Rapid Response Brief

September 2021

What can research evidence tell us about:

Covid-19 - Factors promoting vaccine hesitancy and measures to address these in Uganda

Key messages

- **Vaccine hesitancy** is a general delay or refusal in getting a vaccine due to a period of indecision, reluctance, or concern around getting the vaccine.

- **Factors that promote** hesitancy can be contextual, individual/ group influence, and/or related to the vaccine or vaccination programme.

- The **measures against** vaccine hesitancy can target enhancing access to the vaccine, increasing demand for the vaccine or improving individual and community knowledge and awareness about the vaccine. Multi-faceted interventions targeting context-specific promoters of vaccine hesitancy are more effective than one intervention strategies in addressing hesitancy.

Where did this Rapid Response come from?

This document was created in response to a specific question from a policymaker in Uganda in 2021.

It was prepared by the Center for Rapid Evidence Synthesis (ACRES), at the Uganda country node of the Regional East African Community Health (REACH) Policy Initiative.

Included:

- **Key findings** from research

- **Considerations about the relevance** of this research for health system decisions in Uganda

Not included:

- Recommendations

- Detailed descriptions

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Summary

Background:

Uganda rolled out the Covid-19 vaccination in March 2021. The Ministry of Health used a phased approach in the rollout, prioritizing Health Care Workers (HCWs), security personnel, staff within the education sector and persons older than 50 years, albeit not mandatory. This rollout was followed by the opening up of the vaccine to the general population. Just like the observed slow uptake of the vaccine among the initially prioritized groups (after approximately 20 days, only 10,000 out of the estimated 80,000 HCWs had received the vaccine), the estimated vaccine hesitancy in the general population is observed to range between 10% to 45%. On opening up the vaccination campaign to the general public, there was an apparent higher demand for the vaccine than its supply because of the few vaccine doses available, which masks the challenge of vaccine hesitancy. As the government seeks to improve vaccine uptake, they must implement specific measures to address Covid-19 vaccine hesitancy in Uganda.

Rapid Response Question:

What are the factors promoting Covid-19 vaccine hesitancy, and what measures can be instituted to address these?

Findings:

Vaccine hesitancy is a delay in accepting or refusal of vaccines despite the availability of vaccination services. Factors that promote Covid-19 vaccine hesitancy are presented below;

Individual/ group influence

- Experience with previous vaccinations
- Beliefs and attitudes about the disease and prevention
- Knowledge/ awareness
- Level of trust in the health system
- Perceived risk/ benefits
- Social norms

Vaccine related factors

- Epidemiological risk/ benefit
- New vaccine/ formulation
- Rate of development of the vaccine
- Quality of vaccine
- Duration of protection
- Route of administration
- Source of the vaccine
- Attitude of HCW

Contextual factors

- Communication and media environment
- Influence of community leaders
- Religion
- Gender
- Socio-economic factors
- Level of Education
- Perception of the pharmaceutical industry
- Misinformation

There is a dearth of evidence on the measures to address vaccine hesitancy. Many of the interventions have aimed at increasing vaccine uptake in general, with little to no specific focus on the hesitant population. There are several measures against vaccine hesitance, and they centre around improving knowledge and awareness about the vaccination, increasing demand, and increasing access to it.

Improving knowledge and awareness

- Education interventions
- Mass media
- Social media
- Public health messaging

Increasing demand for vaccination

- Incentives
- Reminder and recall
- Mandating vaccination
- Social mobilization
- Targeting specific groups

Enhancing access to vaccinations

- Mass immunization campaigns
- Making vaccines free
- Quality improvements at the clinics

Conclusions:

It is essential to understand the drivers of vaccine hesitancy to design a tailored and contextualized intervention. A multi-faceted intervention targeting context-specific promoters of hesitancy is more effective than a single one, as vaccine hesitancy is a complex phenomenon with a multitude of drivers.

Background

Uganda's Ministry of Health launched its Covid-19 vaccination campaign in March 2021, with authorities assuring the public of the vaccine's safety and efficacy and with several officials and HCWs receiving their first doses publicly to build trust [1, 2]. The ministry initially prioritized HCWs and their support staff. These were to be followed by security personnel, teachers and other education sector staff, and citizens 50 years and above [1]. However, the vaccination was not mandatory for the prioritized groups, leaving room for vaccine hesitancy and convenience. The government planned to eventually expand the Covid-19 vaccination campaign to the general population, targeting to vaccinate at least 49.6% of the total population in a phased manner [2]. Despite being prioritized, only 10,000 HCWs out of the expected 80,000 had received the vaccine by the end of the campaign's first month [3], signalling a possible hesitancy within this population.

How this Rapid Response was prepared

After clarifying the question being asked, we searched for systematic reviews, local or national evidence from Uganda, and other relevant research. The methods used by the SURE Rapid Response Service to find, select and assess research evidence are described here: www.evipnet.org/sure/rr/methods

In addition, there is Covid-19 vaccination hesitancy in the general population. Different surveys in Uganda show that Covid-19 vaccination hesitancy ranges between 10% to 45% in the population [4]. The vaccination hesitancy was masked by the opening up of the Covid-19 campaign to the general population. This phase of the vaccination program resulted in a higher demand for the vaccine than the limited vaccine supply.

Vaccine hesitancy contributes to the reduced uptake of the vaccination program, yet individuals who remain unvaccinated put the community at a high risk of continued disease outbreaks [5], affecting the rate at which the disease can be controlled.

It is prudent and crucial for authorities to address vaccine hesitancy alongside ensuring an adequate and stable vaccine supply. This rapid response brief provides evidence on the factors that promote vaccine hesitancy, and the different measures authorities can consider to address this challenge.

Rapid Response Question:

a) *What are the factors that promote Covid-19 vaccine hesitancy in Uganda?*
b) *What measures can be instituted to address hesitancy to the Covid-19 vaccine?*

In this brief, we define vaccine hesitancy, provide the factors that promote it and suggest measures to address these.

Summary of findings[1]

Vaccine hesitancy contributes to low vaccine uptake. Ideally, to address vaccine hesitance, there should be adequate access to the vaccination programs to rule out access as a barrier to uptake. Whereas there is a lot of literature on promoters of vaccine hesitancy, there is limited information on measures against hesitancy in particular (outside low uptake in general).

Definition of vaccine hesitancy

The World Health Organisation defines vaccine hesitancy as a "delay in acceptance or refusal of vaccines despite availability of vaccination services" [6]. Vaccine hesitancy can also be defined as the period of indecision, reluctance, or concerns around getting a vaccine or a delay in getting the vaccine [7, 8]. Not all vaccine-hesitant individuals are against receiving the vaccine – a few may have reasons for hesitating or delaying or declining a given set of vaccines in a given period. Figure 1 shows a depiction of vaccine hesitancy.

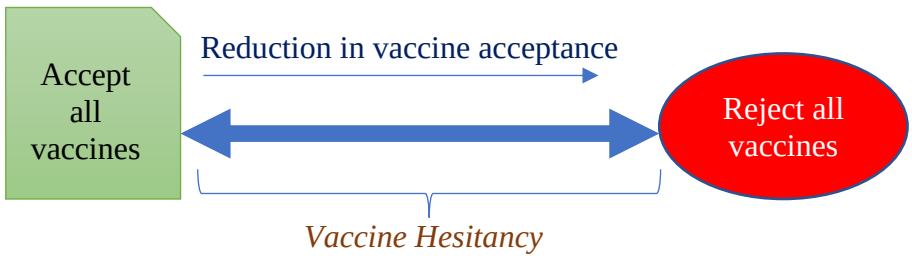

Figure 1: Depiction of vaccine hesitancy; a continuum between accepting and rejecting all vaccines

Factors that promote vaccine hesitancy

Vaccine hesitancy is a complex phenomenon usually explained by a combination of factors operating together and at different times. The factors that promote vaccine hesitancy are mostly similar the world over. These, however, are context-specific, with the particular factors operating at a given time, varying from region to region, even within the same geographical area. These factors are presented in figure 2.

[1] The quality of the systematic reviews used in this brief ranges from high to moderate, with only one low-quality review (See AMSTAR quality of Systematic Reviews). However, the individual studies that inform these systematic reviews have a high risk of bias. Because of this limitation, the impact of the proposed interventions has a high degree of uncertainty. It is therefore important to design a comprehensive monitoring and evaluation plan when implementing the different strategies.

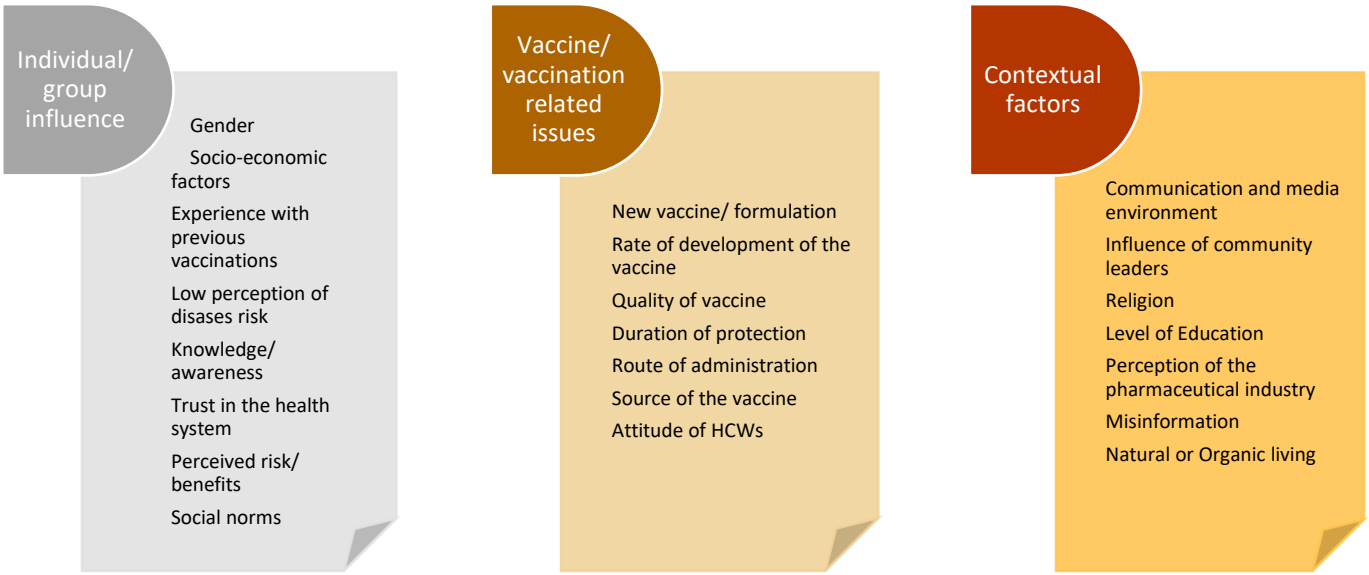

Figure 2: Factors that promote vaccine hesitancy in the population

Individual/ group influence

1. **Gender**: Females are generally more hesitant than males to get vaccinated [8-10]. The gender difference could result from a lack of empowerment and limited access to vaccine information for many women, especially in LMICs [8].
2. **Socio-economic status**: This is inconclusive and should be viewed in the context of a region. In some places, high socio-economic status promotes hesitancy, while in others, it promotes vaccination. This applies to low socio-economic status as well.
3. **Negative experience with previous vaccinations**: Individuals who have developed or know those who developed adverse effects following previous vaccinations are more likely to be hesitant than those who have not. Such adverse events include pain, fever, and allergic reactions, among others.
4. **Low perceptions of disease risk**: Individual beliefs concerning the severity of the disease affects their readiness to get vaccinated. Individuals who do not believe that a particular disease is as serious or believe that the vaccine can be ably replaced with other prevention and control measures are more likely to be vaccine-hesitant [9, 11].
5. **Low levels of knowledge/ awareness**: People with insufficient information about how the vaccine works are not empowered enough to be confident in making decisions regarding vaccination[10, 11]. Vaccine information communicated in an unclear, unconcise, and inaccessible manner creates a barrier of lack of information.
6. **Mistrust in the government and health system**: Individuals' and groups' distrust in the health system and information from the government can lead to vaccine hesitancy. The distrust can be based on political, cultural or religious beliefs of government conspiracies against particular groups [8, 10-12].

7. **Perceived risks/ benefits**: The perception of vaccine harms is the main reported concern among individuals as promoting vaccine hesitancy [12, 13]. Some of the feared harms are; weakening of the immune system, adverse events and sterility [12].
8. **Social norms**: Some social norms and practices promote vaccine hesitancy. Such norms include the perspectives of vaccines being harmful or not needed; for example, the belief that one would rather get sick and recover to develop natural immunity rather than get the vaccine for artificial immunity[5]. In addition, a lack of support, either social or professional, to get vaccinated can lead to vaccine hesitancy [13-15].

Vaccine/ vaccination-related issues

1. **New vaccine/ formulation**: Some individuals prefer waiting for a second-generation version of the vaccine rather than receiving the first generation. The cited reasons are the need for more time to observe the vaccine's performance in terms of safety and efficacy [11, 13] and wait for improvements leading to the second generation of the vaccine.
2. **Fast rate of vaccine development**: This is especially with the Covid-19 vaccine; many individuals cite the fast development and approval process as a reason for concern. Some people associate the fast vaccine development with less time devoted to studying the vaccine's effectiveness and possible side effects [8, 9], causing distrust in the vaccine and, therefore, apprehension [13].
3. **Pain associated with vaccine administration**: Much as pain on administration has not received sufficient attention, pain on previous vaccinations was reported as a factor promoting hesitancy.
4. **Uncertainty about the quality of vaccine**: Some individuals report hesitating to get vaccinated because of real or perceived concerns with the quality of the vaccines, such as expired vaccines and weak cold chain, conditions which affect the quality of the vaccine [8, 9, 12].
5. **Lack of trust in vaccine source**: Willingness to receive the Covid-19 vaccine is affected by the source of the vaccine, i.e., the country of manufacture and the pharmaceutical company. Some individuals doubt the safety and effectiveness of Covid-19 vaccines from Russia and China and trust those from Europe and the USA [8].
6. **Brief durations of protection**: Vaccines that offer a limited duration of protection and require more frequent booster doses contribute to the complex phenomenon of vaccine hesitancy [8, 13]. Some individuals perceive such vaccines as inefficient and, therefore, no need to get them.
7. **Poor attitudes of HCWs**: Unpleasant attitudes of HCWs can promote vaccine hesitancy with different individuals fearing mistreatment on seeking vaccines at the facilities [12]. Other reports, such as HCWs re-using syringes for vaccines, whether real or perceived, promote vaccine hesitancy [12]. Furthermore, HCWs' attitudes toward the vaccines is another key factor for the population accepting the vaccine or not. The HCW's opinion of the vaccine rubs on the clients and the population at large. Where HCWs are hesitant, the HCWs are hesitant to communicate vaccine information to their clients,

and if their hesitancy is known by the population, the population will most likely be hesitant to receive the vaccine [13, 15, 16].

Contextual factors

1. **Communication and media environment**: Exposure to negative vaccination news in the media is a barrier to vaccination [14], yet it is noticeable that vaccine-hesitant individuals and anti-vaxxers usually take up more space in media discussions about vaccines than those who are pro-vaccines [15]. Furthermore, vaccine information is reportedly hard to read for many people. The vaccine recommendation messages are considered difficult to read (yet messages that promote hesitancy are presented very simply) [17]. The unclear communication of pro-vaccine information makes the vaccine hesitancy messages more accessible to the population.
2. **Misinformation**: Misinformation about vaccines is a leading cause of vaccine hesitancy in the population [7, 9, 11]. The main source of misinformation is social media [8]; however, mainstream media such as radios and televisions can also be a source.
3. **Negative influence from community leaders**: Community leaders who are hesitant or completely against vaccination promote vaccine hesitancy within the community.
4. **Religions that are against vaccination:** Some religions and religious practices are against vaccination which promotes hesitancy [5].
5. **Level of education**: This factor presents mixed-effects too. In some places, a high level of education promotes vaccine hesitancy, while in others, it is a promoter of vaccination. The level of education should therefore be contextualized for each group targeted for intervention [14].
6. **Negative perceptions of the pharmaceutical industry**: There is growing mistrust of the pharmaceutical industry. Many individuals see the industry as mostly financially motivated and with significant influence on different regulatory bodies, which reduces their trust in the vaccines they produce.
7. **Mistrust in government by some groups**: Some groups of people, such as religious and cultural groups, perceive government policies such as vaccination as a ploy against their continuity in some regions, promoting hesitancy [5].
8. **Natural or organic living:** There is a group of individuals who believe in nature and the remedies that nature has to provide. These individuals are more prone to vaccine hesitancy as they perceive vaccines as not part of natural remedies against diseases [18].

Whereas the factors that promote vaccine hesitancy are presented in the categories above, these factors interact to affect vaccine acceptance. When one factor is prioritized, the other factors act to affect the observed outcome. Although the link between the different promoters of vaccine hesitancy might not be direct, all factors are connected to each other. The connections and combinations of factors working together to influence vaccine hesitancy are numerous, but they vary depending on individual and community context [18]. Figure 3 depicts an overlap between factors that promote vaccine hesitancy using a gear train model.

Figure 3: Gear train depiction of overlap between factors that promote vaccine hesitancy.

Adopted from Majid, U. and M. Ahmad, The Factors That Promote Vaccine Hesitancy, Rejection, or Delay in Parents.

Strategies for addressing vaccine hesitancy

Several strategies have been suggested to address vaccine hesitancy, but there are few evaluations of their impact [7, 12]. Much of the evidence on interventions against vaccine hesitancy measure uptake as the outcome, with very few studies explicitly focusing on changes in hesitancy [5, 15].

As the causes of vaccine hesitancy vary across the population, interventions addressing vaccine hesitancy should be tailored to the target population and in line with their causes [7]. Furthermore, vaccine hesitancy is a complex phenomenon, with no single cause, rather a spectrum of interconnected causes operating at different intensities. As a result of this complexity, addressing vaccine hesitancy requires combining different interventions addressing context-specific causes.

The three domains for addressing vaccine hesitancy are elaborated below;

Increase knowledge and awareness

1. **Increasing knowledge and awareness of vaccination**: Many studies have focused on increasing knowledge and awareness of the vaccine in the population. This strategy has been shown to increase vaccine uptake by over 20% [7]. Increasing knowledge and awareness can be achieved through education initiatives, especially by embedding new knowledge and information into routine processes such as hospital procedures. However, with a lack of a clear understanding of the underlying reasons for hesitancy and low vaccine uptake,

Note 1: The use of a combination of many different strategies to address vaccine hesitancy is more effective than single component interventions. However, the interventions should be context specific for each target population.

providing information to the population about vaccines may not result in significant changes towards vaccination uptake and reduction in hesitancy [7, 15].

Education interventions also include the use of written educational information such as brochures, pamphlets and posters. Other interventions include meetings, outreaches, PowerPoint presentations, radio and television programs [5, 7]. Evaluations have reported mixed results, though, showing that while in some places education interventions increase vaccination uptake, in others, they showed no impact [5].

The use of social media and the internet for education on vaccine hesitancy carries a limitation of failure to attract vaccine-hesitant individuals to these platforms [15].

2. **Public health messaging**: The use of public health messages targeting individuals, families and communities is postulated to effectively address vaccine hesitancy by improving the perception of risk and intention to vaccinate. However, the messages should be tailored to the different factors promoting hesitancy as different people have different reasons for delaying or rejecting vaccination [11].
3. **Mass media**: The use of mass media to increase knowledge and awareness has shown positive results on awareness but only limited impact on hesitancy and uptake in general [7].
4. **Social media interventions**: Using social media has shown promise of increasing vaccination uptake; however, its most significant impact is shown to be on those who are not hesitant to vaccines. However, a few disadvantages of social media are that it is prone to exploitation if not managed well, and it would miss out on those without access to the internet [7].
5. **Engaging opinion leaders**: Involving opinion leaders like religious leaders was reported to increase vaccine uptake four times more than not involving them [7, 15]. This intervention helps address community mistrust and misconceptions towards vaccination.
6. **Social mobilization**: Social mobilization involves mobilizing all religious, cultural, and political leaders to publicize infection cases and help with mobilization campaigns. This intervention showed an increase in vaccine uptake [7, 15].

Increase demand for vaccination

1. **Reminder-recall interventions**: These had varied results on vaccine uptake. Studies reported an increase in uptake while others reported no change [7, 19]. These can be used to remind recipients or HCWs when vaccines are due.

   Reminder-recall interventions are the least expensive intervention in increasing vaccination uptake. The mode of reminders should be tailored to the population preferences [19]. Phone calls are the most effective single type of reminder-recall intervention, followed by a letter (where the system exists), test messages and lastly, auto dialled phone calls. A combination of reminder-recall interventions was found

Note 2: When implementing interventions, it is important to rigorously evaluate its impact as there is still limited evidence on many of the interventions.

not to be any more effective than a single intervention [19]. Email reminders show improvement in uptake compared to no reminders, but this is only applicable to populations with access to the internet[19]. However, it should be noted that on the extreme, reminder-recall interventions result in decreased uptake of vaccines, possibly because the population feels coerced into receiving the vaccine by the many reminders [15]. Therefore, it is important to carefully craft the information to avoid coming off as coercive and pressurizing, which is counterproductive.

2. **Targeting specific groups of people**: Targeting specific groups such as HCWs and teachers has been shown to increase vaccine uptake [7].
3. **Mandatory vaccination or imposing sanctions against non-vaccination**: Mandating vaccination for the entire population or select groups such as HCWs, students and teachers, improves vaccine uptake. However, there remain ethical challenges with mandatory vaccination [5, 15]. Mandatory vaccination is also limited to particular groups such as HCWs, teachers, and students, with limited applicability to the general population.

Enhancing access to vaccination

1. **Improving access and convenience to vaccination**: This includes making vaccines free and accessible to the entire population, increasing the number of HCWs and setting up vaccination clinics [11]. Whereas this can increase uptake, in some groups, it can promote hesitancy with individuals questioning the quality and efficacy of a free vaccine [11]. Mass vaccination campaigns have shown a positive impact on vaccine uptake [15].
2. **Quality improvements at the clinic**: Evaluative studies have shown that these interventions lead to less than a 10% increase in vaccination uptake. The quality improvement includes improvements in data collection and monitoring of immunization programs, recruiting more staff and extending clinic working hours [7].
3. **Incentives-based interventions**: Incentives can be conditional or non-conditional. However, these have limited impact on addressing vaccine hesitancy and increasing vaccination uptake. Only one study conducted in a disadvantaged region in India showed increased uptake with food-based incentives. This positive result might be because the chosen incentive is linked with basic survival and the region had very low baseline vaccination rates [7]. Other incentives include cash transfers, transport refunds, and shopping vouchers.

Note 3: Directly targeting unvaccinated or under-vaccinated populations is more effective than a less targeted intervention. Issues to consider include key determinants of vaccination and hesitancy, barriers and enabling conditions. Attention should be paid to social and cultural norms.

Conclusion

It is essential to understand the drivers of vaccine hesitancy to design a tailored and contextualized intervention. A multi-faceted intervention targeting context-specific promoters of hesitancy is more effective than a single one, as vaccine hesitancy is a complex phenomenon with a multitude of drivers. Given the relatively low quality of evidence used to inform the measures against vaccine hesitancy, a comprehensive Monitoring and Evaluation plan should be designed and implemented for a chosen strategy to study the impact and identify potential needs for alterations or change.

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What is a Rapid Response?

Rapid Responses address the needs of policymakers and managers for research evidence that has been appraised and contextualised in a matter of hours or days, if it is going to be of value to them. The Responses address questions about arrangements for organising, financing and governing health systems, and strategies for implementing changes.

What is ACRES?

ACRES – The Center for Rapid Evidence Synthesis (ACRES) is a center of excellence at Makerere University- in delivering timely evidence, building capacity and improving the understanding the effective, efficient and sustainable use of the rapid evidence syntheses for policy making in Africa. ACRES builds on and supports the Evidence-Informed Policy Network **(EVIPNet) in** Africa and the Regional East African Community Health **(REACH)** Policy Initiative (see back page). ACRES is funded by the Hewlett and Flora foundation. http://bit.do/eNQG6

ACRES' collaborators:

Regional East African Community Health Policy Initiative

EVIPnet

Glossary

of terms used in this report:

www.evipnet.org/sure/rr/glossary

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Conflicts of interest
None known.

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