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The Role of Social Media Influencers on COVID-19 Vaccine Hesitancy in Cameroon

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Abstract

Social media influencers are increasingly using social media sites to disseminate messages about vaccines. The messages can stir either vaccine confidence or hesitancy. This research examines the role of social media messages on COVID-19 vaccine hesitancy in Fako Division, Southwest Region of Cameroon. The Agenda Setting and Framing Theories were used to support the body of literature. The study adopted a mixed-method approach that consisted of qualitative content analysis and survey methods. The qualitative data were collected from the Facebook pages of social media influencers in Cameroon meanwhile the quantitative data were collected from students at Biaka University, Tiko University, Higher Institute of Professional Studies, and final-year students in the Department of Journalism and Mass Communication, University of Buea. Findings reveal that social media influencers promoted vaccine hesitancy on Facebook by posting unverified COVID-19 cure claims, sharing misleading COVID-19 cure prescriptions, creating avenues for COVID-19 misinformation, and fuelling COVID-19 vaccination doubts and fears through news reports. The results also indicate that social media messages have significantly influenced students' attitudes toward COVID-19 vaccines, $t\ (df = 258) = 9.6$, $p<0.05$ $(p=0.001)$ and promoted vaccine-hesitant behaviour among students, $t\ (df = 258) = 10.4$, $p<0.05$ $(p=0.001)$. To boost vaccine confidence and acceptance, the researchers recommend that the government of Cameroon should organise intensive COVID-19 health campaigns in Higher Learning Institutions to educate students on the importance of vaccines and social media influencers should encourage and influence their followers to receive COVID-19 vaccines by posting their vaccination cards and sharing their vaccination experience with them.

Keywords: *Social media influencers, COVID-19, Vaccine hesitancy, Cameroon*

1. INTRODUCTION

Social media platforms are inundated with numerous messages on COVID-19 vaccines. The messages promote anti-vaccine and pro-vaccine campaigns. Anti-vaccine campaign messages consist of falsehood and conspiracy theories about COVID-19 vaccines. Falsehoods range from fake cures such as salt water, lemon, and injections to conspiracy theories. Conspiracy theories suggest that the virus was invented as a biological weapon to reduce the world's population (Andersen, Rambaut, Lipkin, Holmes, & Garry, 2020). Political leaders also spread COVID-19 misinformation on social media. Former presidents, like Jair Bolsonaro and Donald Trump, recommend the use of hydroxychloroquine as a remedy for the COVID-19 virus (Constine, 2020). Still, the recommendation is not scientifically justified (Geleris, Sun, Platt, Zucker, Baldwin, Hripcsak, Labella, Manson, Kubin, Barr, Sobieszczyk & Schulger, 2020).

Several COVID-19 vaccines were developed to contain the virus. As of 14th January 2022, the World Health Organisation (WHO) approved COVID-19 vaccines like AstraZeneca, Astrazeneca-SK Bio, Pfizer, Sinopharm, Moderna, Sputnik V, Sinovac, Sinovac-CoronaVac, Covaxin and Johnson and Johnson (Polack, Thomas, Kitchin, Absalon, Gurtman, Lockhart, Perez, Pérez Marc, Moreira, Zerbini, Bailey, Swanson, Roychoudhury, Koury, Li, Kalina, Cooper, Frenck, Hammitt, Türeci, Nell, Schaefer, Ünal, Tresnan, Mather, Dormitzer, Şahin, Jansen, & Gruber, 2020). Of these vaccines, Sinopharm, AstraZeneca, Johnson and Johnson, and Sputnik V are the four approved vaccines by Cameroon's Scientific Council. The first batch of 200,000 doses of China's Sinopharm vaccine arrived at Yaoundé

Nsimalen Airport on Monday, April 12, 2021 (Abongwa, Sumo, Ngum, Muhammed, Njiwale, Nakuh, & Nayah, 2022).

The Prime Minister and Head of Government, Chief Dr Joseph Dion Ngute received the consignment on behalf of His Excellency President Paul Biya. The vaccines were dispatched to 243 vaccination centres across the ten regions of Cameroon. On the advice of the Scientific Council and the National Immunisation Technical Advisory Group (NITAG), the priority groups were frontline health workers, people over 50 years of age, individuals suffering from pre-existing health conditions and vulnerable groups. On Saturday, April 17, 2021, Cameroon's health officials, led by the country's Minister of Public Health, Manaouda Malachi, received another consignment of 391,200 doses of AstraZeneca at the Nsimalen International Airport, Yaounde, through the COVAX Advance Market. Upon arrival, the government said that the vaccines were free and not compulsory. Cameroon's Health Minister was the first to receive the vaccine. Cameroon targets 5,400,000 people to be vaccinated by the end of 2021 and 15 million people by December 2022. However, as of February 19, 2023, less than five million doses of COVID-19 vaccines were administered in Cameroon (WHO, 2023). This is equivalent to 15.6% of the vaccine acceptance rate. This reveals the prevalence of COVID-19 vaccine hesitancy in Cameroon.

Measures were adopted to accelerate vaccine acceptance among Cameroonians. Cameroon Radio Television (CRTV) has continued to broadcast the president's statement that calls on Cameroonians to respect COVID-19 barrier measures and to be vaccinated. Another strategy to encourage Cameroonians to get vaccinated was to ensure that only vaccinated persons were to be allowed to enter football stadiums during the 2022 Africa Cup of Nations in Cameroon (The World Bank Groups, 2022). The World Health Organisation (2021) adds that meetings were also held with local authorities and communities to encourage people to get vaccinated against COVID-19. Local chiefs were also encouraged to galvanise their community members to get vaccinated.

The Cameroon government also launched a series of vaccination campaigns. But the campaigns always witnessed low turnout. Some persons who received the vaccines were compelled to do so by their employers. For instance, the Mobile Telephone Network (MTN) and many non-governmental organisations made vaccine administration and monthly COVID-19 testing compulsory for employees. Employees were compelled to receive COVID-19 or resign from their jobs. Educational institutions are one of the vulnerable places that facilitate the spread of the COVID-19 virus. In response to this, Cameroon's Prime Minister, on Tuesday, March 17, 2020, shut all public and private training establishments of the various levels of education: from nursery school to higher education, including vocational training centres and professional schools, schools, and university competitions, like the FENASSCO and University games were equally postponed. Schools were reopened seven months later on Monday, October 5, 2020 (Kindzeka, 2020). The government equally introduced a 3T (Track, Test and Treat) strategy on May 1, 2020, to prevent the spread of the virus. However, observation shows that some students in Higher Learning Institutions are not vaccinated and the respect for COVID-19 preventive measures was inconsistent.

Vaccination programmes have greatly reduced the toll of infectious and communicable diseases by preventing infection or reducing the severity of symptoms. However, vaccination programmes can only be effective when they are accepted and adopted by large population segments. Eskolaa, Duclosb, Schuster and MacDonald (2015) equally explain that vaccines have saved countless lives and improved health and well-being around the world. However, vaccines can only improve health and prevent deaths if they are used. This implies that individuals need to accept vaccination to prevent themselves from pandemics like COVID-19.

The World Health Organisation highlights that vaccination is paramount in fighting the spread of COVID-19.

The COVID-19 vaccines produce protection against the disease, as a result of developing an immune response to the SARS-Cov-2 virus. Developing immunity through vaccination means there is a reduced risk of developing the illness and its consequences. This immunity helps you fight the virus if exposed. Getting vaccinated may also protect people around you because if you are protected from getting infected and from disease, you are less likely to infect someone else. This is particularly important to protect people at increased risk for severe illness from COVID-19, such as healthcare providers, older or elderly adults, and people with other medical conditions (WHO, 2020 p.1)

The WHO estimates that vaccination saves 2 to 3 million lives worldwide every year (WHO, 2017). Nevertheless, a considerable number of children, adults and aged are not getting vaccinated (Omer, Orenstein & Koplan, 2013) leading to outbreaks of vaccine-preventable diseases and avoidable deaths, such as from measles or pertussis. Carrieri, Madio and Principe (2019) also disclose that although vaccines are safe and effective in preventing life-threatening diseases, vaccine hesitancy is still prevalent globally.

The role of social media in promoting COVID-19 vaccine intake is disputed. Chukwuere (2022), and Bode and Vraga (2021) observe that social media messages have positively influenced COVID-19 vaccine acceptance and reduced the spread of vaccine falsehood whereas Özdemir (2021), and Muhammad (2020) aver that social media messages promote vaccine hesitancy. The existence of variances in previous findings evokes reflections on whether social media messages promote or retard COVID-19 vaccination in Cameroon. More so, there is a paucity of scientific knowledge on the status quo in Cameroon, thus, limiting a fair comprehension of the subject. The foregoing situation is a clarion call for more research to be conducted on the influence of social media messages on COVID-19 vaccine hesitancy to align, contrast or rewrite existing literature on COVID-19 vaccination in Cameroon. This leads to the following research questions.

1.1. Research Questions

1. In what ways do social media influencers contribute to vaccine hesitancy through their Facebook posts?
2. To what range do social media messages influence students' attitudes toward COVID-19 vaccines?
3. To what degree do social media messages promote COVID-19 vaccine hesitancy behaviour among students?

1.2. Assumption and Hypotheses

1. Social media influencers are using Facebook to openly express their concerns, fears, or scepticism about the COVID-19 vaccine (Assumption).
2. Social media messages have significantly influenced students' attitudes toward COVID-19 vaccines.
3. Social media messages have significantly promoted COVID-19 vaccine hesitancy behaviour among students.

This study is significant because it provides contemporary evidence on the influence of social media messages on vaccine hesitancy among university students in Fako Division, South West Region of Cameroon. The results can inform policies on accelerating vaccine intake among the student population. The study also highlights the need for individuals to assess the credibility of social media messages before spreading them.

2. Literature Review

2.1. Social Media

Valentini (2018) defines social media as internet-based applications that allow users to create, exchange, or simply consume user-generated content. Social media users can create and disseminate content centred on various societal issues including areas where they have limited knowledge of a subject matter. There is limited regulation to check the quality of social media content from users before they are posted or shared. Social media is built on the ideological and technological foundations of Web 2.0 (Kaplan & Haenlein, 2010,).

Darcy DiNucci initiated the concept of Web 2.0 in 1999. However, it became popular through Tim O'Reilly and Dale Dougherty's presentation during the 2004 O'Reilly Media Web 2.0 Conference (Hinton & Hjorth, 2013). Web 2.0 is an advanced version of Web 1.0. Web 1.0 did not offer users the opportunity to interact, create, post and share content. Its advanced version provides users with such opportunities. Murugesan (2007) explains the functionalities of Web 2.0: Web 2.0 guarantees flexible web design, provides a rich responsive user interface, eases collaborative content creation and modification, facilitates the creation of new applications by reusing and combining different applications on the web or by combining data and information from different sources, establishes social

networks of people with common interests and supports collaboration and helps gather collective intelligence. Coombs (2011) affirms that social media is characterised by participation, openness, conversations, communities and connectedness.

Social media shapes communication. It facilitates the production, consumption and circulation of information. Also, the spread and adoption of social media technology have made it an attractive marketplace for organisations wishing to gain visibility and reach out directly to large groups of the public and stakeholders (Valentini, 2018). It also equally opens up opportunities for users to voice out concerns and opinions on societal issues. Interestingly, the technology is not time or space-bound. Users' content is generated and distributed across borders and time zones within seconds and with the absence of censorship (Qualman, 2009). Individuals use various social media platforms like Facebook, Twitter, Instagram, WhatsApp and LinkedIn to stay connected and interact with friends, family, colleagues and dispersed communities.

2.2. Vaccine Hesitancy

Vaccination saves 2 to 3 million lives worldwide every year (World Health Organisation, 2017). However, a considerable number of children, adults and the aged are not interested in vaccination (Omer, Orenstein & Koplan, 2013). This attitude and behaviour lead to the outbreaks of vaccine-preventable diseases and avoidable deaths. Vaccines save lives and prevent life-threatening diseases. Despite these benefits, vaccine hesitancy is prevalent worldwide (Carrieri, Madio & Principe, 2019). The term *vaccine hesitancy* refers to delay in acceptance or refusal of vaccines despite the availability of vaccination services (Dubé, Gagnon, Nickels, Jeram, & Schuster, 2014). Vaccine hesitancy manifests in two forms: delay and rejection. In terms of delay, individuals may exercise deferral to accept vaccination due to concerns over vaccine safety and effectiveness. Rejection implies a complete refusal to accept vaccination.

Vaccine hesitancy is an aged problem (Callender, 2016). Since the development of the first smallpox vaccine in 1796 by Edward Jenner, scepticism and suspicion about vaccine safety and effectiveness existed. Edward Jenner advocated for using the milder cowpox virus in a child to stimulate an immune response in 1796 after observing that milkmaids rarely contracted smallpox. Jenner tested his hypothesis on his gardener's son (Stewart & Devlin, 2006) and 23 more individuals (Lantos, Jackson, Opel, Marcuse & Myers, 2010). In 1797, Edward Jenner presented his experiment to the Royal Society, who rejected it, citing insufficient evidence and the revolutionary nature of his results. Jenner's eventual publication of the results drew immediate public criticism and significant opposition. The local clergy argued that mixing animal matter with human flesh was a direct violation of God's will (Nuwarda, Ramzan, Weekes & Kayser, 2022).

Durbach (2000) asserts that in 1853, the British Compulsory Vaccination Act proclaimed obligatory smallpox vaccine for infants during their first 3 months of life. This created the world's first mandatory vaccination programme. It sparked widespread resistance and riots in several towns in the United Kingdom. In 1867, the act prescribed the mandatory vaccination age to 14 years, with penalties for non-compliance. Opponents of the 1867 law cited concerns about personal freedom and choice, and, in response, the Anti-Compulsory Vaccination League was founded the same year in London (Nuwarda, Ramzan, Weekes & Kayser, 2022). In the 1870s and 1880s, several anti-vaccination movements emerged in Europe.

In the North West Regional Capital of Cameroon, Bamenda, Abongwa, Sumo, Ngum, Muhammed, Njiwale, Nakuh and Nayah (2022) assert that COVID-19 vaccine hesitancy was 97.6%. They realise that safety concern is the principal cause of vaccine hesitancy. In a survey carried out in Hong Kong, Chan, Cheng, Tam and Huang (2015) found that personal anxiety, previous vaccination history and inadequate knowledge about the A/H7N9 influenza vaccine resulted in a 50% reduction in vaccine acceptance. Abbas, Kang, Chen, Were and Marathe (2018) equally realised that the acceptance of the hypothetical influenza vaccine in America is dependent on income level, with lower-income groups less willing to take the vaccine when compared to those in the higher-income groups. Younger individuals were hesitant to take the vaccines as well. Thus, income level, demographics, societal influences and health insurance influence the acceptance of hypothetical influenza in America.

Recent studies (Figueiredo, Simas, Karafillakis, Paterson & Larson, 2020; Roozenbeek, Schneider, Dryhurst, Kerr, Freeman, Recchia, van der Bles, & van der Linden, 2020) have shown that vaccine

safety, effectiveness concerns, religious beliefs, misinformation and level of income are retarding vaccine acceptance in several countries. Anxiety about vaccine administration also causes hesitancy. This consists of fear of syringes (McLenon & Rogers, 2019) or concerns about the possible side effects (Herman, McNutt, Mehta, Salmon, Bednarczyk & Shaw, 2019). Abongwa, et al., (2022) assert that vaccine hesitancy is considered by the WHO as one of the top ten threats to global health. They further observe that morbidity and mortality rates of COVID-19 can significantly be reduced if vaccine acceptance is high.

2.3. COVID-19 Vaccines' Conspiracy Theories on Social Media

There are concerns that the human rapid spread of 'false or misleading information' in digital and physical environments causes confusion and risk-taking behaviours that can harm health and lead to mistrust in health authorities and undermine the public health response (Harvey, 2021 in Osuagwu, Mashige, Ovenseri-Ogbomo, Envuladu, Abu, Miner, Timothy, Ekpenyong, Langsi, Amiebenomo, Oloruntoba, Goson, Charwe, Ishaya, & Agho, 2023). For instance, in Pakistan, vaccine hesitancy and resistance made it almost impossible to reach the population (Mehmood, Ullah, Hasan, Kazmi, Ahmadi, Lucero-Prisno, 2020 in Osuagwu, et al., 2023 p.2). Despite widespread concerns about the potential impact of misinformation on vaccination, little is known about the magnitude of the impact and its differential effects across countries in sub-Saharan Africa (SSA). The United Nations International Children's Emergency Fund (2022) asserts that social media is used to circulate vaccine myths, misconceptions and misinformation leading to the rapid spread of anti-COVID-19 vaccine campaigns. This situation is worsened by the lack of accurate information through COVID-19 health communication (Kabakama, Konje, Dinga, Kishamawe, Morhason-Bello, Hayombe, Adeyemi, Chimuka, Lumu, Amuasi, Acheampong, & Dzinamarira, 2022).

Some social media messages assert that occult societies and hidden power structures are championing the development of COVID-19 vaccines **(**The Ministry of Communication and Informatics, Kominfo, 2021). The structures are believed to be networking with big pharmaceutical companies to make money or to depopulate the world. Equally, information spread on social media platforms that COVID-19 vaccines such as Pfizer and Moderna are harmful to human organs because they contain Potassium Chloride.

The vaccines can lead to death and miscarriages (Kominfo, 2021 cited in Skafle, Nordahl-Hansen, Quintana, Wynn, & Gabarron, 2022). In 2019, To, To, Huynh, Nguyen, Ngo, Alley, Tran, Tran, Pham, Bui, and Vandelanotte (2021) asserted that about 31 million Facebook users and about 17 million YouTube users followed the anti-vaccines campaign. Jamison et al., (2020) also found that there were more anti-vaccine messages on Twitter than pro-vaccine messages about COVID-19 vaccines. Equally, viewers were likely to encounter anti-vaccine videos on YouTube (Wu, Lyu & Luo, 2021). Continuous exposure to anti-vaccination messages on social media platforms increases hesitancy (Germani & Biller-Andorno, 2021). Wang, Lu, Lai, Lyu, Zhang, Fenghuang, Jing, Li, Yu, and Fang (2021) affirmed that most people who decide whether to reject or accept vaccinations are influenced by information about the level of effectiveness and safety of vaccines. Authentic information promotes vaccine acceptance while conspiracy theories promote vaccine hesitancy.

Pulido, Ruiz-Eugenio, Redondo-Sama and Villareji-Carballido (2020) reveal that some social media sites like Facebook and Instagram are trying to overcome falsehood about COVID-9 vaccines by providing valid link recommendations when a user posts about COVID-19 or COVID-19 vaccine. The valid links enable users to have access to authentic information about the pandemic or the vaccines. However, not all social media sites provide such links. Dinga and Titanji (2022) asserted that in countries like Cameroon, Tunisia, Morocco, Ghana, South Africa and Zimbabwe, several circulating myths, misconceptions, and rumours regarding the origins of SARS-CoV-2 and the dangers of the vaccines have spread disproportionately despite sensitization and strict media laws prohibiting the circulation of misinformation through social media.

Rumours about the pandemic circulated faster than the virus. Some factors have spearheaded the rising influence of misinformation on COVID-19 vaccines on social media. Ngai, Singh, Lu and Koon (2020) assert that lockdowns rendered individuals ample time to access social media sites, thereby increasing the likelihood of exposure to misinformation about the COVID-19 vaccine. Also, some misleading news about vaccines was amusing and novel. This encouraged sharing behaviour among social media users (Lockyer, Islam, Rahman, Dickerson, Pickett & Sheldon, 2021) from one site to another. Equally, some social media sites like Twitter adopted a strict limit on characters. This means some information

on COVID-19 vaccines presented on social media sites was incomplete and misleading (Jamison et al., 2020). Equally, in the early phase of the COVID-19 pandemic, social media companies did not adopt timely actions against misinformation on their sites (Wardle & Singerman, 2021). This created a fertile arena for social media users to circulate misinformation about COVID-19 vaccines.

2.4. Social Media Influencers (SMIs)

Social media influencers are digital content creators with huge online following, distinctive brand personality and patterned relationships with commercial sponsors (Duffy, 2020). They are ordinary people who gained fame through self-branding on social media (Khamis, Ang, & Welling, 2017). They cover several topics such as lifestyle or gaming including socio-political issues (Allgaier, 2020; Dekoninck & Schmuck, 2022; Harff & Schmuck, 2023). SMIs promote goods and service to their online communities in exchange for financial rewards from commercial organisations. Their followers also rely on them for information. They see them as sources of information and opinion leaders (De Veirman, Cauberghe & Hudders, 2017; Kay, Mulcahy & Parkinson, 2020).

Gross and Wangenhim (2018) classify SMIs into four categories. These categories include snoopers, informers, entertainers, and infotainers. The first category create content simply for entertainment. They are excited creating content and sharing it with their audience. This category of SMIs focus on building a network of friends and contacts with whom they share their experiences with. SMIs have a limited reach but establish close relationships with their audience. The second category is made up of informers. They share knowledge with their audience, who are looking for advice on very specific issues. They also pay close attention to their followers' comments and suggest solutions to their problems. The followers see as credible and reliable.

The third category provide entertainment contents. This category, according to Gross and Wangenhim (2018), generate creative content with personal details to encourage their followers to have a good time. However, they do not have a close and frequent contact with their followers as snoopers and informers. In most cases, interactions with their followers occur through question and answer videos, live-stream videos or asking for feedback on the content. The last category is made up of infotainers. They provide informational and educational contents. They are experts in specific domains. Interactions with their followers occur through several means including live broadcasts, question and answer videos, live-stream videos.

SMIs have the potency to influence COVID-19 vaccination decision among followers. While some SMIs promoted vaccination campaigns and COVID-19 preventive measures (Volkmer, 2021), others spread misinformation and promote vaccine-hesitant messages on social media platforms (Abidin, Lee, Barbetta, & Miao, 2021). One of the ways, they promote vaccination campaigns is through the sharing of vaccination experiences and cards with their online communities (Schlagenhauf, Patel, Rodriguez-Morales, Gautret, Grobusch, & Leder, 2021). This encourages their followers to receive the COVID-19 vaccine. Hence, the activities of SMIs towards COVID-19 vaccines can either promote COVID-19 vaccine acceptance or refusal.

2.5. Theoretical Framework

Agenda Setting Theory: Maxwell McCombs and Donald Shaw developed the Agenda Setting Theory in 1972. It demonstrates the power of the media to influence the salience of topics on the public agenda. When the news media cover a particular item more frequently and prominently, the audience will consider the issue essential. There are two basic assumptions of the Agenda Setting Theory. It assumes that the press and media do not reflect reality. They filter and shape; media concentration on a few issues and subjects leads the public to perceive those issues as more important than others (McCombs & Shaw, 1972). This theory provides a comprehensive understanding of how opinion leaders utilise social media platforms to promote COVID-19 vaccine hesitancy. They frequently post and share inflammatory headlines, articles and stories about COVID-19 vaccines. For instance, Brazilian President Jair Bolsonaro and Donald Trump made false claims about COVID-19 remedies. They recommended the use of hydroxychloroquine as a remedy to COVID-19, which Geleris, Sun, Platt, Zucker, Baldwin, Hripcsak, Labella, Manson, Kubin, Barr, Sobieszczyk and Schulger (2020) considered scientifically unjustified. The consistency of posting and sharing opinionated statements against the vaccine on social media stirred vaccine-hesitant attitudes and behaviour among students of Higher Education.

Framing Theory: Frames depict the words, images, phrases, and presentation styles that media outlets use when relaying information about an issue or event to an audience (Gamson & Modigliani, 1989). Arowolo (2017) holds that the concept of framing was first posited by Gregory Bateson in 1972. The theory assumes that the way information is presented to the audience determines the audience's interpretation and understanding of the message. This is why reporters and editors are cautious of their words when writing their articles or coining headlines (Ngange, Mesumbe, & Ndode, 2024). The advent of COVID-19 and COVID-19 vaccines saw the emergence of various frames propagated on social media platforms. Rumours circulated on social media that the COVID-19 pandemic was a trick to sell vaccines, microchips and poison were found in vaccines, pharmaceutical companies were manipulating data on vaccine efficacy to make a huge profit, one is more susceptible to getting COVID-19 from the vaccines, COVID-19 vaccines are ineffective and unnecessary (Jamison et al., 2020; Islam, et al., 2021; Nyawa, Tchuente & Fosso-Wamba, 2022; Skafle et al., 2022). These frames of COVID-19 vaccines adversely affected users' willingness to take COVID-19 vaccines (Nyawa et al., 2022).

3. METHODOLOGY

This research adopts the mixed research approach. It is a blend of quantitative and qualitative methods of inquiry. The qualitative approach enabled the researcher to study vaccine-hesitant messages on Facebook. It used qualitative content analysis method to study and categorise vaccine hesitancy messages from Cameroonian influencers on Facebook. Their platforms have the potency to influence Cameroonians' attitudes and behaviours towards COVID-19 vaccines. The quantitative approach studied the influence of COVID-19 vaccine-hesitant messages on undergraduate students in three Higher Education Institutes in Fako Division: Undergraduates of the Department of Journalism and Mass Communication of the University of Buea, undergraduates of the Higher Institute of Professional Studies and undergraduates of Tiko University. The students measured the extent to which social media changed their attitudes and behaviours of COVID-19 vaccines. The Record Office of Biaka University and Higher Institute of Professional Studies disclosed that there were 659 and 352 undergraduate students respectively for the 2022/2023 academic year. Equally, the Director of Tiko University revealed that there were 26 undergraduate students while the department of JMC-UB disclosed that there were 216 final-year JMC students for the 2022/2023 academic year. This gives a population size of 1,229 undergraduate students and a sample of 291 students based on the Krejcie and Morgan's (1970) recommendation. The researcher used purposive sampling to select students who were exposed to COVID- 19 vaccine messages on social media platforms.

A questionnaire was used to collect the quantitative data. It consists of three sections: influence of social media messages on students' attitudes toward Covid-19 vaccines, influence of social media messages on students' behaviour toward covid-19 vaccines, and demographics. In the first and second sections, the researcher used the five-point agreement scale of Strongly agree (100%), Agree (75%), Neutral (50%), Disagree (25%) and Strongly disagree (0%) to measure the influence of social media messages on students' attitudes and behaviours towards COVID-19 vaccines. The third section examines the students' demographic characteristics. The quantitative and qualitative data were collected within two weeks. Out of 291 undergraduate students, 259 participated in the study. The qualitative data comprised of texts, and images shared on Facebook that could promote COVID-19 vaccine hesitancy. The data were manually collected. The researcher read all the collected posts to get an overall sense of the content. The data were broken down into smaller segments and assigned codes that describe the content. The codes were organised and related ones were linked together. Direct quotes from the posts were used to illustrate and support the identified themes and patterns. The quantitative data were coded, entered into the Statistical Package for Social Sciences (SPSS) version 21, and cleaned analysed. Descriptive and inferential tests were conducted. The Cronbach alpha stood at 0.69. Validity was ensured through face validity, content validity and construct validity. Ethical considerations like voluntary participation, confidentiality, and informed consent were employed.

4. FINDINGS

4.1. Demographic Characteristic Of The Students

Out of the 259 respondents, 77 (29.7%) are male and 176 (68%) are female. 6 (2.3%) respondents did not respond to the question. In terms of age, 139 (53.7%) are less than 21 years, 108 (41.7%) are between

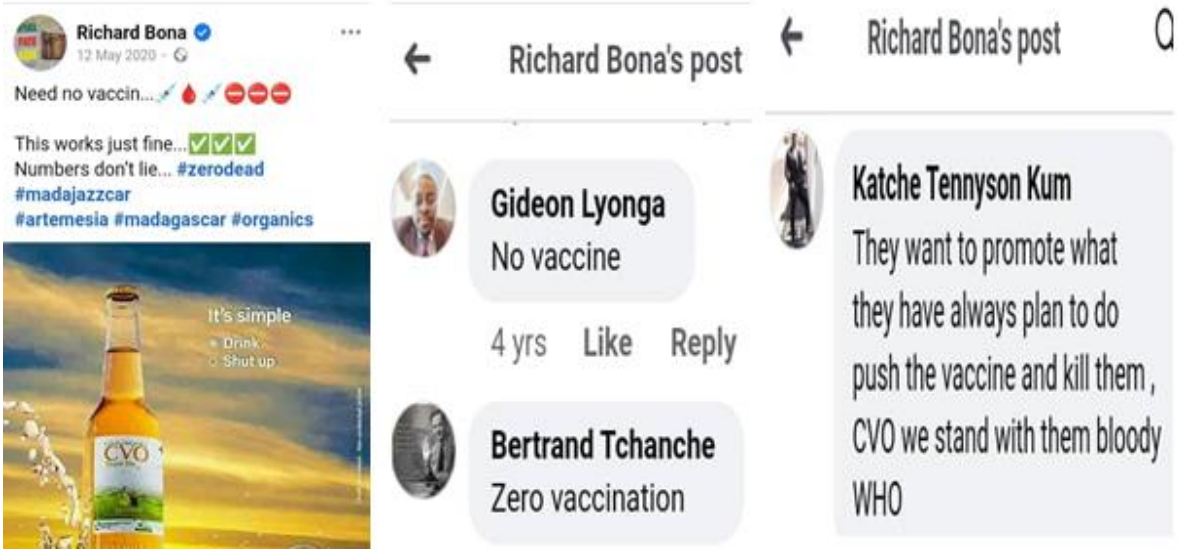
21 and 30 years, 5 (1.9%) are between 31 and 40 years, 1 (0.4%) is 41 years and above while 6 (2.3%) respondents did not disclose their age brackets. Singles dominated in this study: 232 (89.6%) are single, 19 (7.3%) are married, 1 (0.4%) is divorced and 7 (2.7%) did not respond. The findings also showed that 172 (66.4%) respondents are from the University of Buea, 35 (13.5%) from Biaka University, 23 (8.9%) from Tiko University, 22 (8.5%) from HIPS and 7 (2.7%) did not respond to the question.

4.2. The Role of Social Media Influencers in Promoting Vaccine Hesitancy on Facebook

The findings indicate that social media influencers, in and out of Cameroon, played a fundamental role in promoting COVID-19 vaccine hesitation. This influence was evident in several forms including posting, and sharing of unverified COVID-19 cure claims.

4.2.1. Posting of Unverified COVID-19 Cure Claims

Some social media influencers posted and shared information on the alleged effectiveness of traditional medication in curing the COVID-19 virus. For instance, on Tuesday, May 12, 2020, famous Cameroonian bassist Richard Bona posted an image of a COVID-19 organic product on Facebook. He claimed the product, also known as CVO was capable of curing the COVID-19 virus and "*need(s) no vaccine…* This works just fine*".* The product was made in Madagascar to fight the COVID-19 virus.



Bona recommended the use of this product at a time when it was a subject of public controversy. Madagascan President Andry Rajoelina officially launched the product in April 2020, the president claimed that "all trials and tests have been conducted and its effectiveness in reducing the elimination of symptoms has been proven for the treatment of patients with COVID-19 in Madagascar (https://www.africanews.com/2020/04/22/covid-organics-madagascar-launches-africa-s-first-cure-for-virus/). However, news reports on May 15, 2020, stated the Regional Director of WHO Office in Africa, Matshidiso Moeti, disclosed the lack of evidence on the efficiency of the CVO. (https://www.aa.com.tr/en/africa/who-to-study-madagascars-drug-to-treat-covid-19-/1840971).

Bano's endorsement and promotion of CVO through his Facebook page was a hasty measure since the WHO was still to examine the efficacy of the vaccine. Also, Bona's post stated that there was no need for a COVID-19 vaccine. This statement can contribute to promoting vaccine hesitancy among his followers. One of his followers, Katche Tennyson Kum, commented on the post that stating COVID-19 vaccines were developed to kill individuals. He referred to the WHO as "Bloody WHO".

4.2.2. Sharing of Misleading COVID-19 Cure Prescription

The findings indicate social media influencers, like Richard Bona, shared misleading prescriptions on Facebook for curing COVID-19. On Friday, June 5, 2020, Bona used an image allegedly from the Cable News Network (CNN) to prescribe sex with a bass player as a cure for COVID-19. The image contained a headline that read *"Sex with a bass player may cure COVID-19."* This post was accompanied by Bona's comment: "*Tell them… (laughing emojis) I knew that from day 1(laughing emojis)."* Users interacted with the post. It received 1, 574 likes, 269 comments, and 75 shares as of September 12, 2024.

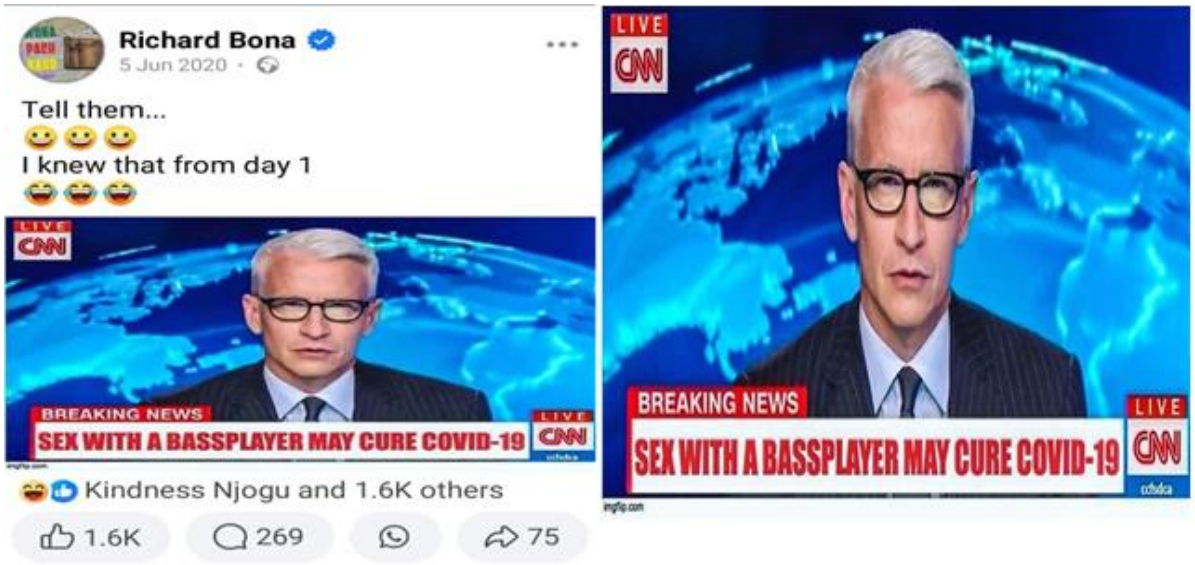
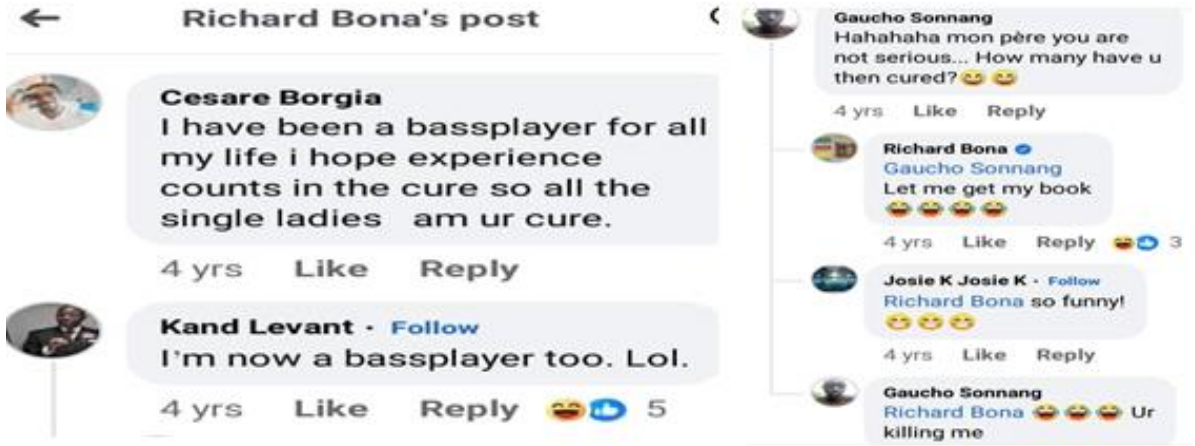


Image posted by Richard Bona on Facebook on June 5, 2020

Some of the commenters, notably Cameroonians, humorously declared themselves bass players and articulated their willingness to try the suggested remedy.

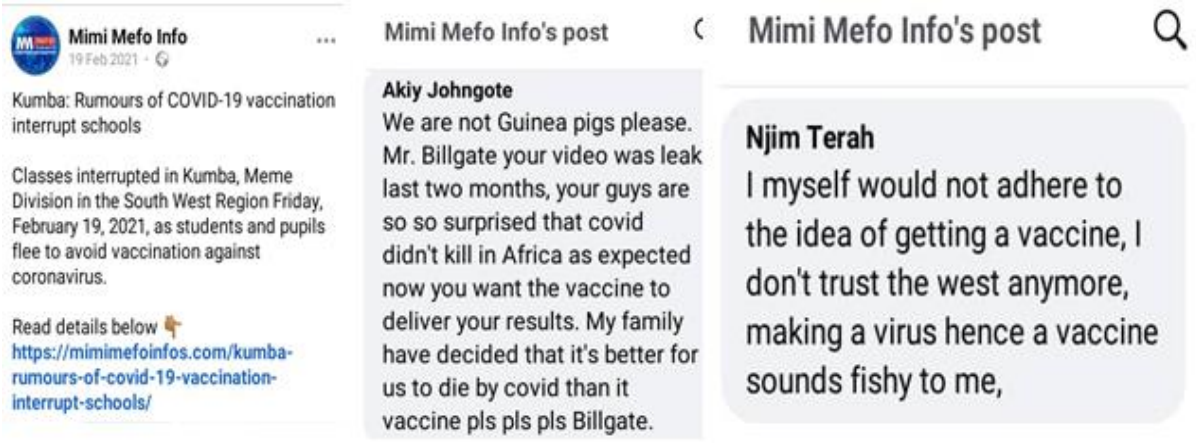


The picture with CNN's logo seems to be a Photoshop. The researcher was unable to locate any record of such a headline on the CNN website. Instead, a CNN report on Wednesday, June 10, 2020, showed that COVID-19 could be transmitted through sexual intercourse. The report read "*Scientists have found the coronavirus in faeces and men's semen, even after the men have begun to recover from Covid-19. That means there's a possibility the virus could be sexually transmitted*" (Christensen, 2020, p.1).

This finding indicates that social media influencers, such as Richard Bona are utilising humour and satire to spread misleading information about the COVID-19 cure. The high engagement on the post showed the potential reach and possible impact of the misleading information on the public. Unfortunately, some of the commenters failed to critically evaluate the validity of the information posted, instead, they joined in the joke. These findings suggest that COVID-19 misinformation can easily be normalised or trivialised when presented humorously.

4.2.3. Creating Avenues for COVID-19 Misinformation

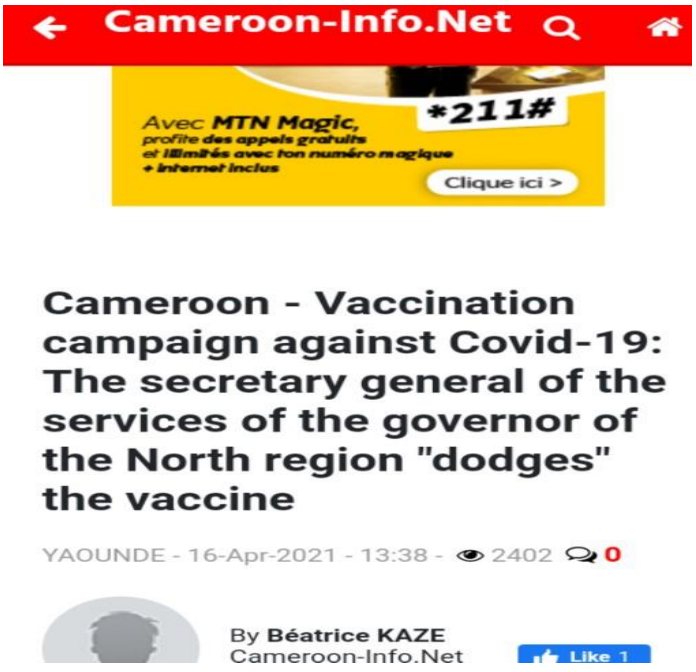
The results reveal that some Facebook influencers like Mimi Mefo Info unintentionally provided channels that were used by other users to disseminate COVID-19 vaccine misinformation. The users shared their anti-COVID-19 vaccine messages on reputable news platforms on Facebook. For instance, on February 2-21. Mimi Mefo Info reported that classes were interrupted in Kumba, the headquarters of the Meme Division, following rumours related to COVID-19 vaccinations. Upon sharing the article link on Facebook, some users used the comment section to share anti-vaccine messages. For example, Akiy Johngote claimed that COVID-19 vaccines were developed to depopulate Africa. He added that his family would prefer death over receiving the vaccine.



In the same way, Njim Terah expressed distrust towards Western countries. She suggested that the vaccine manufacturers might have hidden motives. The sharing of these anti-vaccine perceptions in the comment section of Mimi Mefo Info amplifies their reach. This is because Mimi Mefo Info is one of the most followed platforms in Cameroon. This amplifies the reach of these anti-vaccine messages. Hence, Facebook users are exploiting renowned Facebook platforms' open and interactive nature to disseminate false claims about COVID-19 vaccines.

4.2.4. Fuelling COVID-19 Vaccination Doubts and Fears

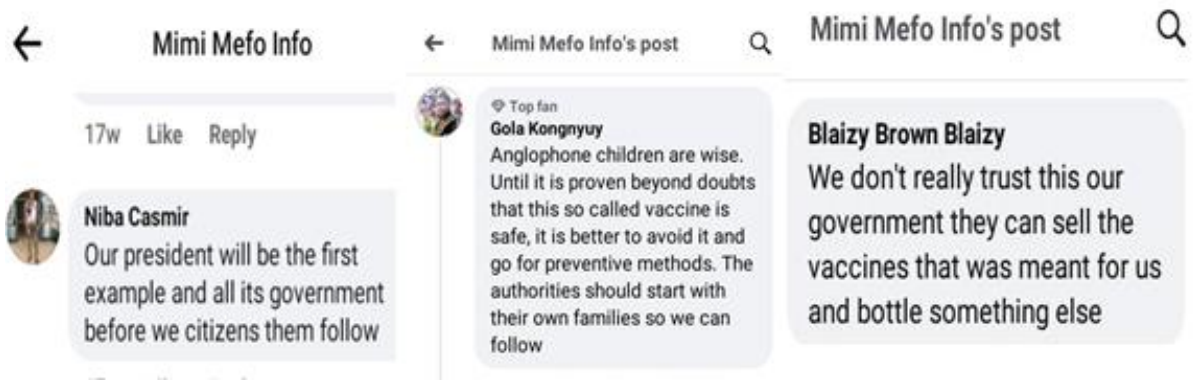
The findings also revealed that renowned news sites connected to Facebook shared stories about government officials refusing to take COVID-19 vaccines in Cameroon. The reports reinforce negative perceptions about the vaccines among the public. For example, Cameroon Info-Net reported on April 16, 2020, that "*the Secretary General of the Services of the Governor of the Northern region "dodges" the vaccine*." The report detailed that Mr Avom Dang, who was the personal representative of Governor Jean Abate Edi'i, had officially launched the COVID-19 vaccination campaign in the Northern Region, unexpectedly left the vaccine registration line, entered his car, and drove off without taking the vaccine.



This incident reportedly shocked many at the vaccination site, who were initially willing to be vaccinated but were discouraged by the official's behaviour. A health worker was quoted saying, "*He is the example; if he refuses, we refuse to do it too." The news quickly spread throughout the city, casting doubt on the vaccine's quality. It negatively affected the atmosphere at the vaccination site* (Cameroon Info-net, April 16. 2021). Defyhate Cameroon reveals that the news story was read by over

2,000 persons. It may have contributed to changing the perceptions of the readers against COVID-19 vaccination.

This news report was written at a time when many Cameroonians were expecting government officials to lead COVID-19 vaccination queues.



Such reports likely contributed to the circulation and reinforcement of negative perceptions about COVID-19 vaccines. It made some Cameroonians believe that the vaccines could be harmful to their health. The news outlet might have mitigated these effects by scheduling an interview with the government official to clarify why he suddenly left the vaccination queue. Instead, it assumed the official was hesitant to take the vaccines. This fosters doubt and fear about the vaccine's safety. These findings affirmed assumption one, which states that "Social media influencers are using Facebook to openly express their concerns, fears, or scepticism about the COVID-19 vaccine"

4.3. Influence of Social Media Messages on Students' Attitude towards COVID-19 Vaccine

Table 1. *Influence of social media messages on students' attitude towards COVID-19 vaccine*

Social media messages have made me to believe that:	Measurement of Agreement					Total
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
COVID-19 vaccines have not been thoroughly tested	21.6% (56)	25.5% (66)	26.6% (69)	15.8% (41)	10.4% (27)	100% (259)
COVID-19 vaccines cannot protect me from COVID-19	10.4% (27)	26.6% (69)	29% (75)	22.8% (59)	11.2% (29)	100% (259)
The vaccines are meant for those affected	9.3% (24)	25.1% (65)	24.3% (63)	23.2% (60)	18.1% (47)	100% (259)
The vaccines will negatively affect my health	15.4% (40)	15.4% (40)	37.1% (96)	20.8% (54)	11.2% (29)	100% (259)
Authorities are promoting COVID-19 vaccines for political and financial gains	23.9% (62)	20.1% (52)	30.5% (79)	15.4% (40)	10% (26)	100% (259)
Traditional medicines are more effective than COVID-19 vaccines	25.1% (65)	23.9% (62)	26.6% (69)	12.7% (33)	11.6% (30)	100% (259)
My immune system is naturally strong against diseases	19.3% (50)	22.4% (58)	31.7% (82)	17.4% (45)	9.3% (24)	100% (259)
COVID-19 vaccine manufacturers want to harm Africans	12.7% (33)	18.5% (48)	31.3% (81)	22% (57)	15.4% (40)	100% (259)
Not to trust any activity that the government is involved	15.1% (39)	18.5% (48)	32.8% (85)	20.5% (53)	13.1% (34)	100% (259)
I can feel safe after being vaccinated against COVID-19.	16.2% (42)	32.4% (84)	25.5% (66)	17.4% (45)	8.5% (22)	100% (259)
Not to trust the effectiveness of our health systems to administer the vaccines	14.3% (37)	26.3% (68)	37.1% (96)	16.2% (42)	6.2% (16)	100% (259)
Syringes used for COVID-19 vaccination are painful	22% (57)	20.5% (53)	35.5% (92)	13.1% (34)	8.9% (23)	100% (259)

Table 1 shows that social media messages have both positive and negative effects on the attitudes of higher education students toward COVID-19 vaccines. It makes the students to believe that: the vaccines have not been thoroughly tested (47.1%), traditional medicines are more effective than COVID-19 vaccines (49%), and government authorities are promoting COVID-19 vaccines for political

and financial gains (44%). Positively, the students learned, through social media platforms, that COVID-19 vaccines are meant for everyone (41.3%), the vaccines will improve their health conditions (48.6%) and COVID-19 vaccine manufacturers do not want to harm Africans (37.4%).

Hypothesis 1: Social media messages have significantly influenced students' attitudes toward COVID-19 vaccines.

Table 2. *Social media messages significantly influenced students' attitudes*

One-Sample Statistics		One-Sample Test (CI: 95%)	
N	259	Df	258
Mean	34.0	T	9.6
Std. Deviation	6.7	Sig. (2-tailed)	.001
		Test Value	30
		Mean Difference	4.0

Table 2 illustrates the result of a One Sample T-test that was performed to determine whether or not social media messages have significantly influenced students' attitudes toward COVID-19 vaccines. The result of the test, t (df = 258) =9.6, $p<0.05$ ($p=0.001$), revealed that social media messages have significantly influenced students' attitudes toward COVID-19 vaccines. The result of the test was statistically significant at a 0.05 level with a 95% confidence interval.

4.4. Role of Social Media in Promoting COVID-19 Vaccine Hesitant Behaviour

Table 3. *Influence of Social media messages on COVID-19 vaccine hesitant behaviour*

Statements	Measurement of Agreement					Total
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
Social media messages have made me scared of accepting the vaccines	20.8% (54)	30.9% (80)	25.1% (65)	14.7% (38)	8.5% (22)	100% (259)
Based on social media messages, I cannot advise my loved ones to take COVID-19 vaccines	18.5% (48)	27.4% (71)	30.1% (78)	15.8% (41)	8.1% (21)	100% (259)
Social media messages have made me not take the vaccines because I know they were not thoroughly tested	17.0% (44)	24.7% (64)	31.3% (81)	15.8% (41)	11.2% (29)	100% (259)
I have read messages on social media where medical doctors are hesitant to take COVID-19 vaccines	12.0% (31)	27.4% (71)	30.1% (78)	19.3% (50)	11.2% (29)	100% (259)
Based on social media contents, my parents have instructed me to avoid the vaccines	11.6% (30)	22.8% (59)	27.0% (70)	17.8% (46)	20.8% (54)	100% (259)
Due to social media contents, my pastor has instructed us to avoid the vaccines	5.0% (13)	10.4% (27)	25.1% (65)	26.3% (68)	33.2% (86)	100% (259)

Table 3 reveals that social media messages promote vaccine hesitant behaviours. They make the students to be scared of accepting the vaccines (51.7%), to refuse to advise loved ones to take the vaccines (45.9%), to see discouraging posts from medical doctors and media practitioners about COVID-19 vaccines (39.4%). The messages also made some parents (34.4%) and pastors (15.4%) to instruct their children and Christians not to take the vaccines.

Hypothesis 3: Social media messages have significantly promoted COVID-19 vaccine hesitancy behaviour among students

Table 4. *Social media messages have significantly promoted COVID-19 vaccine hesitant behaviour among students*

One-Sample Statistics		One-Sample Test (CI: 95%)	
N	259	Df	258
Mean	17.8	T	10.4
Std. Deviation	4.4	Sig. (2-tailed)	.001
		Test Value	15
		Mean Difference	2.8

Table 4 demonstrates the result of a One Sample T-test that was conducted to determine whether social media messages have significantly promoted COVID-19 vaccine hesitant behavior among the students.

The result of the test, t (df = 258) =10.4, p<0.05 (p=0.001), revealed that social media messages have significantly promoted COVID-19 vaccine hesitant behavior among the students. The result of the test was statistically significant at a 0.05 level with a 95% confidence interval. This finding confirms hypothesis three.

5. DISCUSSION

The findings revealed that some Facebook influencers, followed by Cameroonians, advertently and inadvertently promoted COVID-19 vaccine hesitancy. They post unverified COVID-19 cure claims, share misleading COVID-19 cure prescriptions, create avenues for COVID-19 misinformation, and fuel COVID-19 vaccination doubts and fears through their news reports. In line with this finding, Studies have shown that political leaders, like Jair Bolsonaro and Donald Trump, used social media to recommend the use of hydroxychloroquine as a remedy for the COVID-19 virus (Constine, 2020), which was not scientifically justified (Geleris, Sun, Platt, Zucker, Baldwin, Hripcsak, Labella, Manson, Kubin, Barr, Sobieszczyk & Schulger, 2020). These attitudes of the leaders have the potency to promote vaccine hesitancy among their admirers. Contrary to this finding, Alam, Tao, Rastogi, Mendiratta, and Attri (2024) realise that social media influencers positively and significantly influence their followers' inclination to take the COVID-19 vaccine. In the same view, Schlagenhauf, Patel, Rodriguez-Morales, Gautret, Grobusch, and Leder (2021) reveal that millions of social media influencers in India shared their vaccination certificates and vaccine experiences with their followers. This persuaded and encouraged others to accept the COVID-19 vaccine.

The findings also revealed that social media messages made most students believe that COVID-19 vaccines were not thoroughly tested. This means that the vaccines are not safe for individuals. Studies (Ekwebene, Obidile, Azubuike, Nnamani, Dankano, Egbuniwe, 2021; Belingheri, Roncalli, Riva, Paladino, & Teruzzi, 2021) reveal that individuals are hesitant towards COVID-19 vaccines because they are scared that the vaccines may adversely affect their health conditions. They doubt the efficacies of the various COVID-19 vaccines. As a result, most students considered traditional medicines more effective than COVID-19 vaccines. They equally believe their immune systems were naturally strong against diseases like COVID-19 (41.7%). This finding supports Adebisi, Alaran, Bolarinwa, Akande-Sholabi, and Lucero-Prisno (2021) who revealed that beliefs in one's immunity have adversely affected African's willingness to accept COVID-19 vaccines.

The findings revealed that social media messages have promoted vaccine hesitancy behaviour among students in the selected Higher Learning Institutions. For instance, 51.7% of the students affirmed that social media messages have made them scared of accepting COVID-19 vaccines. Due to the nature of some messages, the students are scared of taking the vaccines. Some social media messages stipulated that the vaccines were not thoroughly tested and were harmful. The messages created fright and made students shun the vaccines. In line with this finding, Andersen, Rambaut, Lipkin, Holmes, and Garry (2020) revealed that social media messages created awareness of the side effects of COVID-19 vaccines and reinforced the circulation of conspiracy theories surrounding the vaccines.

Social media messages also made the majority of the students (39.4%) understand that medical doctors were hesitant to take COVID-19 vaccines. This finding supports Agyekum, Afrifa-Anane, Kyei-Arthur, Addo, and Achave (2021), who uncovered that the global vaccination rate among healthcare providers has always been low. Contrarily, Ackah, Woo, Ukah, Fazal, Stallwood, Okpani, and Adu, (2021) explain that health providers are role models for vaccine uptake, especially for populations expressing low levels of trust towards vaccines.

6. CONCLUSION AND RECOMMENDATIONS

The overall findings of the research indicate that some social media influencers are promoting COVID-19 vaccine-hesitant attitudes and behaviours. They post unverified COVID-19 cure claims, share misleading COVID-19 cure prescriptions, create avenues for COVID-19 misinformation, and fuel COVID-19 vaccination doubts and fears through their news reports. Also, the findings indicate that social media messages have positively and negatively influenced students' attitudes towards the COVID-19 vaccine. Positively, they made students to believe that they can feel safer after being vaccinated against the virus, the vaccines are meant for everyone (victims and non-victims), manufacturers of COVID-19 vaccines do not intend to harm Africans and the vaccines will not affect their health (32%). Negatively, the messages have made some students to believe that traditional

medications are more effective than the vaccines, the vaccines are not thoroughly tested, government officials are promoting COVID-19 vaccines for political and financial gains, their immune systems are naturally strong against diseases like COVID-19 and Cameroon's health systems cannot effectively administer COVID-19 vaccines.

This research recommends that the government of Cameroon should organise annual intensive COVID-19 health campaigns in Higher Learning Institutions to educate students on the importance of COVID-19 vaccines. Also, the government should encourage lecturers, parents and religious authorities to take COVID-19 vaccines, and encourage others to do same. Equally, the government should work in collaboration with journalists, especially those with social media pages, to promote COVID-19 vaccine acceptance among students. Most students depend on social media sites for veritable information about COVID-19 vaccines. This explains the ability of social media messages to influence students' knowledge, attitude and behaviour towards the vaccine. Thus, the government should work with journalists to promote the dissemination of veritable COVID-19 news stories that will increase vaccine confidence and acceptance among students. Furthermore, the government should sanction journalists who are crafting, promoting or relaying messages that encourage COViD-19 vaccine hesitancy among students in Cameroon. The sanctions will make those journalists to restrain from promoting messages that encourage vaccine hesitancy.

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