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Research Paper

The Mediating Role of Existential Anxiety and Conspiracy Beliefs in the Relationship Between Fear of COVID-19 and the Intention to Get Vaccinated in the Iranian Population



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ABSTRACT

Objective The Covid-19 epidemic has caused a great deal of concern for the people, and even worse, the issue of vaccination and its dangers is still relevant today. This study aimed to mediate the role of existential anxiety and conspiracy beliefs in the relationship between fear of COVID-19 and the intention to get vaccinated.

Methods The type of research is a descriptive correlation. The statistical population of the study included Iranian adults in the age range of 20 to 65 years, from which 533 people were randomly selected and responded to the online survey. The data were analyzed by the Pearson correlation coefficient method and structural equation model. Five questionnaires including fear of COVID-19, existential anxiety, Conspiracy beliefs and Intention to get vaccinated, were distributed among the research samples.

Results The results showed that there was a positive and significant correlation between fear of Covid-19 with existential anxiety and intention to get vaccinated ($P < 0.01$), also, there is a positive and significant correlation between existential anxiety and conspiracy beliefs ($P < 0.01$) and a negative and significant correlation between existential anxiety and conspiracy beliefs to get vaccinated ($P < 0.01$).

Conclusion The model analysis also showed that when there are anxiety and conspiracy theories between fear of Covid-19 and the intention to get vaccinated, people reduce their desire to get vaccinated.

1. Introduction

Since December 2019, a new type of coronavirus called novel coronavirus (2019-nCoV, or COVID-19) was identified in Wuhan, China. The COVID-19 can cause symptoms including fever, difficulty in breathing, cough, and invasive lesions on both lungs of the patients (Song & Shan et al, 2020). According to the latest statistics of the Ministry of Health of Iran, 123275 people died of coronavirus by October

(World Health Organization, 2020). So far, almost every country in the world has agreed that vaccination is the best possible way to control and eradicate the coronavirus worldwide (Randolph & Barreiro, 2020). Factors such as individual differences, lack of fear of coronavirus, type of attitude, also play an essential role in influencing how people respond to ongoing vaccination campaigns and, at a deeper level, how they deal with

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COVID-19 death anxiety (Dodd, Pickles, Nickel, et al, 2021). The COVID-19 outbreak has also brought a variety of negative psychological costs including stress, depression and anxiety, acute stress disorder symptoms, post-traumatic stress disorder, post-traumatic stress symptoms, suicide ideation, and psychological distress, burnout and somatization (de Pablo, Serrano, Catalan et al, 2020). Reuken et al (2020) emphasized that people who are more afraid of COVID-19 have more protective behaviors.

Fear of infection due to being in public, contact with the infected surface and very close contact with other human beings has caused them to avoid daily activities, which is the core of all these conditions, one of the most basic human emotions, namely fear (Polizzi, Lynn & Perry, 2020). Fear is an emotion created by perceiving a threat and allowing a person to cope with danger. Thus, it has an adaptive function (Patrizia et al., 2020). Preliminary reports indicate that people are afraid of the Covid virus - 19 related to various issues. In an ecchymosis study, Schimmenti, Billieux and Starcevic (2020) identified four areas of fear: 1) fear for the body, 2) fear for essential people, 3) fear of ignorance, and 4) fear of unemployment.

At present, no country is immune to the effects of Covid-19, and many countries are still suffering from continuous waves of Covid-19 outbreaks (Mamun et al, 2021). Expectations for Covid-19 control depend more on the vaccines produced. Through global vaccination programs, governments around the world can potentially control the prevalence of Covid-19 and significantly reduce the negative impact of Covid-19 (Yeh et al, 2021). Although several approved vaccines are currently available, an unresolved issue is the willingness of people to get vaccinated (Wang et al, 2021). There seems to be skepticism about the acceptance of the Covid-19 vaccine because of the spread of misinformation among the people, and despite countless efforts to produce a safe and effective vaccine, people are reluctant to accept the vaccine. Vaccine hesitancy has been listed as one of the top ten global health threats, particularly due to vaccine misinformation in social media. In addition, individuals may not want to endure short-term adverse reactions, such as having a high fever and sore arms caused by the vaccines (Trogen, Oshinsky & Caplan, 2020). Numerous studies have suggested different factors in acceptance and hesitation in receiving the vaccine when introducing a new vaccine (Larson et al, 2018). These include vaccine safety and efficacy,

adverse health consequences, misconceptions about the need for vaccination, lack of trust in the health system, and lack of public awareness about vaccine-preventable diseases (Halpin & Reid, 2021).

In light of the crucial importance of global vaccination to the management of COVID 19, the importance of understanding psychological mechanisms, which contribute to attitudes toward vaccinations, cannot be understated (Barello, Nania, Dellafiore, et al. 2020). Accordingly, several attempts have been made to suggest a psychological profile of COVID 19 vaccine-hesitant. For example, Murphy et al (2021) reported that COVID 19 vaccine hesitant/resistant individuals exhibit a different psychological profile when compared to individuals willing to accept COVID 19 vaccinations (e.g., higher religiosity, disagreeableness and emotional instability). The unbridled release of Covid-19, the lack of effective drug treatment, and ultimately mortality from the disease are among the most critical factors that can significantly affect the mental health of people infected with the virus (Xiang, Yang, Zhang et al, 2020). Factors such as fear of being infected or infecting others, long period of quarantine, insufficient support and lack of access to medical care, and finally fatigue and impatience from quarantine and isolation cause anxiety and mood problems (Liu, Yang, Zhang et al, 2020). One of the psychological problems that was most common among the general population during the spread of the Covid-19 virus was existential anxiety. Tillich (1952) hypothesized that existential anxiety contains three domains: (1) anxiety about fate and death; (2) anxiety of emptiness; (3) anxiety about guilt and condemnation defined as the result of the threat to moral and ethical self-affirmations. Psychological disturbances such as panic, existential anxiety, depression, fear, denial and despair are the most basic traumatic psychological reactions in the most affected and at-risk individuals of Covid-19 (Qiu, Shen, Zhao et al, 2020). The research of Stynska et al (2020) draws attention to the fact that fear and anxiety is the most important and most essential element of human existence. Recently, Courtney et al (2020) have proposed a terror management health model (TMHM). According to TMHT, the COVID-19 pandemic heightens the consciousness of human mortality, activates death-related thoughts, and forces people to make decisions and engage in health behaviors.

Recently, Emanuel et al (2020) described the COVID-19 pandemic as a situation that has created an environment in which existence is more fragile and existential anxiety or terror rises in people. [Bobdey & Ray \(2020\)](#) claim that the COVID-19 pandemic, may activate and maintain existential anxiety or change the pleasure from human life or the mental balance.

In the event of a national or global catastrophe, some people, by producing and cultivating conspiracy theories, seek reason and logic to guide their behavior and thought ([Oleksy, Wnuk., Maison & et al, 2021](#)). Conspiracy beliefs are a specific set of beliefs that ideate about the factors involved in starting a disaster and identifying trustworthy as unreliable people ([Van Prooijen & Douglas, 2017](#)). In today's modern world, access to the Internet and activity on virtual social networks is accelerating the spread of conspiracy theories ([Douglas et al, 2015](#)). In the case of Covid-19, people who use their virtual social pages as a source of information are more likely to engage in conspiracy theories and accept them sooner ([Romer & Jamieson, 2020](#)). In addition, the importance and pervasiveness of the subject of the Covid-19 virus has led to misleading and misleading information, including the cause of the virus outbreak and ways to treat it, circulating at an uncontrollable rate and volume ([Shahsavari et al, 2020](#)).

As for COVID-19 conspiracy beliefs, [Grimes \(2021\)](#) argued that COVID-19 conspiracy theories, arising from existing conspiracy theories, have propagated heavily across social media. A non-exhaustive list of common themes has included the following: (1) COVID-19 is a hoax or, alternatively, deliberately engineered; (2) COVID-19 is a pretext for a mass vaccination program as a means to microchip people with vaccines and (3) COVID-19 is caused by 5G electromagnetic radiation ([Bruns, Harrington & Hurcombe, 2020](#)); some have also asserted that the pandemic is part of Gates's depopulation plans ([Kelion, 2020](#)). Indeed, conspiracy beliefs were associated with mistaken fears about the nature and effects of COVID-19 vaccinations and an unwillingness to vaccinate ([Hornsey, Finlayson, Chatwood & Begeny, 2020](#)).

Since COVID 19 vaccinations are pretty novel, little information is currently available on psychological mechanisms, which underlie ambivalence and concerns about the vaccination. For example, [Palamenghi et al \(2020\)](#) claimed that general mistrust of science might be a contributing factor to Italian citizens' low willingness to receive COVID 19

vaccinations when they were to become available. These beliefs can also be defined as an attempt to explain events that are threatening or inconsistent with personal expectations for producing some short-term benefits such as uncertainty reduction ([Miller, 2020](#)).

Many recent studies have shown that Existential anxiety and conspiracy beliefs are related to reducing the intention to vaccinate against COVID-19 ([Bertin, Kenzo & Sylvain, 2020](#)). In a nationwide survey in the USA, the rejection of vaccine conspiracies was a significant predictor of vaccination intent ([Ruiz & Bell, 2021](#)), while in Jordan, vaccine conspiracy beliefs were associated with a significantly higher level of COVID-19 vaccine hesitancy ([Sallam, Dababseh, Eid et al, 2021](#)). However, contrasting results were also found. For instance, the hypothesis that people who have stronger COVID-19 conspiracy beliefs were less willing to take a vaccine against COVID-19 was not supported in a sample of the Finnish public ([Soveri, Karlsson, Antfolk et al, 2021](#)). As for conspiracy beliefs and vaccination intention, some authors have suggested that anti-vaccination beliefs are part of a psychological propensity to believe in conspiracies ([Goldberg & Richey, 2020](#)). Vaccine conspiracy beliefs have been found are negatively related to parents' willingness to vaccinate their children with the HPV vaccine ([Callaghan, Motta, Sylvester et al, 2019](#)). In the same line, belief in COVID-19-related conspiracy theories has are inversely related to the intention to undertake the SARS-CoV-2 vaccine ([Romer & Jamieson, 2020](#)). COVID-19 conspiracy beliefs have also been associated with negative attitudes toward vaccine science and negatively predicted the intentions to be vaccinated against COVID-19 in the future ([Bertin, Kenzo & Sylvain, 2020](#)).

Overall, according to research, the Covid-19 pandemic can have adverse psychological effects and consequences, including anxiety, depression, and stress ([Ifthikar, Sajjad Fakh, & Johnson, 2021](#)). In contrast, some people seek to be vaccinated to alleviate this anxiety or stress, but in the meantime, there are many misconceptions about the vaccine according to the studies, this means that conspiracy theories have led some people in all countries to launch a "No" campaign on Covid-19 vaccination. Given that some people in Iran still refuse to be vaccinated and put forward conspiracy theories that are somehow related to distrust of the government and political issues, this study seeks to answer the hypothesis that conspiracy beliefs and existential anxiety

are involved in the relationship between fear of Covid-19 and intention to get vaccinated.

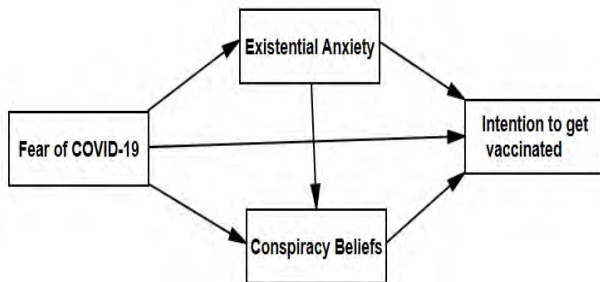


Figure 1. Theoretical model

2. Materials and Methods

This study was of structural equation modeling and correlation type. The statistical population of the study included Iranian adults in the age range of 20 to 65 years, from which 533 people (51.59% male and 48.41% female) were randomly selected and responded to the online survey. Participants included 275 men and 258 women members of the social networks Instagram and WhatsApp. The data was collected from April 1 to May 31, 2021, through an online survey. The survey link was shared on social media and people were invited to participate in the research and answer the questionnaires. Inclusion criteria included the following: 1) all participants were residents in Iran and 2) have not yet received the vaccine for Covid-19 disease. In this study, all ethical criteria of the research were observed, so that all participants expressed their informed consent before answering the questionnaires in a form, all the principles of confidentiality were maintained in this research, the results of the research were placed as a scientific article in the link Available to all and participants were free to answer the questionnaires voluntarily. The employed instruments in this research study were as follows:

A. Fear of COVID-19: This self-report measure was developed by Ahorsu et al (2020) to assess FC-19 among the general population. The Fear of COVID-19 Scale (FCV-19S) consists of seven items (e.g., *I am most afraid of coronavirus-19') (rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree)). The total score ranges from seven to 35, with higher scores reflecting higher levels of FC-19. The FCV-19S has been shown to possess robust psychometric properties, including internal consistency (Cronbach's $\alpha = 0.82$), composite reliability (0.88), test-retest reliability (ICC = 0.72) and concurrent validity. Alizadehfard and Alipour

(2020) have also reported good internal consistency (Cronbach's $\alpha = 0.86$) Cronbach's α in the current study was 0.84.

B. Existential anxiety: Existential anxiety was measured using the Existential Concern Questionnaire (van Bruggen et al, 2017). Composed of 22 items, it measures three dimensions of existential anxiety. twelve items for General existential anxiety, six items for Death anxiety, and four items for Avoidance. Also, for this scale, a 5-point Likert scale with anchors from 1 "disagree" to 5 "agree" was used. In line with the authors' suggestions, the global existential anxiety score (Cronbach's $\alpha = 0.91$) was used in this study. In Iran, Cronbach's α was equal to 0.80 and its internal consistency was obtained by halving method, which is: the first part is equal to 0.72 and the second part is equal to 0.86 (Mohammadzadeh & Jomehri, 2016).

C. Conspiracy beliefs: Conspiracy beliefs were measured with the Conspiracy Beliefs using the Scale (Brotherton, French, & Pickering, 2013). This tool consists of 15 items that measured conspiracy beliefs organized into five factors represented by three items: Government malfeasance, Extraterrestrial cover-up, Malevolent global conspiracies, Personal wellbeing and Control of information. Participants rated items on a 5-point Likert-type scale, with a qualitative label associated with each point (1: not true; 2: probably not true; 3: not sure/cannot decide; 4: probably true; 5: true). As already used in other studies (Georgiou, Delfabbro & Balzan, 2020), we obtained an overall score indicating the individual aptitude to rely on conspiracy beliefs (Cronbach's $\alpha = 0.92$). The validity and reliability of this questionnaire in Iran were confirmed by Sadeghiyeh et al (2021), 0.87 and 0.89, respectively. They also mentioned Cronbach's α level of 0.90.

D. Intention to get vaccinated: Vaccination intent was measured with a one-item measure from Wetzels, Odekerken & Van Oppen (2009) Participants were asked the following question: "When a coronavirus vaccination becomes available to you, how likely is it that you will have one?" The response rate was on an eleven-point scale with anchors from "extremely unlikely" (1) to "extremely likely" (10). Data analysis was performed using SPSS 26 and AMOS 24 software. To evaluate the proposed model of this research, the SEM using AMOS software and the Maximum Likelihood Method of the model have been used (Fitri, Asih & Takwin, 2020).

3. Results

533 people participated in this study, of which 51.59% were men and 48.41% were women. The mean age of men was 45.67 and the mean age of women was 42.74. Table 1 shows the mean, standard deviation and Pearson correlation coefficient and Kolmogorov-Smirnov normality test between the studied variables. The normality of the data is shown by the Kolmogorov - Smirnov test, which indicates

that all variables are normally distributed. There is a positive and significant correlation between fear of COVID-19 with existential anxiety ($r = 0.49$) and intention to get vaccinated ($r = 0.31$) and also between existential anxiety and conspiracy beliefs ($r = 0.42$). Also, there is a significant negative correlation ($r = -0.51$) between existential anxiety and intention to get vaccinated ($r = -0.25$) and between conspiracy beliefs and intention to get vaccinated.

Table 1. Means, standard deviations and Pearson's zero-order correlations

Variable	Mean	SD	1	2	3	4	K-S	Sig
1 Fear of COVID-19	24.70	3.12	-				0.53	0.11
2 Existential Anxiety	34.55	5.70	0.49**	-			0.41	0.71
3 Conspiracy Beliefs	41.12	6.15	0.11	0.42**	-		0.56	0.50
4 Intention to get vaccinated	5.21	1.86	0.31**	-0.25**	-0.51**	-	0.13	0.10

$N = 533$ (* $p < .05$) (** $p < .01$)

Table 2 shows that the model fit indices, ie $\chi^2/df = 0.68$ less than 3, IFI= 0.94, TLI= 1.06, RFI= 0.99, CFI= 1, more than 0.9 indicate the appropriate fit of the model, as well as NFI= 0.99 more than 0. 8 and RMSEA= 0.003 less than 0.08. The direct, indirect, and total effects of Fear of Covid-19 on Intention to get vaccinated by Mediating existential anxiety and conspiracy theories are listed in Table 2. The direct effect of fear of Covid-19 on existential anxiety and Getting vaccinated is 0.43 and 0.29, respectively. The direct effects of existential anxiety and Conspiracy Beliefs on Intention to get vaccinated were -0.21 and -0.43, respectively. The direct effect of existential

anxiety on conspiracy beliefs was 0.39. However the indirect effect of fear of Covid-19 on the Intention to get vaccinated mediated by existential anxiety was equal to -0.18 and the indirect effect of fear of Covid-19 on the Intention to get vaccinated mediated by existential anxiety and conspiracy beliefs was -0.22. The effects of total fear of Covid-19 on Intention to get vaccinated due to existential urgency equal to 0.25 and due to existential anxiety and conspiracy beliefs equal to 0.21, indicating that existential anxiety and conspiracy beliefs among the Iranian population has reduced the Intention to get vaccinated.

Table 2. Coefficients of direct effects between research variables in the final standard model

Paths	Direct effect	Indirect effect	Total effect	P
Fear of COVID-19 → Existential Anxiety	0.43	-	0.43	0.001
Fear of COVID-19 → Intention to get vaccinated	0.29	-	0.29	0.001
Existential Anxiety → Intention to get vaccinated	-0.21	-	-0.21	0.001
Conspiracy Beliefs → Intention to get vaccinated	-0.47	-	-0.47	0.001
.x istential Anxiety → Conspiracy Beliefs	0.39	-	0.39	0.001
Fear of COVID-19 → Existential Anxiety → Intention to get vaccinated	-	-0.18	0.25	0.001
Fear of COVID-19 → Existential Anxiety → Conspiracy Beliefs → Intention to get vaccinated	-	-0.22	0.21	0.001

$\chi^2 = 1.37$, $df = 2$, $\chi^2/df = 0.68$, IFI= 0.94, TLI= 1.06, RFI= 0.99, CFI= 1, NFI= 0.99, RMSEA= 0.003

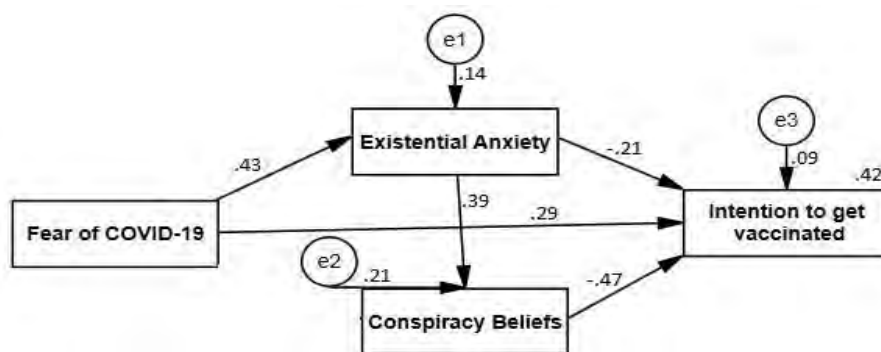


Figure 2. Standardized model

4. Discussion and Conclusion:

To analyze the findings, structural equation analysis has been used and the results of this study showed that the model of the relationship between fear of Covid-19 with the intention to get vaccinated due to existential anxiety and conspiracy theories has a good fit, meaning that existential anxiety and conspiracy theories play an important role in Covid-19 vaccination. At first, it can be said that there is a positive and significant relationship between fear of Covid-19 and the intention to get vaccinated, which is consistent with the results of research by Murphy et al (2021) and Sherman et al (2020). In justifying this relationship, it can be said that fear of Covid-19 and awareness of the resulting deaths raises concerns in the community, and under such awareness, people are more inclined to vaccinate Covid-19. According to Pyszczynski et al (1999), awareness of a death threat can be defused by activating proximal defenses to reduce the feeling of vulnerability.

Also, in the model, a positive and significant relationship was found between fear of Covid-19 and existential anxiety, which is consistent with the results of research by Emanuel et al (2020). In fact, fear of Covid-19 has increased existential anxiety in the general population, which can be explained by TMHT. According to TMHT, the COVID-19 pandemic heightens the consciousness of human mortality, activates death-related thoughts, and forces people to make decisions and engage in health behaviors. Additionally, people may reduce perceived death and health vulnerability risk caused by pandemic in two ways by maladaptive or adaptive health behaviors (Emanuel, Solomon, Fitchett et al, 2020). This important finding highlights the fact that existential concerns are part and parcel of vaccination anxiety, and this may emphasize the importance of addressing

concerns, especially when one considers potential vaccination ratio fluctuations as vaccinations are becoming available to larger portions of the population (Pyszczynski, Greenberg & Solomon, 1999). It seems that such an understanding may enable practitioners and policy makers to gain a deeper understanding into the fears and concerns surrounding COVID 19 vaccinations, in order to address them more effectively, which may contribute to reduce such anxiety and promote COVID 19 vaccination. Bobdey & Ray (2020) claim that even after the physical symptoms of the disease are over, people may suffer from social and mental problems. Therefore, it seems that difficult life experiences, for example the COVID-19 pandemic, may activate and maintain existential anxiety or change the pleasure from human life or the mental balance, which may modify our beliefs about the sense of our own existence, but also the significance of past difficult events.

Also, according to the model, the results showed that existential anxiety and conspiracy beliefs have a negative and significant relationship with the intention to get vaccinated, and this indicates that in the general population, the more existential anxiety and conspiracy beliefs, the less people want to get vaccinated. In justifying this result, Palamenghi et al (2020) claimed that general mistrust of science may be a contributing factor to Italian citizens' low willingness to receive COVID 19 vaccinations when they were to become available. Belief in conspiracy theories, through its effect on reducing trust in science and medical institutions, as well as little objective knowledge about vaccines, raises public skepticism about vaccines (Milošević, Mari, Vdović & Milošević, 2020). In a study in France, belief in extraterrestrial corona conspiracy theories (related to foreign governments and scientists) had a stronger negative

correlation with the scientific view of vaccines and vaccination intent than intra-group conspiracy theories (related to the French government). Explaining this finding took into account the external origin of the disease (for example, the role of Chinese authorities) and distrust of international pharmaceutical companies (including the Pasteur Institute) (Bertin, Nera & Delouvé, 2020). Indeed, conspiracy beliefs tend to be more prevalent in social crisis situations dominated by collective uncertainty and fear and conspiracy beliefs were associated with mistaken fears about the nature and effects of COVID-19 vaccinations and an unwillingness to vaccinate (Soveri, Karlsson, Antfolk et al, 2021). As TMT argues, to give irrefutable meaning to events and obtain a sense of symbolic immortality, individuals tend to strengthen bonds with specific social groups (Fitri, Asih & Takwin, 2020). when individuals experience a state of fear, they can face it with proximal defenses, directly and rationally oriented to eliminate the dangerous stimulus such as vaccination whereas, if existential anxiety activates distal defenses, irrational and unrealistic beliefs, such as conspiracy theories, may occur to support the individual in making sense of one's existential anxiety. Overall, the results of this study showed that the general population tends to be vaccinated for fear of developing Quid-19, but when conspiracy theories (e.g., vaccines kill humans) and existential anxiety were introduced, some It has reduced the number of people vaccinated.

This research has certain limitations. First, because the research method is correlation, it does not allow us to infer cause and effect. Second, the results of this study should be cautiously generalized to Iranian society because the samples may not have been selected from a homogeneous population. It is suggested that other variables related to vaccination intent, such as death anxiety, be considered in future research and that the results of this study be made available to the Ministry of Health and Clinical Centers for vaccination, greater control of the coronavirus, and reduced fear of Covid-19 Let's take steps forward.

5. Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed about the purpose of the

research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

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Authors' contributions

All authors have participated in the design, implementation and writing of all sections of the present study.

Conflicts of interest

The authors declared no conflict of interest.

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