date back to at least the 5th century BC. (Weill et al., 2020). In public health, social distancing is also called physical 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 and reducing the number of times people come into close contact with each other as discussed by Noreen Iftikhar⁵. Without this, other pandemic containment measures, pathogens can spread exponentially through direct physical contact (including sexual contact) indirect physical including touching contaminated surface) and airborne transition (if the microorganism can survive in the air for long periods. The measures are less effective when an infection is transmitted primarily via contaminated water or food or other insects. Spread can speed over distances longer than 2 m (6 feet) in enclosed, poorly ventilated places and with prolonged exposure.

The world Health Organization (WHO) has suggested using the term physical distancing instead of social distancing” because it is physical separation which prevents transmission; people can remain socially connected by meeting outdoors at a safe distance (while there is no stay-at-home order and by meeting via technology). In response to this, national and logical governments around the world have declared emergencies precautionary measures.

In absence of a vaccine, social distancing measures are one of the primary tools to reduce the transmission of severe acute respiratory syndrome Coronavirus 2 (SAR-Co-2) virus which results to COVID -19 (Weill et al., 2020). This measure has been applied around the world it is unfortunately that there is often long delay between strong social distancing policies that are adopted and when cases, hospitalizations and deaths peak and begin to decline (Nande et al., 2021).

2.2. Isolation and Quarantine

According to WHO (2020), quarantine is separation and restriction of movement of well persons presumed to be exposed often at home or designated residential facility hospital (Sopory et al., 2021) .

Self-quarantine is one of the measures that has been recommended by MoH for people who have mild COVID 19 symptoms (Suppawittaya et al., 2020)(Francis et al., 2020). Further, WHO recommends the quarantine of persons in contact with a COVID 19 positive person (contacts) in essence, the restriction of activities and/or the separation of persons who are not ill. This is aimed at controlling onward transmission of the virus, monitor contacts for the development of any symptoms to ensure the early detection, and appropriate management of potential cases. WHO distinguishes quarantine from isolation, where isolation is the separation of persons with known infection to prevent the spread of the virus.

2.2.1. Wearing of Masks

Masks and face coverings can prevent the wearer from transmitting the COVID-19 virus to others and may provide some protection to the wearer. Multiple studies have shown that face coverings can contain droplets expelled from the wearer, which are responsible for the majority of transmission of the virus (Howard et al., 2020)(Esposito & Principi, 2020). Universal mask use can significantly reduce virus transmission in the community by preventing anyone, including those who are unwittingly carrying the virus, from transmitting it to others (Nakayachi et al., 2020).

Disease modelling suggests masks worn by significant portions of the population, coupled with other measures, could result in substantial reductions in case numbers and deaths (Howard et al., 2021). The WHO recommends wearing of Masks to help prevent the spread of COVID 19. Masks can also reduce the inequitable impact of the pandemic, particularly for those who live in crowded environments where physical distancing is difficult, and for those who work in frontline roles where there is a greater risk of exposure to the virus.

2.2.2. Hand Washing Hygiene

During the Corona Virus disease/COVID-19 disease outbreak (COVID-19) hand washing with soap is considered as the best defense. Mechanism against COVID-19 virus along other health measure, like social distance, avoiding crowded places and mask wearing. CDC- and WHO guides and recommends on HCW's washing requires that one washes hands with soap and water when rubs is recommended for all other opportunities for hand hygiene during patient care as it is faster, efficient and better tolerated by skin surfaces World health organization (WHO) (2013).

2.2.3. Temperature Monitoring

Elevated temperatures has been identified as a symptom of Corona Virus(Mariš & Adamová, 2021). Thus, monitoring of body temperature is critical to containing the spread of COVID 19 (Lin et al., 2020)(Aharari et al., 2021). Normal temperatures are estimated at ~37.0°C however with slight variation based on age and gender and therefore the critical need for assessment (Diamond et al., 2021).

National Surveillance:

⁴ <https://www.voanews.com/covid-19-pandemic/kenyas-kisumu-emerges-new-covid-19-hotspot> accessed on 19th August 2021

⁵ <https://www.healthline.com/health/coronavirus-prevention>

Reporting systems ought to aid in understanding the impact of diseases (Post et al., 2020)(Mbithi et al., 2021). In Kenya, the public reporting structures for COVID included government briefs and KHIS data

2.3. Objectives

2.3.1. Broad Objective

The broad objective of this paper is to document the strategies employed by Kisumu County to manage COVID 19 and to compare the Kisumu County documented trends from KHIS to the trends in Kenya between March 2020 and December 2021

2.3.2. Specific Objectives

To document the preventive and control measures to COVID 19 employed by Kisumu County between March 2020 and December 2021

To documented trends from KHIS to the trends in Kenya between March 2020 and December 2021

3. Research Questions

Are there traces of adherence to COVID 19 mitigation measures in Kisumu County?

Does KHIS data for Kisumu County demonstrate reduced numbers compared to other counties in Kenya?

3.1. Scope of the Study

The study was carried out in Kisumu County. The county was selected based on its status as the second largest city in Kenya, its population, health and economic activities

4. Methods

The researcher used various data collection methods to describe the COVID 19 management processes within Kisumu County. They include a review of government briefs/communication on COVID 19, observation and review of newspaper articles.

5. Government Briefs

With guidance from WHO, The GoK provided directives to counties on a daily basis which were also implemented by Kisumu County and included Establishment of a multi sectoral task force for COVID 19. Led by the Governor and the county Director of health, a team was identified and tasked to improve and maintain country/county readiness and response interventions for COVID 19. This team meets on a regular basis and provided update to the County governor. The team also work closely with the national COVID 19 response team through the chair. The team was responsible for development of budgets and resource mobilization for COVID 19.

The county ensured community education by demystifying, providing clarity on misinformation, communicating with, engaging, and empowering communities to adopt risk-reducing behaviors and practice infection prevention and control. To reduce mortality and morbidity from COVID-19 and all other causes the county ensured that COVID-19 cases are diagnosed early and given quality care.

The county ensured that the most vulnerable populations are protected through vaccination. Vaccines were provided through health facilities and all vaccinated persons were registered in an online system. In addition, the county supported integration of the COVID-19 response within the health system and minimize the socioeconomic impact of a prolonged COVID-19 response.

6. From Newspaper Reporting

6.1. Social Distancing

Kisumu being one of the four counties identified as hotspots due to the early detection of the disease in these counties. Other counties were Nairobi, Mombasa, Kilifi and Kwale. In the beginning policy response was directed at these counties in order to isolate and control the spread of the disease. Social distancing was one of the most appropriate public health interventions.

The county government of Kisumu used community policing to enforce the guidance through its *Nyumba Kumi* initiative. In addition, community health workers, public health officers, multi-agency teams were employed at road blocks to enforce the regulations. All services offered within the county of Kisumu had to adhere to the social distancing guidelines recommended by the ministry of health of two metres apart



Figure 1: Screenshot of New York Times Picture Showing Social Distancing in Kisumu

6.2. Quarantine and Isolation

Following the GoK directive in April 2020 for all counties to set up quarantine facilities, Kisumu County set up to establish 300 bed capacity isolation centers, the county government of Kisumu identified three facilities including Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH), Kisumu County referral hospital and Lumumba hospital to meet the required capacity for isolation measures.

6.3. Hand Washing

The county carried out advocacy on hand washing techniques and distributed of sanitizers soap. In addition, to mark the global hand washing day the county also implements WHO measures of COVID -19 and was reported in the daily nation on 1/10/2020. To commemorate global hand washing day, the county health department in collaboration with partner including WSUP, practical, Action, care Kenya, SWAP and KIWASH distributed hand washing around Omena market, Dunga beach, Kasawino, Obunga and Kibuye markets.

Speaking during the official opening of global washing day marked while at Kisumu County Referral Hospital (KCRH), the chief officer for health Mr. Alphonse Ouya echoed the importance of hand hygiene for all and more important habit to adopt to prevent COVID -19, other viruses' bacteria and germs that spread when we fail to wash hands. Mr. Fred the director for health described why hand washing is vital at a key time. This was after Prof Anyang Nyong'o governor and Special programs Ruth Odunga Kisumu country had initially moved round to sensitize masses on the same.

6.4. Temperature Taking

The Saturday Nation 17/ July/ 2020 stated that as states and business communities struggle in planning economy re opening, strategies during the Covid 19 pandemic involved non-contact temperature assessment devices as part of an initial check at entry points to identify and triange people who may have elevated temperatures. When the thermo gun is used improperly, temperature assessment may be very minor on reducing COVID 19 infection measure. The county government of Kisumu enacted health policy and measures in ensuring that businesses, transport systems and community organizations etc. avail this device to assess body temperature of clients. Most entry points including public offices had thermo guns to implement this and officiated by county health team as seen by nation media

6.5. Wearing Masks

On May 27th 2020, through regular daily newspapers, the County Government of Kisumu reported its implementation of the COVID control measure that residents to take temperature at the entrance of hospitals, super markets, malls, main entrances of learning institutions, banks, worship areas, eateries and bus terminals. The Police were asked to support in enforcing the guidance

7. From Observations

7.1. Social Distancing

To comply with the government directive, all learning institutions both public and private i.e., universities, colleges and Schools within the Kisumu County provided adequate infrastructure such as classrooms dormitories with recommended 6 feet distance to decongest and to assist in cabbng spread of virus. When at peak, close and advice learners to stay home going to web-based learning and cancelling all campus meeting and other gathering was instituted for redesigned vehicles "Do Not Sit here" notice were pinned on seats. These seats are thus avoided to create recommended space the process called a greedy Algorithm. Although this spacing left the company with likely losses but it's safer to staff, company and the passengers as well.

The for inter - faith council protocol proposed a third of the capacity of the venue and 1.2 meters apart or total banned. Business entities changed routine practices, setting up flexible shift plans, having employees telecommute and canceling any larger meeting or conferences. The practice of distancing encouraged use of things such as online video and phone communication instead of in-person contact avoiding large gatherings and maintain at least 6 feet from others when possible. In addition, institutions encouraged staff to Avoid using other employees' phones desks, work tools, offices, or work tools and equipment, when possible. As much as possible, clean and disinfect them before and after use.

All bars, restaurants and eateries within Kisumu County operated in strict adherence to WHO ministry of health protocols. Enforcement of curfew restrictions across the county starting say 7.00 pm and ending at say 4.00am until situation improves was observed. Burial functions to be convened 72 hours after pronouncements of death and camping at all. In addition, only 100 very close mourners to attend as per the Ministry of Health, state order (2020). When at apex, workers within non-essential department/ units were asked to work from home regardless of whether it is public or private entity.

7.2. Quarantine and Isolation

On 6th March: The County governments, through their respective governors were tasked to ensure that necessary isolation wards in all Level 4 and 5 Hospitals. The County recommended Self isolation at home for those diagnosed and those suspecting to be infected through the detailed guidelines of the health agencies.

Patients in critical conditions separation and restricted movement were recommended. Individuals seeking health care and had symptoms of fever, cough or difficulty breathing were requested call center number (719), the individual was directed to the nearest facility with capacity to screen, collect samples for the laboratory and manage the patient. For patients who met the case definition, on arrival at the facility, staff ensured that they don appropriate PPE, move the patient to isolation, assess to get better history and conduct a physical exam.

Persons with COVID-19 were considered potentially contagious from two days before to 14 days following illness onset. COVID 19 Contact cases within the county were to be quarantined either at home or in health facilities with special protective equipment and other health care settings for 14 days

Trained laboratory technologists in participating healthcare facilities collected nasopharyngeal and oropharyngeal samples from patients meeting the Kenyan MoH COVID-19 case definition. Samples were tested using RT-PCR at the central reference laboratory in KEMRI. Healthcare workers in participating facilities collected patient clinical data using a digitized MoH COVID-19 Case Identification Form. All this was done to compact with the surging numbers of COVID 19 patients in the County,

7.3. Hand Washing

Left: Picture showing Chief Officer Alphonse Ouya demonstrating hand washing techniques during the global hand washing day observed in Kisumu for COVID 19 pandemic.

Kisumu County carried on with advocacy on handwashing through demonstration of handwashing techniques and distribution of sanitizers and soap to mark the global handwashing day on the 15th of October 2020.



Figure 2: Chief Officer Alphonse Ouya Demonstrating Hand Washing Techniques Temperature Taking

At the Kisumu County with an average of 80,000 passengers entering the county from neighboring the county working closely with health facilities around the bus terminus ensured that all travelers had their temperatures recorded as an initial step that can lead to screening for the novel coronavirus.



Figure 1: Health Care Worker Taking the Temperature of Passengers at the Kisumu County Bus Terminal before Boarding

7.4. Wearing Masks

On 16th March 2020, Kisumu County Governor together with the Kisumu County Commissioner, released a joint press release enforcing wearing of masks by the public. Throughout the period, the county government received masks from well-wishers which were distributed to the public including health care workers.

Health care workers were tasked to provide continuous medical education on wearing masks. In addition, posters were developed and shared on proper wearing of masks

7.5. KHIS Data

Between March 2020 and December 2021, Kisumu County reported to KHIS a total of 257 COVID 19 Cases. During the period, the highest reported cases were in April 2021 with 115 (45%) of all reported cases followed by March 2021 at 74 (29%) of all reported cases. The county CNR (Case Notification Rate) per 100,000 population in the given period is 22.4. When comparing Kisumu reported cases to the national cases, Kisumu had cases ranging below 3%

Month	% to Country Cases	Case Notification Rate/100,000	% to National
March 2020	0	0.00	0%
April 2020	0	0.00	0%
May 2020	0	0.00	0%
June 2020	0	0.00	0%
July 2020	0	0.00	0%
August 2020	0	0.00	0%
September 2020	0	0.00	0%
October 2020	0	0.00	0%
November 2020	11	0.95	0%
December 2020	3	0.26	0%
January 2021	1	0.09	0%
February 2021	3	0.26	0%
March 2021	74	6.40	3%
April 2021	115	9.95	3%
May 2021	7	0.61	0%
June 2021	24	2.08	1%
July 2021	5	0.43	0%
August 2021	4	0.35	0%
September 2021	0	0.00	0%
October 2021	4	0.35	0%
November 2021	0	0.00	0%
December 2021	6	0.52	0%
Total	257	22.24	

Table 1: Kisumu County COVID Reporting to KHIS -22nd Jan 2022

8. Discussion

It has not been easy to compact COVID 19 in Kisumu County though the curve of infections went down, which was due to the top management in collaboration with the various stakeholders holding meeting and working out together to enable a peaceful working environment. The County boss in liaison with the national government and other sectors like Public-Private partnership worked together in strengthening COVID-19 response in Kisumu. Furthermore, COVID-19 diagnostic testing formed the basis for a PPP between KEMRI, Department of Health Kisumu County, Pharm Access Foundation, and local faith-based and private healthcare facilities.

The economic consequences of the pandemic are likely to have a far greater impact on the long-term health, wellbeing and poverty levels of the population as a whole than the predicted fatalities caused directly by the disease. Sectors worst hit by the virus include the labour force, housing, transport, health, trade and tourism. The supply and demand for goods and services in these sectors have been significantly hampered. Furthermore, the restriction of movement in and out the country has dwindled the revenues from the tourism and aviation sectors, while delays at borders due to testing of truck drivers have resulted in losses of profits to business owners.

There has been a tremendous reduction of scrambling and over loading for public transport. Also, the issue of keeping two meters apart for the customers queuing to receive services has been adhered to.

These actions provide protective measures such as limiting travel, avoiding crowds, social distancing, hand washing, wearing of masks thorough and frequent monitoring to slow down the development of new COVID-19 cases and reduce the risk of overwhelming the health care system.

9. Conclusions

The pandemic is continuing to have an impact in the County, like most, areas in the County are having serious resource constraints, fragile health systems and lack of a clear strategy to fight the virus. To ensure socioeconomic recovery within a reasonable period, the County Government should put in place plans and resources that do not continue to weigh disproportionately on people living in poverty.

The pandemic has highlighted, more than ever, that neglecting certain sectors make people living in poverty more vulnerable. These are health, social protection, housing and sanitation and hygiene. There needs to be more scrutiny of budget plans, their execution, and performance of these sectors, all of which should support those living in poverty.

Re-opening the economy whilst also taking care of health concerns has been a balancing act for County Government. The county has a large population living below or just above the poverty line. It is this category of the population that are most affected by the impact of the pandemic. Reduced earnings from sluggish economic activities and job losses as a result of confinement measures by the government have to be balanced against consideration of the daily needs of those living in poverty, as well as now-looming food insecurity across the country.

10. Abbreviations and Acronyms

CDC	Centre for Disease Control
CME	Continuous Medical Education
COVID	Corona Virus Disease
GoK	Government of Kenya
HCW	Health Care Worker
KHIS	Kenya Health Information System
KIWASH	Kenya Integrated Water, Sanitation and Hygiene
MoH	Ministry of Health
SWAP	Safe Water and Aids Project
WHO	World Health Organization
WSUP	Water and Sanitation for the Urban Poor

11. Operational Definitions

Strategies	:	Strategic Management approaches
<i>Nyumba Kumi</i>	:	<i>A framework for community policing in Kenya</i>

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