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Vaccine 57 (2025) 127133

Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

Factors influencing influenza vaccine uptake among adults in Johannesburg, South Africa: A qualitative study

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ARTICLE INFO

Keywords:
Influenza vaccine
Vaccine uptake
Vaccine hesitancy
Youth
COVID-19
South Africa

ABSTRACT

Background: Influenza vaccination coverage in South Africa is less than 3 % among the general adult population. We explored factors associated with influenza vaccine uptake using the World Health Organization's Strategic Advisory Group on Immunization (SAGE) 3C (confidence, complacency, convenience) model of vaccine hesitancy.

Methods: The present study forms part of the Bambisana project, a mixed-methods pre-test-post-test intervention study conducted from 29 April 2023 to 15 April 2024. Participants ≥18 years were enrolled in six Focus Group Discussions (FGDs), stratified by age (≥18–34 and ≥ 35 years). FGDs were audio-recorded, transcribed verbatim, and coded in Dedoose using framework analysis.

Results: Among the 48 participants, most (66.7 %, $n = 30$) were aged 18–34 years, 65.9 % ($n = 29$) had completed high school, and 70.2 % ($n = 33$) were unemployed. Overall, influenza vaccine uptake was associated with three key factors: low confidence, high complacency, and a lack of convenience. Low confidence in the influenza vaccine was associated with negative experiences with COVID-19 vaccines, fear of side effects, vaccine misconceptions, fear of needles, mistrust of public health institutions, and concerns about vaccine effectiveness. Complacency factors included reliance upon traditional and alternative medicines, lack of knowledge about vaccines, and minimising the seriousness of influenza illness. Convenience factors included perceived costs of the vaccine and a lack of influenza vaccine promotion.

Conclusion: Addressing confidence, complacency and convenience factors is important to increase influenza vaccine acceptance and uptake in South Africa.

1. Introduction

Influenza, commonly known as the flu, is a highly contagious, vaccine-preventable respiratory illness associated with significant morbidity and mortality. In South Africa, influenza is seasonal, typically occurring during winter months from May to September [1]. Globally, influenza infection results in up to 5 million cases of severe illness and up to 650,000 deaths each year [2]. In South Africa, approximately 7000 to 12,000 seasonal influenza-related deaths occur each year [3], with hospitalizations and deaths most commonly reported among those over 65 years [1].

Seasonal influenza creates a substantial economic burden through

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https://doi.org/10.1016/j.vaccine.2025.127133
Received 20 December 2024; Received in revised form 7 April 2025; Accepted 10 April 2025
Available online 7 May 2025
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direct healthcare costs and indirect costs from work absenteeism and productivity losses. The impact is particularly significant among adults aged 18–49 years [2] and individuals who are self-employed or engaged in informal trading [4].

Influenza vaccination is recommended as a cost-effective preventive measure to reduce disease burden. However, uptake remains low, especially in low- and middle-income countries (LMICs) [5]. Factors associated with low influenza vaccine uptake include perceived lack of vulnerability, fear of side effects, limited vaccine availability, lack of knowledge, and inaccessibility [6–9]. To better understand the factors affecting vaccine uptake, researchers have employed the 3C model of vaccine hesitancy developed by the World Health Organization's Strategic Advisory Group of Experts (SAGE) Working Group on Vaccine Hesitancy. The model provides a framework for analyzing the interplay of factors influencing vaccination decision-making [10].

The 3C model categorizes factors influencing vaccine uptake into three categories: Confidence, Complacency, and Convenience. Confidence is defined as trust in (i) the effectiveness and safety of vaccines; (ii) the system that delivers them, including the reliability and competence of the health services and health professionals; and (iii) the motivations of policymakers who decide on the needed vaccines. Complacency exists where perceived risks of vaccine-preventable diseases are low, and vaccination is not deemed a necessary preventive action. Convenience is the physical availability, affordability and willingness to pay, geographical accessibility, ability to understand (language and health literacy), and appeal of immunization services [10,11].

Influenza vaccine research in South Africa has mainly focused on vaccine coverage and willingness to receive the vaccine in high-risk populations such as healthcare workers and people with chronic medical conditions [8,12,13], with limited data on the general population where coverage rates are estimated at 1.8 % and 2.1 % among 21–35 year and 36-50 year-old adults, respectively [14]. Our study therefore explored factors associated with influenza vaccine uptake among adults in Soweto, South Africa, using the SAGE 3C vaccine hesitancy model.

2. Methods

2.1. Study design

This qualitative analysis was conducted as part of the Bambisana Study, a larger mixed-methods intervention study assessing the impact of community influencers and social media on influenza vaccination in Soweto, South Africa. We conducted formative qualitative research through Focus Group Discussions (FGDs) from 15 to 26 May 2023, with each group comprising at least 6 participants. Individuals aged 18 and older from economically marginalized communities in Soweto (described in the *Study Setting* and *Sampling*) were purposefully selected for the formative FGDs. We particularly focused on youth aged 18–34 who are unemployed or informally employed, were less likely to be influenced by workplace or school vaccine mandates, and are generally not targeted by vaccine initiatives.

2.2. Study setting

Data were collected from participants living in parts of Soweto and the Thembelihle informal settlement in the Southern periphery of Soweto. Soweto is a linguistically diverse black-African township extending over 200 km^2 in Johannesburg, with approximately 1,9 million residents [15,16], while Thembelihle is densely populated with over 20,000 residents.

The study areas were selected based on the Vaccines and Infectious Diseases Analytics (VIDA) Research Unit-led Health Demographic Surveillance System (HDSS) within the Child Health and Mortality Prevention Surveillance Program (CHAMPS) [17]. The HDSS has been collecting longitudinal health and demographic data in Soweto and surrounding areas since 2017 [15]. Both Soweto and Thembelihle have high unemployment rates and poverty [15,18,19]. In 2023, socio-demographic data collected in communities under HDSS surveillance indicated that 65.1 % of the population had completed secondary education, 54.2 % were unemployed and 35.5 % lived in informal dwellings.

2.3. Sampling

We used a purposive sampling strategy to recruit participants aged 18 years and older, stratified by age: 18–34 years old, and 35 years and older. Recruitment focused on the following HDSS catchment areas: Mofolo and Meadowlands Zone 4 and 5; Phiri, Senaoane, and Mapetla; Thulani and Thembelihle. Participants were recruited with the assistance of the VIDA Community Advisory Board (CAB), which is comprised of members from the aforementioned areas. CAB members were briefed on the purpose of the study, and the inclusion/exclusion criteria. They then facilitated the identification of eligible participants and provided their contact information. Following this, research assistants provided interested individuals with further information about the study and invited them to participate in the FGDs.

2.4. Procedures

Trained researchers conducted six formative FGDs in private rooms at the VIDA premises. Of these, two FGDs included 11–13 participants each, one involved 7 participants, and the remaining three had 6 participants each. The FGDs lasted on average 133 min and were conducted in the participant's preferred local language and/or English. With no new themes emerging in the final FGDs, data saturation was achieved [20]. All FGDs were audio-recorded with the participants' consent and transcribed verbatim for analysis.

2.5. Measures

All participants completed a brief socio-demographic questionnaire capturing age, gender, race, language, and employment status. Interviewers used a semi-structured interview guide to explore motivators, barriers, and key influencers to influenza vaccination. The factors associated with influenza vaccine uptake presented and discussed in this paper were identified from data coded under two main themes: motivators and barriers to influenza vaccination.

2.6. Data analysis

We employed Framework Analysis, a systematic approach for identifying patterns and differences in qualitative data to draw descriptive and/or explanatory conclusions clustered around themes [21]. Two researchers read through the same transcript to immerse themselves in the data for familiarisation [22]. Each researcher independently coded the transcript line-by-line to identify initial codes. They met to discuss differences and similarities in the codes identified until an agreement was reached. Codes were then sorted, collated, and categorized into themes and sub-themes to develop a coding framework (completed 20 March 2024). The wider research team reviewed and approved the framework which was then entered into the Dedoose analysis software version 9.2.12 [23] (22 March 2024). The coding framework was applied to all remaining transcripts, which were also loaded on Dedoose on 22 March 2024.

Following coding, the SAGE 3C model of vaccine hesitancy was applied. As such, the identified factors influencing influenza vaccine uptake are presented using the 3Cs (confidence, complacency, and convenience). Data analyses were stratified by age group (18–34 years and 35 years and older).

2.7. Ethics statement

Written informed consent was obtained from all participants before participating in the study. Ethical clearance was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand (M230254-MED23–02-013).

3. Results

3.1. Participants' socio-demographics

The majority of participants (66.7 %, $n = 30$) were aged 18–34 years old. The median age for participants was 30 years (Interquartile range of 22–43). Of the 48 participants, the majority (65.9 %, $n = 29$) had completed matric/high school, 70.2 % ($n = 33$) were unemployed, and 66.7 % ($n = 32$) were isiZulu speaking. Detailed participant characteristics are presented in Table 1.

3.2. Factors influencing influenza vaccine uptake

The factors influencing influenza vaccine uptake are presented using the SAGE 3C vaccine hesitancy model (See Fig. 1). The boxes beside each of the 3Cs (confidence, complacency, convenience) represent the key study themes.

3.2.1. Confidence factors influencing Influenza vaccine uptake

Negative experience with COVID-19 vaccines. Participants' reluctance to get the influenza vaccine was influenced by their experience with COVID-19 vaccines. The number of COVID-19 vaccine doses they had received, and personal experiences with side effects from those vaccines, created lasting vaccine hesitancy, as expressed by this participant aged 35 years and older:

"When I got my second [COVID-19] jab, I became very sick. I became weak for two days then on the third day I was fine. I told them at home that I'll never get vaccinated again. I'm sorry to say, but I won't go get the flu vaccine." (Participant 48_35+).

Another participant, in the same age group, stated they would have previously been open to being vaccinated against influenza but were now dissuaded on account of COVID-19 vaccines, further underscoring the impact of the COVID-19 pandemic on vaccination behaviours:

"I have known about the flu vaccine for a long time, like for years and years and years but I've never taken it because I'm not someone who usually gets sick. But before if I were someone who got sick easily, I would take it but since COVID, I'm not sure how I feel about it anymore; I have this worry and this fear." (Participant 47_35+).

Mistrust of public health institutions. Some participants discussed their distrust of the public health system, stemming from the challenges experienced when accessing care, with one participant highlighting the perceptions of associating public health institutions with death:

"Most of our parents are scared of going to clinics and hospitals because they have this mind that they will die or what, right." (Participant 5_18–34 years).

Other participants linked the availability of free healthcare at public institutions to poor treatment and quality of care received:

"Besides, the communication at clinics is not there, they are not that

Table 1.
Participants' sociodemographic characteristics.

VARIABLE	FREQUENCY $n = 48$	PERCENTAGE (%)
AGE[a]		
≥18-34	30	66.7
≥35	15	33.3
Median age (IQR):	30 (22–43)	
GENDER[b]		
Male	23	48.9
Female	24	51.1
HIGHEST LEVEL OF EDUCATION[c]		
Primary school (Grade 7 or below)	1	2.3
High School not completed	9	20.5
Grade 12/Matric	29	65.9
Post-matric graduate	5	11.4
EMPLOYMENT STATUS[d]		
Employed	14	29.8
Unemployed	33	70.2
LANGUAGE GROUP		
IsiZulu	32	66.7
Setswana	6	12.5
isiXhosa	5	10.4
Sesotho	5	10.4

[a] Three participants' data missing, [b]one participant's data missing, [c]four participants' data missing, [d]one participant 's data missing.

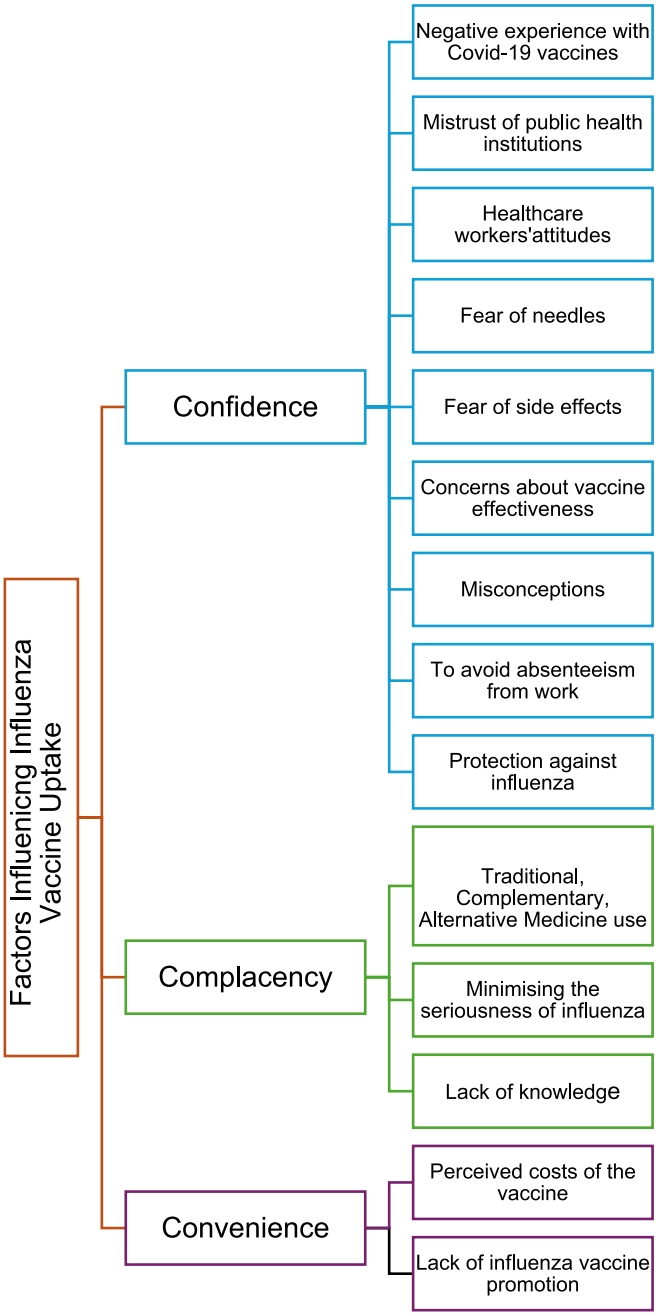


Fig. 1. Factors influencing influenza vaccine uptake using the World Health Organization's Strategic Advisory Group of Experts on Immunization (SAGE) 3C Vaccine hesitancy model.

friendly. Unless when you pay. When you pay you get good service and when you're not paying the service is very bad." (Participant 50_35+).

"Sometimes you go to the clinic, maybe you don't have money to get the one that's paid for, so you go to the clinic sometimes you'll find it crowded and then you end up coming back home without getting the vaccine." (Participant 40_18–34 years).

To further this point, one participant said they would have taken the influenza vaccine at private pharmacies if they could afford to do so:

"And again, the thing is I wouldn't go and take it in public institutions, it's just that I can't afford to go and take it at Clicks[1] or Dischem[2] I don't trust the clinics." (Participant 50_35+).

Healthcare workers' attitudes. Concerns about healthcare workers' attitudes when seeking healthcare services at clinics were predominantly voiced by participants aged 35 years and older, from the same community. They recall unfriendly staff who lacked the patience to provide quality care:

"It is better [to go to] the clinic in the beginning. When you go in November they will ask you, 'Why were you sitting around not coming? This thing [vaccinating] has long passed. Don't bore us' And then they just vaccinate you because they want to get over and done with." (Participant 22_35+).

Fear of Needles. Across the different age groups, a fear of needles was identified as a barrier to influenza vaccination:

"The problem is the injection that they administer, so I will not go because of that" (Participant 44_18–34 years).

Closely linked to a fear of needles is a preference for other methods of vaccine administration. Participants suggested that different forms of administering the influenza vaccine might aid with the uptake of the influenza vaccine for themselves and other community members who are also scared of injections:

"I would go only if it were being administered in a different form." (Participant 4_18–34 years).

"I think what you can do is to introduce drops or pills people will still come to vaccinate for flu." (Participant 47_35+).

Fear of side effects. Participants across all age groups also voiced their unease with the side effects associated with influenza vaccination, alluding to not wanting to experience such. This fear was largely influenced by misconceptions that participants had heard about the influenza vaccine:

"…yeah, plus I don't want things that will fight against my body. You see, maybe I'm weak what will happen? That's what I don't want" (Participant 37_18–34 years).

These participants based their fears on anecdotes of adverse reactions that they heard, such as this participant's description of others' experiences with the influenza vaccine:

"Others say they feel dizzy, they hear people talking, they say weird things" (Participant 7_18–34 years).

Concerns about the effectiveness of the vaccine also contributed to a lack of confidence in the influenza vaccine. The possibility of infection post-vaccination made some participants, particularly those aged 18–34 years question the need for vaccination:

"You get sick either way, so I don't see a need. It's all the same." (Participant 46_18–34 years).

Another participant emphasized that if the vaccine was effective, only a single dose would be sufficient to provide lifelong protection:

"I will say, it doesn't work. If you ask me why, why should I vaccinate? If this vaccine works It must be once off; [if] I vaccinate today and [then] I'm fine all my life. That is, it" (Participant 4_18–34 years).

While others expressed dissatisfaction with the effectiveness of the influenza vaccine, one participant accepted the level of effectiveness of the influenza vaccine, recognizing that it provides increased protection, rather than complete prevention of infection:

"For me, I think [the flu vaccine], it's enough but for someone else they would ask themselves the question of, why get vaccinated? Whereas you still have flu, cos it doesn't like totally, cut you off from having flu but it increases your chances [of protection] by 40 to 60% but you still get it." (Participant 33_18–34 years).

Misconceptions about the influenza vaccine. Participants' responses conveyed inaccurate beliefs about influenza vaccination. These misconceptions were mostly expressed by participants aged 35 years and older, such as this participant who believed that influenza vaccination could result in severe illness or even death:

"I see when they tell us to come and vaccinate. For me vaccinating, I think they are… I don't know how to put it. For me, I see the vaccine as something that isn't right. It's something that, what can I say, limits the number of years that one must live, maybe in 4 years or like 5 years' time. After that, you become sick or become worse from whatever sickness in my opinion." (Participant 48_35+).

Similarly, another participant described others' fears of getting vaccinated, fuelled by the belief that the influenza vaccine contains the influenza virus, which may have detrimental effects on one's health:

"Some people are scared of going to get vaccinated because they're thinking that no, they're injecting you with the flu virus and then you are going to be worse, you're going to die. They are scared of the flu vaccine." (Participant 50_35+).

Another participant repeated a myth they heard about influenza vaccination resulting in illness:

"On this one, I don't have experience, I'm not sure whether it's a myth or what. Usually, they say if you take the flu vaccine you get early flu before the season comes. You will have flu maybe that week or the following week you will have flu." (Participant 32_18–34 years).

In contrast, one participant linked the experience of severe illness not with vaccination itself, but with the absence of it:

"If you [are] vaccinated this year on a particular date, next year on the same date, if you are not vaccinated you will get infected. And what I've noticed about the vaccine, once you vaccinate, whenever you don't vaccinate the flu becomes strong. It becomes this other flu." (Participant 17_35+).

To avoid absenteeism from work. Only one participant in the over 35 years age group with previous experience with the influenza vaccine, described being certain that the vaccine would reduce their chances of severe illness, allowing them to avoid missing work:

"Let me start with me and not make examples. I was vaccinated I think it was 25 Rands when I was still working. Another thing that made me vaccinate was because I was working the day shift and I realized that if the flu got worse, I would have a lot of absenteeism at work and my things will not work out, so I must get rid of it, you see, so I can move on with my life. That's what made me vaccinate." (Participant 15_ 35+).

Another participant, in the same FGD, noted that their brother got vaccinated because of the same reason:

"My brother also vaccinated because he manages a shop. So, he constantly had the flu. So, his superior suggested he get vaccinated so that he also doesn't get absent." (Participant 23_35+).

Protection against influenza. Although most participants said they were not vaccinated, many acknowledged the benefit of influenza vaccination in protecting against influenza:

"I'm thinking as well that no one wants to get admitted or become sick for two weeks so obviously yeah, you'd want to go and get vaccinated." (Participant 47_35+).

Some also noted that elderly people are most likely to get the influenza vaccine to protect themselves:

"So, [the] more people get older, just like pensioners and the elderly, grandmothers, and grandfathers, that's when they want to protect their lives more. They want to be healthier, unlike young people." (Participant 23 _35+).

Routine behaviour was also identified as a positive factor

[1] Clicks is South Africa's leading health, beauty, and wellness retailer and the largest retail pharmacy chain. Home - Clicks Group

[2] Dischem is a prominent retail pharmacy group in South Africa. About Dis-Chem Pharmacies | Dis-Chem

contributing to vaccine confidence in our study, as demonstrated by this participant who indicated that she gets the influenza vaccine as part of her yearly routine:

"I get vaccinated because each and every year I get vaccinated. I'm used to it" (Participant 7_18–34 years).

This participant also expressed a positive attitude towards vaccines in general, except for COVID-19 vaccines, and further goes on to say that vaccinating was something they do annually as a family to prevent influenza:

"I think that you know that I am a mother. I take them [my children] to vaccinate ..., they are still vaccinating and it's not just the flu vaccine. When the flu vaccine comes out, I'm taking my kids to the clinic. The three of us, we vaccinate for the flu each and every year. The COVID one is the one that I didn't take. For flu, we vaccinate each year with my children." (Participant 7_18–34 years).

3.2.2. Complacency factors influencing influenza vaccine uptake

Traditional Complementary Alternative Medicine Use. The most common manifestation of complacency was the belief in the use of traditional complementary and alternative medicine, which entailed a preference to treat and prevent influenza by utilizing traditional herbs, homemade mixtures, and over-the-counter medication. Participants of all age groups did not see the need to get vaccinated because of reliance on *umhlonyana* (Artemisia Afra/African wormwood) – a traditional plant widely used in Southern Africa to treat coughs, colds, and a range of influenza-related conditions:

"And at home, we know that if you have flu you use umhlonyana and we know that those things help, not the vaccine." (Participant 30_18–34 years).

"It's because I also believe in things like umhlonyana. I would rather use those than the vaccine." (Participant 3_18–34 years).

They further go on to say they infuse *umhlonyana* with other herbs and plants such as ginger, lemon, and marijuana to prepare homemade mixtures:

"There are traditional things we have to protect us against the flu. When you drink warm water, then add garlic, then lemon, then ginger, you even destroy COVID. So, that is how I treat myself. Of course, I know I get the flu, every year I get the flu, but what I do is I dress warm and then, yes, drink whatever I need to drink, sometimes I mix the umhlonyana with marijuana, put it in a pot, boil it and that's it." (Participant 17 _35+).

For these participants, the use of *umhlonyana* and other alternative remedies to treat influenza is Indigenous knowledge passed down from generation to generation mainly by matriarchal elderly figures in their households:

"My granny when we were growing up when it was wintertime or she noticed that you had flu, she would take Sunlight [a type of South African laundry bar] and Colgate toothpaste and boil with umhlonyana or mint and ginger and then she would give you to drink. That's how we grew up." (Participant 40_18–34 years).

In regard to the use of over-the-counter medication, one participant aged 18–34 years had the following to say:

"I guess people are used to dealing with flu rather than to prevent it" (Participant 43_18–34 years).

This notion was supported by other participants in the same age group, who expressed that vaccination was unnecessary because they deal with influenza-related symptoms by using medication:

"As we have said we can go to pharmacies to go buy medicines for ourselves; it is therefore not necessary to get vaccinated." (Participant 45_18–34 years).

Minimising the seriousness of influenza. Another complacency factor associated with influenza vaccine uptake was the feeling that they were at low risk of influenza illness and severe disease. Participants did not perceive influenza as a severe illness, which further promoted the notion that vaccination was unnecessary:

"Because for me most of the time when I get the flu it is not the severe one that needs me to go to the doctor as such. If I have flu, I just stay at home drink those few tablets and then after about two or three days, I will be okay" (Participant 28_18–34 years).

Lack of knowledge. A lack of information and awareness about the influenza vaccine also added to complacency in getting vaccinated. This was mostly expressed by younger participants, who spoke of not having adequate knowledge about the influenza vaccine, if at all, such as this participant who was not aware of the influenza vaccine before participating in the FGD:

"For me, it's because it's the first time I hear that there is a flu vaccine. I didn't know about it, so I feel as if there are a lot of people who don't know about it" (Participant 30_18–34 years).

Other participants emphasized not having information about the purpose, availability, and accessibility of the influenza vaccine:

"They tell us that we have to vaccinate but as to why, that is what they are not telling us." (Participant 26 _18–34 years).

"So, we haven't gotten much information as to what it [the vaccine] does or how to take it where? We don't have that information." (Participant 33_18–34 years).

3.2.3. Convenience factors influencing Influenza vaccine uptake

Perceived costs of the vaccine. Irrespective of age, the cost of the vaccine was a deterrent to vaccination for some participants who believed that the affordability of the vaccine was tied to one's employment status. One participant even went as far as to say that only those with private medical insurance [commonly referred to as medical aid in South Africa] are the only ones who can afford the vaccine, which also highlighted a lack of awareness about the availability of the vaccine at no cost at public health facilities:

"I'm unemployed so, I see no need to take it [influenza vaccine] because, at the end of the day, I will still catch the flu… So, with us coming from these communities, we struggle with income. So, I cannot take my last R100 and go use it for vaccination at Clicks." (Participant 44_18–34 years).

Lack of influenza vaccine publicity. Some participants aged 18–34 years spoke about the lack of influenza vaccination promotion by the government, as explained by this participant who distinguished between private and public vaccination provider efforts, where the former was seen as doing more influenza vaccination promotion compared to the latter:

"Yeah, like especially to us as young people that they have just said when you go to Clicks; Clicks they make sure that they promote the flu vaccine. But when it comes to our health facilities in the townships; the clinics are not something they talk about every time." (Participant 32_18–34 years).

All three factors – confidence, complacency, and convenience – influenced influenza vaccine uptake among participants, regardless of age group. However, confidence factors were more prominent, and the prominence of specific themes varied across age groups. Among participants aged 35 years and older, the most prominent themes were negative experiences with COVID-19 vaccines and the need to avoid absenteeism from work. Additionally, concerns about healthcare workers' attitudes were raised exclusively by participants from the same community, reflecting a context-specific challenge in healthcare worker-patient communication. Conversely, among those aged 18–34, lack of knowledge, lack of influenza vaccine promotion, concerns about the vaccine's effectiveness, and minimising the seriousness of influenza were prominent themes.

4. Discussion

Our study findings reveal that influenza vaccine uptake is influenced by key factors such as negative experiences with COVID-19 vaccines, fear of needles, healthcare worker attitudes, traditional complementary and alternative medicine use, lack of knowledge, and perceived vaccine costs. These factors reflect low confidence in the vaccine, high

complacency, and a lack of convenience, aligning with findings in upper-middle and high-income countries [24,25]. Understanding these factors is important for tailoring interventions and public health messaging aimed at increasing vaccine acceptance, confidence, and uptake.

4.1. Confidence factors influencing influenza vaccine uptake

In this study, factors associated with low confidence in the influenza vaccine included concerns about the effectiveness of the vaccine, negative experiences with COVID-19 vaccines, misconceptions about the influenza vaccine, and mistrust in the health system. Other researchers have reported similar findings [6,26,27], while a study conducted in China found that participants who had received the influenza vaccine and subsequently fell ill with influenza perceived the vaccine to have limited benefits and questioned its effectiveness [28]. Low confidence in the vaccine was also attributed to a fear of side effects. Interestingly, this fear was informed by second-hand accounts rather than personal experience, emphasising the importance of community narratives in shaping vaccine perceptions.

Our findings also suggest that a fear of needles contributes to vaccine hesitancy, highlighting the need to invest in alternative methods of vaccine administration that may be accepted by those who fear injections/needles.

In South Africa, patients' experiences with the public health system, such as long waiting times, disrespectful treatment, and poor communication, have resulted in frustration and negative perceptions about the quality of care received at public healthcare facilities [26]. Grievances about treatment received at public hospitals and clinics were particularly expressed by participants aged 35 years and older from the same community, who noted that their fear of rude treatment and clinic staff's unfriendliness discouraged them from inquiring about the vaccine or getting vaccinated.

Although discourse around the quality of care received at public health institutions is nuanced, given, challenges such as staff shortages and an overburdened public health sector, it was clear from the present study that, healthcare workers' interpersonal skills and experiences at public health facilities influence health-seeking behaviours [29]. These findings mirror other studies in LMICs, where healthcare workers' attitudes and poor quality of care – particularly in vaccine administration hindered vaccine uptake [30].

In line with previous research on patient perceptions of the public health sector in South Africa, our findings revealed perceptions of vaccination services and overall quality of care at private health facilities as superior compared to those in the public sector, associating mistreatment in public health settings with the lack of direct payment for services [31]. Some participants expressed greater confidence and trust in private facilities such as pharmacies over public clinics, linking paid services to higher standards of care. Public health facilities were also associated with negative outcomes including death, which discouraged individuals from seeking care. Additional barriers such as overcrowding and long waiting times further discouraged participants from utilizing public health care services, leading to missed vaccination opportunities. Furthermore, despite financial constraints, the preference for private pharmacies like Clicks and Dischem reinforced the perception that paid healthcare services are superior in terms of quality and trustworthiness. The mistrust of public health institutions identified in our study is concerning, given that the majority of the South African population primarily relies on public clinics and hospitals for healthcare, with only 25.4 % initially seeking care through the private sector [32]. These findings underscore the urgent need to address the stigma surrounding public health institutions, rebuild trust through community engagement, and emphasize the importance of public-private partnerships to improve vaccine uptake. Health system mistrust plays a role in influencing vaccine uptake and has been identified as a factor in the low uptake of the influenza vaccine in several studies [27,33].

Confidence in the influenza vaccine was demonstrated by participants who reported getting vaccinated to avoid work absenteeism, for protection against influenza, and because it's their annual routine. These findings are corroborated by other studies [26,34].

4.2. Complacency factors influencing influenza vaccine uptake

Reliance on traditional and alternative remedies diminished vaccine uptake. Consuming *umhlonyana* (a Southern African plant used in traditional healing systems to treat viral respiratory diseases [35]), homemade remedies, and buying over-the-counter medication to either prevent or treat influenza was the norm for some participants and made them believe vaccination was unnecessary. Similar findings were reported in a study conducted across five Latin American countries, where high complacency in getting the influenza vaccine was associated with trust in traditional or alternative strategies to prevent influenza [36]. These findings mirror other studies conducted in higher-income countries that have examined the association between complementary and alternative medicine (CAM) use and vaccine hesitancy. For instance, a U.S. study found that adults who frequently used home remedies were less likely to get vaccinated against influenza, had negative attitudes towards the vaccine, and had lower trust in vaccines and vaccination processes [37]. Similarly, a study across four European countries found that healthcare professionals who endorsed alternative medicine had lower confidence in vaccines and recommended them less frequently, whilst an Australian study found that parents who refused or delayed vaccination for their children viewed vaccines as toxic and perceived CAM as a safer, harm-free protective strategy for immune systems before, during and after illness [38].

Some study participants minimized the potential severity of influenza illness to warrant vaccination. This finding is corroborated by several studies where participants who had never been vaccinated considered influenza a mild illness [6,13,39,40]. This underestimation of the seriousness or severity of influenza can be attributed to [a lack of] medical knowledge and beliefs about the complications that the disease could potentially create [41]. Therefore, communicating the severity, complications, and burden of influenza illness is crucial to increase vaccine uptake.

4.3. Convenience factors influencing influenza vaccine uptake

In contrast to the present study, other South African studies evaluating factors associated with influenza vaccine uptake did not identify the costs of the vaccine as a barrier to vaccination [12]. However, it is important to note that these studies were conducted with high-risk groups such as healthcare workers, who are prioritized to receive the influenza vaccine for free, at public health facilities. Additionally, concerns about the affordability of the vaccine, perceptions that vaccines were only accessible at a relatively low cost of $5 through private pharmacies, and the perceived lack of active promotion of the vaccine by the government underscored a lack of awareness about the availability and accessibility of the influenza vaccine at public health facilities, highlighting the need for community awareness campaigns.

4.4. Limitations

Most of our participants self-reported never having received the influenza vaccine, resulting in a disproportionate representation of unvaccinated individuals in our FGDs. As a result of the limited number of participants with personal experience receiving the influenza vaccine, we were unable to thoroughly explore factors that drive vaccine acceptance. Thus, most of the factors identified relating to confidence, complacency, and convenience were those pertaining to vaccine hesitancy. Future studies should intentionally recruit individuals who have been vaccinated to better understand their perspectives, attitudes, and motivations.

5. Conclusions

Our findings underscore the critical roles confidence, complacency, and convenience play in driving influenza vaccine acceptance and uptake. To increase vaccine acceptance, training for healthcare professionals should go beyond the administration of vaccines and also focus on improving patient communication to build trust. Complacency can be addressed through community engagement highlighting the risks of influenza to individuals and their communities, the efficacy of the vaccine in preventing serious illness, but also listening to and understanding the concerns that people may have in order to try to address them. Getting vaccinated should be as convenient as possible by ensuring vaccines are easily accessible and affordable and by healthcare workers offering good patient care at the point of vaccination.

These approaches could contribute to increasing vaccination uptake and, in turn, improve public health outcomes in South Africa.

CRediT authorship contribution statement

Mulalo Mashamba: Writing – review & editing, Writing – original draft, Visualization, Formal analysis, Data curation. **Tshepiso Msibi:** Writing – review & editing, Writing – original draft, Formal analysis, Data curation. **Gugulethu Tshabalala:** Writing – original draft, Supervision, Project administration, Investigation. **Lerato Tsotetsi:** Writing – original draft, Investigation. **Stefanie Vermaak:** Writing – review & editing. **Nellie Myburgh:** Writing – review & editing, Conceptualization. **Sarah Malycha:** Writing – review & editing. **Izzy Goldstein:** Writing – review & editing. **Elliot Grainger:** Methodology. **Maatla Dave Temane:** Writing – review & editing, Formal analysis. **Takwanisa Machemedze:** Writing – review & editing, Formal analysis. **Kimberley Gutu:** Writing – review & editing, Project administration, Conceptualization. **Heidi J. Larson:** Writing – review & editing. **Catherine Hill:** Writing – review & editing, Resources, Funding acquisition. **Ziyaad Dangor:** Writing – review & editing, Resources. **Janan Dietrich:** Writing – review & editing, Supervision, Funding acquisition, Conceptualization.

Informed consent statement

Written informed consent was obtained from all participants involved in this study for participation and to publish the results. FGD participants also consented to the audio recording and were reimbursed ZAR 150 (~9 USD) for their transport costs and time.

Institutional review board statement

The Bambisana project was approved by the Human Research Ethics Committee of the University of the Witwatersrand (Protocol No: M230254-MED23–02-013) as of 24/04/2023 and conducted according to the approved protocol and the principles outlined in the Declaration of Helsinki.

Funding

This project was funded by The Vaccine Confidence Fund II, a philanthropic and charitable fund of Global Impact. Grant ID: VCFII-011. The work reported herein for Janan J. Dietrich was also made possible through funding by the South African Medical Research Council through its Division of Research Capacity Development under the Early Investigators Programme through funding received from the South African National Treasury. SV was supported by the Consortium for Advanced Research Training in Africa (CARTA). CARTA is jointly led by the African Population and Health Research Center and the University of the Witwatersrand and funded by the Carnegie Corporation of New York (Grant No. G-19-57145), Sida (Grant No:54100113), Uppsala Monitoring Center, Norwegian Agency for Development Cooperation (Norad), and by the Wellcome Trust [reference no. 107768/Z/15/Z] and the UK Foreign, Commonwealth & Development Office, with support from the Developing Excellence in Leadership, Training and Science in Africa (DELTAS Africa) programme. The statements made and views expressed are solely the responsibility of the Fellow.

The content and findings reported/illustrated are the sole deduction, views, and responsibility of the authors and do not reflect the official position and sentiments of the Vaccine Confidence Fund and the SAMRC.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Janan J. Dietrich reports financial support was provided by The Vaccine Confidence Fund II. Catherine Hill reports financial support was provided by The Vaccine Confidence Fund II. Heidi J. Larson reports that the Vaccine Confidence Project has received research grants from GSK and Merck, the Bill & Melinda Gates Foundation, National Institute for Health Research (UK) and UNICEF. The other authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

We would like to extend our sincere gratitude to all study participants.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.vaccine.2025.127133.

Data availability

Data will be made available on request.

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