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Diffusion of COVID-19 Misinformation in Kenyan X Conversations

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Abstract

Purpose: The study set out to explore the role of X conversations in the spread of misinformation about the COVID-19 pandemic in Kenya.

Methodology: The study was guided by the Rumor Theory. The study adopted a descriptive survey design which allowed the researchers to collect data without interacting with participants. Data was collected from existing online records of conversations on X and other relevant websites such as the Ministry of Health. The data was sourced from hashtags and tweets related to the COVID-19 pandemic in Kenya, posted in the period from March 2020 to April 2021. The hashtags and tweets were mined using the free API tool for geolocated tweets. 16 hashtags and 200 tweets were selected for the study. Quantitative data was analyzed using descriptive statistics while qualitative data was analyzed using content analysis under classified themes.

Findings: The findings of the study indicate that none of the hashtags created by Kenyans was framed to spread misinformation but the tweets under the different hashtags analyzed contained misinformation. Findings also indicate that verified X handles were involved in either creating or spreading COVID-19 misinformation. Additionally, false claims were found to diffuse faster than partially false claims as observed in the tweets with misinformation. Compared to a background corpus of COVID-19 tweets, tweets with misinformation were more often concerned with discrediting other information on social media.

Unique Contribution to Theory, Practice and Policy: We recommend that the government and stakeholders in health ought to counter COVID-19 misinformation online, and equip users with basic digital literacy skills regarding consumption of online information while continuously monitoring online discourses. A policy on online health communication needs to be developed and implemented.

Keywords: *COVID-19, Diffusion, Misinformation, Hashtags, Rumor, Social Media*

JEL Codes of Classification: *L86, L82*

INTRODUCTION

The emergence of the novel coronavirus in late 2019 brought a lot of uncertainty, fear, controversial theories and an accelerated search for any information that would help people around the world understand the new disease. Social media platforms became an important source of information for most populations since they were easily accessible using mobile phones. These networks provided real time information on COVID-19 data including world statistics on infections, deaths and recoveries. The first case of COVID-19 in Kenya was reported on 13th March 2020. The country went into lockdown on the 15th of March 2020. During this period Kenyans resorted to seeking information on the strange disease from different media.

Due to their tendency to seek information from the internet through the mobile phone, an increasing number of Kenyans relied on social media platforms for COVID-19 information and therefore identified misinformation emerged as a critical task in those unpredictable times. Misinformation is false or inaccurate information that is deliberately created and is intentionally or unintentionally propagated. Misinformation can therefore be misleading. Misinformation on COVID-19 appeared to have spread rapidly on social media (Zarocostas, 2020). Similar trends were seen during other epidemics elsewhere, such as Ebola (Oyeyemi, Gabarron & Wynn, 2014) and yellow fever (Ortiz-Martínez & Jiménez-Arcia, 2017) outbreaks.

Social media use in Kenya has grown immensely especially with the rapidly growing number of Smart Phone users in the country. The country also has good internet access and relatively good levels of digital literacy. According to Wamuyu (2023), 99% of Kenyans access social media through their mobile phones. Kenyans use different social media platforms including Tik Tok, WhatsApp, Instagram, Telegram, IMO, LinkedIn, X (formerly Twitter). X is an important social media platform that continues to gain popularity among users in Kenya especially as a source of news (Munuku, Mberia & Ndavula, 2017). Kenyans on X use the platform for news sharing much more compared to Facebook or TikTok which have more users but are more often viewed as entertainment platforms. During the COVID-19 pandemic, X Hashtags became very popular among Kenyans. During the pandemic Kenyans relied on the platform for information on vaccination, infection rates and also government directives on lockdowns, travel and other control measures. Besides, X was the main platform used by WHO and MOH during the pandemic (WHO Report, 2020; MOH Report 2020). This study focused on misinformation in the COVID-19 oriented hashtags on X.

Statement of the Problem

During the COVID-19 pandemic, X health campaign platforms like *Mobile. Twitter. Com*, for example, had created many hashtags including #StayingSafeAndInformedWithTwitter and #Covid19TwitterSearch. X also had a platform named the COVID-19 Tracking Project. These platforms played a critical role in keeping the world informed on the spread and management of the viral pandemic. It is however important to note that it was also through social media that the majority of people got false, non-authentic and unverified information about issues since the internet allows anyone to post anything from anywhere in the world. These posts in different social media networks included messages from doctors, patients, health experts and ordinary online community members. In many cases, the source, authenticity and credibility of the messages was unclear. Hence, the need to conduct a study that would shed light on the diffusion of health information in relation to the COVID-19 pandemic.

X users also engaged in debunking rumors around the pandemic. Overall, research supports the idea that the X community debunks inaccurate information through self-correction (Zubiaga, et al., 2017; Mendoza, Poblete, & Castillo, 2010). However, self-correction can be slow to take effect (Procter, Vis, Voss, 2013) and interaction with debunking posts can even lead to an increasing interest in conspiracy-like content (Zollo, et al., 2017). Moreover, it appears that in the earlier stages of a rumor circulating X users had problems differentiating between true and false information (Zubiaga, et al., 2016). This included users of high reputation such as news organizations and celebrities. Often, news organizations would issue corrective statements at a later date if necessary. This underscored the necessity of dealing with newly emerging rumors around crises like the outbreak of COVID-19. Furthermore, the study sought to fill research gaps since existing Kenyan studies on COVID-19 focused on different aspects such as the effectiveness of health communication campaigns through social media (Musyoka, 2020) and how the X platform was used to disseminate both accurate and inaccurate information (Karanja & Wasike, 2020). A study by Mule & Kilonzo (2021) investigated the role of X in shaping public opinion on COVID-19 vaccination in Kenya. Moreover, another study by Akinyi (2021) explored the role of social media in crisis communication focusing on the COVID-19 pandemic. A study by Wanjiru & Mutua (2020) was closely related to this study since it analyzed X conversations about COVID-19 pandemic focusing on public debate and health access. The current study focused on misinformation. This study sought to investigate the role of X in the spread of misinformation through hashtags and tweets based on the Covid-19 pandemic.

LITERATURE REVIEW

Within the field of communication there is no consensus on the definition for misinformation (Pierri, Piccardi & Ceri, 2020). In this paper, we define misinformation broadly as circulating information that is false (Zubiaga et al., 2017). Spreading false or inaccurate information can be explored under the term's misinformation, malinformation and disinformation. The term misinformation is more commonly used to refer specifically to when false information is shared accidentally, whereas disinformation is used to refer to false information shared deliberately (Hernon, 1995). Malinformation refers to the spread of false and sometimes dangerous information with a malicious intent. In this study, no claims about the intent of the purveyors of information, whether accidental or malicious are made. Therefore, this study pragmatically groups false information together regardless of intent. In line with recommendations by Wardle and Derakhshan (2017), we avoided the polarized and inaccurate term fake news. Rumors are circulating pieces of information whose veracity is yet to be determined at the time of posting (Zubiaga et al., 2017). Misinformation is essentially a false rumor that has been debunked.

Few studies have investigated the magnitude or spread of misinformation on X regarding the COVID-19 pandemic (Cinelli, et al., 2020; Kouzy, et al., 2020; Gallotti, et al., 2020; Singh, et al., 2020, Shahi, etal 2020), but none of those studies were contextual to Kenya. For instance, there were several studies on the use of X for public health communication and misinformation in different countries including United Kindom, USA, India, Korea, Brazil, Germany, Italy and New Zealand (Erdem, 2021; Telles & Braga, 2020) Kenya like many countries in the world suffered the devastating effects of COVID-19 with many Kenyans desperately seeking information from social media. This makes Kenya an important case study especially because most countries in the developing world were relying solely on Western countries for information on the strange disease. Furthermore, none of the previous studies reviewed had investigated how the language use of COVID-19 misinformation differed from other COVID-

19 tweets or which X accounts are associated with the spreading of COVID-19 misinformation. We thus conducted an exploratory analysis of: (1) the X accounts behind COVID-19 misinformation, (2) the propagation of COVID-19 misinformation on X, and (3) the content of incorrect claims on COVID-19 that circulate on X. The exploratory method was preferred because too little was known about the topic under study to tailor either a purely quantitative or a purely qualitative study.

We believed this to have been a starting point for a more structured, goal oriented approach to mitigate the crisis on the go and to learn how to decrease negative effects from misinformation in future crises as they unfold. Second, we aimed to make a contribution to the scientific theory with new insights into how COVID-19 misinformation differs from other COVID-19 related tweets, in relation to where the disease originated from, and how it spread to other areas in the world. This should pose as the foundation for drawing a solid research agenda on the phenomenon. Third, we provided the first set of recommendations for practice. The recommendations ought to directly help social media managers of people in authority, crisis managers and social media users and content creators in their work.

The key questions which this study sought to answer were: (i) What were the main areas of misinformation in relation to the COVID-19 pandemic in Kenya? (ii) What were the sources of misinformation on COVID-19 on X? (iii) How was misinformation passed to the public via COVID-19 X hashtags in Kenya?

Theoretical Framework

The study was guided by the Rumor theory that was developed by Bordia in 1996 and which he later improved in 1998 with Rosnow. Di Fonzo then modified the theory in 1998 (Onook, etal. 2010). In this study, rumor is defined as any form of information and misinformation that has not been verified as true or correct. A rumor may be taken as collective behavior that appears as communicative transactions, negotiations, evaluations and interpretations about an issue. In the study, any information and misinformation about the COVID-19 disease before verification was treated as rumor. Onook, Kwon and Rao (2010) while citing Aquirre et al. (200l), posit that rumor normally sets in during crises especially where there is ambiguity and ignorance. Therefore, when both ignorance and ambiguity are removed from the situation, rumor will not take hold. Informational ambiguity as well as the level of importance of needed information during crises fuels rumors and consequently leads to a rise in misinformation. The information spread must be based on important issues that affect the concerned interlocutors. According to Runyan (2006), rumors crop up during extreme events, which are characterized by high consequences, low probability, ambiguity and decision-making pressure. This causes unusual communication patterns including multiplicity of information sources and diversity of opinions on the event or issue. The Rumour Theory suits this study because most of the information about the pandemic that Kenyans shared in online platforms including the discussions under different X hashtags needed verification and authentication. Moreover, the COVID-19 crisis led to a proliferation of misinformation especially in the internet-based media. X had been used to propagate this misinformation which can be classified as rumours about different aspects of the pandemic using hashtags and tweets. Governments all over the world had been under immense pressure to make decisions as information on severity of the disease, infection rates and other issues came up from different sources. The study employed the Rumor Interaction Analysis Systems method to identify the coding themes and categories of information from hashtags and tweets. These categories were based on communication

modes such as whether the information is authentic, interrogatory, informative, based on beliefs, used for sense making, digressive, discursive, antagonistic or seen to cause apprehension and anxiety.

METHODOLOGY

The study adopted a descriptive survey design, which allowed the researchers to collect data without interacting with participants. For data collection, online data mining was done on existing online records of X conversations and websites such as the Ministry of Health website. The study limited itself to data from hashtags and tweets related to COVID-19 in Kenya from March 2020 to April 2021. The hashtags and tweets were collected using the X API for geolocated tweets. The study targeted 16 hashtags and 200 tweets relating to COVID-19. Quantitative data was analyzed using descriptive statistics while qualitatively data was analyzed using content analysis. In this case, a thematic categorization of the communication modes and categories under the Rumor Interaction Analysis Systems were used to categorize the information in the hashtags and tweets collected.

RESULTS

The study analyzed a total of 16 hashtags and the tweets under them. The analysis revealed that the hashtags had different sources including ordinary Kenyans on X, government agencies and health professionals. The hashtags were framed in different ways communicatively. These frames produced hashtags with identifiable themes, whereby, some hashtags were classified as antagonistic, others were pro-government and others neutral depending on the creators' understanding of the COVID-19 protocols or measures taken by the government. This is discussed below.

Framing COVID-19 Hashtags on X

Hashtags reviewed in the study had three main sources: those created by Kenyans on Twitter (KOT) (10 hashtags), the Kenyan Ministry of Health (MOH) (4 hashtags) and doctors from Kenya (2 hashtags) (see Table 1). Categories specified by the Rumor Interaction Analysis Systems were used to identify the coding themes and categories of information from hashtags. These categories were based on communication modes such as whether the information is informative, persuasive, digressive, discursive, directive or antagonistic. The hashtags were analyzed according to their communication mode. Upon analysis under different categories of the communication mode, the following distribution was revealed: discursive (5 hashtags), persuasive (5 hashtags), informative (2 hashtags), digressive (2 hashtags), directive (1 hashtag) and antagonistic/sarcastic (1 hashtag). It is clear that discursive and persuasive hashtags outnumbered the other types of hashtags. Antagonistic/Sarcastic hashtags such as #COVIDIOTS were the least common.

The hashtags were also grouped into three categories, namely pro-government, anti-government and neutral. Hashtags that we reviewed were either framed to communicate neutrality to the COVID-19 protocols or framed to depict anti-government or pro-government stance. A majority of the hashtags (8 hashtags) created by Kenyans on Twitter (KOT) had a discursive frame that was anti-government. One hashtag created by KOT had a discursive frame that was pro-government while one was neutral. A majority of the hashtags (3 hashtags) created by the Kenyan Ministry of Health (MOH) were pro-government while one hashtag was neutral. The two hashtags created by the doctors were neutral because they communicated neutrality to the COVID-19 protocols.

Table 1: COVID-19 Hashtags on X

Hashtag	Source/Creator	Hashtag frame	Communication Mode
#Covid19KE	KOT	Neutral	Informative
#StayHomeKenya	KOT	Pro-government	Persuasive
#KomeshaKorona	MOH	Pro-government	Persuasive
#Covid19Millionaires	KOT	Anti-government	Digressive
#UnlockOurCountry	KOT	Anti-government	Discursive
#FlattenTheCurve	MOH	Pro-government	Persuasive
#OrangeMaskFriday	KOT	Anti-government	Discursive
#KemsaScams	KOT	Anti-government	Discursive
#KemsaHeist	KOT	Anti-government	Discursive
#Covid19Spreaders	KOT	Anti-government	Digressive
#CovidIsNotOver	Doctors	Pro-government	Persuasive
#CovidVaccine	MOH	Neutral	Informative
#BelieveInScience	Doctor	Neutral/pro-government	Persuasive
#GetVaccinatedNow	MOH	Pro-government	Directive
#NjaaRevolution	KOT	Anti-government	Discursive
#COVIDIOTS	KOT	Anti-government	Antagonistic/Sarcastic

The 8 hashtags created by KOT were anti-government and protested the response of the Kenyan government to the COVID-19 pandemic. Kenyans protested against lack of sufficient information when the government shared COVID-19 updates. Users pointed out the lack of specificity in the COVID-19 updates. An X user stated:

> Gakau Njuguna RN @GakauNjuguna Jul 25, 2020 Replying to @MOH_Kenya:
>
> Total males tested ????
>
> Total females tested???

Some X users stated the lack of clarity in the statistics provided by the Ministry of Health. An X user stated:

> Sam Maina @SAMMAINALC Jul 25, 2020 Replying to @MOH_Kenya:
>
> Please provide statistics of the cumulative active cases per county. It'll provide an indication of the counties in which there is a high risk of facility overrun: cases vis-a-vis the bed capacity

Other users protested the slow pace of testing COVID-19. An X user stated:

> M.O. Rodgers @MORodgers3 Jul 25, 2020 Replying to @MOH_Kenya:
>
> At this time in July, we are still testing below 5k?? Testing 2k??? We have a long way to go to flatten the curve @MOH_Kenya. You need to up your game. Yes, I have a responsibility to take care of myself, but you also have a responsibility to take care of all of us.

The tweets related to politics critiqued the government inconsistency in enforcing COVID-19 containment measures. Government regulations mainly for curbing the spreading of COVID-19 were seen as limiting consequences in people's daily lives which explains the negative valence seen. An X User stated:

> Wilberforce M. @WMumia Replying to @RailaOdinga and @JunetMohamed
>
> I thought it was just yesterday when political gatherings, government conferences were banned? Ama some animals are more equal than the others? Do we really even care about voters' lives? Oohh my....my country Kenya

Some criticized the government corruption surrounding the COVID-19 pandemic. They used X hashtags as tools for discursive practice where ordinary citizen expresses displeasure with the governing system as seen in the X posts below:

> Mesh@DemeshMeshack
>
> It's unfortunate that all the beneficiaries of the Covid-19 billions are still walking scot free, I thought investigations were being done concerning the same? #Kemsascams.
>
> Roy@Senior_Komrade
>
> Every day, we hear 4,5,3,6 Covid-19 deaths. Yet, there's someone is busy making money at the expense of the dying. Where does one even get the audacity to do that?! And the dpp is even not feeling the intensity of the matter. Was money not lost ama kuna kitu hatujui?! #Kemsascams
>
> Bobo Bobo@Lucywambo14
>
> It's like corona came came as an opportunity to some individuals, it so sad to see Kenyans lacking something to put on the table while some people's accounts are rising. #KemsaScams

Diffusion of COVID-19 Misinformation on X

Findings indicate that out of the 16 hashtags created, none of them was framed to spread misinformation. A possible explanation is that hashtag creators included established organizations like the Ministry of Health who created 4 hashtags and professionals such as doctors who created 2 hashtags. A majority of the hashtags (10 hashtags) created by Kenyans on Twitter (KOT) were a form of protest towards the government's handling of the COVID-19 health crisis as opposed to spreading misinformation. However, X Users engaged in conversations under the various hashtags posted tweets which spread misinformation. Some users disputed facts about how COVID-19 virus is spread in the community. An X user stated:

> @SalimAbebe Replying to @DrAhmedKalebi @MOH_Kenya and 9 others
>
> it has always been at a community level spreading peacefully within us... but lazy science made you to think otherwise... that's why it's a disgrace to see intellectuals like you mislead the public that you can control an aerosol virus

Another X User argued that the virus wasn't as bad as the Ministry of Health stated it to be.

> Circle@cir_circle Replying to @DrAhmedKalebi @I_am_Gathoni and 10 others
>
> We're not dropping down dead on the streets, so tone it down with the fear mongering… #covid19Ke

An X user stated:

> Jackson@JackThash Oct 18, 2020
>
> All Kenyans believed COVID is that serious until the #Covid19Millionaires

Other Users tried to fix a political angle to the COVID-19 pandemic. They linked the spread to political events in the country. One X User claimed the rallies conducted by one political candidate acted as super spreaders. However, Kiambu wasn't the epicenter of the epidemic. An X user stated:

> Rein@Rein_Asamo
>
> Kiambu county is the epicenter of #covid19Ke. Remember the UDA super spreader rallies.

Some X users spread the narrative that the government was opening schools so that they could create a ready market for COVID-19 protection masks and drugs, especially after the KEMSA scandal was revealed. An X User stated:

> Charles Ole Kapaiku@CharlesKabaiku Sep 23, 2020
>
> Phase 2 of #covidbillionaires LOADING... Sell at throw away price! Schools to open IN October 19th so market will be readily AVAILABLE!! Brokers TO make DOUBLE KILL, Sell to Kemsa, buy cheap, Sell to Schools. @CofekRebranded
>
> @kot #kemsascams #TekelezaKATIBA #healthscam

Other users gave a political angle to the COVID-19 containment measures. One X User stated:

> Cyprian, Is Nyakundi@CisNyakundi May 30
>
> BREAKING: Illegal Interior CS Fred Matiangi has extended the curfew. They want to keep us in this state until elections next year so that they can rig themselves in. This cycle will never end until we arise! #UNLOCKourCOUNTRY #StopLoaningKenya #RevolutionNow #BoycottBrookside

Another user posted:

> DP @DanChepta Mar 29
>
> The lockdown may provide #Covid19Millionaires another opportunity to steal - Martha Karua.

On the other hand, Some X users tried to dispel COVID-19 misinformation. One X User stated:

> Wanjiru Muriuki@CiruMuriuki Oct 2, 2020
>
> This weekend while at a petrol station, I struck up a conversation with the attendant, who proceeded to tell me that COVID-19 is fake, a ploy to get donor funds. That broke me, because my father died of COVID-19.

This implies that some X users tried to debunk COVID-19 myths on social media. They fulfilled a gap that was left by government agencies in dispelling the misinformation that was on social media.

The discursive hashtags that seemed to go against the government's directives may imply that any control or preventative measures would face hurdles among members of the wider public. This may have contributed to the faster spread of the disease as people ignored directives in protest. The fact that corruption seemed to be one of the key issues raised means less public trust toward any government measures of prevention or control of the disease. Discursive hashtags may also contribute to faster formulation and dissemination of controversy theories. The use of X during COVID-19 to spread information and misinformation was reported in United Kingdom, Brazil, India, United States of America, Germany, Italy and New Zealand (Teles & Braga, 2020).

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

Findings indicated that none of the hashtags created by Kenyans was framed to spread misinformation but the tweets under the different hashtags analyzed contained misinformation. Findings also indicate that verified X handles were involved in either creating or spreading COVID-19 misinformation. Additionally, false claims were found to diffuse faster than partially false claims as observed in the tweets with misinformation. Compared to a background corpus of COVID-19 tweets, tweets with misinformation were more often concerned with discrediting other information on social media. The Ministry of Health in Kenya and other organizations such as World Health Organization (WHO) used the X platform to counter misinformation and disinformation.

Conclusions

In this exploratory article we showed how COVID-19 misinformation diffused in Kenyan X conversations. We identified 16 hashtags and tweets under them related to diffusion of COVID-19 misinformation. Based on our analysis of X hashtag data, our study yielded a complex picture of the diffusion of COVID-19 pandemic information in Kenya. We found hashtag frames dominated by anti-government frames, created by Kenyans on X. X conversations critiqued government response and attempted to infiltrate the discourse with COVID-19 misinformation. The COVID-19 pandemic was a complex issue in the Kenyan society because it was tied to politics. Some X users felt that the government manipulated COVID-19 information and statistics in order to profit from it. X discussions surrounding COVID-19 were centered more on mismanagement and mistrust of the government rather than facts about the disease itself. Kenyans expressed their dissatisfaction and lack of confidence in the government and how it handled the crisis. However, some X users tried to dispel COVID-19 misinformation as seen in some of the tweets.

Recommendations

We recommend closely monitoring social media discourse in order to understand how information dissipates across the different platforms. COVID-19 had sparked much misinformation, and it quickly propagated. We recommend close monitoring of hashtags even when they have not been obviously framed to spread misinformation. For X users, this also means that they have chances to check if a tweet might contain misinformation by checking replies to it – these replies may contain misinformation. For the ordinary X user, our findings

suggest to always be critical of messages on X and to always check the sources of information. We suggest that strategies for fighting COVID-19 misinformation should focus on a fast response to misinformation regarding conspiracies and virus characteristics, given that previous research has shown that negative (mis)information spreads faster (Vosoughi et al. 2018). We recommend that the government and the MOH should carefully tailor their online responses going forward. Conventionally, a trusted source of information is expected to have a neutral frame which is informative, discursive or persuasive. We also advise authorities to employ tools of social media analytics so as to get accurate metrics on public engagements with health information. This will help them to keep updated on developing misinformation and possibly debunk fake news. Improved regulation of information dissemination on social media is critical. Development and implementation of policies on cyberspace use for dispensing important information such as the spread of diseases needs to be accelerated.

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