

## UNDERSTANDING THE MOTIVATIONS FOR COVID-19 VACCINE HESITANCY IN SOUTH AFRICA: NARRATIVE LITERATURE REVIEW

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### Abstract

*While efforts to promote vaccine knowledge and acceptability in the global and local communities are applauded, affordability of the vaccines to the public is inadequate thus strategies that promote vaccine access and uptake will lead to increased usage of COVID-19 vaccines. To review the relevant literature obtained from a computerised database search that focuses on vaccine hesitancy in order to understand motivations for vaccine hesitancy with a view to address within a South African context. A comprehensive search from different databases, namely, Google Scholar and North-West University Library through the e-Link Catalogue, with journal and conference publications from 2010 to 2021, yielded qualitative, quantitative and mixed-method studies that addressed various topics on vaccine hesitancy. Inclusion and exclusion criteria were set and 25 publications met the inclusion criteria for the review. The motivations for COVID-19 vaccine hesitancy are described as complacency: anti-scientific attitude (unbelief in evidenced-based information) caused by conspiracy beliefs and distrust in information sources leading to lack of compliance to COVID-19 restrictions such as wearing of masks, social distancing and lack of hand hygiene: convenience/lack of access to COVID-19 vaccines; caused by delays in the distribution and use of vaccines till expiry dates were reached and lack of confidence and trust: caused by concerns on safety and effectiveness of vaccines. COVID-19 vaccine hesitancy can be addressed by ensuring that there are no constraints related to the supply and system that administers vaccines; building trust in the safety of vaccines, health services and government authorities and avoiding delays in distribution and use of vaccines. Future studies need to address the root causes of conspiracy beliefs that lead to complacency (anti-scientific attitudes) resulting in delays/refusal of COVID-19 vaccines and non-compliance to evidence-based information that if observed could curb the spread of COVID-19.*

**Key words:** Understanding, motivations, COVID-19; Vaccine hesitancy

### Introduction

In pre-vaccine eras, huge numbers of populations died globally from measles and small pox (Greenworld, 2014). In our modern times, deaths from infectious diseases including COVID-19 continue to be reported in thousands. In 2018, the World Health Organization (WHO) announced the devastating deaths of over 140 000 people involving children under 5 years world-wide mainly as a result of missed measles doses (WHO, 2021). Although the impact of small pox is unknown, it was reported to be responsible for a death toll of about 20 million people world-wide in the 20<sup>th</sup> century alone (Davenport, Satchell, and Shaw-Taylor, 2018). Immunizations have a track record globally for saving millions of lives by reducing the burden of infectious diseases and saving 2-3 million lives every year (Machingaidze, Wiysonge and Hussey, 2013; WHO, 2019).

The Expanded Programme on immunization (EPI), rolled out in 1974, consisted of scheduled vaccines that include Bacillus Calmette-Guerin (BCG), diphtheria-tetanus-pertussis (DTP), polio, measles, Hepatitis B (HebB) yellow fever and Haemophilus influenza (WHO, 2019). EPI was an initiative of WHO, whose goal is to make vaccines available for all children worldwide. In the African Continent, the EPI is reported to have made successful strides in saving lives despite country-specific challenges. An article on strengthening the EPI programme in Africa, published in 2013 by Machingaidze, Wiysonge and Hussey (2013) shared some highlights of the results as follows:

- The EPI performed significantly well since its inception in 1974 although major differences exist between countries.
- Shortfalls such as ailing health institutions, lack of skilled personnel and resources were noted as a need to improve and further strengthen and maintain the programme.

The EPI programme in South Africa (SA) has been reported as one of the success stories owing to its remarkable results at provincial levels that were highly supported at national levels with resourceful professionals and scientists (Dlamini and Maja, 2016). These authors further enlisted the rewarding impact of the programmes as follows:

- Polio is eradicated since the 1990's and other infectious diseases such pertussis and diphtheria are under placed under control.

- SA took the lead as one of the first countries in the African continent that produced new vaccinations such as Haemophilus influenza (Hib), pneumococcal (PCV), rotavirus (RV) and human papillomavirus (HPV) vaccines. The latter is a vaccine given to young girls over the age of 9 (nine) years to protect them from cervical cancers.

Despite the notable achievements, the WHO and United Nations International Children's Emergency Fund (UNICEF) (WHO, 2020) reported on general attitudes of complacency in all countries of the world that has left about 20 million babies with no access to vaccines including diphtheria, tetanus, pertussis and measles. Essentially the authors ascribe the interruptions on missed immunizations in part to COVID-19 since the decline has been noted before the outbreak and may have serious implications that may cause suffering and death worse than the current pandemic. Furthermore, these authors elaborated on some of the reasons for the disrupted vaccines as related to lockdowns, lack of transport, lack of protective equipment or fear of contracting the corona virus in countries where the services are made available. Whatever the merits of each case maybe, objective 2 of the Global Vaccine Action Plan (2012) that urges all *"individuals and communities to understand the value of vaccines and demand immunization as both their right and responsibility."* The time is now to apply personal and collective drives that proved successful in previous pandemics to combat the current scourge of COVID-19 guided by emerging scientific data that provides up to date information.

In the recent publication issue on June, the WHO re-affirms that Corona Virus (COVID-19) is mainly caused by a severe acute respiratory tract infection (SARVS-CoV-2) and spreads fast through human contact (WHO, 2021). By June 2021, more than 5.3 million confirmed cases and 140 976 thousand deaths have been reported in the African Continent by Africa Centre for Disease Control Dashboard (Africa CDC, 2021). As corona virus continues to inflict numerous suffering and deaths in all the countries of the world and regions some worse than others WHO (2021) further stipulates guidelines to reduce mortality and morbidity as follows:

- All persons, including those who were immunized partially or fully against COVID-19 need to stay at home and avoid contact wherever possible.
- Maximum support needs to be enhanced for essential services while modifications and or working from home measures need to be considered with immediate effect for non-essential business.
- Human trials of COVID-19 vaccines at the time of the current publication were 89% safe for use, meaning that there is a very low risk of suffering from severe disease among younger to middle aged adults and low to moderate risk in the elderly people.

Despite the safety and efficacy of COVID-19 vaccines huge numbers of people around the world have been reported to be unsure of whether or not they will accept corona vaccines (vaccine hesitancy) while others are totally against vaccinations (Edwards et al., 2021). Early in the year, a survey conducted by a high tech and financial services South African Company CompariSure reported via Independent News Online (IOL) that 52% of citizens from all age-groups were not prepared to be vaccinated despite the warning reports of the second wave surge with high numbers and deaths at the time. Africa has a target of reaching 60% of its people with vaccinations against corona virus (Africa News, 2021).

WHO's Strategic Advisory Group of Experts (SAGE) (2011-2020) admonishes governments to take active steps in addressing vaccine hesitancy because it is a threat to individuals and community at large (Wiysonge et al., 2021). Furthermore, one of the key objectives of SAGE is to promote vaccine acceptability for all persons and communities of the world in order to reach "population immunity" and control the spread of COVID-19. It is against this background that the researcher is embarking on a narrative literature review to explore and describe the motivations for vaccine hesitancy in order to increase acceptance of the COVID-19 vaccines among South Africans. It is hoped that the results will strengthen the COVID-19 guidelines particularly the non-pharmaceutical aspects which if observed can minimize infection and death, assist the clinicians and educators in understanding and alleviation of problems related to vaccine hesitancy.

**Objectives:** To review the relevant literature obtained from a computerised database search that focuses on vaccine hesitancy in order to understand the motivations thereof with a view to address accordingly in the context of South Africa.

**Methods:** This study adopted a narrative literature review to address the author's concern of COVID-19 vaccine hesitancy in SA. Narrative or integrative reviews are comprehensive and critical analysis of theoretical literature in a particular focus area to identify gaps in the body of knowledge (LoBiondo-Wood & Haber 2014) and address them. A literature search was conducted through Google Scholar, EBSCOHost and North West University Library through the e-Link Catalogue, with journal and conference publications from 2010 to 2021, refer to Table 1. The search terms used were, "vaccine hesitancy;" "COVID-19 acceptability;" "increasing vaccination rate", "reasons for vaccine

delays/refusal.” The concepts not only described the title of this study, but also set parameters to the research. Twenty-five articles met inclusion and exclusion criteria and were accessed, reviewed and the results synthesized to draw related motivations for COVID-19 hesitancy and conclusion for the study.

**Table 1: Literature search**

Databases	Search terms	Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>• Google Scholar</li> <li>• EBSCOhost</li> <li>• e-Link Catalogue</li> <li>• Journal publications</li> </ul>	<ul style="list-style-type: none"> <li>• Vaccine hesitancy,</li> <li>• COVID-19 acceptability</li> <li>• reasons for vaccine delay</li> </ul>	English articles focussing on motivations for vaccine hesitancy published between 2010-2021.	<ul style="list-style-type: none"> <li>• newspaper articles</li> <li>• Conference reports</li> <li>• databases not mentioned in this review.</li> </ul>

### Overview of COVID-19 vaccine hesitancy

The WHO's, SAGE (2011-2020) concluded on the concept of vaccine hesitancy that it embodied both the “*delays or refusal to accept a vaccine despite available services*” resulting in vaccinated and unvaccinated members in a country. The authors further expounded on the definition to include context-based factors that tend to fuel and propel it as “*varying across time, place and vaccines*. Many countries across the globe experience varying views over decisions whether or not to take COVID-19 vaccines. In United States of America, Pew Research Centre (2020) reported that the American population were split into about half as 51% were of the view that they would definitely/probably accept the vaccine while 49% would definitely/probably decline vaccinations. In contrast the majority of Australians had definite intentions to take the vaccine at 59%, while 29% and 7% reported low levels and high levels of hesitancy respectively and 6% were in total refusal (Edwards *et al.*, 2021).

In Africa, COVID-19 vaccine acceptability rate has diverse variations based on safety and effectiveness. Africa Centre for Disease Control (CDC) (2021) reported in a survey conducted between August to December 2020 across 15 countries, whereby Ethiopia and Niger had the highest readiness at 94% and 93% respectively while Senegal and DRC were lower at 65% and 59% respectively. In Zimbabwe, heated debates have been recorded between scientists and researchers over the efficacy of evermeectin, a parasitic drug investigated for the treatment of COVID-19 (Dzinamarira *et al.*, 2021). The issue in contention was over the drug being used for treatment of COVID-19 in order to oppose vaccination attempts. While some doctors were more inclined for the use of the drug, these authors warned that such diverse perceptions could shift the population's focus towards COVID-19 treatment as opposed to vaccine uptake as a preventive measure against corona infection.

It is noted that minimal levels and high levels of COVID-19 vaccine acceptance exist in varying patterns between countries in Africa alongside with vaccine hesitancy (Africa CDC, 2021). The authors further illustrated the responses given by participants on vaccination intentions in terms of more likely or less likely to vaccinate and those who had not changed their views on COVID-19 vaccines in Table 2 below:

**Table 2: Vaccination intentions by some countries in Africa**

Vaccination intentions	Sudan	Nigeria	DRC	RSA
More likely	69%	59%	48%	41%
Less likely	11%	14%	21%	20%
No change in views	17%	25%	26%	38%

Adopted from (Africa CDC, 2021)

Comparison by countries showed that Sudan and Nigeria had over 50% of respondents indicating willingness to vaccinate while DRC and SA were less than 50%.

An online study conducted by Cooper, van Rooyen and Wiysonge (2021) from the University of Johannesburg (UJ) South Africa (SA) and Human Sciences Research Council (HSRC) between 2020 and 2021 to explore the willingness of the people in taking COVID-19 vaccines reported the following findings:

- 67% assured of their probability in taking the vaccine,
- 18% were strongly certain that they would not take COVID-19 vaccine and
- 15% remained unsure of their accepting the vaccine.

These results are consistent with the recent findings of a South African study on vaccine hesitancy by Burger *et al.* (2021). The authors reported that 71% of participants were willing to be vaccinated against COVID-19 while 29% were not. Furthermore, the authors were able to break down the unwillingness to receive COVID-19 Vaccines by language. For example, the respondents who spoke Afrikaans were more vaccine hesitant at 42% than their Tshivenda

(18%), isiNdebele (19%) counterparts as well as isiXhosa, isiZulu and Sepedi who were at 25% all together, with an overall vaccine hesitancy of 0.248 for isiXhosa and isiZulu and 0.258 for the latter language. These authors however acknowledged the gap in their research, that is, inability to understand the underlying issues behind vaccine hesitant responses. It is on this light that the author of the current review sought to understand the reasons that drive respondents to be vaccine hesitant in order to address it and enhance stopping the spread of corona virus.

### **Factors influencing vaccine hesitancy**

Vaccine hesitancy is influenced by factors such as complacency, convenience and confidence (WHO's SAGE, 2011-2020). As was the case of remarkable best practice with the EPI, Dzinamariva *et al.* (2021) acknowledged that South Africa was the first country to secure and implement the COVID-19 vaccine roll-out in the continent early in the year while the rest of the African countries were still in preparatory phases. Social factors such as the age, race, education, politics and unemployment are to blame for failure to reach the measure of success, that is, to achieve high levels of COVID-19 Vaccine uptake (Cooper, van Rooyen and Wiysonge, 2021).

WHO's SAGE (2011-2020) acknowledges that there are individual and communal related factors that increase the demand for vaccines, thus there is a need for all countries to motivate their members to get high acceptability of vaccines as the ultimate behavioural goal. To achieve this noble outcome SAGE proposes understanding first and foremost the factors that determine vaccine hesitancy in order to intervene accordingly as involving the 3 C's model as explained as follows:

1. Complacency: occurs when "*perceived risks of vaccine-preventable disease is low and vaccination is considered not necessary while unaware of potential dangers for not being vaccinated*" (Macdonald, 2015). In this review, this concept relates to anti-scientific attitudes (unbelief in evidence-based information) caused by conspiracy beliefs and distrust in information sources leading to lack of compliance to COVID-19 restrictions such as wearing of masks, social distancing and lack of hand hygiene.
2. Convenience: is about absence of constraints related to the supply and the system that administers vaccines (Wiysonge, *et al.*, 2021). In the context of this review, it also relates to whether the population has access to vaccines points or not, whether they can afford and are available whenever required and the language used for communicating information about vaccinations is understandable for users to increase uptake.
3. Confidence: refers to trust that the vaccines are safe and effective; that the health services and health personnel that render them are reliable and competent in their work and trust in the regulators who decide over vaccines (Wiysonge, *et al.*, 2021; Macdonald, 2015).

Given the understanding that the model can be used as theoretical framework for the factors that influence vaccine hesitancy, the author will apply COVID-19 specific influences using the 3 C's model for understanding vaccine hesitant participants in the context of South Africa. They are conceptualized below as factors related to complacency, factors related to convenience and factors related to confidence:

### **Factors related to complacency**

In his address to the Nation on 27 June 2021, prompted by the discovery of the new Delta variant which appears to dominate the surging of the 3<sup>rd</sup> wave, President Cyril Ramaphosa informed South Africans that the country would move to adjusted alert level 4 to curb the spread of the virus and resultant deaths (State of the Nation Address, 2021). He pleaded with the nation stressing emphatically that "complacency comes with a great price" and endorsed the non-medical prevention measures such as wearing mask properly covering nose and mouth, social distancing and hand-hygiene which SA seemed fatigued to maintain. A study conducted by Soteri *et al.* (2021) in Finland on behaviours that make people unresponsive to COVID-19 restrictions identified that conspiracy beliefs and distrust in information sources are fertile ground for negative response to COVID-19 restrictions and also propel vaccine hesitancy (Hughes and Machan, 2021).

Hornsey and Fielding (2017) argue that in order to understand anti-scientific attitudes that make people reluctant to comply with evidence-based messages we need to go deeper and seek the underlying motives for the manifested behaviours. These authors further explain that below the surface there are usually fears, belief systems and needs that maintain what is observed on the surface level. It is unfortunate that conspiracy mentality exists, the belief that COVID-19 is a malicious act caused by certain organization (Soteri *et al.*, 2021) and undermines government regulators and social distancing (Pummerer *et al.*, 2020; Hughes and Machan 2021). What the president of SA expressed as an attitude of complacency is real concern for further investigation as more and more people are seen in public places without masks or holding hands on a daily basis disregarding the role of human contact in the spread of corona virus amidst a fast spreading third wave of COVID-19.

### Factors related to convenience/access to COVID-19 vaccines

Africa CDC (2021) established that while some countries' populations were concerned about issues of COVID-19 accessibility and the kind of people to be prioritized for vaccines; 13 out of the 15 countries responded thus: health workers (32%), elderly (28%), no group to be prioritized (27%), children (26%) and most vulnerable (25%). These authors further continued that 31% of respondents raised concerns on the type of vaccines sourced in Africa as they would have positive or negative impact on vaccine uptake (31%) depending on the country that manufactured the vaccines. Africa News and BBC NEWS reported on 27 April and 8 June 2021 respectively that, COVID-19 vaccine hesitancy appears as a problem generally as delays in the distribution and use of vaccines is reported and thousands had to be wasted due to expiry dates. For example, Malawi, Sudan and Democratic Republic of Congo (DRC) had to destroy 20 000; 59000 and 1,5 million doses of AstraZeneca (AZ) vaccine respectively due to failure to administer them prior expiry date.

Furthermore, Ghana and Madagascar gave the vaccines that were close to expire on 24 June 2021 to other countries to avoid destruction and SA received 1 million doses of AZ in February 2021 with an expiry date of 13 April 2021 (BBC NEWS, 2021). The SA government decided not to use them for fear that they may not be effective enough for COVID-19 Beta variant that was prevalent in the country early in the year and also for the clots reported on AZ use (BBC NEWS, 2021). It is regrettable that political issues, social instability and government disillusionment were found to contribute to vaccine hesitancy (Cooper, van Rooyen and Wiysonge 2021) adding not only to the spread but also to delays in the control of corona virus. Africa News confirmed that social media is rich ground for misconceptions such as the vaccines cause infertility and are means for public experimentation on the effectivity of the vaccines. Scientific evidence that there are risks with vaccines as with all other medications need to be used to correct the myths related to COVID-19 vaccines (Africa CDC, 2021:10).

### Factors related to confidence/trust/lack of trust in COVID-19 vaccines

Reflecting on trust as a virtue, authors such as Dominic *et al.* (2020) and Africa CDC: 2021) believe that it is critical during fast changing pandemics like COVID-19 where scientific uncertainty abound to establish trust and remain ahead of the problems of the outbreak. These authors further add that trust influences how messages about the severity, mode of transmission, interventions are perceived and successfully carried out. Cooper, van Rooyen and Wiysonge, (2021) noted that the respondents generally explained their reasons for not wanting COVID-19 Vaccine as related to side effects (25%) and worried about their effectiveness against the disease (18%).

Similarly, a study conducted by Burger *et al.*, (2021) echoed issues of adverse effects (31%) and uncertainty about their effectiveness (21%) and what was different was lack of trust (18%) and a feeling of anti-vaccinations (14%). Africa CDC, (2021) reported fears about mandatory vaccinations circulating in social media can create fears and distrust in vaccines. Endorsing the importance of trust in the government and health facility's authorities, Edwards *et al.* (2021) added that participants who had trust in their leaders were (11.1% and 13.0%) respectively more likely to get vaccinated than those who had none. Thus it is important to cultivate long term trust relationship so that misinformation and inaccurate messages about the vaccine can be corrected immediately before spreading unnecessarily (Dominic *et al.*, 2020:845). Belief in COVID-19 conspiracy theories diminishes trust in all efforts of controlling the spread of corona virus (Pummerer, *et al.*, 2020; Burger *et al.*, 2021), therefore it needs attention.

The Technical Advisory Group for WHO (TAG, 2020) warns about the social barriers via social media such as Facebook or WhatsApp that spread anti-vaccine sentiments that negatively influence people who may be in favour of vaccines or want to be neutral. TAG proposed that it is very important to educate the media to provide context when reporting anti-vaccine messages to avoid perception errors being seen as dominant view and social worlds can be used to reduce vaccine hesitancy in South Africa (Cooper, van Rooyen and Wiysonge, 2021).

### Implications in the context of COVID-19 Vaccine Hesitancy in South Africa

The findings of this review have shown that COVID-19 vaccine hesitancy can be addressed through collective efforts that ensure that there are no constraints related to the supply and system that administers vaccines; by building trust and confidence in the safety of vaccines, health services and government authorities avoiding delays in distribution and use of vaccines. Thus this study has recommendations for future research, educators/ health and Governments authorities and media as explained below:

- Future research: Factors related to complacency which are associated with conspiracy beliefs and distrust of information sources (Soteri *et al.*, 2021; Pummerer *et al.*, 2021) resulting in delay/refusal of COVID-19 Vaccines (Hughes and Machan 2021) and compliance with non-pharmaceutical interventions (Burger *et al.*, 2021). Future research needs to look at the scope of conspiracy beliefs and how they can be used positively to correct misconception influence and reduce COVID-19 hesitancy. Different research methodologies such as qualitative,

quantitative, mixed methods and review studies can be used to address the motivations for COVID-19 vaccine hesitancy in the context of South Africa.

- Educators and Health/Government authorities: Factors related to convenience/ lack of COVID-19 vaccines which may be linked to political issues and disillusionment with the government (Cooper, van Rooyen and Wiysonge 2021) resulting in failure of vaccine delivery to the targeted population (Burger et al., 2021:8).
- Educators need to promote communication measures that encourage dialogue and restore trust. It is also important to listen to the public to understand the underlying attitudes that lead to lack of trust and offer evidence-based messages that increase vaccine acceptance. Faculty of Health Sciences in different Higher Education Institutions (HEI) in South Africa should emphasize the importance of COVID-19 vaccine, because the author noted that even the health science students are not sure of whether to get vaccinated or not.
- Media and social media users: Factors related to confidence/ lack of trust in safety and effectiveness of COVID-19 Vaccine (Cooper, van Rooyen and Wiysonge, 2021; Burger et al., 2021). It is accepted that trust relationship between the population and health authorities/ providers increase compliance with protocols and vaccines (Dominic et al., 2020), while conspiracy belief systems abolished trust (Pummerer *et al.*, 2020; Burger *et al.*, 2021). Thus it is important that social media is used to channel evidence-based information about the COVID-19 vaccines to promote vaccine acceptance and uptake. Posting negative messages that are out of context such as: ‘vaccines are bad’, and ‘they don’t work’; may diminish hope in COVID-19 vaccines and restrictions and create unnecessary fears.

### Conclusion

SA and the world used vaccines through the EPI strategy to eradicate deadly epidemics in the past. We can draw lessons from the past to address complacency create vaccine accessibility (convenience), build trust and confidence in the COVID-19 vaccines and related protocols to pave our way through the uncertainties of the current epidemic. This study identified the motivations that go beyond refusal/ delay of COVID-91 vaccines and found the attitudes or conspiracy belief systems that go deeper than the stated intentions; resulting in non-adherence to protocols. This study has implications for researchers, educators, health and government authorities and media that are hoped to reduce COVID-19 vaccine hesitancy and increase vaccine acceptance and uptake to create herd immunity.

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