



Willingness to vaccinate against Covid-19: A qualitative study involving older adults from Southern Switzerland

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ABSTRACT

Background: The Covid-19 pandemic is causing unprecedented disruption and suffering to people across the globe, with a disproportionate toll on the elderly. The development and equitable distribution of a vaccine seems to be the most promising and sustainable route ahead. The goal of this study was to explore older adults' attitudes towards and beliefs regarding the Covid-19 vaccination in Southern Switzerland.

Methods: We conducted a qualitative study employing telephone interviews to understand older adults' attitudes towards and beliefs about the Covid-19 vaccine. No Covid-19 vaccine had yet been approved at the moment of data collection. A convenience and snowball sample of 19 participants was recruited. Participants had to be at least 65 years old, without any hearing impairments, and be resident in the Canton of Ticino.

Results: Most participants were women ($n = 12$), Swiss nationals ($n = 14$), retired ($n = 18$), resident in urban areas ($n = 14$), and had obtained a secondary school degree ($n = 14$). The average age was 75 ($SD = 6.04$; range = 64–85). We found that the majority of participants were in favor of the vaccination and highlighted its positive consequences, such as the abandonment of current freedom-limiting protective measures. Those participants who were against or unsure about the vaccination had concerns regarding the novelty of the vaccine and its impact on its safety and efficacy, stated they would prefer other protective measures rather than the vaccination, and identified contextual and individual drivers of their concerns.

Conclusions: Independently from the outbreak's trajectory, efforts to foster vaccination acceptance should focus on the benefit of relapsing freedom-limiting protective measures. Vaccination strategies should be grounded in an evidence-based, participatory approach, ongoing community engagement, trust-building activities, and communication about vaccine developments and how the vaccine will be combined with other outbreak response measures.

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Introduction

With almost 200 million confirmed cases and almost 4 million deaths as of June 21, 2021 [1], the Covid-19 pandemic is causing unprecedented disruption and suffering to people across the globe, with a disproportionate toll on the elderly [2]. The risk for severe illness from Covid-19 increases with age, with older adults being more likely to require hospitalization, intensive care, or artificial ventilation [3]. Eight out of 10 Covid-19-related deaths reported in the United States have been among adults aged 65 years and older [4], and case fatality rate for those over 80 years of age is five times the global average [3]. Less evident but no less worrying are

the psychological, social, and economic implications of the current pandemic [5,6]. Compared to the general population, the impact on well-being and mental health is more dramatic among those who were already vulnerable before the onset of the outbreak, and stigma and discrimination are significantly higher among the older adult population [2].

With no known therapeutic interventions and considering the necessity of sustained preventive behaviors, including physical distancing, the development and equitable distribution of a vaccine seems to be the most promising and sustainable route ahead to mitigate and possibly suppress the pandemic. The introduction of a SARS-CoV-2 vaccine is considered essential not only to reduce morbidity and mortality if the virus establishes itself in the population, but also to lessen the impact of the pandemic on the global economy [7,8]. Research groups around the world have been using

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different next-generation vaccine technologies and platforms, and innovative approaches to develop a vaccine that could stop the outbreak [9–11], while a mechanism called COVAX has been created to guarantee rapid, fair and equitable access to covid-19 vaccines worldwide [8]. Over 280 vaccine candidates are either in preclinical or clinical development, 15 of which have entered Phase 3 clinical trials at the time of writing [12]. On December 11, 2020, the U.S. Food and Drug Administration (FDA) issued the first emergency use authorization (EUA) for a vaccine for the prevention of covid-19 in individuals 16 years of age and older [13]. The Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV) partnership, coordinated by the Foundation for the National Institutes of Health (FNIH) and involving government, academic, and industry partners (including FDA) [14,15], was created to prioritize vaccine and therapeutic candidates, maximise clinical trial capacity and effectiveness, and rapidly expand the clinical research resources focused on developing therapies for the covid-19 pandemic [16].

In Switzerland, the first covid-19 vaccine was approved on December 19, 2020, and its administration started in January, free of charge and without obligation [17,18]. As in most countries in Europe, vulnerable individuals and frontline health-care and social workers in targeted and supervised settings were given priority [18,19]. However, research shows that the sole availability of a vaccine does not equal its acceptance [20]. The vaccination decision may be driven by emotional, cultural, social, spiritual, logistical, political and cognitive factors. Furthermore, the current pandemic entails unique challenges for public confidence in a future, licensed covid-19 vaccine [21]. These include the speed of development and approval of this vaccine, limited information on the specific SARS-CoV-2 antigen(s) used in vaccine development, the fact that most active vaccine candidates have been developed or are being developed by private/industry developers, and the lack of a long-term safety and efficacy record [22]. A final, considerable challenge is the spread of falsehoods as mis-informed people, anti-vaccine groups and other anti-establishment groups (e.g., lockdown opponents) use powerful tools to amplify vaccine scares and spread mis-information, thus potentially threatening the success of future vaccination campaigns against covid-19 and other public health efforts to contain the pandemic [23–25].

Understanding the concerns, beliefs, and needs for information of potential recipients of currently approved and/or future covid-19 vaccines is crucial for effective public health communication. A global survey conducted in 19 countries to determine potential acceptance rates and factors influencing acceptance of a covid-19 vaccine found that, on average, 71.5% of respondents would be very or somewhat likely to take a covid-19 vaccine, and 48.1% reported that they would accept their employer's recommendation to do so [26]. However, the study found marked differences in acceptance rates across countries, which ranged from almost 90% in China to less than 55% in Russia [26]. Studies conducted in the US found that between 50% and 69% of people intended to receive a (future) covid-19 vaccine, with another quarter either unsure about or against it [27–29]. Other studies found that 20% of Canada residents would refuse a vaccine or were unsure [30], compared to 15% in Australia [31]. In line with findings from other studies conducted in Europe [32–34], willingness to get vaccinated against covid-19 was found to be 73.9% in a European study (including Denmark, France, Germany, Italy, Portugal, the Netherlands, and the UK), while more than a quarter of respondents stated that they were not sure or did not want to get vaccinated [35]. In another study, French residents showed the lowest levels of willingness in Europe [36]. Lower levels of education and working in health care were associated with lower intent, while liberal political views, altruism, believing in the natural origin of the virus, and perceived threat to physical health were associated with higher

intent [29,33,37]. This expanding body of evidence is difficult to reconcile because quantitative studies vary in scope and methods. Despite the importance of collecting qualitative data when planning to introduce a new vaccine [38], no qualitative investigation has been conducted to explore the specific beliefs that the elderly may have regarding a future covid-19 vaccine, at the time when no covid-19 vaccine had been approved yet. The goal of this study was to explore older adults' attitudes towards and beliefs regarding a future covid-19 vaccination in the Italian-speaking Canton of Ticino in Southern Switzerland.

Methods

Study design and participants

We conducted a qualitative study employing telephone interviews to capture and understand older adults' attitudes towards and beliefs about a future covid-19 vaccine. It was conducted in the Canton of Ticino, Switzerland, a region severely affected by the covid-19 epidemic. We conducted all interviews over the telephone to meet physical distancing measures in force at the time of data collection. A convenience sample of 16 participants was recruited from a readily available database of older adults who previously took part in other qualitative studies focusing on ageing carried out by the research team. The database comprised 22 older adults who had previously accepted to be contacted for other studies. The interviewer invited them by either e-mail or phone to participate in the present study and asked those who accepted to participate to invite additional participants among their acquaintances. To be eligible for the study, participants had to be at least 65 years old at the time of the interview, without any hearing impairments, and be resident in the Canton of Ticino. Three additional participants were recruited through participant's referral. We combined convenience and snowball sampling strategies to maximize the variance of our participants' attitudes and beliefs towards a future covid-19 vaccine and to ensure we reached a target sample of approximately 20 participants quickly. The Ethics Committee of the Canton of Ticino approved the study (ID REQ-2020-00291).

The objectives and voluntary nature of the study were explained to participants when we first contacted them to schedule the interview (either by e-mail or over the phone) and when starting the interview over the phone. Oral informed consent was obtained before each interview began. Confidentiality was assured by replacing names with numbers and removing any identifying information from the interview transcripts. All audio recordings, transcripts, and personal data were saved on a password-protected computer. We adhere with the Standards for Reporting Qualitative Research guidelines [39].

Data collection

Semi-structured, in-depth telephone interviews were done at a time convenient for participants between April 2 and May 15, 2020. We conducted all interviews in the local language, i.e., Italian, the native language of both the interviewers and the interviewees. After explicit consent from participants, all interviews were audio-recorded using a free call recorder smartphone application. When not already available, participant's gender, age, education, relational status, occupation, place of residence, and type of dwelling were obtained at the end of the interview. The duration of the interviews spanned from 16 to 120 min. Based on a semi-structured guideline, participants were asked open-ended questions to elicit their attitudes towards a future covid-19 vaccine ("What is your attitude towards a future covid-19 vaccine?") and

related beliefs (“Why would you say you are in favor/unsure/against a future covid-19 vaccine?”), information on its status (“What do you know about the development of a covid-19 vaccine?”) and related sources (“Do you remember where you read this/heard this from?”), and expected social reactions (“To what extent do you think people will accept the vaccine once it is licensed?”). Furthermore, participants were also asked questions regarding their representation of the virus and of the disease and the strategies they used to manage the risk of covid-19 in their day-to-day life. Questions were developed based on previous qualitative studies conducted by the authors [40,41]. The interviewer was a purposely trained female research assistant who, at the time of data collection, was undertaking her postgraduate training in cognitive psychology, and had substantial, previous experience in qualitative research. Debriefing between the interviewer and an experienced member of the research team (MF) took place shortly after each interview.

Data analysis

Audio-recordings were transcribed verbatim within one week after each interview. The experienced member of the research team (MF) independently conducted an inductive thematic analysis of the transcripts in the original language (Italian) following the six-stage comprehensive thematic analysis approach developed by Braun and Clarke [42]. The analysis included reading the transcripts multiple times to familiarize with the content, identifying meaningful quotes regardless of their length, labelling them under broader concepts, organizing the generated labels around more general themes, and creating relationships between them. To validate the results, discussion between the coder and the other members of the research team (SS and EA) took place at the end of the analysis. Disagreements in the interpretation of the findings were resolved through discussion and by making reference to the transcripts. Participant's answers to the question regarding their attitudes towards a future covid-19 vaccine were used to categorize them as either in favor, against or unsure about this vaccination.

Results

Nineteen older adults participated in an interview. Most participants were women ($n = 12$), Swiss nationals ($n = 14$), retired ($n = 18$), resident in urban areas ($n = 14$), and had obtained a secondary school degree ($n = 14$). The average age was 75 ($SD = 6.04$; range = 64–85). Most participants reported to be living alone ($n = 12$) and in a flat ($n = 14$). See Table 1 for participants' characteristics. Most were in favor of a future covid-19 vaccination, while a minority were either against or unsure. In three cases, it was impossible to infer participant's attitude towards the vaccination from their reports. The thematic analysis resulted in three main themes in relation to our research question. The first theme refers to participants' understanding of the vaccination as a means to loosen current freedom-limiting protective measures; the second theme refers to participants' belief that protective measures will always be safer than the vaccine; the third theme refers to participant's reported contextual and individual drivers of vaccine hesitancy, namely the pandemic's trajectory and one's personal health status, respectively. These three themes are presented in detail in the next paragraphs.

Vaccination as freedom

More than half of the participants reported to be in favor of a future covid-19 vaccination and explained that the main reason they would accept to be vaccinated is that immunization will

Table 1
Socio-demographic characteristics of participants ($N = 19$).^a

Characteristic	n (%)
Gender	
Female	12 (63%)
Age	
64–70	3 (16%)
71–80	12 (63%)
81–85	3 (16%)
Nationality	
Swiss	14 (74%)
European	4 (21%)
District of residence	
Lugano	14 (74%)
Bellinzona	2 (11%)
Blenio	1 (5%)
Locarno	1 (5%)
Education	
Primary	14 (74%)
Secondary	3 (16%)
University	1 (5%)
Occupation	
Retired only	9 (47%)
Retired and volunteer	9 (47%)
Disable and volunteer	1 (5%)
Living status	
Living alone	12 (63%)
Living with partner	7 (37%)
Type of dwelling	
Flat	14 (74%)
House	5 (26%)

^a The sum of the individual numbers may not always add up to 100% due to missing values.

accelerate the easing of some of the covid-19 restrictive measures, such as those limiting people's movement and demanding physical distance.

I think that, at that moment, everyone will be willing to get vaccinated because it means freedom of movement, so basically everything. If everyone is vaccinated, everyone will be alright (Participant #7, pro-vaccination, female, 79, secondary school) They must find this vaccine! If they do not find this vaccine, we need to use all these precautions! (Participant #13, pro-vaccination, female, 85, primary school)

For some participants, the vaccination will allow to regain normality in everyday life. As one participant pointed out when asked what her hopes for the future were:

I absolutely want to get out of this situation, to find a vaccine and a cure, so that we can return to normal life with the hope that everything will make us better than we are, and that we will understand the importance of life and friendship (Participant #4, pro-vaccination, female, 71, secondary school)

According to a few participants, a future covid-19 vaccination will also mean people will have less anxiety, thanks to the easing of some of the current non-pharmaceutical public health interventions including social and physical distancing, and hygiene measures.

When a vaccine that protects [from covid-19] is available, there will be a race to the vaccine, because it gives mental serenity and removes that anxiety that someone may have... Avoiding people, extreme hand and face hygiene... It is fine that everything is disinfected, including the chairs where you sit, but now they seem to be a bit exaggerated (Participant #11, pro-vaccination, male, 81, secondary school).

Despite agreeing on the positive consequences of a future covid-19 vaccination, unsure participants stressed the importance of being recommended to get vaccinated by a trustworthy source such as their family doctor:

If they say it is recommended, I listen to those who know more about it than me. Clearly, I do not get advice from anyone. It has to be the trusted doctor or someone who tells me that it is better that you do it because ... I mean it can be the urologist or the family doctor. If it is recommended to get it, then I say "why not to listen?" (Participant #6, pro-vaccination, male, 73, secondary school).

So, yes, the vaccine... Someone will refuse it. For example, I always get the flu vaccination, but my wife never does. It's a matter of trust (Participant #11, pro-vaccination, male, 81, secondary school).

Other participants stressed the need to ensure a fair distribution of the vaccine that takes into account people's age, with younger people having the right to be vaccinated first:

People will line up to receive the first ones. However, we will have to wait a little once these products are available... I mean, I hope there is a strategy for distribution... We will need to be less selfish and help those people who really need it. [...] People up to 65 should have the right to have this vaccine. [...] They still have all their lives ahead; we have lived our own. We had nothing, but we built something, and now we try to move on. Young people have to rebuild everything now, and they must have the possibility to do it, and that comes with the chance of being vaccinated (Participant 5, pro-vaccination, female, 79, secondary school).

Protective measures will be safer than the vaccine

One third of participants was either against or unsure about the vaccination, and reported that, even when a covid-19 vaccine will be available, protective measures such as physical distancing, increased hand hygiene and mask usage will be safer than the vaccine. This participant reported that will surely not get vaccinated, arguing that the vaccine can have fatal consequences:

I certainly will not [get vaccinated], I really will not! Look, when I had the flu vaccination, the nurse who treated my husband for 14 years - now, unfortunately, he's dead - has always recommended me not to get the vaccine. Because, some told me, they got the vaccine and they died as a result. I don't want to be against the vaccine, but I know that they died after getting the shot. When they gave my husband the shot without telling me, he died after 2-3 days. I... I'm really allergic to vaccines. I will never get it, even if I am obliged to. (Participant #15, anti-vaccination, female, 85, secondary school).

The same participant added that the vaccination will give the illusion to be protected and people will stop using other precautions, putting others in danger:

I think that most of them, out of fear, will get the vaccine and then go around without precautions. So I prefer to go around with a mask but avoid the vaccine, personally.

Another participant stressed that the future covid-19 vaccine will be similar to the flu vaccine, and that vaccination weakens the immune system, exposing people to other diseases:

As with the flu, I have never done it [the vaccination]. They say that you get a milder disease. But it's been 6 or 7 years now that

I haven't got a cold. I don't take anything if I don't really need it. I am not against medications, but I am against mandatory vaccinations. Maybe, if you get it [the vaccine]... it kills you. I have been years now without taking anything. I either go to the supermarket and get the virus, or I stay here and get the shot. (Participant #10, anti-vaccination, male, 71, secondary school).

Some of those participants who reported to be in favor of a future covid-19 vaccine stated that they will likely wait for some time before accepting the vaccination, so that more people can be vaccinated before them and the vaccine safety can be further tested.

I will accept it, but I'll probably wait a month or two to see the consequences. Let's say I won't get it on the first day. (Participant #12, pro-vaccination, female, 79, secondary school).

I would wait at least a month or two to see what effects it has, this is my idea. [...] Some will be afraid and hope that this vaccine will not harm us, and that it will not impose an additional burden on us. Some think that it's a bad thing because they inject us with a product that is still unknown. I don't know if everyone will agree to get vaccinated. I need to see if healthy people can tolerate this vaccine. Only then we can be sure that we can give it to other people as well. (Participant #5, pro-vaccination, female, 79, secondary school).

I think I will get vaccinated, but always according to what will be defined, what will be said. I don't want to be a guinea pig. I will get it when there is enough information on its effectiveness. (Participant #11, pro-vaccination, male, 81, secondary school).

Contextual and individual drivers of vaccine hesitancy

Unsure and favorable participants stressed that two main factors will be crucial for acceptance. The first one is a contextual factor, i.e., if the pandemic fades and cases significantly decrease, people's perception of the risk of getting infected will also decrease and they will be more reluctant to accept the vaccination.

This will be another big problem, because it depends on whether the virus disappears. If the vaccine becomes available, the question "what is this vaccine for?" may be raised. If the vaccine was developed for a specific strain of virus, it might no longer be needed at some point. If, on the other hand, this vaccine will work like a broad-spectrum antibiotic, then yes. Even when vaccines were offered against the seasonal flu, I never got them and never got the flu. And there are people who got the vaccine and also got the flu. So, you are right, it will be a big question when the vaccine is available: what will we do? My impression is that, if this [pandemic] completely fades and there is no more risk, I will most likely not get the vaccine. (Participant #9, unsure, male, 80, university degree).

The second factor is an individual one and has to do with people's perceived health and past experiences. Participants argued that, if older adults will perceive themselves to be in good health, they will not perceive the likely consequences of covid-19 to be serious enough to require the vaccination.

A group of older adults whom I know would say that they are well and that they would not do it. But just as I get the shot for the flu, I would get it [covid-19 vaccine] without any problems. Because I am convinced that if they recommend doing it, then I should do it. I really noticed that every year that I get it [flu vaccine], I get nothing. Nothing, neither a cold nor

a flu... only when I got the shot for the first time did I get something, but then nothing again, and now I'm fine (Participant #17, pro-vaccination, male, 71, secondary school).

Other participants stated that their parents' or family members' experiences with past infectious diseases increased the perception of the risk of covid-19 and made them in favor of the vaccination, even if they were not used to vaccinating against the flu.

I never got the flu shot, I have to say, but if a vaccine against coronavirus becomes available now, I would accept it. I would be the first to call and ask to be vaccinated. I come from a family of hairdressers and both were infected with tuberculosis by their customers. My mom had to stay in the sanatorium for a year and she used to tell me to take care of my lungs, because you never know... here is just to tell you that I've always been on that side [in favor]... It's not that I lived with the fear of getting sick with tuberculosis, because it was eradicated at some point. But my mother told me about this period of [her life]... At that time they didn't have penicillin and you could only recover at the sanatorium. I am very cautious, in a few words. Even if I don't wear a mask, I am very sensitive to this pandemic. (Participant #8, pro-vaccination, male, 76, university degree).

Discussion

The goal of this study was to qualitatively explore older adults' willingness to vaccinate against covid-19 and, in particular, their attitudes towards and beliefs regarding a future covid-19 vaccination. We found that a majority of participants were in favor of the vaccination and highlighted its positive consequences, such as the removal of other protective measures. Those participants who were against or unsure about the vaccination had concerns regarding its safety and efficacy and identified contextual and individual drivers of such concerns.

The current, global response to the covid-19 pandemic involves the aggressive implementation of containment, mitigation, or suppression strategies, and the enforcement of a variety and combination of non-pharmacological (i.e. public health) measures including case reporting, contact tracing, isolation of sick individuals, quarantine, voluntary sheltering, national and international travel impositions, and a variety of community restrictions including physical distancing, and partial to complete lockdowns of schools, universities, workplaces, businesses, and shops. The finding that participants support a future covid-19 vaccination for its liberating effect (possibility to return to a normal life, have freedom of movement and no longer live with anxiety) is consistent with evidence on both the psycho-social benefits of vaccination [43], and the disruptive impact of public health measures such as isolation and lockdown on individuals' mental health and well-being [44–46]. The literature on vaccine hesitancy has repeatedly found a number of variables related to the health and psycho-social benefits of the vaccination (e.g., anticipated regret for not vaccinating, avoidance of the anxiety related to a possible infection, desire to protect the health of family members or the community) to be important predictors of the vaccination decision, particularly among parents [47–49]. The novelty of our findings lies in participants' awareness of the unprecedented effects of the pandemic on multiple levels (mental and physical well-being, relationships) and the resulting importance of the vaccination for returning to a normal, pre-pandemic life, and having freedom of movement again. Despite being observed in the context of other vaccinations, for example smallpox and polio vaccinations, such perceived benefits of the vaccination may constitute a much stronger potential driver of the immunization decision than in the past. Our findings also suggest that participants were aware of their vulnerability and

recognized the need to be sufficiently informed and recommended to get vaccinated by trustworthy sources, such as their family doctor. Participants cited the scarce evidence on vaccine safety and efficacy and the key role of their family members' experiences with past epidemics as the main two reasons for this. This is confirmed by previous evidence that social interactions with family members, friends, politicians, bloggers, religious leaders, or anti-vaccination campaigners may play a significant role in the vaccination decision, with healthcare provider advice consistently found to be the most important predictor of vaccine uptake [48]. Furthermore, participants were concerned about vaccine manufacture and deployment, both issues that are gaining increasing attention [50–52]. The literature has repeatedly shown that practical issues such as vaccine availability, logistic or financial inconvenience in accessing vaccines, service quality and satisfaction, personal requirements, and incentives may further delay vaccination or lead to its complete refusal [53]. Participants showed sensitivity to the need to ensure a fair distribution of any future covid-19 vaccine, adding that younger individuals should be given priority despite recognizing their at-risk status. This latter finding contributes to the debate on who should be vaccinated first, as long as vaccine availability is limited. While the elderly and other vulnerable groups might seem the most obvious candidates to receive priority, some scholars have argued that prioritizing the vaccination of children would maximize the benefits of indirect immunity for older and vulnerable individuals. [54]. Our participants' preference to let children have first access to the vaccine seems to be rooted in the altruistic belief that they will benefit most, rather than in selfish motives, indicating that the population's view of what an acceptable vaccination strategy should be may differ from that of the experts. However, there are unresolved issues related to the indirectness of evidence of vaccines' safety and efficacy in children due to their systematic, by-design exclusion from pivotal randomized controlled trials.

Our findings that protective measures are perceived as safer and potentially more effective than the vaccine resonate with previous evidence that individuals may believe vaccines can cause harm or even death, particularly when vaccines are novel and do not have a long track record of safety tests [49,55]. Even pro-vaccination participants would likely wait several months before getting vaccinated after a covid-19 vaccine is licensed and officially recommended, and may prefer to continue to use protective measures rather than getting vaccinated even in the long term [56]. This can be explained by the stronger influence of safety over efficacy concerns in relation to the vaccine. Even if individuals believe that the vaccine is more effective in protecting from covid-19 than other measures (such as wearing a mask), however intrusive and disruptive they may be, they may opt for active refusal and give preference to what they believe to be the safer measure. Knowledge and understanding of the disease, of the vaccine manufacture process (including information on its safety and efficacy), as well as the reputation of vaccines developers has been shown to contribute to instil trust [48]. Finally, our results that individual's hesitancy may be altered by the pandemic's trajectory is in line with previous studies showing that individual's risk perception in terms of susceptibility depends on the communicated diffusion of a certain disease within a population [48].

The findings also have a number of implications for the success of future covid-19 vaccination strategies targeting older adults and the general population. As it is never too early to understand the nature and extent of vaccine hesitancy in order to address it with suitable measures, such strategies should be grounded in an evidence-based, participatory approach and include ongoing community engagement, trust-building activities, and communication about vaccine developments and how the vaccine will be combined with other outbreak response measures. Information

must be understandable and channelled through both traditional and new media [57]. In addition, communication training of healthcare providers and other key stakeholders in the immunisation landscape should also be provided [58]. Importantly, research on hesitancy and communication strategies should inform each other, through an iterative process, and because education and socio-economic status influence hesitancy in an extremely complex manner [48], an effort should be made to include the public as a whole [49]. Furthermore, the findings obtained from this qualitative study could be used to guide future or further research related to Covid-19 vaccination acceptance among those 65 years old and older. A way to do this could be to include additional items to already validated vaccine hesitancy scales to measure to what extent the novelty of this vaccine impacts its perceived safety and efficacy, what type of trade-off people make between the use of protective measures or the acceptance of the vaccine, or in which measure older adults are willing to let younger people have priority access to the vaccine as a way to protect themselves.

Some limitations of the present study are to be mentioned. We used telephone interviews for data collection to allow participation during the Covid-19 pandemic, while physical distancing was in place, and face to face interactions with older adults impracticable. Despite studies suggesting that data quality is comparable between face-to-face and telephone interviews, the latter have known limitations. The lack of an in-person contact may have limited the formation of trust between interviewer and participant. Social desirability bias might have contributed to express possible frustrations connected to the lockdown less freely. To mitigate these challenges, we introduced long pauses during the interviews and adopted a familiar, warm, and understanding approach to the interview to allow participants to express their thoughts at their own pace, reduce inhibitions, and increase their confidence that their honest responses were welcomed. A second limitation has to do with the study sampling. Most participants were part of previous studies conducted by our research team. We cannot exclude that some similarities exist between participants in both their characteristics and their previous experience of research participation. To reduce this potential bias and increase socio-demographic variance, we approached participants in a non-systematic manner and combined the initial sampling strategy with a snowball sampling. Previous interactions between participants and the interviewers may, however, have positively influenced mutual trust and bonding, and contributed to the elicitation of themes during the interviews. Finally, the nature and small sample size of qualitative studies limit the generalizability of results to similar contexts, populations, and circumstances. However, the internal validity of the study is supported by the robustness of our methods, and is confirmed by the saturation of the themes after 15 interviews.

Conclusions

We found that pro-vaccination older adults see the vaccination as the single, best route to ending current restrictive measures, while anti-vaccination participants have safety and efficacy concerns that may be amplified by the trajectory of the pandemic. To integrate research efforts and communication actions into covid-19 vaccination strategies and promote public confidence in the vaccine and its acceptance, a dialogue between governments, the scientific community, vaccine developers, regulators, healthcare providers, and the public is essential [59]. Through a coordinated action individuals can be placed in the position to understand the value of vaccination, in general, and of the covid-19 vaccination, in particular, and demand it as both a right and a responsibility once the vaccines are approved and become available [60]. Following a social marketing approach [61], researchers

from both the public and private sectors are urged to employ or adapt existing, validated tools to collect evidence on individuals' knowledge about, and attitudes towards a future covid-19 vaccine, informative needs and information sources, trust in (public health) institutions, social influences or other factors that are known to drive confidence and uptake [62,63]. In this regard, the value of our qualitative study stretches far beyond the geographic area where our data were collected, by providing useful insights and novel themes worth further investigation to others interested in conducting research on Covid-19 vaccine hesitancy among older adults.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: [The authors declare that they have no conflict of interest. LSS served on the MSD European Vaccines Advisory Board in 2019].

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