

**Social Media Dependency and Its influence on
COVID-19 Booster Vaccine Uptake Amongst
International University Students in Northern
Cyprus: A Quantitative Study**

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ABSTRACT

In the context of the ongoing global COVID 19 pandemic, understanding vaccine attitudes has become paramount. This study aims to unravel and explore the association between social media dependency and COVID 19 booster vaccine attitudes and uptake, with a focus on measuring the level of booster vaccine hesitancy and exploring the potential link between social network attitudes and booster vaccine uptake. The research employs a quantitative, cross sectional methodology with snowball sampling and is framed within the theoretical lens of media dependency theory. This study attempts to: first, to gauge the extent of booster vaccine hesitancy among respondents; second, to ascertain whether there exists a discernible association between social networks dependency and vaccine attitudes, and if so, whether this association manifests as a positive or negative impact. As well as the link between attitudes towards social media and the uptake of the COVID 19 booster vaccine. Finally, the possibility of the inclusion of social media into the domain of media dependency theory.

The research findings indicate that social media dependency does indeed predict COVID 19 booster vaccine uptake. While the correlation observed may not be exceptionally prominent, it proves to be adequate in establishing a meaningful link. Moreover, the study reveals that individuals' attitudes toward social media significantly influence their decision to accept the booster vaccine. This highlights the impact of social media on shaping public health behaviors. Notably, the level of booster vaccine uptake was found to be lower than expected, with more than half of the participants not having received the COVID 19 booster vaccine at the time of the study. This suggests a need for targeted interventions to increase booster vaccine

uptake rates, with a particular emphasis on addressing the impact of social media in vaccine decision-making processes. In conclusion, this research provides valuable insights into the role of social media in shaping public health behaviors during the pandemic. The findings suggest that social media has a cognitive, affective, and behavioral impact on individuals, emphasizing its significance in the realm of media dependency theory. This study contributes to our understanding of the multifaceted dynamics between social media, information dissemination, and healthcare decisions, highlighting the need for a holistic approach to public health communication in the digital age.

Keywords: social media, media dependency theory, COVID-19 booster vaccine attitudes

ÖZ

COVID-19 salgını bağlamında aşı tutumlarını anlamak önemlidir. Bu çalışma, takviye aşısı alım düzeyini ölçmeye ve sosyal ağ tutumları ile takviye aşısı alımı arasındaki potansiyel bağlantıyı keşfetmeye odaklanarak, sosyal medya kullanımı ile COVID-19 takviye aşısı tutumları ve alımı arasındaki ilişkiyi araştırmayı amaçlamaktadır. Araştırma, medya bağlılığı teorisi çerçevesinde kartopu örnekleme ile niceliksel, kesitsel bir metodoloji kullanmaktadır. Bu çalışma şunları yapmayı amaçlamaktadır: ilk olarak, katılımcılar arasındaki COVID-19 takviye aşısı tereddüt düzeyini ölçmeyi amaçlamaktadır. İkinci olarak çalışma, sosyal ağ kullanımı ile aşı tutumları arasında bir ilişki olup olmadığını görmeyi amaçlıyor. Eğer öyleyse, bu ilişkinin olumlu ya da olumsuz bir etkisi olup olmadığı. Ayrıca sosyal medyaya yönelik tutumlar ile COVID-19 takviye aşısının alınması arasındaki bağlantının yanı sıra. Son olarak sosyal medyanın medya bağlılığı teorisi alanına dahil edilme olasılığı.

Araştırma bulguları, pandemi zamanlarında sosyal medya kullanımının, COVID-19 aşısı alımını öngördüğünü gösteriyor. Gözlemlenen korelasyon olağanüstü derecede belirgin olmasa da anlamlı bir bağlantı kurmada yeterli olduğu kanıtlanmıştır. Ayrıca çalışma, bireylerin sosyal medyaya yönelik tutumlarının takviye aşısı kabul etme kararlarını etkilediğini ortaya koyuyor. Bu, sosyal medyanın halk sağlığı davranışlarını şekillendirmedeki etkisini vurgulamaktadır. Ayrıca rapel aşı alım düzeyinin beklenenden düşük olduğu görüldü. Bu çalışma, aşı karar alma süreçlerinde sosyal medyanın etkisinin ele alınmasına özellikle vurgu yaparak, takviye aşı alım oranlarını artırmak için hedefe yönelik müdahalelere ihtiyaç olduğunu öne sürüyor. Sonuç olarak bu araştırma, sosyal medyanın pandemi sırasında halk sağlığı davranışlarını

şekillendirmedeki rolüne dair değerli bilgiler sağlıyor. Bulgular, sosyal medyanın bireyler üzerinde bilişsel, duygusal ve davranışsal bir etkiye sahip olduğunu ileri sürerek medya bağılılığı teorisi alanındaki önemini vurgulamaktadır. Bu çalışma, COVID-19 salgını zamanlarında sosyal medyanın, bilgi yaymanın ve sağlık hizmetleri kararlarının rolünü anlamamıza katkıda bulunmaktadır.

Anahtar Kelimeler: sosyal medya, medya bağılılığı teorisi, COVID-19 aşısı aşısı tutumları

DEDICATION

I dedicate this dissertation to Cyprus, Eastern Mediterranean University, and the Communication and Media Department. A special thanks to my supervisor and friend Dr. AYSU ARSOY.

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It is a pleasure to give back to the island that embraced me for four years. A little parting gift that is this dissertation. May it be a remarkable or a minute contribution to Eastern Mediterranean University and the island of Cyprus.

PREFACE

Living in Northern Cyprus during COVID-19 times, we have experienced months of peak restriction and a few weeks of normality and ease of restrictive measures. In the meantime, more of my focus was channeled to social media, mainly TikTok, Twitter, Instagram, and YouTube. Plus, the conspiracy theories I encountered during my social media consumption at that period sparked this dissertation. Through my observation, more people around me developed fluctuating opinions because of these theories that showed me that social media truly can change minds, especially during a crisis time. The virus developed and my ideas too. The aim of the thesis started taking shape from social media's impact on our perception of the virus into vaccines into booster vaccines.

Completing this research was challenging and would not have been possible without the unwavering support of those around me. I extend my heartfelt gratitude to my advisor, Assoc. Dr. Prof. Aysu Arsoy. Despite her hectic schedule and as a vice dean and professor, she always prioritized me and provided guidance whenever I inquired. To my friends and family, your patience, encouragement, and endless discussions have kept my enthusiasm burning bright. In hope that this research may be the beginning of a great harvest of their investment. May it be a humble contribution to my university.

With heartfelt gratitude,

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Chapter 1

INTRODUCTION

1.1 Problem of the Study

COVID-19 has impacted both the real and digital world. The devastation caused by the virus on the economy, education, and multiple major fields is immense (Rosenberg et al., 2022). The pandemic has also affected social media platforms and their level of consumption (Puri et al., 2020). Such impact is personified in a great rise of infodemic accompanied by misinformation and disinformation at once that altered the audience's beliefs and behaviors making a portion of them hesitant to take the vaccine and by extension the booster shots (Jennings, W. et al., 2021). The study solely focused on international students because of their heavy consumption of social media (Lim et al., 2022). This Impact was prominent at the time this research was being conducted which was between March 2020 and March 2022_ for the record COVID-19 was announced as no longer a global health emergency by The W.H.O. in May 2023, which makes this research still relevant (Gumbrecht et al., 2023). However, social media has been of great use in informing people and encouraging them to follow preventative measures. (Wang et al., 2021)

1.1.1 The Rise of COVID-19

To elaborate, it is best to start with the main issue which is COVID-19. The world had been facing one of the deadliest viruses ever, also known as Sars-cov-2. The cases have reached more than 500 million infections with more than 6 million deaths ever since its breakout (W.H.O., 2022). Governments took strict measures to control the

virus: border closure, social distancing, and the mandate of facial masks. Such measurements showed a flicker of success but not enough to contain the virus (Lounis et al., 2022).

1.1.2 Herd Immunity

A prominent measure was and still is population immunity also known as herd immunity (Randolph & Barreiro, 2020). The most efficient way, recommended by the World Health Organization, to attain herd immunity is through vaccination (World Health Organization, 2023). In 2020, Anderson et al. showed that herd immunity could be reached with 75–90% vaccination coverage to reach full vaccine efficacy with long-term protection (Lounis et al., 2022).

1.1.3 COVID-19 Vaccines

For the records, at least one dose of COVID-19 vaccines has been distributed to almost 66 percent of the population. Globally, around 12 billion doses have been provided, with 5.85 million administered each day (Ritchie, 2020). Only 15.9 percent of low-income countries got at least one treatment (Ritchie, 2020).

1.1.4 New COVID-19 Variants

The rise of new variants of the virus led to an increase in concerns about decreasing immunity from the main COVID-19 vaccination; booster doses are a practicable alternative for increasing protection against COVID-19 (Yadete et al., 2021). Booster shots are needed to reach a certain reassuring level of herd immunity (Burckhardt et al., 2022). Besides, not getting the second shot will prevent the individual from the full protection the second dose provides (PharmD, 2022).

1.1.5 COVID-19 Booster Vaccine Shots

Booster shots are important. Given the advent of novel variations and concerns about decreasing immunity from main COVID-19 vaccinations, booster doses are a better way for enhancing and support COVID-19 protection (Yadete et al., 2021).

1.1.6 COVID-19 Infodemic and Social Media Impacts

The COVID-19 crisis caused an uproar in the media resulting in a great amount of infodemic (Tan et al., 2022). During a disease epidemic, a boom of information is inevitable, including inaccurate and or misleading claims, in both digital and physical media platforms (W.H.O., 2020). It generates confusion and risk-taking behaviors that might damage one's health (W.H.O., 2020). Infodemic has been prominent in social media platforms. These platforms can disseminate all sorts of information because they are not as thoroughly filtered as news media; therefore, the possibility of misinformation reaching the audience is very high. Besides, the slightest contact with misinformation, especially in the case of a health crisis can worsen the crisis by changing the audience's views to the worst in a surprisingly short time (Betsch et al., 2010; Puri et al., 2020). To sum it up, social media platforms can negatively affect the audience's vaccine attitudes toward COVID-19 vaccines resulting in great vaccine hesitancy (Puri et al., 2020). On the other hand, social media dependency as a means of information in times of COVID-19 proved efficacious (Venegas-Vera et al., 2020). People were educated and well-informed about the virus through social media resulting in positive attitudes toward hygiene, protective measurement, and COVID-19 vaccine acceptance (Venegas-Vera et al., 2020).

1.1.7 Social Media and COVID-19 Vaccines and Booster Shots

Studies conducted on social media effects and COVID-19 (booster) vaccine attitudes showed opposing results. For instance, Benis et al. (2021) showed that a remarkably

large portion of US young adults, who are using social media daily, were inclined to take the COVID-19 vaccine. A study in Singapore suggested that adults who rely on social media to get informed about COVID-19 tend to be partially or not fully vaccinated (Tan et al., 2022).

However, when it comes to booster vaccination and social media dependency, it was shown that social media increased the odds of participants getting COVID-19 booster shots significantly (Wang et al., 2022). The negative impact of social media on the uptake of booster shots is scarce and only one study has been found. Its findings show that 57% of the participants had a negative attitude towards Booster COVID-19 vaccination because of Twitter reliance (Sv et al., 2023).

1.1.8 Knowledge Gap

The knowledge gap noticed is that there are very few articles in the literature measuring the level of COVID-19 booster vaccine hesitancy and its link to social media dependency in the frame of media dependency theory better yet, in Northern Cyprus. Social media reliance, social media attitudes, and COVID-19 booster vaccine uptake are the main points of this thesis and are elements that were studied separately but rarely all in one study. Social media dependency has been noticeably on the rise after the outbreak of COVID-19 (Statista, 2022).

1.2 The Motivation of the Study

Social media platforms reach a larger mass of audience, especially the youth, yet misinformation lingers on these platforms. In times of crisis, misinformation can worsen a crisis by affecting the audience into acting in a certain manner according to media dependency theory (Blank & Reisdorf, 2023). Besides, when information is delivered in the form of imagery, it is more convincing. Plus, a fraction of

misinformation can shake and maybe alter the audience's state of mind for the worse (Puri et al., 2020).

The virus is not completely under control, new variants of it keep showing up, and vaccines alone are not enough to keep it under control (Achenbach & Pietsch, 2022). Yet, the possibility of another major health crisis is low but never zero. The W.H.O. declared a global spike in COVID-19 cases reaching 1.5 million caused by the new variant EG.5. That is why booster shots are needed to reach a reassuring level of herd immunity (Pal et al., 2021). Another motivation for this study is to address the gap in the literature about the level of COVID-19 vaccine and booster vaccine acceptance in the community of Northern Cyprus.

1.3 Significance of the Study

The study explores how people's dependency on social media and their attitudes towards these platforms relate to their decision to get a COVID-19 booster vaccine and their overall attitudes about it. This study has real-world importance. In today's pandemic-stricken world, where getting vaccinated is crucial for our safety, understanding how social media influences our choices is crucial (W.H.O. ., 2021). Most people rely on social media for information and opinions, and this research delves into how this reliance affects whether people decide to get that booster shot or not (Puri et al., 2020). The findings could be of great use, helping public health efforts and policymakers tailor their messages to fight vaccine hesitancy and misinformation on platforms like Facebook, Twitter, TikTok, Instagram, and YouTube (Puri et al., 2020). In the end, this study adds to the broader conversation about how we communicate about public health and the role social media plays in our health decisions during these challenging times. Besides this study stretches the field of

research into Northern Cyprus, making it the first study that shed light on social media and COVID-19 booster vaccines in the island. As well as expanding the field of media dependency theory by the inclusion of social media in its framework.

1.4 Aim of the Study

This study attempts to get a grasp if dependency and attitudes towards social media platforms are impacting the uptake of COVID-19 booster vaccines among international students. This study includes highly imagery social media platforms, namely, YouTube, Facebook, Instagram, TikTok, and Twitter (Persuasion, 2021). The reason behind including highly imagery platforms is that when information is conveyed in the form of pictures or videos, it is more convincing regardless of its authenticity (Persuasion, 2021). Besides, when it comes to viruses, infodemics are inevitable and unfortunately, such a boom of information is accompanied by misinformation, in addition to the fact that social media platforms reach a larger audience (W.H.O., 2021). Another major aim is to understand the level of booster vaccine hesitancy among international students in Northern Cyprus. Besides. This dissertation aims to examine the attitudes of the sample towards social media in times of COVID-19. The findings of this study should mold a tool kit to enhance social media performance in times of crisis.

1.5 Research Questions

To reach these aims, several questions should be answered. These questions will unravel the link between social media dependency and booster vaccine attitudes among the sample. The literature contains studies examining the link between social media and vaccine hesitancy. This thesis takes it a step further and studies social media and booster vaccine uptake and stretches the field of research to Northern Cyprus. The results harvested from the below questions can be used to enhance these platforms to

be more reliable in times of crisis, and limit the dissemination of misinformation, and promote authentic pieces of information. The results would also show the degree of booster vaccine hesitancy, which would help the authorities to either do more vaccine promotion or to channel their focus on other matters.

1.5.1 Research Question 1

According to the W.H.O., COVID-19 is the only health crisis where social media has been relied on to disseminate information to educate and warn the population which was a success (W.H.O., 2021). Attitudes towards social media differ, which segues to the first research question which is: Can we predict the attitudes towards COVID-19 booster vaccines according to the participants' attitudes towards social media platforms as a means of getting informed about the pandemic?

1.5.2 Hypothesis 1

The nature of attitudes towards social media predicts the attitudes towards COVID-19 booster vaccines. Positive attitudes towards social media result in a positive attitude towards COVID-19 booster vaccine uptake and vice versa.

1.5.3 Question 2

The Crux of this dissertation is to establish and link the level of social media dependency and the attitudes towards the COVID-19 booster vaccine. Thus, is there a correlation between these variables?

1.5.4 Hypothesis 2

There is a correlation between social media dependency and COVID-19 booster vaccine attitudes. In fact, we hypothesize that social media dependency contributes positively to booster vaccine attitudes.

The above questions must be answered following a certain methodology.

1.5.5 Research Question 3

The scarcity of studies around media dependency and COVID-19 booster vaccines prompted this research to inquire about this matter. In a study conducted in Pakistan, it was shown that social media reliance increased the sample's willingness to take COVID-19 booster vaccines and suggested that social media ought to be included in the media dependency framework since the research implemented elements of media dependency theory.

Therefore, in the frame of media dependency theory, does social media have a cognitive, affective, and behavioral impact on people when it comes to taking COVID-19 booster doses in the context of Northern Cyprus? If so, is it safe to assume that social media should be part of the media dependency theoretical framework and not just traditional media outlets?

1.5.6 Hypothesis3

Social media dependency does have a cognitive, affective, and behavioral impact that eventually makes it legit enough to be included in the framework of media dependency theory.

1.6 Methodology

This thesis is to rely on an objectively empirical quantitative approach using a cross-sectional questionnaire distributed in a non-random snow-balling way that will consist of two parts. A quantitative research method has been relied on in previous studies that aimed at the same issue either vaccine hesitancy or media dependency; therefore, it is best to follow previous scholars' steps to stretch the field of research to Northern Cyprus. The reliance on quantitative methodology aims to observe and produce findings that can be communicated through data and numbers (GCU, 2021).

In the context of a health crisis that keeps updating, a cross-sectional method suits this research for the results should provide a snapshot of the situation (Thomas, 2023). The participants of this survey ought to be international students who have an adequate level of English living in Northern Cyprus preferably the Famagusta district, thus a non-random sampling technique is applied. In order to reach a larger number of participants, a snowballing method is relied on (Nikolopoulou, 2023).

To attain such objectives a questionnaire to collect data is needed. The questionnaire of this thesis will consist of three parts. The first part is about the demographics, working conditions, and the vaccination status. The second part is solely for vaccinated individuals (not necessarily the ones who took booster shots) and it will measure the level of social media namely Instagram, TikTok, Twitter, YouTube, and Facebook dependency and attitudes in times of COVID-19. Plus, the willingness of the sample to get a booster shot as well as the reasons for their booster shots uptake or refusal. The third part is solely for unvaccinated individuals and their reasons for not taking the vaccine plus inquiring on which media platforms have contributed to their attitudes. It is almost unattainable to study the matter from every area, which is why it is necessary to narrow things down and follow a certain framework (Godfrey, 2021).

1.6.1 Media Dependency Theory

The core idea of Media dependency theory is that the influence of the media depends on how dependent the audience is and the social system on the media. In other words, the greater the number of social functions performed by an audience through means of communication (getting informed, entertained...), the higher the audience's reliance on that medium of communication (Ball-Rokeach, 2010). Hence, the greater the influence of media on the audience (Ball-Rokeach, 2010). Because the research is cross-sectional, this dissertation focuses on the theory's micro level. In other words,

the impact of media on individuals (cognitive, affective, and behavioral) and not the social system (Ball-Rokeach, 2010; Ma et al., 2023)

Multiple studies concluded that the reliance on mass and digital media increased remarkably at the beginning of the pandemic (Blank & Reisdorf, 2023; Fletcher et al., 2020; Mitchell et al., 2020).

Although the Media system dependency theory was introduced before the creation and rise of the internet, multiple studies have included the Internet in the domain of the theory. For example, Lyu (2012) applied media dependency theory to examine how Chinese college students rely on multiple mediums, including the Internet, during a public health crisis. The survey's findings showed that younger Chinese media users depended more on information from the World Wide Web, emphasizing the importance of the Internet as an essential information medium and a pillar in the media dependency theoretical frame (Blank & Reisdorf, 2023). For the record, media dependency solely can be a predictor of people's attitudes and behavior, which was the case in the terrorist attack on 11 September (Lowrey, 2004).

Media Dependency Theory suggests that media plays a pivotal role in shaping perceptions, attitudes, and behaviors, particularly in situations of uncertainty or crisis (Ball-Rokeach, 2010). In the context of COVID-19 and this thesis, the theory is projected on the influence of social media as a primary source of information on participants.

Social media's flow of information can shape cognitive structures, affecting knowledge acquisition and information processing. Individuals heavily reliant on social media for

COVID-19-related updates may encounter filter bubbles and echo chambers, which could lead to selective exposure and confirmation bias (JJiang, 2021). This may influence perceptions of vaccine efficacy, safety, and necessity (JJiang, 2021).

For instance, social media dependency in times of COVID-19 showed a positive link in expecting people's attitudes towards vaccination programs. This is a cognitive effect. This effect, if and when it is emotionally reassured, translates into an affective effect since the emotional effect on social media platforms may amplify positive or negative vaccine sentiments (Ball-Rokeach, 2010). In the case of a positive link, the population would develop positive feelings towards vaccination that ultimately project into a behavior that is accepting vaccines because social media can shape social norms and perceived behavioral control, affecting vaccine uptake (Allington et al., 2021).

Media reliance was used in research done in Pakistan to gauge the influence of both traditional and social media on the uptake of booster shots (Ma et al., 2023). The results showed that people are more likely to take preventive measures and accept booster immunization when their reliance is higher. In other words, the participants acknowledged a shift in their beliefs (cognitive effect) and feelings (affective effect), which prompted them to take precautionary action (behavioral impact) (Ma et al., 2023). The same process should be applied in case of a negative effect. This is just an example of how the data will be viewed and analyzed from the lenses of Media Dependency theory in this dissertation.

Since there is a lack of literature when it comes to social media dependency, Media Dependency Theory, and Booster vaccines. This thesis aims to fill such a gap from the Media Dependency System standpoint.

Media Dependency Theory offers valuable insights into the complex relationship between social media reliance and attitudes toward COVID-19 booster vaccines. By examining cognitive, affective, and behavioral dimensions, this paper underscores the need for balanced and informed engagement with social media, particularly in the realm of public health. Navigating the digital landscape responsibly is essential for promoting informed decision-making and facilitating successful vaccination campaigns.

1.7 Limitations and Summary

As the research unfolds, it is essential to remain mindful of the limitations inherent in quantitative studies, such as potential biases in survey responses and the inability to capture nuanced qualitative insights. However, by triangulating findings with existing literature and combining quantitative and qualitative research approaches in subsequent chapters, this dissertation aims to present a comprehensive and holistic understanding of booster vaccine hesitancy in the context of social media dependency.

There are limitations to this study. Relying on a quantitative approach may give an abundance of findings yet they would lack nuances and depth (Chetty, 2022). Besides, analyzing the data from a media dependency standpoint would eventually leave some areas uncharted because the theory oversimplifies audience behavior, not fully considering individual differences and active audience effects (Das, 2023). Adding on to the above, media literacy, health literacy, targeted social media recommendation, social media algorithms and social media addiction, and vaccination history are all elements not included in the survey and the analysis. The size of the sample could be considered a limitation, 150 participants is not a considerable number, yet it can provide adequate results.

The challenges associated with misinformation and polarized narratives surrounding vaccines and health issues have made it imperative to understand the role of social media in molding public views. The literature offers many variant findings depending on the socio and geo demographics and the methodology. Yet, fewer studies can be found on booster vaccination. Better yet, no study on this matter has been conducted in Northern Cyprus. With complex and contradicting results concerning social media and COVID-19 vaccine attitudes, a gap has been noticed which is the lack of evidence concerning social media consumption and COVID-19 booster vaccine attitudes. This dissertation aims to fill this gap from a media dependency standpoint, plus, a quantitative approach in a cross-sectional manner should facilitate reaching adequate results on the matter in Northern Cyprus. Therefore, any finding should be a prominent contribution to the community.

Chapter 2

LITERATURE REVIEW

2.1 History of COVID-19

Concerns and aspirations are predominant when talking about COVID-19 and the vaccination programs (Mitropoulos, 2022). Fortunately, significant improvement could be seen thanks to the vaccines in preventing serious illness, hospitalization, and death (Mitropoulos, 2022). Yet, unfortunately, effectiveness at preventing infections is remarkable in the presence of Omicron and wanes after vaccination (Mitropoulos, 2022).

The world is still facing a pandemic, this battle started in December 2019 (W.H.O., 2020). The outbreak of the virus occurred in December 2019 in Wuhan. The World Health Organization named the virus COVID-19 on 11 February 2020, two months later the virus was officially considered a pandemic because of the fast pace whereby it spread and took away lives (Cucinotta & Vanelli, 2020). The cases have reached over 550 million cases, with over 6 million deaths (World Health Organization, 2023)

2.2 COVID-19 Preventative Measures

To contain the virus, several strict measures were put into action. COVID-19 can be transmitted through air, therefore wearing face masks is an efficacious, cheap, and easy measure to control it (Howard et al., 2020). Lockdowns and social distancing have been implemented in order to lessen the spread of the virus worldwide (Atalan, 2020).

Travel bans and quarantine were also implemented to limit the spread of the virus (Cascini et al., 2021, Donovan, 2020).

2.3 The COVID-19 situation in Northern Cyprus

North Cyprus has relied on the same methods to fight the pandemic. The first case of COVID-19 in North Cyprus was discovered on 10 March 2020 in a 65-year-old German tourist (Volkan & Volkan, 2020). Three days later, the state implemented a lockdown and afterward mandated face masks (Volkan & Volkan, 2020). The only facilities that remained in operation were hospitals, markets, and banks, and all education became online (Volkan & Volkan, 2020). In Northern Cyprus, the total number of tests conducted was more than seven million, with slightly more than 106000 cases confirmed and almost 103000 recoveries, with a total of 239 deaths (Cihancir et al., 2022).

Another issue that arose was the emergence of new variants of the virus. The Centre for Disease Control (CDC) identified multiple variants namely Alpha, Beta, and delta variants. The spread of these variants worsened the situation, making the case rates increase sharply, pressuring the hospitals' capacities and leading to more deaths. The economy, education, and health facilities faced immense hardships because of the virus and its variants (Alfatease et al., 2021; Alloway et al., 2021; Torjesen, 2021).

It is worth noting that studies on COVID-19 in Northern Cyprus are scarce, let alone social media's impact on COVID-19 vaccine uptake.

2.4 COVID-19 Vaccine Emergence

Fortunately, even with the spread of new variants, new vaccines were made in less than a year ever since the outbreak. AstraZeneca, Sinopharm, Sinovac, Pfizer, and

Moderna vaccines were immediately administered for emergency use (Alfatease et al., 2021). Up until July 2022, 66.8% of the world's population has gotten at least one dose of a COVID-19 vaccine. Almost 13 billion doses have been rolled out worldwide, and 4.09 million are now administered each day. Merely 19.4% of people in low-income countries have received at least one dose (Ritchie, 2020).

Vaccines are a safe way to obtain immunity rather than catching diseases and treating them. Besides, once the immune system knows how to combat a disease, it can often protect the subject for a while (W.H.O., 2020). COVID-19 set new standards, and since it keeps upgrading itself resulting in new variants, multiple doses are needed in addition to booster vaccine shots (Mandavilli, 2022). Plus, the fast pace at whereby COVID-19 vaccines were produced is a scientific achievement and at the same time, it was perceived with worries and skepticism (Alfatease et al., 2021). These mixed feelings created a public concern that led to COVID-19 vaccine hesitancy (Alfatease et al., 2021).

2.5 Defining Vaccine Hesitancy

It is a fact that vaccine hesitancy has a long history; the internet has fed this negative attitude. Fear and misunderstanding of the development of vaccines made the spread of misinformation easier (Alfatease et al., 2021).

Vaccine hesitancy is classified in the list of the deadliest threats to global health in 2019 by the W.H.O. (2019). Vaccine hesitancy is the disinclination in acceptance or total refusal of vaccination despite its availability. Hesitancy may be the outcome of a range of factors and held views (MacDonald, 2015). Vaccine-reluctant people are a varied group with fluctuating uncertainty towards certain vaccines or immunization in

general. Besides, vaccine-hesitant individuals may accept all vaccines yet keep their worries; some may not accept or delay some vaccines but take others; and obviously, a portion of people may refuse all vaccines (MacDonald, 2015; Troiano & Nardi, 2021).

The level of hesitancy across the globe varies. For instance, in the Republic of Cyprus, 41% of the participants had expressed disinterest in vaccination against COVID-19 due to worries about the vaccines' fast development and potential side effects (Fakonti et al., 2021). The levels of COVID-19 fluctuated around the globe depending on the socio and geo demographics (Sallam et al., 2022).

There are multiple factors contributing to the rise of COVID-19 vaccine hesitancy attitudes. Concerns about vaccine effectiveness, safety, side effects, convenience, price, and beliefs that the vaccine is not necessary, as well as the authorities and pharmaceutical companies' financial motivations, are a few of these (Cascini et al., 2021). Other factors include the vaccine's insufficient testing and rapid development and being misinformed (Coomes et al., 2019).

2.6 Introducing Social Media and Its Impact

With every epidemic and health crisis. Infodemic is inevitable. An infodemic is an abundance of information including false and or misleading information in digital and physical environments during a disease or a crisis outbreak (W.H.O., 2020). It causes disturbance leading people to take risky behaviors that may harm their health and others. It also accumulates suspicion toward health authorities and sabotages public health feedback (W.H.O., 2020). An infodemic can worsen or lengthen outbreaks when people are unsure about what they ought to do to protect their health and the

health of the community (W.H.O., 2020). With the increase of internet and social media usage, information _correct or incorrect_ spread at a sharp pace. This can help people get informed but can also amplify harmful messages (W.H.O., 2020).

A recurring theme is spotted in the literature, and it also heavily contributes to COVID-19 vaccine hesitancy which is misinformation regarding the benefits and the side effects of the vaccine (Cascini et al., 2022).

2.7 Social Media and COVID-19 Vaccine Hesitancy

When speaking of the internet, misinformation, and infodemic, it is reasonable to address social media. Social media platforms are digital platforms that allow individual users and user communities to produce, engage, and share content with others with many platforms for various content kinds (Betsch et al., 2012; Wilson & Keelan, 2013). They enable real-time communication across quasi-peer networks, allowing the users to participate in public debate (Buller et al., 2019). Unlike traditional media, information shared on social media does not need to be scientifically treated and may result in a broader spectrum of data and opinions (Massey et al., 2018; Meleo-Erwin et al., 2017). Social media is also distinguished by its advantage to reach a large number of people and spread information quickly (Blankenship et al., 2018).

Besides, emerging infectious diseases such as COVID-19 have led to relying more on social media to get all types of information. Thus, such platforms have a remarkable impact on the cognition of the audiences, changing their viewpoints of disease outbreaks, decision-making, and risk behavior (Al-Dmour et al., 2020). Besides, people heavily relied on social media to stay connected after implementing social distancing measures (Freberg et al., 2013).

Social media use has expanded, but this dependence may backfire given that it has the potential to propagate false information and lead to increasing reluctance, especially among groups who are more likely to have higher COVID-19 vaccination hesitancy rates (Donovan, 2020).

What can be deducted from the above is that vaccine hesitancy is caused by multiple factors and one of them is misinformation. One major way to be misinformed is the usage of social media since these platforms are not always filtered. This brings the review into how impactful social media on COVID-19 vaccine attitudes is (Puri et al., 2020).

2.8 Misinformation about COVID-19 on Social Media Platforms

Regardless of the positive impact social media consumption has on people, especially students on getting the vaccines, social media platforms may have some elements that could demotivate them from receiving the jabs (Luo et al., 2021). Social media sites may have a detrimental effect. Previous studies have shown that anti-vaccination messages make up a significant portion of the content about vaccines on well-known social media platforms, endangering and contaminating users' perception and engagement (Cascini et al., 2022). These groups also report that vaccine-hesitant groups have a prominent and significant impact on social media (Cascini et al., 2022).

2.9 The Negative Impact of Social Media Dependency on Vaccine Attitudes

This review focuses on the social media dependency impact on vaccine attitudes with less focus on sociodemographics, trust in government and health officials, and time of social media consumption factors.

Studies have shown that false information, particularly on Twitter, Instagram, YouTube, and Reddit may spread more quickly and widely than the news that is factual (Van Raemdonck, 2019). However, this might be a platform-specific effect (Cinelli et al., 2020; Vosoughi et al., 2018). The literature also points to conspiracy theories as a motive behind vaccination hesitancy, which is frequently communicated via social media and results in a widespread distrust in the healthcare system and government more generally (Rotolo et al., 2022; Yoshida et al., 2022).

Another point worth mentioning is that the users might choose how to be affected by social media. Social media platforms allow users to follow other users or groups to stay informed about their postings (Schmidt et al., 2018). By doing so, the consumer of social media creates a bubble of content around them, accepting what aligns with their interests and rejecting what is not (Salathé & Khandelwal, 2011). Correspondingly, each user develops an exclusive network of content and interactions within the broader scale of the network (Getman et al., 2017). This self-clustering of content puts the individual in a distinct ideological sub-community also known as echo-chambers (Getman et al., 2017). Therefore, the quality of the content dictates what kind of ideas and behaviors the individual might acquire (Getman et al., 2017). Echo-chambers gather individuals and surround them with ideologically like people (Van Raemdonck, 2019). These metaphorical chambers mostly help to reinforce previously held beliefs rather than to examine new ones. Such ideological isolation may restrict public health impact on social media to encourage immunization (Yuan et al., 2019).

The W.H.O. named infodemic: the opposing plague, which spreads and feeds the public with false news, misinformation, and misleading scientific claims (W.H.O.,

2020). This plague is partially to blame for the lack of faith in vaccination information among vaccine-apprehensive individuals (Zarocostas, 2020). Those who are prone to this infodemic have less of a predisposition and they are less inclined to get the COVID-19 vaccine (Roozenbeek et al., 2020). Vaccine hesitancy is tightly linked to relying on social media as a main source of news (Van Nguyen & Nguyen, 2022).

The dependency on social media as a source of information was associated with conspiracy theories that led to a reluctance to follow health-protective measures against COVID-19 (Allington et al., 2020). Besides, in the United Kingdom, people who obtain information from unregulated social media sources such as YouTube are less likely to be willing to become vaccinated. People who depended on Instagram, TikTok, and Snapchat to get informed were more vaccine hesitant than the latter. (Jennings, W. et al., 2021). In a large-scale study conducted by Al-Hassan et al. (2021), it was deduced that WhatsApp, Instagram, and YouTube alter the cognition of participants into developing a negative intent towards vaccination.

When it comes to university students, it was noticed that in the U.K. 50.6% of the participants showed hesitancy due to a lack of information and context in social media (Synnott, 2020). In the U.S. University students in South Carolina expressed their distrust in social media in times of COVID-19. Such negative attitudes and lack of trust in social media platforms could predict the decision-making of the university students which is a reluctance to take the vaccine (Qiao et al., 2022). In addition to sociodemographic factors, trust in the government, and level of education, it was found that social media and the misinformation swarming in it are negatively associated with COVID-19 vaccine attitudes although these platforms are putting enough resources and funds to promote vaccination (Allington et al., 2021).

It was noticed that foreign disinformation increases the negative content on Twitter. Individuals who are vaccine-hesitant are more likely to identify social media as their main source of information (S. L. Wilson & Wiysonge, 2020); hence, social media platforms play a crucial role in resolving vaccine hesitancy (Piltch-Loeb et al., 2021). The impact of misinformation is not only limited to vaccine hesitancy and the reluctance to follow preventative measures, but it could also lead to something greater. There have been some behaviors that were considered as vandalism against 5G cellular towers because of the dissemination of conspiracy theories linking 5G technology to the spread of COVID-19 (Ahmed et al., 2020).

To emphasize the previous point, in Oman, most participants (88%) were informed about COVID-19, and social media was the most prevalent source of knowledge (67%) (Al-Marshoudi et al., 2021). There was a 34% rate of COVID-19 vaccination rejection among participants, motivated mostly by friends and social media (Al-Marshoudi et al., 2021).

Moreover, the time invested in social media can be a factor contributing to negative vaccine intent. In comparison to persons who use social media less often, those who use it intensively for more than three hours each day have greater rates of vaccination hesitation. Besides, the group of Mascherini and Nivakoski's (2022) study that relied on social media as the main source of information showed a significant level of vaccine hesitancy.

Negative content on social media proved to alter people's perception of COVID-19 vaccines, among these negative information, conspiracy theories are more prominent (Ahmed et al., 2020).

2.9.1 Introducing the Main Conspiracy Theories about COVID-19

The misinformation spreading on the internet has reached social media and this later was quick to censor such content (Gisondi et al., 2022). Yet, what is puzzling is the fact that such conspiracy theories are stated by doctors and best-selling writers (Digital Freedom Platform, 2020). The following segment is to show such voices and their main points concerning COVID-19 and its vaccine agenda.

Dr. Rashid Buttar (2020) claimed that, If COVID-19 truly were a pandemic, people would have died and the authorities would not have altered death certificates, nor sent away nurses and doctors. Besides, He claimed that the virus is manufactured, and it was a result of mutating, making a Frankenstein out of naturally occurring diseases (Digital Freedom Platform, 2020).

Another front runner of these different views is Dr. Andrew Kaufman (Digital Freedom Platform, 2020). He criticized the PCR test since the sample it examines is an impure one. Therefore, it is almost impossible to detect the virus's genetic material when it is mixed among fungi, a mixture of nostril cells, bacteria, and fungi (Digital Freedom Platform, 2020).

YouTube in 2020 had taken down all videos promoting Hydroxychloroquine (Digital Freedom Platform, 2020). This medicine was promoted to lessen the severity of COVID-19. Hydroxychloroquine has been used for decades as one of the safest drugs in the world recommended by the W.H.O. for kids and pregnant ladies to prevent Malaria and many other diseases and autoimmune diseases. It also proved useful against SARS and eventually reduces the risks of Sars-COV-2 (COVID-19); however, the W.H.O. and C.D.C. (Centre of Disease Control) suppressed and canceled trials

for the use of the drug in the prevention of treatment of COVID in such urgent times (Digital Freedom Platform, 2020).

In a very frowned upon documentary under the name of Plandemic (Digital Freedom Platform, 2020). The French virologist Prof. Luc Montagnier claimed that COVID-19 is not natural, and it is the work of a professional virologist (Ians, 2020). The documentary explains that pharmaceutical companies are driven by ulterior motives. They only function because of the financial profits and the backgrounds of their officials are controversial to be philanthropists. These companies namely The Gates Foundation, the CDC, and the FDA...have administered vaccines without prior testing. In India, thousands of teens developed paralysis because of the polio vaccine. In an interview done by Digital Freedom Platform (2021), Robert F. Kennedy Jr. reinforced the last statement by discussing that the vaccine industry is economically driven and human lives are its less worries since it administers unsafe and untested vaccines causing catastrophic damages to its recipients from autism all the way to castration (Digital Freedom Platform, 2021).

2.9.2 Conspiracy Theories in Northern Cyprus

The waves of these conspiracy theories were spread worldwide. In Northern Cyprus, a small community started to mold under the name of K.K.T.C plandemi (Kibris Gerçek & Kibris Gerçek, 2021). The following are some of the community's highlights: The KKTC plandemi members expressed their intolerance towards the quarantine protocols and mentioned that it was never acceptable to pay a considerable sum of money (750 Turkish Lira) to wear a wristband, go quarantine and get a rapid PCR test that is already flawed. The discrimination against vaccinated and unvaccinated individuals in Northern Cyprus at the time of the election in 2021 has caused the KKTC plandemi members to reciprocate and express their intolerance

toward such discrimination that has a flawed logic behind it (Kibris Gerçek & Kibris Gerçek, 2021). Among all these controversies there is a silver lining.

2.10 The Positive Impact of Social Media Dependency on Vaccine Attitudes

Contrastingly, social media networks are useful tools that can improve attitudes regarding the COVID-19 vaccination. Social media is being relied on more and more to advance public health objectives, with Twitter playing a particularly significant role in these initiatives (Chen & Wang, 2021; McNeill et al., 2016). For instance, news organizations and public health groups depended on Twitter during the COVID-19 pandemic to swiftly communicate information, particularly material highlighting the seriousness of the crisis and promoting the adoption of preventative practices like vaccination (Wang et al., 2021).

The W.H.O. claimed that COVID-19 was the first pandemic where social media was used to educate and warn people (2020). Benis et al. (2021) confirmed that 81.5% of young audiences depending on social media mostly developed a positive attitude toward COVID-19 vaccines. Their attitudes stem from their trust in healthcare officials, the need to protect their families and relatives, and or be civilly responsible. Another reason behind their positive attitudes is their justified fear of COVID-19 personal infections. Social media platforms increased the number of vaccine participants despite its negative impact (Alfatease et al., 2021). Further, a group of studies found that social media positively increases the willingness on getting COVID-19 vaccines (Aloweidi, A. et al., 2021; Luo et al., 2021; Mo et al., 2021).

Adding on to the above, there are studies that concluded the existence of a positive indirect association between social media dependency and vaccine acceptance. Zhang et al., (2021) deduced that the type of content individuals are exposed to dictates how the effect of social media will be on vaccine attitudes. For instance, consuming positive content is positively associated with the intent to get vaccinated and vice versa.

In another study, Berenson et al. (2021) shed light on the importance of doctors as social media influencers, which was also positively associated with higher vaccine willingness among women of reproductive age. Aside from other factors, social media dependency was found to have a positive association with vaccine acceptance in Hawaii (Ghaffari-Rafi et al., 2021).

Besides, Fontenot et al. (2021) confirmed that relying on social media as the primary source of information concerning COVID-19 and its updates resulted in the molding of positive attitudes toward COVID-19 vaccines. Additionally, Arifuzzaman (2021) looked at publicly available Twitter tweets and found that, overall, more people had favorable feelings towards vaccinations (20–25%) than negative ones (10%), with the remaining people being indifferent. Additionally, it was discovered in Portugal that the decline in vaccine hesitancy refusal is related to the dependence on official social media accounts. (Silva et al., 2022).

Regarding vaccination campaigns, Aloweidi, A. et al. (2021) found that the most effective method to encourage people to take the vaccine is brief scientific highly imagery content spread on social media (Scerri & Grech, 2020; Smith & Reiss, 2020).

Social media exposure be it active or passive and peer discussions can potentially increase University students' attitudes toward COVID-19 vaccines 'related decisions for decision-making' which positively impact their intent to get vaccinated (Luo et al., 2021).

2.11 COVID-19 Vaccine Efficacy

Although the results are opposing each other, it is a fact that the COVID-19 vaccine proved efficacious. Vaccines have helped eradicate smallpox, mumps, rubella, polio, chickenpox, and several infectious diseases (Alfatease et al., 2021; Greenwood, 2014). Since the first variants of COVID-19 were discovered in 2020, it was challenging to find studies in the literature about vaccine efficacy and SARS-Cov2 without its variants (Geddes, 2021).

Multiple studies pointed out the remarkable results of COVID-19 vaccines against the infection. For instance, Bartsch et al. (2020) stated that a vaccine should reach an efficacy threshold of 70% to prevent an epidemic and at least 80% to extinguish an epidemic without taking other preventive measures. Further, COVID-19 vaccines showed positive results in terms of their efficacy against the virus. The Vaccine efficacy against the infection in the general population above the age of 16 years, the elderly, and healthcare workers reached 86.1%, 83.8%, and 95.3% respectively (Zheng et al., 2022). A study conducted in Israel showed that the Pfizer vaccine was 92% effective against the infection (Dagan et al., 2021). The UK government confirmed that one shot of the BioNTech, Pfizer vaccine had 51.4% effectiveness against SARS-CoV-2 (Chodick et al., 2021). Overall, The COVID-19 vaccines are highly protective against SARS-CoV-2-related diseases in real-world settings (Zheng et al., 2022).

In Northern Cyprus, vaccination against COVID-19 was so successful that the island enjoyed multiple days of zero cases of COVID-19. Until the cases spiked due to the emergence and spread of new variants.

2.12 The Decline of Efficacy of Primary Vaccines

The virus is changing, and what was efficacious two years ago may not work for future variants (Callaway, 2022). Mass vaccination of the population is the key to the containment of the coronavirus disease 2019 pandemic; however, it is a fact that protection against infection wanes through time (Tartof et al., 2021). Plus, the success of vaccination programs is also hurdled by breakthrough COVID-19 variants infection and disease in fully vaccinated individuals. The emergence of new variants is considered a major threat, waning the acquired immunization, and potentially causing breakthrough infection (CDC, 2020; Goldberg et al., 2021).

2.12.1 Introducing COVID-19 Booster Vaccine Shots and Their Importance

The F.D.A. (Food and Drug Administration) on September 24, 2021, and the Director of the C.D.C. (Centre of Disease Control). approved and adopted the recommendations of the A.C.I.P. (Advisory Committee on Immunization Practices) for the roll-out of booster doses of the Pfizer-BioNTech COVID-19 vaccine to the population that is considered at high risk of exposure and infection by COVID-19, because of their professional and or institutional duties (The Lancet, 2020).

The variations of COVID-19 range in risk. For instance, COVID-19 variants Delta and Omicron are more contagious than variants Alpha, Beta, and Gamma. A few variants are also elimination-resistant. As a result, the community of vaccine recipients faces a risk of reinfection. Uncertainty exists over the recently discovered Omicron variant's

transmissibility and resistance. The most hazardous of all variations is the Delta one (Islam et al., 2022).

As stated above, the primary vaccination is not enough to provide the necessary protection against the COVID-19 variants such as Omicron and Delta variants; therefore, booster vaccines are needed to compensate for the emerging inadequacy of the primary doses. It has been proved that 2 doses of COVID-19 vaccines only offer adequate short-term protection against the Omicron variant. A third dose is needed to reach reassuring protection (Buchan et al., 2022)

The booster shots may differ in terms of efficacy against COVID-19 variants' infections depending on the primary vaccination, yet they are still effective and enhance people's immunity (Arbel et al., 2021). Moderna and Pfizer BioNTech booster vaccines showed great efficacy against the Delta variant when it was dominant in the U.K. (Sachdeva, et al., 2022). There has been an abundant number of studies concerning the effectiveness of booster shots in Israel and the same results were witnessed in the U.K.; booster doses proved effective. (Bar-On et al., 2021)

Aside from the benefits and the success of booster shots, there emerges an issue that hinders the roll-out of booster vaccines; COVID-19 booster vaccine refusal or hesitancy. A big contributor to it is social media (Wang et al., 2022). The literature about COVID-19 booster attitudes is not as thorough when it comes to social media and its impact on booster acceptance. Such a gap in the literature is where this thesis to adequately fill; at least in the context of Northern Cyprus.

2.12.2 The Level of COVID-19 Booster Acceptance

The levels of booster acceptance vary from one country to another due to multiple reasons be it geodemographics and or sociodemographics. For instance, in Arabic countries, the level of COVID-19 booster acceptance reached a reassuring percentage, and only 20.4% were hesitant to receive the vaccination (Abouzid et al., 2022). Related results were found in China (Lai et al., 2021). Lazarus et al. (2022) showed that in 23 countries (Brazil, Canada, China, Ecuador, France, Germany, Ghana, India, Italy, Kenya, Mexico, Nigeria, Peru, Poland, Russia, Singapore, South Africa, South Korea, Spain, Sweden, Turkey, the United Kingdom and the United States) Almost one in eight (12.1%) vaccinated respondents are hesitant about booster doses.

In the US, nearly 62% of the 2138 individuals planned to receive COVID-19 booster doses, while the remaining participants were unsure (Yadete et al., 2021). The trend noticed is that the level of COVID-19 booster vaccine hesitancy has not reached an alarming level but that still is considered a potential risk. In Italy, the university community had a level of 24,7% booster hesitancy. According to the study's findings, people who received information from official government organizations were more likely to be willing to obtain the COVID-19 vaccine's booster dosage than those who did not, who were more likely to be apprehensive (Folcarelli et al., 2022).

2.12.3 Social Media Impact on COVID-19 Booster Vaccine Attitudes

In a study conducted in India, on social media in general and Twitter in particular, it was shown that nearly 84.4% of India's social media posts on the COVID-19 booster dose were either negative or neutral (SV et al., 2022). The results show that Indians' opinions on booster doses became more negative and polarized than the original normal COVID-19 vaccines. The contents floating around the Indian social media are the same reasons why people are reluctant on taking booster doses: fear of severe side

effects, normal doses are enough, and skepticism around big pharmaceutical companies (SV et al., 2022).

In a Chinese study, the rate of hesitancy toward COVID-19 vaccine booster shots was remarkably low, almost 7% (Wang et al., 2022). Public social media were most frequently used to acquire information about COVID-19 and vaccines 50.5%, followed by official social media 43.8%, and professional social media 4.8% (Wang et al., 2022). Most of the sample believed that social media played a significant role in influencing their perception and attitudes about COVID-19 vaccine booster shots for the better, which accounted for 83.1% of the participants. However, the findings also showed that acquiring information from traditional media, friends, and family members was associated with a higher rate of booster vaccine hesitancy (Wang et al., 2022). However, statistically speaking, people who followed information provided by official government sources were more inclined to take the booster shots compared to others who used alternative ways such as social media (Ghazy et al., 2022).

Regardless, people who mostly obtain their information from public social media platforms (such as TikTok, YouTube, and WeChat) exhibit more vaccination reluctance than those who primarily rely on official social media platforms, which may be because of false information (Jennings, W., Stoker, Bunting, et al., 2021). Compared to official social media, public social media platforms (particularly unregulated accounts) may quickly disseminate a lot of false, biased, or invented material, which significantly affects people's risk-benefit analysis and feeds their conspiracy theories about vaccinations which can only result in staining their perception of vaccines to the worst (Jennings, W., Stoker, Bunting, et al., 2021). Furthermore, those who obtained information about SARS-CoV-2 and COVID-19

disease through television, radio, or general practitioners were more likely to be vaccinated. Participants seeking information on social networks, general internet/blogs forums, and friends or acquaintances, on the other hand, were more likely to be unvaccinated (Jennings, W., Stoker, Bunting, et al., 2021).

Social media and booster vaccination attitudes is not a topic that is thoroughly addressed in the literature. Besides, the level of vaccine hesitancy is uncharted territory in the context of Northern Cyprus as well as booster vaccine attitudes. Therefore, this dissertation aims to examine the level of COVID-19 booster vaccine attitudes in Northern Cyprus. Alongside the effect of social media on the sample's attitudes towards COVID-19 vaccines and booster vaccines. This dissertation aims to be a local and a global contribution to literature. Global in the context of social media impact on booster doses attitudes. Local in the context of examining the level of booster vaccines hesitancy and acceptance.

2.13 Media Dependency Theory Interpretation

Media dependency theory encompasses three distinct levels: macro, micro, and individual. At the macro level, it scrutinizes the systemic influence of media institutions, policies, and technologies on society, examining how media shapes information dissemination, cultural norms, and public discourse (Ball-& DeFleur, 1976). On the micro level, it investigates how individuals interact with and rely on media in their daily lives, including their media preferences, selective exposure, and media's impact on attitudes and behaviors (Ball-Rokeach & DeFleur, 1976). At the individual level, it delves into the specific ways individuals depend on media for personal information, entertainment, and communication needs, exploring the role of

media literacy, interpersonal communication, and media's influence on individual worldviews (Ball-Rokeach & DeFleur, 1976).

This thesis focuses on the micro level of the theory. Bearing in mind that in times of crisis, media dependency increases to fulfill people's needs to get informed. Besides, the higher the dependency the higher the impact of media on people's attitudes and behaviors (Ball-Rokeach & DeFleur, 1976). Media dependency theory pertains to the impact of media usage on the molding of human attitudes, sentiments, and behaviors (Ball-Rokeach & DeFleur, 1976).

In the context of COVID-19, media dependency theory can prove useful. Multiple studies have been conducted concerning social media and its relation to COVID-19 vaccine attitudes, yet very few relied on media dependency theory. To clarify, media dependency theory argues that the more we rely on media and the more we attain our needs through it, the more we get influenced by it (Ball-Rokeach & DeFleur, 1976). This influence can be cognitive, affective, and behavioral. Media dependency increases during a crisis, and people reach out to media to get educated and informed to pilot their actions (Ball-Rokeach, 2010).

Relying solely on media dependency theory to predict attitudes and behavior is achievable. One study conducted by Lowrey (2004) employed media dependency theory by examining the levels of dependency of media in times of the 11 September terrorist attack. The findings proved the adequacy of the levels of media reliance to predict attitudes and behavior.

As seen above in the literature, there was no trend in the findings when it comes to social media impact on COVID-19 uptake. The impact could either be positive or negative. Positively speaking, social media dependency proved effective in increasing the willingness of participants to get vaccinated (Aloweidi, A. et al., 2021; Luo et al., 2021; Mo et al., 2021). From a media dependency perspective, this can be interpreted as a cognitive impact: an impact on the attitudes and perceptions of the participants in a positive way to get vaccinated (Ball-Rokeach, 2010). The affective impact can be portrayed in the feelings of trust the participants of these studies developed towards COVID-19 vaccines; resulting in the behavioral impact which is the uptake of vaccines (Ghaffari-Rafi et al., 2021; Luo et al., 2021; Smith & Reiss, 2020). The same interpretation could be conducted on social media dependency and its positive impact on the uptake of COVID-19 booster vaccines (Wang et al., 2022).

In Pakistan, Ma et al. (2023) concluded that media dependency was implemented to measure the level of traditional and social media on booster vaccine uptake (Ma et al., 2023). The findings proved that the higher the dependency, and more trust towards social media platforms, the higher the odds of people taking preventative measures and accepting the booster vaccine. In other words, the participants expressed a change in their attitudes (cognitive impact) and sentiments (affective impact) resulting in them taking preventative measures (behavioral impact). That is what Media dependency is all about (Ball-Rokeach, 2010). Another point worth mentioning is the fact that this study emphasized the importance of social media as a crucial element and ought to be included in Media dependency theory rather than just solely relying on traditional media (Ma et al., 2023).

Contrastingly, social media reliance from a media dependency theoretical standpoint contributed to the people's negative attitudes affecting them cognitively. Social media platforms also affected participants affectively meaning that they affected their feelings making them fear the vaccine, resulting in the disinclination on taking the vaccine in other terms resulting in a behavioral impact, in this case, the right term to use is deactivation which is refraining from doing something: in this case, refraining from accepting COVID-19 vaccines (Allington et al., 2020; Ball-Rokeach, 2010; Jennings, W. et al., 2021; Mascherini and Nivakoski's, 2022). Behavioral impact could be seen in a study conducted by Ahmed et al. (2020), where social media contents encouraged people to relate 5G technology with the dissemination of COVID-19, resulting in acts of vandalism against 5G towers.

When it comes to booster vaccines and social media reliance impact, there is a scarcity of studies, yet an interpretation could be made. For instance, in India, it was concluded that Twitter does negatively impact people's attitudes towards COVID-19 booster vaccines, making them develop feelings of distrust and resulting_ in deactivation_ hesitancy, or refusal of the vaccine (SV et al., 2022).

To sum up, this literature review sheds light on the intricate relationship between social media and attitudes towards COVID-19 vaccines and booster shots. The findings demonstrate a multifaceted impact, highlighting both positive and negative influences that social media platforms wield in shaping public perceptions. While some studies highlight the role of social media in disseminating accurate information and promoting vaccine acceptance, others underscore its potential to propagate misinformation and fuel vaccine hesitancy. Notably, a notable gap exists in the research landscape, as fewer investigations have delved into the realm of booster vaccine willingness through

the lens of media dependency theory. By acknowledging this gap, scholars can unlock fresh insights into the ways in which individuals rely on social media for information, guidance, and decision-making, enriching our understanding of how media dynamics contribute to the evolving discourse surrounding COVID-19 vaccination strategies. Addressing this gap will be crucial in formulating comprehensive strategies to foster informed decision-making and engender widespread vaccine acceptance in the ongoing battle against the pandemic.

Chapter 3

RESEARCH METHODOLOGY

3.1 Introduction

The methodology employed in this dissertation aims to rigorously explore the intricate interplay between social media dependency and attitudes towards COVID-19 booster vaccines, utilizing a media dependency theoretical framework. The study adopts an empirical quantitative approach, recognizing the need for empirical evidence to unveil the underlying dynamics. By investigating these dynamics within a cross-sectional time frame, the research endeavors to capture a snapshot of the contemporary link between social media engagement and booster vaccine attitudes. To decipher this connection, a combination of descriptive and Pearson correlation coefficient analysis will be applied to the collected data, affording a comprehensive understanding of the extent to which social media dependency influences individuals' perceptions of COVID-19 booster vaccinations. Through this methodological lens, the study seeks to contribute valuable findings to the ongoing debate surrounding vaccine acceptance in the context of the global pandemic.

3.2 Research Philosophy

This thesis views its topic from an empirical point of view. Empirical philosophy forms the basis of this dissertation, emphasizing the collection and analysis of real-world data to answer research questions and validate hypotheses (Galbraith & Schendel, 1983). The reliance on such philosophy stems from the reliance on a quantitative approach on the impact of social media dependency on international university students' attitudes

towards booster COVID-19 vaccines. There are several hypotheses mentioned above that need to be confirmed or falsified objectively and empirically according to the facts and the data found without any subjective interpretation or any association with the researcher's personal values and interpretations. That is why such philosophy is relied on (Dudovskiy, 2022)

3.3 Research Type

This thesis builds upon previously done studies on vaccine attitudes and social media and therefore relies on a deductive research type. This thesis starts with an already established theory which is that social media can have either a negative or positive impact on vaccine attitudes. There are multiple studies on this subject with different findings depending on the context, the sample studied, the theoretical framework, and the dependent variables. Yet the outcome is either social media has a bad impact on people's attitudes toward vaccines or social media has a positive to no effect on people's attitudes. Thus, this study is conducted in a deductive manner. In other words, this thesis is a confirmatory study and not an explanatory one (Jansen, 2022).

3.4 Research Strategy

This dissertation relies on a survey research strategy since it aligns with the deductive approach and empirical philosophical positioning (Jones et al., 2013). Besides, the choice of data collection method depends on the research philosophy, type, strategy, and approach. This thesis adopts an empirical philosophy that observes reality objectively making the approach relied upon to be a quantitative one with descriptive and confirmatory purposes and a limited time horizon (Jansen, 2022). For all these reasons, a practical way to collect data for this thesis is through a well-structured survey (Jansen, 2022). Furthermore, the data collection was a snowballing one to reach a larger number of target participants (Widiasih et al., 2022).

As seen in the literature review, all the studies relied on surveys as a research strategy and data collection tool as well (Hu et al., 2020; Lounis et al., 2022; Othman et al., 2022). Therefore, this thesis follows the path of previous studies to reach adequate and credible results. Besides, collecting data through surveys does not require a prolonged period nor any financial budget which supports the reliance on a cross-sectional time horizon (Jansen, 2022).

The survey consists of demographic questions, inquiring about gender, level of education, and employment status. After that, there comes the question inquiring if the sample is vaccinated or not; their answers will decide which part of the survey they should proceed to answer. The survey is separated into two parts.

The first part of the questionnaire is devoted to vaccinated individuals. The second part inquires about the level of vaccine acceptance and booster shots uptake and attitudes as well as which social media platform was more relied on in times of COVID-19. Plus, the attitudes of the participants towards social media.

Questions inquiring about the types of vaccines and reasons for reluctance were adopted from a report survey conducted by UNICEF (2021). These questions are 2.1 in section 2 as well as questions 3.1, 3.2 and 3.3 in section 3 (see Appendix). Questions examining the attitudes towards social media were adopted from a study conducted in Saudi Arabia on social media's effect on booster vaccine acceptance (Alfatease et al., 2021). These questions are from 2.12 till 2.21 in section 2 (see Appendix). Social media dependency questions are borrowed from a study conducted in Bahrain on media dependency and trust in government in the time of COVID-19 (Khalifa, 2020). These questions are 2.3 to 2.8 in section 2 (see Appendix). This Bahraini study

examined Television, newspaper, radio, and social media however because this thesis has a different focus the only change made on such questions is to replace those means of information with different social media platforms, mainly Facebook; Twitter; TikTok; Instagram, using the same 5 point-scale Linkert scale (Khalifa, 2020).

The questions inquiring about the willingness on the uptake of the booster vaccine were borrowed from a study conducted in K.S.A (Othman et al., 2022). These questions are 1.6 in section 1 and question 2.9 in section 2. Finally, the question about the reasons for the taking or refusal of the booster vaccine could be found in multiple studies yet to be precise, the thesis borrowed the elements of this segment from an Algerian study on booster vaccine hesitancy and its causes (Lounis et al., 2022). These questions are 2.10 and 2.11 in section 2. Overall, the survey was composed of elements from four surveys to serve this thesis' aims. For the records, the Cronbach alpha value was 0.6 which indicates that this questionnaire is adequate to proceed with the research (Widiasih et al., 2022).

Participation in this study was not encouraged by any reward, and participants' interest in taking part was not forced by any means or threat. Participants' identities were kept anonymous (Lounis et al., 2022). Incomplete responses are to be removed and not considered in the data analysis. Participants were reached non-randomly following a snowballing approach through different social media platforms (Statista, 2022).

3.5 Time Horizon

This thesis is interested in collecting data on the effect of social media on booster vaccine attitudes among university students at one point in time rather than evaluating the changes this effect has on the students' behaviors over an extended period. This

thesis relies on a cross-sectional time horizon because of practical constraints, time constraints. This approach was adopted in order to get faster results at once. Plus, it is cost-free (Jansen, 2022).

This thesis measures the level of vaccine hesitancy among university students at one point in time and attempts to understand the nature of the link between social media dependency and booster vaccine attitudes. Is there a correlation link, is it a negative or positive link? For instance, does social media dependency negatively or positively impact the students' booster vaccine attitudes; adopting a cross-sectional approach aligns with this thesis's aims and questions.

The virus is ever-changing and reforming everything around; social media platforms keep updating. To capture a snapshot of what is taking place, a cross-sectional approach fits the goal (Bhatla, 2020; Beckmann, 2020).

One of the limitations is that the data collected at this point in time may differ if this study is conducted in the near future because of the nature of the virus and the ever-changing social media platforms and their policies, which brings the inevitable conclusion that the findings of this study may not be representative (Jansen, 2022).

3.6 Sampling Strategy

The chosen sampling strategy for this thesis is a non-probability one. This strategy means that the sample is non-random. The sample of this thesis is international university students exclusively living in Northern Cyprus preferably the region of Famagusta. The sample has to have a decent level of English to complete the questionnaire. Choosing a non-probability sampling strategy is a result of multiple factors. Some of these factors are limited time, resource constraints, and difficulty in

gaining access to a truly random sample. Besides, this thesis does not aim to be representative, in fact, its aim is to channel all the efforts into studying a fraction of the population which is international university students because their age group consumes social media the most making them the more susceptible to its impacts (Statista, 2022). The results of this thesis would be a remarkable contribution to the literature about booster vaccine attitudes and social media effects. That is why the sampling should be non-randomized for this thesis.

3.7 Data Analysis

More than one analysis takes place because the survey is divided into two sections. For the record, the data was collected between December 2022 and January 2023, and it was analyzed in June 2023 all the way till the 13th of August 2023. The number of participants reached 156. The sample was chosen following the following criteria: being an international university student, having an adequate level of the English language, and residing in Northern Cyprus preferably the Famagusta district.

3.7.1 Unvaccinated Participants

The unvaccinated section data analysis is descriptive. There are no causality links to demystify, the aim of this section is to determine the level of vaccine hesitancy, pinpoint among the listed reasons which one is prominent when it comes to the refusal or hesitancy on taking the vaccine, and gauge if there is any cognitive, affective, and behavioral impact of social media on the participants. Furthermore, showing which social media platform is the most impactful in deciding not to take the COVID-19 vaccine. Questions inquiring about the primary sources of information during COVID-19, reasons not to take the vaccine, the negative impact of social media platforms, and vaccine options were borrowed from a vaccine hesitancy report conducted by UNICEF (2021).

3.7.2 Vaccinated Participants

A descriptive analysis is to be conducted before going any further. This analysis will serve to measure the level of booster vaccine acceptance which is the starting point followed by an inferential analysis to unravel the correlation between social media dependency and booster vaccine attitudes.

Excel Pearson correlation coefficient analysis is to be conducted in this section. This method of analysis is used to study the value of a variable and its correlation with another variable (Benesty et al., 2009). This method of analysis measures how strong the relationship between two variables is. If one variable goes higher does the other variable's value increase or decrease, it assigns a value between -1 and 1 , where 0 is no correlation, 1 is a total positive correlation, and -1 is a total negative correlation (Kirk et al., 2021).

In the context of this study, the aim is to investigate how strong is the link between social media dependency and the uptake of COVID-19 booster vaccines. As well as the link between social media attitudes and booster uptake. If social media dependency goes higher does that translate into an increase or a decrease in COVID-19 booster uptake? The same logic ought to be applied between social media attitudes and the acceptance of booster vaccines.

The analysis done for the vaccinated individuals' section considers the question of whether the sample is booster vaccine-hesitant or not as a dependent variable. Questions inquiring about the willingness to get booster vaccinated were borrowed from a study conducted in K.S.A by Othman et al. (2022). The main question measuring the acceptance and hesitancy level is (Are you willing to get a booster

vaccine dose?) Acceptance was defined as (I have already taken the booster vaccine) and (Yes, I will take it). Hesitancy was measured with (Maybe, I am hesitant). The booster vaccine refusal was measured by (No, I will not). Each answer was coded into a number: 3,2,1,0, respectively. This coding was necessary to proceed into the Excel Linear Regression and Pearson coefficient correlation.

The X-axis or the independent variables in this part of the analysis are the questions measuring the level of dependency on Facebook, Twitter, TikTok, and Instagram on COVID-19 news on a 5-point Likert scale (Bhandari, 2023). The Likert scale is self-explanatory in terms of coding. Always =5, Often= 4, Sometimes= 3, Rarely= 2, Never= 1 (Zakharenko, 2023). The level of dependency on each social media platform can predict only two outcomes of booster vaccine attitudes, either hesitant or non-hesitant (acceptant). This correlation should either pinpoint or demystify the link between the variables stated above (Hosmer & Lameshow, 2000)

The second Pearson correlation coefficient analysis is done between attitudes towards social media and the attitudes towards the COVID-19 booster vaccine. The questions inquiring about social media attitudes can be found in the appendix. An analysis is to be conducted between each question measuring social media attitudes and the booster uptake attitude.

This method of analysis goes along with the theoretical framework of this study. Because we are looking to confirm social media's cognitive, affective, and behavioral effects on the booster uptake, it is a must to see if these variables are correlated in the sense that a higher dependency leads to a higher booster uptake, and a higher positive social media attitude should lead to a higher booster uptake as well.

3.8 Methodological Limitations

The characteristics of this research are also considered its limitations. For instance, this study is narrowed down to a portion of society that is international university students living in Northern Cyprus preferably the Famagusta district. Therefore, the findings cannot be projected on the population.

Regardless, there has been no study prior to this one on the same topic in the region, therefore even though its focus is on a small portion of society, it is still a contribution to literature and a remarkable plus to the region. Despite the limitations, this thesis brings unprecedented results since it is the first one done on the topic in the region.

This study could have been more thorough if more time and means were provided, yet this could be the beginning of many more studies on COVID-19 booster vaccine attitudes and social media dependency.

Another limitation is the framework relied on. This study views its data through the lenses of a media dependency theoretical point of view therefore, the researcher is aware that conducting the same study using different philosophies and frameworks does not necessarily lead to the same results; thus, the data is limited by the viewpoints of media dependency theory.

Overall, this thesis views its topic from an empirical philosophical standpoint where objectivity is the norm with no room for subjectivity. To get objective data that would decide the outcome of this thesis, a quantitative approach was adopted in a cross-sectional time horizon zone using surveys as a research strategy. The thesis is not exploratory. This thesis builds upon previously established works of literature and

theories therefore it is deductive. Descriptive and inferential statistical techniques are relied on. The main statistical technique is the Pearson correlation coefficient. Such a technique would allow the researcher to establish links between variables using multiple independent variables at once and one dependent variable. Introducing media dependency in social media reliance and COVID-19 booster attitudes is unprecedented in the context of Northern Cyprus. Therefore, findings should contribute heavily to the community.

Chapter 4

RESULTS

4.1 Introduction

To attain the aims and confirm or deny the hypothesis mentioned above a questionnaire has been distributed in a snowballing manner. The following is the analysis of the data harvested from the questionnaires.

Firstly, this questionnaire was first piloted and then distributed to collect data. The survey was distributed to three students to detect any ambiguity or lack of options. After the collection of feedback. Minor modifications have been implemented. These modifications were: rather than putting Ph.D. and MA degrees in one section, they were separated. Adding on more options in the employment status rather than just: student or employed. Plus, extending the vaccine options rather than the most common ones. This questionnaire has a value of 0, 62 alpha Cronbach reliability which is considered acceptable in academia (Raharjanti et al., 2022)

4.2 Socio-demographic and COVID-19 Vaccination Status

The respondent demographics were varied and quite balanced. They varied in terms of nationalities (Belarus, Britain, Cyprus, Egypt, India, Iran, Jordan, Morocco, Pakistan, Russia, Türkiye). The total number of participants was 156. 68% (n=108) of them were between the ages of 18 and 24. 25.5% (n=40) were between 25 and 30. The rest are aged 31 and more. Female participants made up 58% (91 female) and male participants were 42% (65 male). Their level of education varied but the majority are

B. A student 70.1% (n= 110), master's students, 23.6% (n= 37), and PhD students (n=10). As for employment status, 59.2% (n= 93) of the participants were students, the rest of them were employed in government or private jobs or were unemployed.

Regarding their vaccination situation, 6.4% (n= 10) were not vaccinated, and only one person was hesitant. 44.6% (n=70) of the participants were vaccinated without a booster dose, and 48.4% (n=76) were vaccinated with at least one booster dose.

4.3 Booster Vaccine Attitudes and Social Media Dependency

The following results only concern the 146 participants who are vaccinated with or without booster doses. 56, 4% (n= 85) expressed their refusal, and 30% (n= 43) have already taken it. 9 % (n= 14) showed their willingness to accept it and the rest 7% (n= 11) showed hesitancy. So, the level of COVID-19 booster vaccine uptake is remarkably low which means the attitudes are mostly negative towards the booster shots.

Only 109 of the participants answered the questions inquiring about the reasons why they took the booster shots. Among the reasons why participants took the booster shot, traveling abroad was the main reason (n= 33), followed by the fact there were no alternatives (n= 22). The rest was scattered around the fact that experts recommend it and its high efficacy. Fear of side effects and the sufficiency of primer doses were the main reasons behind the reluctance of COVID-19 booster uptake.

When it comes to social media dependency at the time of COVID-19, dependency drastically varied. A minute portion of the sample relied on TikTok to get informed about COVID-19, 74.3% (n= 110) never used it to get informed about the virus, and the remaining 35.7% were distributed on the scale and only 5.3% (n= 5) always relied

on it. 55.5 % (n= 82) of the sample never used Twitter to get informed about the virus, 36% (n= 55) sometimes used it and 9.5% (n= 14) always considered it. 56.4% (n= 84) never relied on Facebook, 23.4% sometimes used it, and only 7.4% (n= 11) always considered Facebook when getting informed about the pandemic.

Although the level of dependency varied from rarely to always, 67.6% (n= 100) relied on YouTube and 71% (n= 118) of the participants relied on YouTube and Instagram respectively to get informed about COVID-19. That shows that YouTube and Instagram have been the only two platforms with a significant usage frequency compared to the other platforms.

When it comes to social media attitudes in times of COVID-19, 87.9% (n= 128) claimed that social media carries wrong information, and it should not be taken without referring to specialists.

66.9% (n= 97) made sure to follow medical professionals through social media. 65% (n= 95) preferred to obtain information directly from competent authorities instead of social media platforms. 43.9% (n= 64) followed with interest the number of vaccine recipients through social media. 63.1% (n= 91) of the participants expressed that social media did not increase their willingness to take the vaccine. 79% (n= 115) expressed that they will not share vaccine information obtained from social media unless they make sure of its authenticity. 43.3% (n= 63) of the participants advised others to follow social media to get updated about COVID-19. 45.2% (n= 65) follow up with interest on social media daily regarding the developments in the COVID-19 vaccines. 52.2% (n= 76) expressed that the amount and quality of information

circulating in social media negatively affected their attitudes towards COVID-19 booster vaccines.

It is safe to assume that there is a tendency towards having a negative attitude towards social media in times of COVID-19.

4.4 Unvaccinated Individuals

When it comes to the unvaccinated individuals, one reason stood out the most is the lack of trust in the vaccination programs 30.8%. The rest of the unvaccinated individuals were equally distributed in choosing different reasons –choosing not to take it, not wanting it for no specific reason, uncertainty about potential side effects, and not physically qualifying to take it. The other 2% refused the vaccine because it was not mandatory for their job/ work, or the vaccine options were not to their liking.

The number of unvaccinated people amounted to 16 participants. In other words, these people did not take any vaccine let alone booster shots. Among the reasons that best explain why they are still unvaccinated, the lack of trust in vaccines was shown to be the main reason 30.8% (n=8) chose that answer. As for the social media platforms that reinforced their decision-making on not taking the vaccine, Instagram and Twitter stood out the most.

4.5 Pearson Correlation Coefficient Analysis

To establish a correlation between social media consumption and attitudes towards the COVID-19 booster vaccine, the data were conveyed into an Excel sheet, coded accordingly, and analyzed in a linear regression manner. The level of dependency was measured by a 5-point Likert scale. The value 1 represents never, and the value 5 represents always. The level of social media dependency is considered an independent

variable. The Y axis or the dependent variable is the attitude towards booster vaccines. The question measuring the attitudes of the sample is (Are you willing to take a booster shot?) The answers: Yes, I will; I have already taken it; I am hesitant; and No, I will not; were all translated into numbers 3,2,1,0 respectively (Othman et al., 2022). The following tables show the graph of the linear regression that helps visuals the correlation between every social media platform included in this research and the willingness to take the booster vaccine:

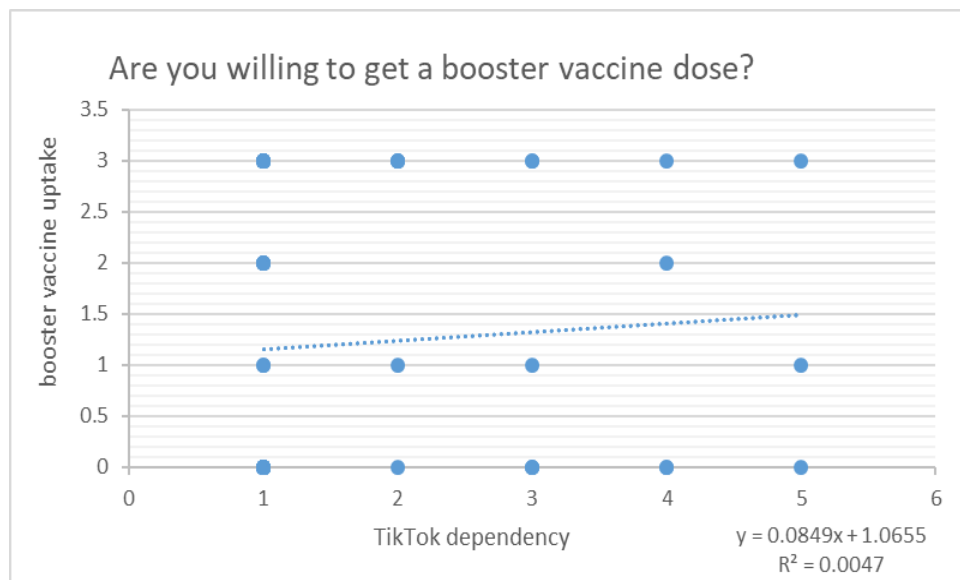


Figure 1: Scatter Plot of Pearson Correlation between TikTok Dependency and COVID-19 Booster Vaccine Attitudes

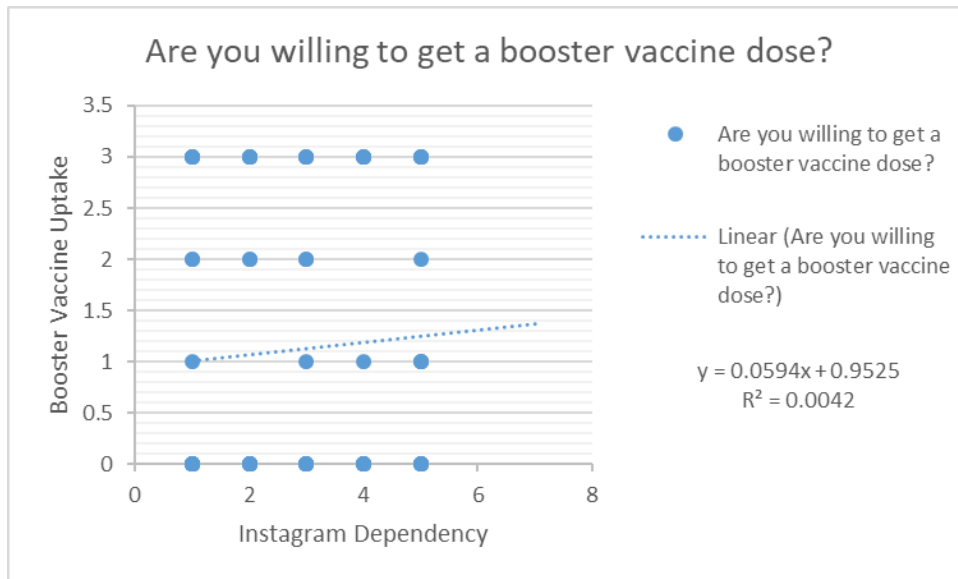


Figure 2: Scatters plot of Pearson Correlation between Instagram Dependency and COVID-19 Booster Vaccine Attitudes

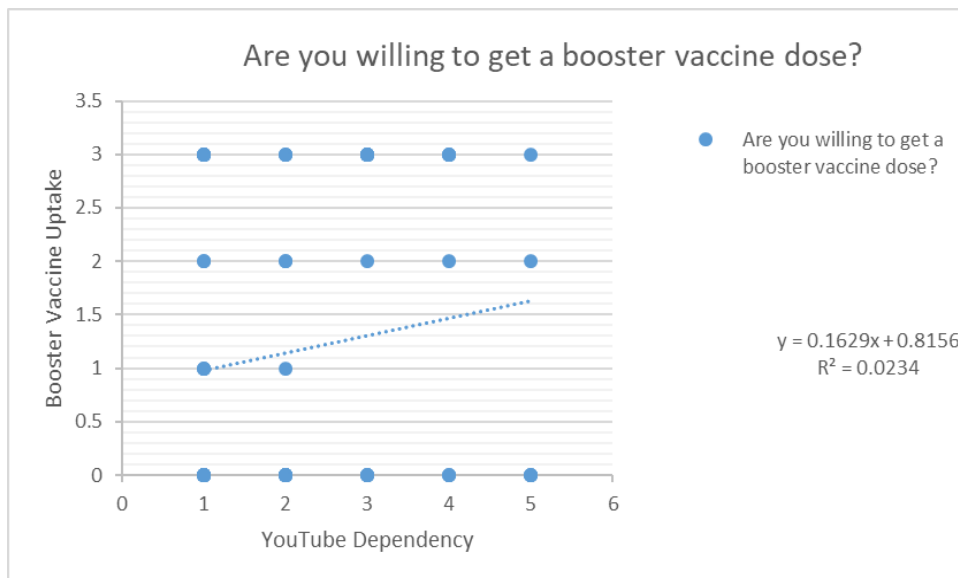


Figure 3: Scatters plot of Pearson Correlation between YouTube Dependency and COVID-19 Booster Vaccine Attitudes

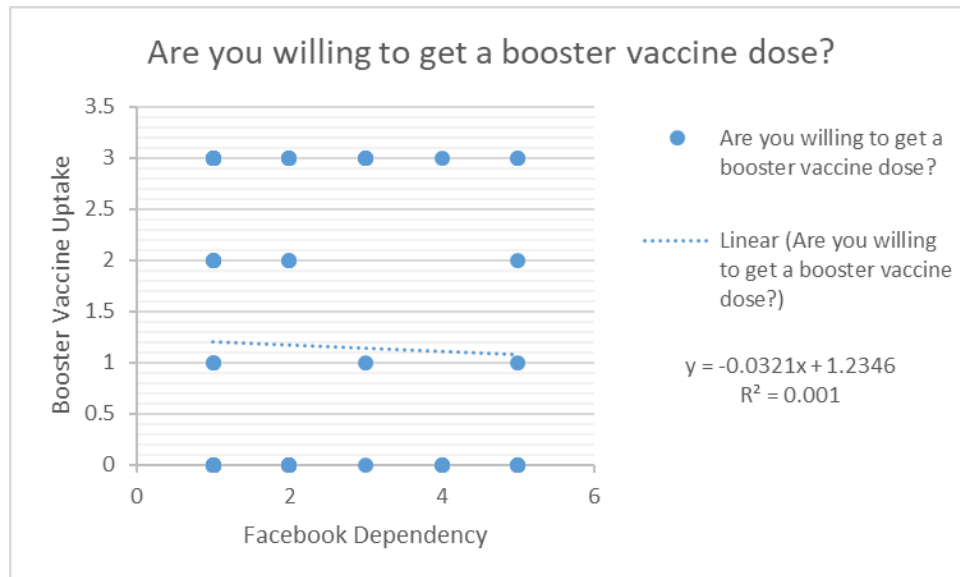


Figure 4: Scatters plot of Pearson Correlation between Facebook Dependency and COVID-19 Booster Vaccine Attitudes

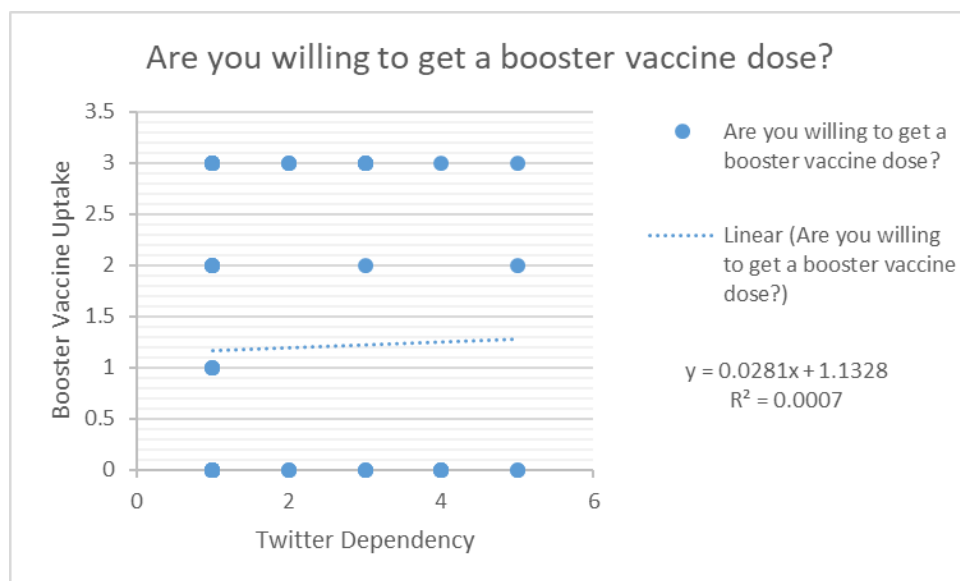


Figure 5: Scatters plot of Pearson Correlation between Twitter Dependency and COVID-19 Booster Vaccine Attitudes

- The Pearson correlation coefficient (r) value between Facebook and COVID-19 booster uptake (C.B.U) is 0.02.
- The Pearson correlation coefficient value (r) between Twitter and COVID-19 booster uptake (C.B.U) is -0.007.

- The Pearson correlation coefficient value (r) between YouTube and COVID-19 booster uptake (C.B.U) is 0.048.
- The Pearson correlation coefficient (r) value between Instagram and COVID-19 booster uptake (C.B.U) is 0.03.
- The Pearson correlation coefficient value (r) between Facebook and COVID-19 booster uptake (C.B.U) is 0.05.

The same process was followed to establish a correlation coefficient between attitudes on social media and COVID-19 booster uptake. Questions measuring the attitudes of social media were answered either (Yes) or (No). (Yes) was valued at 1, and (No) was valued at 0 (Alfatease et al., 2021). The question measuring the attitudes of the sample is (Are you willing to take a booster shot?) The answers: (Yes, I will); (I have already taken it); (I am hesitant); and (no, I will not) were all translated into numbers 3,2,1,0 respectively (Othman et al., 2022). The tables below portray a correlation between questions measuring negative and positive attitudes towards social media and COVID-19 booster uptake.

Table 1: Correlation between Questions Measuring Negative Attitudes towards Social Media and COVID-19 Booster Uptake

	COVID-19 Booster Uptake
Social media carries wrong information regarding the COVID-19 vaccine, and it should not be taken without consulting specialists	-0.002
I prefer to obtain the information directly from the competent authorities without referring to social media	-0.06

The amount and quality of information on social media negatively affects my attitudes towards vaccines/ booster vaccines	-0.11
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Table 2: Correlation between Questions Measuring Positive Attitudes towards Social Media and COVID-19 Booster Uptake

	COVID-19 Booster Uptake
I Follow up with interest on social media on a daily basis regarding the latest developments in the COVID-19 vaccine	0.09
I advise others to follow social media constantly to know the latest developments about the vaccine in the future	0.13
I share the vaccine information I get from social media with my family and friends without making sure the information is correct	0.14
I follow with interest the number of vaccine recipients through social media	0.04
Social media has increased my eagerness to take the COVID-19 vaccine	0.18

Chapter 5

DISCUSSION & CONCLUSION

In chapter 5, the results and findings will be discussed in more depth. This would segue into recommendation and suggestions for further studies.

5.1 Hypothesis 1

H1: The nature of attitudes towards social media predicts the attitudes towards COVID-19 booster vaccines. Positive attitudes towards social media results in a positive attitude towards COVID-19 booster vaccine uptake and vice versa.

Most of the r values (Pearson correlation coefficient) between questions measuring negative attitudes towards social media and COVID-19 uptake were negative (-0.002, -0.06, -0.11). This shows that the correlation is weak yet there is a negative correlation. In this case, a negative correlation means that one value goes up and the other one goes down (Benesty et al., 2009). This means that having a negative attitude towards social media can result in a reluctance or refusal to take COVID-19 booster vaccines. Which confirms a part of the hypothesis. Eventually, it is safe to assume that negative attitudes towards social media can predict the uptake of COVID-19 booster vaccines.

On the other hand, the r value between questions measuring the positive attitudes towards social media and COVID 19 booster uptake were less than 1 (0.09; 0.13; 0.14; 0.04; 0.18), which also shows that there is a weak correlation. This correlation, although weak, proves that having a positive attitude towards social media results in taking the COVID-19 booster vaccine. Having a weak correlation means other

variables should be considered as well. Besides, these findings are supported by Alfatease et al. (2021), who concluded that 76% of the sample expressed that social media does misrepresent COVID-19 leading to negative attitudes towards social media. Simultaneously, 37% expressed that having a positive attitude and reliance on social media increased their willingness to take the COVID-19 vaccine

5.2 Hypothesis 2

H2: There is a correlation between social media dependency and COVID-19 booster vaccine attitudes. In fact, we hypothesize that social media dependency contributes positively to booster vaccine attitudes.

The r values shown in the finding chapter were all remarkably low (Facebook: 0.02; YouTube: 0.048; Instagram: 0.03; TikTok: 0.05). A low r value means a weak correlation (Benesty et al., 2009). The fact that the values are more than zero means that there is a positive correlation (Benesty et al., 2009). Meaning that, reliance on these platforms goes along with COVID-19 booster uptake. The higher the dependency on these platforms, the willingness or uptake of COVID-19 booster vaccines increases. More variables should be included to get a higher and solid correlation that is more apparent and closer to 1 rather than 0. The hypothesis is right considering Facebook, YouTube, TikTok, and Instagram dependency as a predictor of the COVID-19 booster vaccine uptake. The findings of a Portuguese study conducted by Silva et al. (2022) showed the same results where he concluded that social media reliance on getting informed about COVID-19 encouraged the participants to get vaccinated. In China, social media exposure during COVID-19 increased the willingness of the participants' positive attitudes towards vaccination making them more inclined to get the vaccine (Luo et al., 2021). These findings prove the opposite of many studies that concluded

that social media dependency cognitively impacts people into developing a negative attitude towards COVID-19 booster vaccines (Allington et al., 2020; Jennings, W. et al., 2021; Van Nguyen & Nguyen, 2022).

Yet when it comes to Twitter, the correlation was found negative. Meaning that reliance on Twitter has a negative impact on COVID-19 booster uptake. Dependency on this platform negatively impacts the attitudes towards COVID-19 booster vaccines leading to reluctance or refusal. The literature supports this finding, it was concluded that dependency on YouTube negatively impacted participants' willingness on taking the COVID-19 vaccine due to the misinformation lingering there (Jennings et al., 2021).

5.3 Hypothesis 3

H3: Social media does have a cognitive, affective, and behavioral impact that eventually makes it legit enough to be included in the framework of media dependency theory.

The third hypothesis was confirmed to be correct. The above findings and interpretations could be summed up as that more dependency towards social media increases the likelihood of accepting the COVID-19 booster vaccines. Plus, among the questions measuring the level of attitudes towards social media 'The amount and quality of information on social media negatively affects my attitudes towards vaccines/ booster vaccines' more than 50% of the participants answered yes (n=82). 63% (n= 99) of the participants answered no to (Social media has increased my eagerness to take the COVID-19 vaccine). These answers show social media as an impactful platform on the cognitive level of the participants, affecting their belief

systems (Ball-Rokeach, 2010). A strong cognitive impact translates into an affective impact that eventually leads the participants to make a decision and act accordingly which is a behavioral impact that either is the uptake, hesitancy, or refusal of the booster vaccine (Ball-Rokeach, 2010).

An affective impact is explicitly stated, but it can be deduced from the participants' reasons for not taking the booster vaccine. Among the reasons for not taking the COVID-19 booster vaccine amongst the vaccinated participants, the prominent reason was the fear of side effects. Considering their high dependency on social media to get informed about social media, it is safe to assume that an affective impact through social media dependency can be deduced that is developing feelings of fear and distrust in the vaccines due to the social media reliance in times of COVID-19.

When it comes to behavioral impact, in the unvaccinated section, participants who are not vaccinated expressed that YouTube and Twitter mostly contributed to their decision-making in not taking the vaccine. The right term to use is de-activation, which means refraining from an action (Ball-Rokeach, 2010). In this study, it is the refusal of the booster vaccine. Overall, social media does have a cognitive, affective, and behavioral impact in the context of COVID-19 uptake in Northern Cyprus at least, and it should be included in the media dependency theory.

If so, then social media is legit enough to be part of the media dependency theory at least on the micro level. These findings go along with a study conducted by Ma et al. (2023), where it was found that higher social media dependency positively impacted the participants into taking booster COVID-19 vaccines, suggesting that social media

ought to be a pivotal element in the media dependency theoretical framework because of its cognitive, affective, and behavioral impacts.

To sum up this chapter, hypothesis 1 proposed that people's attitudes toward social media would correlate with their COVID-19 booster uptake, with higher positive attitudes resulting in higher uptake and lower negative attitudes leading to lower uptake. The second hypothesis sought to determine whether social media dependency had a minor but significant positive and weak relationship with COVID-19 booster uptake. Finally, the third hypothesis attempted to confirm that social media should be included in the scope of media dependency theory.

The findings of this study confirmed the validity of these hypotheses, revealing more about the significant impact of social media dependency on COVID-19 booster consumption. The study found that people's perceptions regarding social media have a significant impact on their vaccination behaviors. Furthermore, while the correlation between social media dependency and booster vaccination uptake is low, it is identifiable and suggests that social media does play a role in molding individuals' booster vaccination decisions.

This study adds to our understanding of the complex effects of media dependence in the setting of a global health crisis. It emphasizes the significance of understanding social media's cognitive, affective, and behavioral elements within the context of media dependency theory. Recognizing the influence of social media in shaping public health practices is critical in a world increasingly reliant on digital communication channels.

This study provides empirical evidence linking social media attitudes, social media reliance, and COVID-19 booster usage, validating media dependency theory's relevance in a shifting media world. These findings provide important insights for policymakers, public health experts, and media practitioners aiming to understand and leverage the power of social media in promoting health and well-being during times of crisis.

In summation, this thesis affirms the veracity of all posited hypotheses. H1: The reliance on social media is proven as a reliable indicator of one's attitudes towards accepting COVID-19 booster vaccines. A favorable predisposition towards social media corresponds to a propitious stance regarding the uptake of COVID-19 booster vaccines, and conversely, negative attitudes towards social media correspond to a less inclination towards receiving the booster vaccines.

H2: An observable correlation exists between the degree of dependency on social media and one's attitudes towards COVID-19 booster vaccines. Our hypothesis contends that a heightened reliance on social media positively influences attitudes towards embracing booster vaccinations against the COVID-19 virus.

H3: The discernible dependence on social media was shown to have a cognitive, affective, and behavioral impact on the participants. This suggests the rationale for integrating social media within the established framework of media dependency theory. Furthermore, our empirical observations unveiled a relatively subdued level of COVID-19 booster vaccine uptake, particularly pronounced among international university students. Notably, slightly over half of the participants expressed a palpable

reluctance to undergo the booster vaccination which is not good news considering the nature of the virus that keeps upgrading itself.

The scholarly contributions of this study lie in introducing an innovative approach to measuring booster vaccine uptake, particularly within the distinctive context of Northern Cyprus. As well as predicting COVID-19 booster uptake through social media attitudes. Moreover, this study advocates for the incorporation of social media within the theoretical framework of media dependency, signifying a pivotal theoretical expansion.

5.4 Suggestion for Future Research

For future research, this study advocates for an in-depth exploration aimed at unraveling the nuanced reasons affecting the attitudes towards booster shots, notably within specific demographics such as international university students. More variables should be put into context like vaccine history, media literacy, health literacy, and cultural background because the virus is not totally eradicated and the probability of a potential outbreak is low but not zero.

5.5 Conclusion

The core aim of this thesis is to investigate the link between social media dependency and attitudes and the COVID-19 booster uptake. Social media was shown to be used to disseminate information about a pandemic for the first time by W.H.O. (2021). Plus, these aims were investigated from a media dependency theoretical standpoint. The reliance on this theory stems from the fact that media reliance can be a detector of people's behaviors as suggested by Lowrey (2004). Pearson correlation coefficient analysis was used to make sense of the data collected. This method of analysis shows the strength and direction of the relationship between two variables. When one variable

changes, the other variable changes in the same direction. In this study, it was noticed that social media dependency and attitudes towards these platforms logically correlate with COVID-19 booster uptake.

This study aims to establish a link between attitudes towards social media and the uptake of COVID-19 booster vaccines as well as shedding light on the potential cognitive, affective, and behavioral impact of social media on participants in terms of taking the booster vaccine. By doing so, this study aims to contribute to the literature by suggesting social media as a pivotal part of the media dependency theory at least on a micro level as this study suggests. Furthermore, this is one of the few studies that investigate the correlation between social media attitudes and dependency on the uptake of COVID-19 booster vaccines. As the results prevailed, there was an adequate correlation. Meaning that TikTok, Instagram, Facebook, and YouTube dependency in fact predicts the uptake of the vaccine, except for Twitter. Besides, having a positive attitude towards these platforms positively correlates to taking a booster vaccine. Negative attitudes negatively correlate to booster uptake.

Another contribution of the study is stretching the field of research to Northern Cyprus because there are no studies on the topic in the area. This is the first study that measures the level of COVID-19 booster uptake among international university students. The focus on university international students stems from the fact that they make up a remarkable portion of society in the northern part of the island (EMU, 2017). Measuring the level of COVID-19 booster uptake should provide the officials with enough data to develop the necessary kit to promote vaccination in order to sustain public health.

COVID-19 is no more a pandemic (W.H.O. ., 2023). However, new variants are emerging and cases are on the rise one more time (Pandey, 2023). Thus, making the findings of this research relevant to combat any potential outbreak by channeling more focus onto social media platforms as promoters of COVID-19 booster vaccine in Northern Cyprus and the world.

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APPENDIX

QUESTIONNAIRE

Section 1: Demographic Information and Vaccination Status

1.1 Gender

- Male
- Female
- Prefer not to say

1.2 How old are you?

- 18-24
- 25-30
- 30-35
- Other: _____

1.3 What is your Nationality? _____

1.4 What is your current level of education?

- Bachelor's degree
- Master's degree
- PhD degree

1.5 What is your employment status?

- Government job
- Private job
- On leave but still employed
- Unemployed but looking for work
- Wanting to work, but unemployed due to health-related reasons
- Temporarily laid off

1.6 At this point are you vaccinated against COVID-19 with any of the vaccines available?

- Yes, I am vaccinated, and I have at least a booster dose
- Yes, I am vaccinated without booster doses
- I am hesitant
- No, I am not vaccinated

Section 2: (Vaccinated Individuals)

2.1 Which of the vaccines did you receive?

- Abdala/Soberana (Cuban)
- BioNTech, Pfizer
- Covishield
- Convidecia
- Covaxin (Bharat Biotech)
- Covovax (Novavax formulation)
- Johnson & Johnson
- Moderna
- Novavax
- Oxford, AstraZeneca
- Sinopharm
- Sinovac (CoronaVac)
- Sputnik V Vaccine
- Valvena
- Vaxzevria (Oxford, Astrazeneca)
- Not on the list

- I cannot remember

2.2 Did you choose your vaccination type, or did you just take what was available at the time?

- Took what was available
- Choose my preferred vaccine

2.3 What is your primary source of information on the COVID-19 vaccine situation?

- Government/Official sources
- Private/personal medical sources
- Social media (Facebook/Instagram/WhatsApp/Twitter/TikTok/YouTube)
- Personal internet research (via Google, Safari, Bing, Yahoo, Baidu, AOL, Ask.com, Excite)
- Local radio/television/newspapers
- Information from family and friends

2.4 When it comes to social media, how much have you been using Facebook to get informed about COVID-19?

- 1 (Never)
- 2
- 3
- 4
- 5 (Always)

2.5 How much have you been using Twitter to get informed about COVID-19?

- 1 (Never)
- 2
- 3

- 4
- 5 (Always)

2.6 How much have you been using YouTube to get informed about COVID-19?

- 1 (Never)
- 2
- 3
- 4
- 5 (Always)

2.7 How much have you been using Instagram to get informed about COVID-19?

- 1 (Never)
- 2
- 3
- 4
- 5 (Always)

2.8 How much have you been using TikTok to get informed about COVID-19?

- 1 (Never)
- 2
- 3
- 4
- 5 (Always)

2.9 Are you willing to get a booster vaccine dose?

- I have already taken it
- Yes, I will
- Maybe, I am hesitant

- No, I will not

2.10 Choose among the below reasons why will you accept a booster vaccine dose

- There is no alternative
- I want to travel abroad
- Experts recommend it
- It is necessary and efficient
- I am vaccine hesitant

2.11 Choose among the reasons below why you are still hesitant or will not accept the booster vaccine dose. (Kindly skip the question if you are **not** vaccine-hesitant)

- Primer doses are sufficient (Prime doses= the first prescribed doses e.g., one dose of Johnson's Johnson, 2 doses of Sinovac, 2 doses of Pfizer...)
- Fear of side effects
- Booster Vaccination is inefficient
- It can harm the immune system
- I had breakthrough infection (breakthrough infection= Getting infected while being a fully vaccinated person)

2.12 Social media carries wrong information regarding the COVID-19 vaccine, and it should not be taken without consulting specialists

- Yes
- No

2.13 I make sure to follow medical professionals through social media to know the latest developments about the vaccine

- Yes
- No

2.14 I prefer to obtain the information directly from the competent authorities without referring to social media

- Yes
- No

2.15 I follow with interest the number of vaccine recipients through social media

- Yes
- No

2.16 Social media has increased my eagerness to take the COVID-19 vaccine

- Yes
- No

2.17 I share the vaccine information I get from social media with my family and friends without making sure the information is correct

- Yes
- No

2.18 I advise others to follow social media constantly to know the latest developments about the vaccine in the future

- Yes
- No

2.19 Follow up with interest on social media on a daily basis regarding the latest developments in the COVID-19 vaccine

- Yes
- No

2.20 The amount and quality of information on social media negatively affects my attitudes towards vaccines/ booster vaccines

- Yes
- No

2.21 The means of communication affect the delivery of a meaningful message to the community about receiving the COVID-19 vaccine

- Yes
- No

Section 3: Unvaccinated Individuals

3.1 Which of these reasons best explains why you are unvaccinated at this time?

- I did not qualify to receive it before
- Can't find the time to go/lines are too long
- I don't like any of the vaccine options available to me
- I will not take it for religious reasons
- I believe that I have a medical condition that bars me from taking it
- I do not trust the government/medical authorities here
- I do not trust the vaccine (not safe, developed too quickly, do not know what is in it)
- I believe it is a choice and I choose not to
- No reason really, I just won't take it
- I am not sure about long-term side effects of the vaccine
- It is not mandatory for my work/ school

3.2 When it comes to social media, which of these sources of information has been the most helpful to you in terms of deciding not to take the vaccine?

- Government/Official sources
- Private/personal medical sources
- Social media (Facebook/Instagram/WhatsApp/Twitter/TikTok/YouTube)
- Personal internet research (via Google, Safari, Bing, Yahoo, Baidu, AOL, Ask.com, Excite)
- Local radio/television/newspapers
- Information from family and friends

3.2 Which one of the following social media platforms has been the most helpful to you in terms of deciding NOT to take the vaccine?

- Facebook
- Instagram Twitter
- YouTube
- TikTok

Thank you for your time, feel free if there is anything you would like to add
