

ORIGINAL ARTICLE

Standing alone: experiences of vaccine-hesitant Danish healthcare professionals during COVID-19

KRISTOFFER MARSÅ¹, TINA BØGELUND KRISTENSEN² 
& HANNE KONRADSEN^{3,4,5} 

¹Arresødal Hospice, Frederiksværk, Denmark, ²Department of Oncology, Herlev and Gentofte Hospital, Herlev, Denmark, ³Department of Gastroenterology, Herlev and Gentofte Hospital, Herlev, Denmark, ⁴Department of Clinical Medicine, University of Copenhagen, Copenhagen, Denmark, ⁵Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

Abstract

Aim: The aim of the study was to explore the experiences of Danish healthcare professionals who were hesitant about the COVID-19 vaccine. *Methods:* Interviews were conducted over the telephone in January and February 2021. *Results:* Healthcare professionals experienced the need to avoid impossible conversations about vaccine hesitancy with their colleagues. They felt a lack of knowledge of long-term experience with the vaccine and a need to balance trust in themselves and the authorities. *Conclusions: Healthcare professionals who were hesitant towards the COVID-19 vaccine felt they had to keep their concerns to themselves and felt isolated and pressured by their managers. This study is especially important for managers, who must ensure a trusting working environment in which employees can discuss their concerns without feeling pressured.*

Keywords: Attitudes, COVID-19, corona, vaccine hesitancy, vaccination

Background

The World Health Organization (WHO) has indicated that vaccination hesitancy is a leading global health threat [1]. Knowledge of why adults decide not to become vaccinated against COVID-19 is sparse. Vaccination hesitancy has been found to include questions about the reliability of the vaccine, insecurity about possible side effects, a preference for natural immunity and the perception that vaccinations only serve those who produce them [2]. Willingness to be vaccinated has been related to the perceived severity of infection, effectiveness of a vaccination and its side effects, as well as the recommendation of a healthcare professional [3, 4]. There may also be differences in the acceptability of a vaccine between different ethnic, socioeconomic or political groups [5, 6].

Among people with a background in healthcare, a recent review found a worldwide acceptance range of the COVID-19 vaccine, from only 27% in the Democratic Republic of the Congo to 78% in Israel [7]. Studies have found that nurses and nursing assistants are less likely than physicians to get vaccinated [8]. Reasons for vaccine hesitancy among nursing home staff included concerns about possible side effects and a preference to wait until the vaccine had been tested for a longer period [9]. Among medical students, in addition to side-effect concerns, hesitancy was related to the level of trust in public healthcare experts [10], and among nursing students, it was related to age and a sense of collective responsibility [11]. Studies among healthcare professionals have shown a positive correlation between male gender, acceptance of other vaccines and the likelihood of accepting the COVID-19 vaccine [12–14].

Correspondence: Hanne Konradsen, Department of Gastroenterology, Herlev and Gentofte Hospital, Borgmester Ib Juuls Vej 1, 2730 Herlev, Denmark.
E-mail: hanne.konradsen@ki.se

Date received 23 May 2021; reviewed 24 June 2022; accepted 27 June 2022

© Author(s) 2022

Article reuse guidelines: sagepub.com/journals-permissions

DOI: 10.1177/14034948221113645

journals.sagepub.com/home/sjp



In Denmark, there is traditionally a high participation rate for vaccines. An example of this is the measles, mumps and rubella (MMR) vaccine, for which coverage among children was 94% in 2018 [15]. However, the introduction of the human papillomavirus (HPV) vaccine in 2009 was met with great opposition and negative media coverage from a heterogeneous group, some of whom identified themselves as vaccine opponents [16]. Vaccination coverage in subsequent years showed two tendencies: concomitant vaccine provision increased overall vaccine uptake, and increased hesitancy towards one vaccine (HPV) undermined the resilience of another vaccine programme (MMR) [17]. This is relevant to the introduction of the COVID-19 vaccine in Denmark because willingness to receive a vaccine (e.g. the influenza vaccine) among healthcare professionals, as in the general population, may affect willingness to receive the COVID-19 vaccine [18, 19].

At the beginning of the COVID-19 pandemic, there was political agreement in the Danish parliament regarding the need for restrictions (e.g. recommendations for online learning in students' homes), and the way of handling the evolving situation received widespread support from the media. However, by the end of 2020 and the beginning of 2021, the debate had become more polarised. A group calling itself 'Men in Black' was established based on the opinion that authorities were not acting in the public's interest. On their Facebook websites, Men in Black wrote, 'While you sleep, others wake up – we fight for you'. Thus, social media was used by Men in Black, among others, to promote both a strong stance on COVID-19 restrictions and the vaccine and to allow healthcare professionals and opinion makers to argue that people would die if these efforts were not followed. This distinct 'us and them' narrative began increasingly to fill the public debate.

When the vaccination of healthcare professionals began, it was often illustrated as a success in social media and as a showcase for those who had accepted the vaccine. Previous research has demonstrated that such campaigns may increase the acceptance of vaccination [20]. Danish authorities emphasised that vaccination was voluntary in their regular updates on the COVID-19 situation in Denmark. This generated interest in understanding how healthcare professionals decide whether to be vaccinated when it is offered, as this group: (a) might be considered to have insight into the mechanisms behind a vaccine and the illness trajectory of COVID-19; and (b) were among those first offered the vaccine.

The overall intent of this study was to explore the experiences of a group of healthcare professionals

Table I. Characteristics of included participants ($n=18$).

Age, years (range)	25–65
Profession (numbers)	
Nurse	6
Midwife	5
Physician	4
Physiotherapist	2
Occupational therapist	1

who decided to decline receiving the COVID-19 vaccine. This group was absent from the public media, and we expected their experiences to mirror those of people outside the healthcare system.

Methods

This exploratory study used an inductive approach, and the data comprised qualitative interviews.

Data collection

Data were collected in January and February 2021 shortly after the vaccine programme was initiated, as we sought to understand healthcare professionals' experiences within the first months after vaccines were offered. Thus, data were collected before knowledge about rare but serious side effects was found, which ultimately led to vaccines from some companies being removed from the vaccination programme in Denmark.

A snowball sampling strategy was planned, as is recommended in studies in which it might be difficult to find participants due to the sensitivity of the subject [21]. Data collection started by sending information about our study to colleagues' networks and closed groups on social media, as well as ward management at different hospitals and primary health facilities. The written information about the study included an email address to which those wanting to participate could send their contact details. An invitation to forward the information to colleagues who might be eligible for participation was also included. We aimed for maximal variation concerning gender, age, education and workplace. The demographic information of the participants is shown in Table I. An interview guide was developed to structure the individual interviews. It included questions on reasons behind the decision to withdraw from vaccination, experiences with sharing this decision with colleagues, friends and family, and general attitudes towards vaccinations. Interviews were conducted by telephone at a time chosen by the informant. The interviews were recorded, and the informants were made aware of this at the beginning of the interviews.

Data analysis

Data were analysed using the thematic analysis described by Braun and Clarke [22]. As the data comprised telephone interviews, there were limitations in terms of nuances and interpretations beyond the spoken word; therefore, a theoretical semantic analysis of our data was performed [22].

All three researchers listened independently to the interviews, followed by a discussion of the data at a meeting. The data were coded and grouped into themes, which were again discussed until consensus was achieved on the name and content of the themes. The first author wrote the preliminary findings, and the material was then sent back and forth between the authors until agreement on the interpretation of the data and wording of the results was achieved.

Reporting of the study and findings followed the recommendations of the standards for reporting qualitative research (SRQR) [23].

Ethics

Approval to store data on a secure file was given by the Danish Data Protection Agency (no. P-2021-17). According to Danish law, no formal ethical approval was needed for this study. The recommendations from the Declaration of Helsinki were followed. All participants were informed about the study in writing and given the opportunity to ask questions, as well as being assured of voluntary participation and anonymity. As most participants described the decision to participate as difficult and verbalised the need for assurance that no one could recognise them once the results were presented publicly, data on personally identifiable information, such as their workplace, were not revealed.

Results

In this study, the experiences of healthcare professionals who were hesitant about the COVID-19 vaccination could be described as having a lack of long-term experience with the vaccine, placing trust in oneself or the authorities, and avoidance of sharing their opinions and concerns about the vaccine with their colleagues, as it was an impossible dialogue.

Long-term experience with the vaccine

There was clear awareness of the vaccine being recently developed and, thus, less thoroughly tested and well known compared to other vaccines. The fact that the COVID-19 vaccines had been developed

and validated in a much shorter time than other vaccines induced a sense of uncertainty. This uncertainty could be related to education as a healthcare professional, as the vaccines' approval did not adhere to the guidelines of what the informants considered to be evidence-based practice. One participant said, 'I know that so much money has been spent on developing these vaccines; why do they now not wait and conduct a gold standard study?' By gold standard study, she meant conducting a sufficiently large randomised controlled trial rigorously to test the effects of the vaccine. Some suggested that they would like to wait a few years to make a decision, and they also considered that some people might be in a vulnerable situation and thus in need of a vaccine quickly.

Time was also considered from the perspective that those who needed the vaccine the most and wanted to receive it should have it first, and those who wanted to wait could be offered it again later. The question of how to prioritise between healthcare professionals and people in vulnerable situations was raised by a participant, 'Why do I then need to be one of the first to take the vaccine? Why can I not wait?'

There was pronounced frustration about being forced to receive the vaccine due to the indirect consequences of not having it. This could be a restriction on which work tasks they would be allowed to perform. Whether a possible future vaccine pass should regulate who can participate in 'ordinary' life, such as restaurant visits and concerts, was also discussed. Some said that if such a requirement were in place, they would take the vaccine for that reason; others said they hoped they could remain strong and true to their position.

Among pregnant women, there were considerations as to when they would be able to receive the vaccine after giving birth. In addition to concerns about the newness of the vaccine, pregnant women also considered Danish health authorities' recommendations and believed that extra precautions were necessary in relation to protection during pregnancy.

Trust in oneself or in authorities

Participants were confident in their choice to decline the COVID-19 vaccine and believed that it should remain a personal choice. The informants expressed nervousness about the possible impending threat to personal choice following the increasing public pressure to reopen society.

The personal fear of COVID-19 was not present. The participants trusted that their bodies could handle the COVID-19 infection. One participant said, 'I

meet patients every day, and some have COVID-19; I cannot go around being afraid every day'. Even though participants identified themselves as healthy and believed that if they were infected with COVID-19, they would not become seriously ill, they tried to avoid infection by following the authorities' recommendations on social distancing and hygiene.

None of the informants described themselves as vaccine opponents, and all had received childhood vaccines and the vaccines they needed when travelling. The COVID-19 vaccine was considered different from the other vaccines. A pregnant informant argued, 'I am happy to accept the vaccine for influenza during my pregnancy but not the corona [COVID-19] vaccine. If the health authorities had recommended it to pregnant women, I might have considered it, but I am not sure I would have taken it'.

There was scepticism towards the authorities and a belief that education as a healthcare professional also contributed to the awareness of not accepting announcements from authorities without exploring that area for oneself. Among those who were pregnant, recommendations from healthcare authorities not to take the vaccine were followed without any questions. Regarding what to do after giving birth and among those who were currently breastfeeding, the desire was to make the decision a personal choice. One woman who was pregnant said, 'After my child is born, I will decide for myself how long I will wait before I want to receive the vaccine'.

Knowledge on the vaccine was sought through national TV news, health authorities' websites, social media and scientific publications. When healthcare professionals openly expressed their concerns about the vaccine and their hesitancy to receive it, this lack of information was especially noticed. Healthcare professionals missed discussions on arguments similar to theirs in the daily information they received. One woman described an interview she had seen on TV that she still remembered, 'It was one of the leading scientists, and she said she would not take the vaccine before we know more on late side effects'. Concerns about the pharmaceutical industry's motives were also expressed.

A common feeling among the participants was that the nuances and knowledge of the things worrying them were not openly debated in the news, resulting in a feeling of a lack of information about that aspect of the debate.

The impossible dialogue

A dialogue about vaccine hesitation or rejection was described as almost impossible and something that

should be avoided if possible. The participants used different strategies to avoid getting into a dialogue, such as saying, 'I have not received it yet' to end the conversation. Another woman was very aware that, as a physician, her opinion might influence others, who thought she must have more insight into the medical perspective of vaccines. She said, 'I keep it to myself, and when asked, I just say that I have not made up my mind yet'.

The experience was that the only acceptable reason for not taking the vaccine was pregnancy. Thus, those who were actively trying to get pregnant also felt compelled to explain to their leaders and colleagues why they did not get the vaccine. They felt that declining was a necessity and that uncertainty about the side effects of the vaccine was not a convincing reason for their colleagues. It did not appear possible to have an open discussion on the choice of accepting the vaccine. One participant described how she had witnessed another colleague receive 'a quagmire of threats' when trying to start the debate. Another participant experienced a telephone conversation with her boss and other colleagues who tried to pressure her into getting the vaccine, either by arguing about the safety of the patients by saying, 'Think of our patients – you need to take the vaccine to protect them' or the need to be a good colleague by saying, 'If you do not take the vaccine, you cannot care for the patients infected with COVID-19, leaving the rest of us to work all your shifts'. Another participant found herself in a predicament that risked employment extension: 'If I tell them I say no to the vaccine because I am trying to get pregnant, they will not extend me, and if I accept the vaccination, then I will need to postpone my fertility treatment'.

Some felt that their family and friends tried to convince them that they were wrong, while others had family members who understood and respected them. It was, however, common that open dialogue among family and friends was not possible among colleagues. One woman stated, 'At work, we do not discuss it because we also need to work together in the future'. They almost exclusively talked to colleagues whom they knew had the same attitude as themselves.

Being a healthcare professional was perceived as having an extra responsibility to promote recommendations from healthcare authorities; therefore, not being convinced that it was the right recommendation also contributed to a difficult dialogue with others. One woman said, 'My opinion is never personal; it is the opinion of a physician'.

Discussion

This study aimed to explore healthcare professionals' experiences of rejecting the COVID-19 vaccine. Their rejection was bound to the situation they were in when the first vaccine was offered and could change over time.

We found that healthcare professionals who rejected the vaccine wanted to know more about the long-term effects and side effects of the vaccine before they received it. Participants had confidence in the authorities, yet they believed that they should be allowed to choose between the risk of becoming infected with the disease and the possible risks of the vaccine. They felt pressured to accept the vaccine, and it was impossible to talk to other healthcare professionals about their doubts and hesitations.

The Strategic Advisory Group of Experts on Immunisation (SAGE) on vaccine hesitancy, which was established under the WHO, concluded that vaccine hesitancy is complex and context dependent, varying across time, place and the vaccine, and is not a simple matter of knowledge [24]. The group defines three factors related to vaccine hesitancy: complacency, confidence and convenience. Our findings can also be interpreted in light of these factors. In our study, healthcare professionals considered the risk of being infected with COVID-19 and the unknown long-term effects of COVID-19 vaccination. In a study from Portugal, the same factors related to vaccine hesitancy were found, as the risk of suffering from complications after vaccination and the risk perception of getting infected were significantly associated with vaccine hesitancy among healthcare professionals [25]. Not having cared for patients with COVID-19 has been identified as a factor associated with vaccine hesitancy [26]. In our study, the likelihood of not having cared for this group of patients was high, as it was conducted at the beginning of the pandemic, but it is unknown whether the same factor applies to a Danish context. Our study expands the knowledge of vaccine hesitancy by describing how healthcare professionals perceive dialogue about their vaccine considerations as impossible.

Regarding confidence in one's own body and health, our informants described trusting that if infected with COVID-19, they did not expect to become seriously ill. The choice to reject the vaccine was based on both their understanding of the human body and the immune system due to the training they had received as healthcare professionals and their personal knowledge of their own health status. The choice also demonstrated a shift in the level of fear of the disease and was different from a

previous study from Denmark, in which the nursing staff at a COVID-19 ward during the first wave in early 2020 had greater uncertainty and fear of the disease [27]. It was unclear if this shift occurred because the participants in our study did not directly care for patients with COVID-19, the fluctuation in the number of people infected with COVID-19 or the increased knowledge of the disease that resulted in more confidence.

Trust in vaccine safety might be the strongest predictor of accepting a vaccine and has been found to outweigh the perceived risk of COVID-19 [28]. In our study, the speed at which the vaccines were developed was an especially important issue of concern for the participants in terms of vaccine safety. This has been observed in other studies on vaccine acceptance among healthcare professionals [29]. The level of trust in health authorities has been shown to be a significant factor globally [30, 31]. Our study showed that some of those who rejected the vaccine also requested a more nuanced and open debate on the pros and cons of the vaccine.

We used snowball sampling to search for participants, as they were difficult to identify. All included informants were women. Whether this is related to more scepticism among women or to the fact that more women are employed in the Danish healthcare system is unknown. The data were collected using telephone interviews due to limitations in physical closeness as a result of COVID-19 restrictions; this was also a weakness of this study. Trust that can be built by sitting in the same room and using non-verbal communication is not possible over the telephone.

Our study aimed to increase our understanding of the early considerations behind vaccine hesitation. However, as the data were obtained before the first side effects were scientifically described and before certain vaccines on this basis were removed from the Danish vaccination programme, the transferability of the results may be limited. Undertaking interviews over the telephone may have impacted the results, as interviews conducted face to face would have given the interviewer the possibility also to interpret the interviewees' body language and unspoken facial gestures; however, it has been shown that when discussing sensitive topics, telephone interviews can make the informant feel anonymous and not judged [32].

Conclusions

Healthcare professionals who felt hesitant towards the COVID-19 vaccine felt they had to keep their concerns to themselves; they were uncomfortable discussing it with other colleagues and felt isolated

and pressured by their managers. This hesitation was based on a perceived lack of knowledge of the long-term effects and side effects of the vaccine, and the perception that the risk of taking the vaccine might be higher than the risk of getting the disease itself. This study is especially important for managers, who must ensure a trusting working environment in which employees can discuss their concerns without feeling pressured. Furthermore, it calls for the need to provide opportunities for nuanced and respectful discussion of considerations regarding the COVID-19 vaccine.

Acknowledgements

The author(s) would like to thank all the participants who gave their time to participate in the study.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Tina Bøgelund Kristensen  <https://orcid.org/0000-0002-1337-2714>

Hanne Konradsen  <https://orcid.org/0000-0002-7477-125X>

Data

No data can be provided from this study due to ethical sensitivity towards the informants.

References

- [1] World Health Organization. *Ten threats to global health in 2019*. <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019> (accessed 1 August 2022).
- [2] Akarsu B, Özdemir Canbay D, Ayhan Baser D, et al. While studies on COVID-19 vaccine is ongoing, the public's thoughts and attitudes to the future COVID-19 vaccine. *Int J Clin Pract* 2020;4:e13891.
- [3] Reiter PL, Pennell ML and Katz ML. Acceptability of a COVID-19 vaccine among adults in the United States: how many people would get vaccinated? *Vaccine* 2020;38: 6500–6507.
- [4] Taylor S, Landry CA, Paluszek MM, et al. A proactive approach for managing COVID-19: the importance of understanding the motivational roots of vaccination hesitancy for SARS-CoV2. *Front Psychol* 2020;11:575950.
- [5] Bell S, Clarke R, Mounier-Jack S, et al. Parents' and guardians' views on the acceptability of a future COVID-19 vaccine: a multi-methods study in England. *Vaccine* 2020;38:7789–7798.
- [6] Griffith J, Marani H and Monkman H. COVID-19 vaccine hesitancy in Canada: a content analysis of tweets using the theoretical domains framework. *J Med Internet Res*. Epub ahead of print 19 February 2021. DOI: 10.2196/26874
- [7] Sallam M. COVID-19 vaccine hesitancy worldwide: a concise systematic review of vaccine acceptance rates. *Vaccines*; 9. Epub ahead of print 16 February 2021. DOI: 10.3390/vaccines9020160
- [8] Gagneux-Brunon A, Detoc M, Bruel S, et al. Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: a cross sectional survey. *J Hosp Infect*. Epub ahead of print 28 November 2020. DOI: 10.1016/j.jhin.2020.11.020
- [9] Unroe KT, Evans R, Weaver L, et al. Willingness of long-term care staff to receive a COVID-19 vaccine: a single state survey. *J Am Geriatr Soc*. Epub ahead of print 28 December 2020. DOI: 10.1111/jgs.17022
- [10] Lucia VC, Kelekar A and Afonso NM. COVID-19 vaccine hesitancy among medical students. *J Public Health Oxf Engl*. Epub ahead of print 26 December 2020. DOI: 10.1093/pubmed/fdaa230
- [11] Kwok KO, Li K-K, Wei WI, et al. Influenza vaccine uptake, COVID-19 vaccination intention and vaccine hesitancy among nurses: a survey. *Int J Nurs Stud* 2020;114:103854.
- [12] Dror AA, Eisenbach N, Taiber S, et al. Vaccine hesitancy: the next challenge in the fight against COVID-19. *Eur J Epidemiol* 2020;35:775–779.
- [13] Greech V and Gauci C. Vaccine hesitancy in the University of Malta Faculties of Health Sciences, Dentistry and Medicine vis-à-vis influenza and novel COVID-19 vaccination. *Early Hum Dev*. Epub ahead of print 12 November 2020. DOI: 10.1016/j.earlhumdev.2020.105258
- [14] Gagneux-Brunon A, Detoc M, Bruel S, et al. Intention to get vaccinations against COVID-19 in French healthcare workers during the first pandemic wave: a cross-sectional survey. *J Hosp Infect Journal* 2021;108:168–173.
- [15] Statens Serum Institut. *Surveillance in numbers, graphs and maps. [Overvågning i tal, grafer og kort]*. <https://statistik.ssi.dk/sygdomsdata#!?vaccination=11&sex=3&landsdel=100&xaxis=Cohort&show=Graph&datatype=Vaccination> (accessed 1 August 2022).
- [16] Smith ME. *Mediacovering of the HPV-vaccine in Denmark [Mediedækning af HPV-vaccinen i Danmark: Et studie af mediernes indflydelse på HPV-debatten fra 1991 – 2017]*. Aarhus: Centre for Science Studies, University of Aarhus, 2018.
- [17] Gortz M, Brewer NT, Hansen PR, et al. The contagious nature of a vaccine scare: how the introduction of HPV vaccination lifted and eroded MMR vaccination in Denmark. *Vaccine* 2020;38:4432–4439.
- [18] Gualano MR, Corradi A, Voglino G, et al. Healthcare workers' (HCWs) attitudes towards mandatory influenza vaccination: a systematic review and meta-analysis. *Vaccine* 2021;39:901–914.
- [19] Jorgensen P, Mereckiene J, Cotter S, et al. How close are countries of the WHO European region to achieving the goal of vaccinating 75% of key risk groups against influenza? Results from national surveys on seasonal influenza vaccination programmes, 2008/2009 to 2014/2015. *Vaccine* 2018;36:442–452.
- [20] Schumacher S, Salmanton-García J, Cornely OA, et al. Increasing influenza vaccination coverage in healthcare workers: a review on campaign strategies and their effect. *Infection* 2021;49:387–399. DOI: 10.1007/s15010-020-01555-9
- [21] Shaghghi A, Bhopal RS and Sheikh A. Approaches to recruiting 'hard-to-reach' populations into re-search: a review of the literature. *Health Promot Perspect* 2011;1:86–94.

- [22] Braun V and Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;2:77–101. DOI: 10.1191/1478088706qp063oa
- [23] O'Brien BC, Harris IB, Beckman TJ, et al. Standards for reporting qualitative research: a synthesis of recommendations. *Acad Med J Assoc Am Med Coll* 2014;89:1245–1251.
- [24] MacDonald NE. Vaccine hesitancy: definition, scope and determinants. *Vaccine* 2015;33:4161–4164.
- [25] Estrela M, Magalhães Silva T, Roque V, et al. What determines health professionals' COVID-19 vaccine hesitancy? A nationwide study. *Eur J Clin Invest* 2022;7:e13785.
- [26] Navin MC, Oberleitner LM-S, Lucia VC, et al. COVID-19 vaccine hesitancy among healthcare personnel who generally accept vaccines. *J Community Health* 2022;3:1–11.
- [27] Marsaa K, Mendahl J, Heilman H, et al. Pride and uncertainty. *J Hosp Palliat Nurs* 2021;23:140–144.
- [28] Karlsson LC, Soveri A, Lewandowsky S, et al. Fearing the disease or the vaccine: the case of COVID-19. *Personal Individ Differ* 2021;172:110590.
- [29] Shekhar R, Sheikh AB, Upadhyay S, et al. COVID-19 vaccine acceptance among health care workers in the United States. *Vaccines*; 9. Epub ahead of print 3 February 2021. DOI: 10.3390/vaccines9020119
- [30] Lazarus JV, Ratzan SC, Palayew A, et al. A global survey of potential acceptance of a COVID-19 vaccine. *Nat Med* 2021;27:225–228.
- [31] Soares P, Rocha JV, Moniz M, et al. Factors associated with COVID-19 vaccine hesitancy. *Vaccines*; 9. Epub ahead of print 22 March 2021. DOI: 10.3390/vaccines9030300
- [32] Ward K, Gott M and Hoare K. Participants' views of telephone interviews within a grounded theory study. *J Adv Nurs* 2015;71:2775–2785.