

## Research Article

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## Vaccine Hesitancy: A Netnographic Study of 160 Moroccan's Internet Users

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### ABSTRACT

Morocco, like all countries of the world, has faced recently two great infectious diseases that have impacted human lives; coronavirus pandemic (COVID-19) and measles. Several actions have been carried out as part of the national plans to rapidly counter these diseases and convince people to get vaccinated as possible, not only to protect themselves but also others.

However, many people haven't been looking for vaccines. Their commitments toward these preventive actions were different, ranging from acceptance to rejection or hesitation, depending to the nature of vaccine that they will get as well as to their social context, which made a looming hurdle to ending both COVID-19 pandemic and measles epidemic, and bring us to make a netnographic study about vaccine hesitancy in these people.

This research focused on to how far Moroccan internet users are really vaccine hesitant and why some of them didn't believe in vaccination. At the end, we tried to give some recommendations to healthcare professionals to how communicate with doubtful people and make them trust in vaccines.

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### Introduction

Vaccine hesitancy is a widespread phenomenon which appears frequently at the time of each immunisation action. It was defined by the World Health Organisation (WHO) as a “delay in acceptance, or refusal of vaccines despite availability of vaccination services” [1]. The term refers either to tolerant of vaccines, refusal to be vaccinated, or even delaying vaccines. Sometimes, it indicates quite simply an unsure about vaccine's safety and efficacy.

This evolving challenge often appears into doubts or concerns related to vaccine. In 2019, WHO has raised awareness about vaccine hesitancy and named it as one of the ten most dangers that threaten people's safety in the world [2].

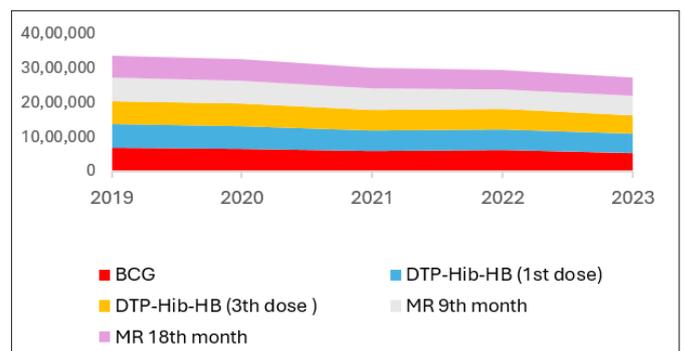
Although data on vaccine hesitancy in our country is limited, internet users has expressed incredibly their hesitancy in social media; some of theme thought that vaccination against COVID-19 is a dishonest action and refused it, a second party hesitated to get vaccine against measles and asked some doubtful questions for both its efficacy and safety, while others were more likely to agree on the importance of vaccines, even their compatibility with their concerns.

### The Epidemiological Situation in Morocco

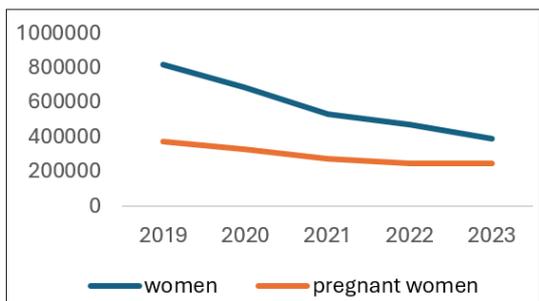
The coronavirus pandemic was confirmed in Morocco on 2 March 2020. At the end of this crisis in May 2023, the government

officially counted that there have been 1274180 confirmed cases of which 16297 have died. Since late 2023, a growing measles has appeared again in our country. According to the Health and Social Protection Ministry, more than 19515 people were affected by the virus, of whom 107 died [3].

The governmental official statistics also mentioned that the number of children under five years fully vaccinated was slightly slowing down between 2019 and 2023 (figure 1). These figures match with those given by the United Nations Children's Fund; “20 million children miss out on vaccines annually, and nearly 30 per cent of deaths among children under 5 years of age are caused by vaccine-preventable diseases” [4].



**Figure 1:** Children under 5 years fully vaccinated (2019-2023)  
**Source:** WHO, program for vaccination on the horizon 2030. P.26



**Figure 2:** Nb of Moroccan women vaccinated against tetanus (2019-2023)

Source: SEIS/DPE/DPRF

The same comment can be made about tetanus toxoid vaccination. The pooled data given by the ministry of health and social protection show that the coverage in women between 2019 and 2023 was suboptimal, and that there was a considerable decrease in number of vaccinated women in this period (figure 2). Nevertheless, all these statistics should be used with prudence and ought to be assessed in light of the vaccine hesitancy for which we asking this question: Are Moroccan people really vaccine hesitant?

### Methods

This is a netnographic study that aims to analyse people's discussions in social media about COVID-19 and measles vaccinations. We have adopted a non-participating approach based on the information that has already been expressed by 160 Moroccan internet users during the period between 2019 and 2023.

The available information was collected from four among the most popular websites and social media in our country: two professional Facebook pages which are "SEHATI" and "Moroccan Association for Health Communication", and two electronic journals that are "alyaoum 24" and "rue 20". We have selected those data sources according to three conditions: (1) a regular transmitted data, (2) an important level of interactivity with many views, (3) then an information expressed in local language (figure 3). Our principal target is to describe factors that have influenced vaccination decisions among internet users, and to provide an explanation to this.

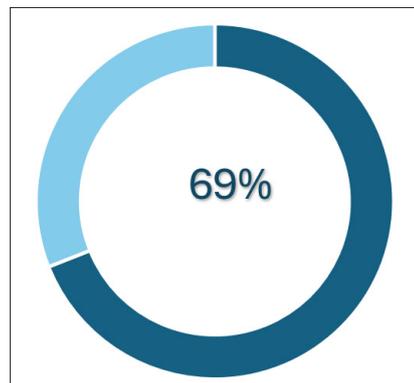


**Figure 3:** Virtual Groups in Our Study

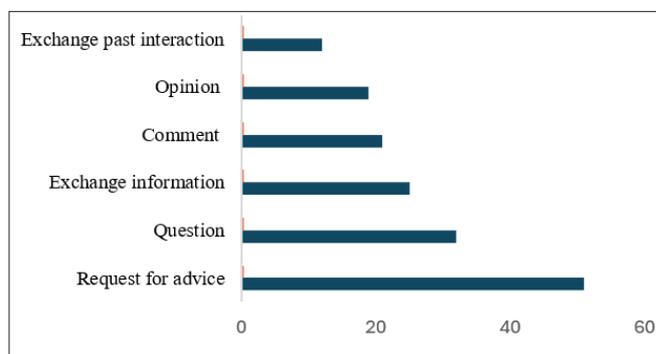
### Results

Despite there has been a rise in the number of people who are infected by COVID-19 and measles viruses, almost 69% of 160 internet users included in this study were not believed in vaccination, and among the various virtual groups that we consulted, only the website of "Moroccan Association for Health Communication" and the community called "SEHATI" created by the Ministry of health and social protection have constantly

offered an emotional support to internet users and have provided more explanation about vaccination, which has contributed to a successful communication and helped most of them to make their decisions. However, other groups gave more liberté to internet users to express their opinions about vaccines and to feel more confident and secure towards ideas that they expressed.

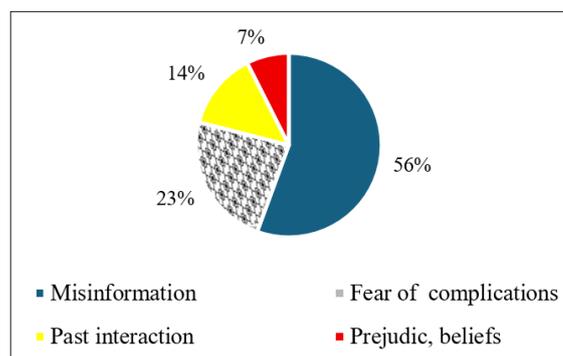


**Figure 4:** Percentage of Vaccine Hesitant Individuals



**Figure 5:** Types of Data

Regarding to the reasons for vaccine hesitancy, the study found that around 56% of this hesitation was related to misinformation that arose during the two diseases, besides shares of invaluable insights and false information about vaccines. Furthermore, 23% of vaccine hesitant individuals had a lack of confidence because they thought that vaccines in general have no importance and sometimes it can cause side effects or complications like perturbing the immune system. In addition, 14% of vaccine hesitant have confirmed their past experiences either with vaccines or with defeatist remarks given by some healthcare professionals, while only 7% had prejudice about benefits and safety of vaccines, the measles-mumps-rubella (MMR) vaccine increases risk of autism for instance, even more it can cause the same diseases that one is vaccinated against (figure 6) [5].



**Figure 6:** Reasons of Vaccine Hesitancy

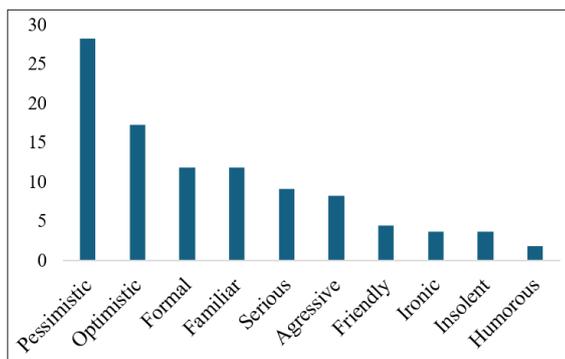


Figure 7: Types of Tones in Communication

The tone in Communication is an important element again which tells us how internet users explained their decisions about vaccines and how they communicated their emotional concerns. This tone was achieved here in particular by the choice of words, the nature of expressions and by using pictures, Icons and Emojis.

In our research, 28.2% of vaccine hesitant individuals have expressed their decisions with a pessimistic tone, 17.3% with an optimistic one, while others have used various types of tones, especially: formal, aggressive, ironic and humorous one (figure 7). This analysis of tone proves that internet users were very afraid to get vaccines and allows us to know how they perceived vaccination even how it was their behaviour.

### Discussion

According to the results obtained, mistrust in vaccine's safety and efficacy was the main motive for internet users to express their reluctance. Most of them didn't think that was necessary to get vaccines against COVID-19 and measles diseases, as well as they seemed strangely doubted about the composition of these vaccines. Usually, this reluctance made them unable to retain confidence in healthcare professionals, or even it eroded ultimately their trust in all the public health.

The second important reason of vaccine hesitancy is the spread of misinformation through social media and word of mouth about infectious diseases. With time, misinformation became mainstream in social networks which has impacted decisions of more than half of internet users. As reported by the World Health Organization (WHO); "coronavirus has triggered two parallel pandemics: a biological one which has spread to every country in the world, and a social pandemic of misinformation spreading across social networks" [6].

There were two other seemingly trivial reasons that led most internet users to remain unconvinced of the benefits of vaccines. The first was the defeatist rhetoric that began circulating on social media during the COVID-19 pandemic, which discouraged internet users from getting vaccinated and revealed a general reluctance. This type of rhetoric was expressed through certain defeatist expressions, such as: "We doubt everything," "I will not agree to the vaccine," "The vaccine does not come from safe hands," "Honestly, I really regret it because I took the vaccine," and so on. In addition to spreading myths and rumors about vaccines, there are also comments on internet users' questions like: "Immunodeficiency doses and certain death of the elderly," and "They want to change a person's genetic makeup through the vaccine." [7-10].

The following reason is the past interactions that occurred in some internet users after receiving one or two doses of coronavirus vaccine, like suffering from excessive fatigue, arthralgia, brain fog, insomnia and dizziness. These typically symptoms have raised the internet user's doubt about safety and effectiveness of the new vaccines used against covid-19.

Finally, vaccine hesitancy was quietly building by a specific mistrust due to the mainstream beliefs of the community, and some ethical objections to vaccination which have stuck in people's minds and have been raised rapidly during the COVID-19 pandemic. In this context, some internet users believe that vaccines are important only for vulnerable people, that it reduces immunity, or even worse that vaccination is a conspiracy and it may cause negative health impacts. Thus, they reported that God protect us and that we should let nature take its course.

Five recommendations for professionals to communicate about vaccines	
	Communicate accurate, reliable and complete information.
	Be open and proactive in dialogue.
	Be empathic, ask questions.
	Listen carefully, correct prejudices and beliefs.
	Guide towards reliable sources of information.

### Conclusion

The study revealed that vaccine hesitancy was widely known among Moroccan internet users during COVID-19 pandemic and measles epidemic, what exposed their health as well as the health of others to danger, and has undermined the enormous progress delivered by immunisation actions.

Although these results are not generalizable individually, it proves that it's crucially important to pick up internet users and to consider their text messages in social media about vaccination. It will be crucial again to encourage healthcare professionals to raise their voice in websites and social media by giving a Credible information and promoting positive conversations around vaccines.

Certainly, communication is a reliable way for healthcare professionals to make people believe in vaccines and to change their bad behaviours, either by creating groups meeting in social media as safe spaces for sharing trusted information, and for an honest and respectful conversation, or by giving opportunities to all people to respond with the given set of data that they need. In their conversations, healthcare professionals should be honest, open about the uncertainties and express to people that vaccines are not mandatory, but it's an individual choice that can save lives of the entire population.

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