



## Research Paper

# Investigating the Effectiveness of Web-Based Theory-Based Motivational Interviewing on the COVID-19 Vaccine Hesitancy among the Health Care Workers of a Military Hospital in Tehran



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### Abstract

The purpose of this study was to investigate the effectiveness of motivational interviewing on the COVID-19 Vaccine Hesitancy in Military Besat Hospital's health workers. The research is semi-experimental, it also include a pre-test/post-test design and a control group. The study population include the health workers of Besat Hospital in Tehran in November 2021. The sample consisted of 240 workers, who were selected through convenience sampling, which were sorted into two experimental and control groups of 120 people. After the pre-test, the experimental group went through two 4-hour online motivational interviewing sessions. Then, the post-test was taken. The research tool was the self-administrated scale for the COVID-19 Vaccine Hesitancy with a content validity of 0.87 and Cronbach's alpha of 0.96. The data were analyzed in the descriptive part by extracting the mean and standard deviation and in the inferential part by analyzing the covariance with SPSS ver. 21. Motivational interviewing significantly increases the tendency to vaccinate, which was significant at the  $P=0.037$  level. The covariance analysis test showed that the mean scores of the health belief model factors include susceptibility ( $P<0.03$ ), severity ( $P<0.01$ ), perceived benefits ( $P<0.04$ ), and perceived barriers ( $P<0.05$ ), self-efficacy ( $P<0.02$ ) and cues to action ( $P<0.04$ ). After the educational intervention, there was a significant difference in the experimental group compared to the control group. Motivational interviewing can be used to increase the tendency to receive the COVID-19 vaccine. It is recommended to teach motivational interviewing in health centers to personnel involved in vaccination services.

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## Introduction

In 2019, the emerging disease of COVID-19 spread globally, and the need for vaccination was strongly felt (Hause, 2022). With the efforts of health and medical professionals, various vaccines were offered around the world and the vaccination program was put on the agenda of the societies (Organization, 2022).

However, because there wasn't much knowledge regarding the COVID-19 virus, a significant percentage of people were skeptical about receiving the vaccine and refused to take it (Salomoni et al., 2021).

In addition to the unknown nature of this virus, people have other reasons for their unwillingness to receive the COVID-19 vaccine. Among those reasons are: political reasons between countries such as biological attacks through vaccines, waiting for better vaccines in the future, fear of possible side effects, uncertainty and distrust in their effectiveness, etc (Lazarus et al., 2020).

In any case, the reluctance to get the COVID-19 vaccine for whatever reason caused a significant number of people in every community to not receive the COVID-19 vaccine, and according to the warnings of the World Health Organization, if the quantity of individuals who did not want to receive the vaccine becomes significant, the vaccination program might fail (Yeh et al., 2021).

Because the ground for the dynamics and spread of the COVID-19 virus was still

maintained to a large extent (Moore et al., 2022).

Therefore, the World Health Organization asked the member countries to, in the first step, examine the hesitancy to receive the COVID-19 vaccine according to scientific theories, and in the second step, by using known scientific methods, reduce this problem (Patel et al., 2021).

In the meantime, one of the groups at risk was the medical staff who usually work in hospitals, and among these people, a significant number of them may not have the desire to receive the COVID-19 vaccine despite the fact that the time for their vaccination had arrived (Biswas, Mustapha, Khubchandani, & Price, 2021).

Therefore, since this group was directly exposed to the COVID-19 virus, they were more likely to contract this disease (Paris et al., 2021).

Therefore, it seemed necessary to use approved methods in order to encourage them to receive the COVID-19 vaccine and reduce the risk of contracting this disease, while also reducing their concerns (Kose et al., 2021).

One of the well-known scientific theories in the reluctance to get a vaccine for similar diseases such as influenza is the theory of the health belief model (Limbu, Gautam, & Pham, 2022).

The health belief model offers a valuable framework in order to define and predict vaccine hesitancy so that this model can be

used to develop an educational program to reduce the COVID-19 vaccine hesitancy (Limbu et al., 2022).

According to this theory, which has six components, the desire or unwillingness to receive a vaccine is related to the issue of whether people in the community are concerned (perceived susceptibility) about the risks of contracting a disease (in this study, the COVID-19 disease), the extent of this concern (perceived severity), belief in the benefits of vaccination and that the vaccine can protect them from the disease agent (perceived benefits), the issues that discourage a person from vaccination (perceived barriers), the amount of information and resources that can be used to guide the person in the direction of receiving the vaccine (cues to action) and finally the person's belief that they also have an important role in reducing the possibility of infection and contracting the disease by receiving the vaccine. (self-efficacy) (Wong et al., 2021).

In this regard, as was previously mentioned, the World Health Organization had recommended the use of methods that can create the desire to receive vaccines in the community. Motivational interviewing was one of these methods in which its effectiveness was confirmed regarding the issue of behavioral changes related to health (Gabarda & Butterworth, 2021).

It seemed that it could be used to increase the tendency to receive the COVID-19 vaccine, especially in people who had doubts about receiving it according to the health

belief model theory (Breckenridge, Burns, & Nye, 2022).

The original inception of the model was designed as a means for smokers and alcoholics to understand how to quit smoking and alcohol, but these days it is used for people to quit virtually any behavior, ranging from alcohol abuse and drug addictions to overeating, anorexia or an inactive lifestyle. As was previously mentioned, the reluctance to receive the COVID-19 vaccine can also be considered in this format, because the reluctance to vaccinate is a behavior (Yeh et al., 2021).

Motivational interviewing is a method that tries to change health-related behavior without challenging, questioning, and discussing the person's beliefs (France et al., 2016).

This method intensifies the ambivalences and doubts of a person towards a subject and brings these ambivalences to light, and by fueling the self-efficacy of the person and strengthening it, it encourages healthy behavioral changes (Shingleton & Palfai, 2016).

Accordingly, in this study our objective was to investigate the beliefs of the military staff of the hospitals of Tehran regarding the COVID-19 disease, the existing concerns about vaccination and the degree of willingness of these people to be vaccinated by using motivational interviewing.

### **Research methodology**

This research was semi-experimental, it also include a pre-test/post-test design and a

control group. The target population was all military health workers of Besat Hospital in Tehran from the end of November to the middle of March 2021. The target sample consisted of 240 workers who were selected through convenience sampling.

The minimum sample size based on the error rate of 0.05 and confidence coefficient of 95% in a community with an approximate size of 1500 people using Cochran's sample size calculation method was estimated to be 216.23, which due to the possibility of attrition, 240 people were finally selected to complete the questionnaires.

$$n = \frac{(p_{1d}(1-p_{1d})+p_{2d}(1-p_{2d}))(Z_{\alpha}+Z_{\beta})^2}{(p_{1d}-p_{2d})^2}$$

Therefore, in order to select the samples, among the 673 people who had not take the vaccine so far, despite having the opportunity to receive the vaccine, according to the inclusion and exclusion criteria (The inclusion criteria were: living in Tehran, having at least a high school diploma, being the age of 30-55 years old, having the necessary skills to be able to participate in online meetings, and according to the initial interview, not wanting to receive the COVID-19 vaccine. The exclusion criteria were: not being a health worker, having a history of being infected with COVID-19, having a medical history of underlying diseases such as high blood pressure, heart disease, diabetes, etc., undergoing other medical trainings at the same time, using drugs or alcohol, not attending the training sessions, and incomplete completion of the questionnaires) 240 people were selected and included in the

sample. Then, they were divided into two experimental and control groups of 120 people by simple random allocation.

This study's tool was Rahmati's tendency to receive the COVID-19 vaccine questionnaire [18]. This questionnaire has 33 questions, which includes six subscales: perceived susceptibility (4 questions), perceived severity (6 questions), perceived benefits (5 questions), perceived barriers (7 questions), cues to action (6 questions), and finally self-efficacy (5 questions). The scoring was done in a Likert scale which was as follows: strongly disagree (with a score of zero), disagree (with a score of 1), neutral (with a score of 2), agree (with a score of 3), and finally, strongly agree (with a score of 4).

The minimum score for the tendency to receive the COVID-19 vaccine was zero and the maximum score was 132. In the stratification of the tendency to receive the vaccine, a score between 0-25 is a very weak tendency, 21 to 50 is a weak tendency, 51 to 75 is a moderate tendency, 76 to 100 is a high tendency, and finally 101 to 132 is considered a very high tendency. The CVR was 0.73-0.87, the CVI was 0.71-0.84, and the Cronbach's alpha was 0.87-0.96 (Varmazyar, Mortazavi, Arghami, & Hajizadeh, 2014).

The health expert based in Besat Hospital made a phone call to the hospital staff whose time to receive the vaccine has arrived but have not yet received the vaccine and inquired about their inclination or disinclination to accept the vaccine.

Then, among the people who were unwilling to receive the COVID-19 vaccine,

during a short one-minute interview, they were asked about their willingness to participate in the present study in the form of a webinar, and the target sample of 240 people was selected according to the study’s inclusion and exclusion criteria.

Next, an informed consent form along with the tendency to receive the COVID-19 vaccine questionnaire was provided to the members of both groups through the WhatsApp social network, and it was completed with the follow-ups of the lead researcher.

Due to the COVID-19 pandemic, short-term motivational interviewing was used in the form of a webinar. Two days before the start of the webinar session, a phone call was made with the experimental group’s participants, and they were informed of the

date and time of the training session and were provided with the meeting link. They were also informed about how to install the Adobe Connect application and how to enter the training session.

Then, the motivational interviewing intervention was presented to the experimental group for four hours in the form of two two-hour sessions on two consecutive days.

During this period, the control group was not subject to any form of intervention. In the end, the post-test was conducted for the two groups through the WhatsApp social network, and to adhere to the ethical principles, the desired intervention was also presented to the control group with a similar method. It should be noted that the intervention was presented based on the protocol of Table 1.

**Table 1. Web-based short-term motivational interviewing protocol**

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| First session  | In this meeting, therapists and health workers introduced themselves and discussed possible problems related to the COVID-19 disease. Next, the workers listed their most important concerns. Then, the discussion regarding vaccination and its effectiveness in the prevention of contracting the disease and becoming immune to the COVID-19 disease was discussed. Also, the tendency to receive the COVID-19 vaccine among health workers was discussed. In addition, the question was raised as to why they have not yet attempted to get vaccinated. Subsequently, the stage of change, according to Procheska and Diclemente, was examined by the consultant regarding the position of the workers regarding whether or not to receive the COVID-19 vaccine. The participants then were asked if they would like to receive the COVID-19 vaccine following the intervention, and in which stage of change their willingness is placed. |
| Second session | At the beginning of this session, the indecisiveness of the health workers was discussed. On the one hand, they had concerns about the risks of contracting the COVID-19 disease, and on the other hand, they were concerned about receiving the COVID-19 vaccine due to the existence of possible complications, these concerns were evaluated and discussed. Afterward, each one of the workers tried to discover the hindrances related to the desire to receive or not to receive the COVID-19 vaccine within themselves and bring them to the surface. The consultant made the health workers realize that on the one hand, they are worried about the COVID-19 disease and on the other hand, despite being aware of these risks, they are reluctant to receive the COVID-19 vaccine. In the                                                                                                                                             |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>following, an attempt was made to identify the factors of attraction for the health workers to receive the COVID-19 vaccine and the obstacles that made them unwilling to receive this vaccine.</p> <p>In this meeting, each of the health workers tried to examine the benefits and drawbacks of maintaining the status quo and changing their tendency to receive the COVID-19 vaccine. In this session, the therapist used the empathy, open questions, reflecting and summarizing techniques. Then it was mentioned, in order to change their tendency to receive the COVID-19 vaccine, the health workers should have the necessary planning and target behaviors related to it, such as studying the benefits of vaccination, and it was pointed out that getting vaccinated should be considered a necessary part of their jobs. They should also identify the future situations that may hinder their tendency to receive the vaccine and make a list of strategies to deal with it. In the continuation of the meeting, self-efficacy and self-encouragement were discussed, and the health workers concluded that the behaviors that prevent them from wanting to get vaccinated and that may put them at risk for the coronavirus are largely within their control, they should also encourage themselves to change their behavior because they have the ability and opportunity to change and prepare and commit themselves to receive the COVID-19 vaccine.</p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

After receiving the completed questionnaires, the data underwent analysis utilizing the IBM SPSS software, version 0.21 for Windows (IBM Corporation, Armonk, NY). In order to analyze the data in the demographic information section of the test, the Chi-square test was utilized, while in the

segment of descriptive statistics, the indices of mean and standard deviation were employed, and the multivariate covariance analysis test and paired samples T-test were used in the inferential section.

Research Finding

Table 2. Demographic variables status of the study according to experimental and control groups

| Variable      Subscale |                   | Experimental group |     | Control group |     |
|------------------------|-------------------|--------------------|-----|---------------|-----|
|                        |                   | N                  | %   | N             | %   |
| Gender                 | Male              | 52                 | 43  | 63            | 52  |
|                        | Female            | 68                 | 57  | 57            | 48  |
|                        | Total             | 120                | 100 | 120           | 100 |
| Education              | Middle school     | 12                 | 10  | 10            | 8   |
|                        | Diploma           | 22                 | 18  | 23            | 19  |
|                        | Associate degree  | 21                 | 17  | 22            | 18  |
|                        | Bachelor's degree | 32                 | 27  | 32            | 27  |
|                        | Master's degree   | 25                 | 21  | 27            | 23  |
|                        | Doctorate         | 8                  | 7   | 6             | 5   |
|                        | Total             | 120                | 100 | 120           | 100 |

|                |          |     |     |     |     |
|----------------|----------|-----|-----|-----|-----|
| Age(year)      | 20-30    | 36  | 30  | 35  | 29  |
|                | 31-40    | 56  | 48  | 53  | 44  |
|                | 41-50    | 20  | 17  | 21  | 18  |
|                | 51-60    | 8   | 7   | 11  | 9   |
|                | Total    | 120 | 100 | 120 | 100 |
| Marital status | Single   | 36  | 30  | 43  | 36  |
|                | Married  | 70  | 58  | 62  | 51  |
|                | Widowed  | 5   | 4   | 6   | 5   |
|                | Divorced | 9   | 8   | 9   | 8   |
|                | Total    | 120 | 100 | 120 | 100 |

The contents of Table 2 show that regarding the gender variable of the military health workers who did not want to receive the vaccine, in the experimental group, 43%

were male and 57% were female, and in the control group, 52% were male and 48% were female.

Table 3. Basic demographic base sizes of the experimental and control groups

|                  |        |      |           |                |
|------------------|--------|------|-----------|----------------|
|                  | Gender | Age  | Education | Marital status |
| Chi-square score | 5      | 7.86 | 0.53      | 0.53           |
| P-value          | 0.28   | 0.71 | 0.56      | 0.43           |

The contents of Table 3 show that the chi-square score is not significant in any of the demographic variables. Thus, the two experimental and control groups had no

significant differences in terms of sex, age, education, and marital status according to the chi-square test. Therefore, in terms of this variable, they were identical to each other.

Table 4. Distribution of scores in research variables before and after the intervention

|          |                           |              |                           |              |
|----------|---------------------------|--------------|---------------------------|--------------|
| Variable | Experimental (60)         |              | Control (60)              |              |
|          | Standard deviation ± mean |              | Standard deviation ± mean |              |
|          | Before the                | After the    | Before the                | After the    |
|          | intervention              | intervention | Intervention              | intervention |

|                          |            |            |            |            |
|--------------------------|------------|------------|------------|------------|
| Perceived susceptibility | 1.05±7.15  | 1.22±7.10  | 1.66±7.92  | 1.36±6.93  |
| Perceived severity       | 2.12±11.39 | 2.55±19.07 | 2.40±9.94  | 2.37±10.35 |
| Perceived benefits       | 2.21±9.08  | 2.62±17.47 | 2.53±11.07 | 3.01±11.89 |
| Perceived barriers       | 3.74±25.35 | 3.52±11.20 | 3.61±23.48 | 2.98±24.30 |
| Cue to action            | 1.36±9.77  | 2.05±21.42 | 2.38±11.14 | 1.65±10.09 |
| Self-efficacy            | 2.22±8.61  | 3.02±18.77 | 1.83±9.51  | 2.67±9.01  |

The contents of Table 4 show the indicators related to the mean and standard deviation of the subscales of the tendency to receive the COVID-19 vaccine. Based on the contents of this table, the mean scale scores of perceived susceptibility, perceived severity, perceived benefits, cues to action and self-efficacy in the experimental group have

increased after the intervention compared to the pre-test, and the scale score of perceived barriers has decreased in comparison with the pre-test. While in the control group, in all six scales of the tendency to receive the COVID-19 vaccine, the mean changes in the mean scale scores from pre-test to post-test were insignificant.

Table 5. Kolmogorov-Smirnov one-sample test results

| Variable                 | Z score | p-value |
|--------------------------|---------|---------|
| Perceived susceptibility | 0.13    | 0.20    |
| Perceived severity       |         |         |
| Perceived benefits       | 0.18    | 0.14    |
| Perceived barriers       | 0.20    | 0.15    |
| Cue to action            | 0.34    | 0.71    |
| Self-efficacy            | 0.53    | 0.46    |
|                          | 0.79    | 0.29    |

The contents of Table 5 show that the distribution of the studied variables is normal (the presumption of normality of the studied

variables) because the Z values are not significant at the P<0.05 level.

Table 6. Covariance analysis test’s results regarding the effectiveness of motivational interviewing on the tendency to receive the Covid-19 vaccine

| Variable                 | Index    | MS      | df  | F     | P    | Eta coefficient |
|--------------------------|----------|---------|-----|-------|------|-----------------|
| Perceived susceptibility | Pre-test | 1341.11 | 1   | 4.35  | 0.24 | 0.051           |
|                          | Group    | 4051.32 | 1   | 15.64 | 0.03 | 0.211           |
|                          | Error    | 302.21  | 116 | -     | -    | -               |

|                    |          |         |     |       |      |        |
|--------------------|----------|---------|-----|-------|------|--------|
| Perceived severity | Pre-test | 2211.41 | 1   | 10.25 | 0.05 | 0.112  |
|                    | Group    | 7124.62 | 1   | 28.12 | 0.01 | 0.452  |
|                    | Error    | 253.32  | 116 | -     | -    | -      |
| Perceived benefits | Pre-test | 1184.26 | 1   | 8.61  | 0.61 | 0.021  |
|                    | Group    | 6548.27 | 1   | 12.67 | 0.04 | 0.621  |
|                    | Error    | 516.68  | 116 | -     | -    | -      |
| Perceived barriers | Pre-test | 2141.06 | 1   | 6.11  | 0.53 | 0.043  |
|                    | Group    | 5429.34 | 1   | 11.48 | 0.05 | 0.647  |
|                    | Error    | 458.52  | 116 | -     | -    | -      |
| Cue to action      | Pre-test | 1428.51 | 1   | 5.91  | 0.82 | 0.0118 |
|                    | Group    | 8142.60 | 1   | 14.08 | 0.04 | 0.511  |
|                    | Error    | 578.03  | 116 | -     | -    | -      |
| Self-efficacy      | Pre-test | 2451.13 | 1   | 10.08 | 0.02 | 0.321  |
|                    | Group    | 5789.26 | 1   | 19.13 | 0.03 | 0.683  |
|                    | Error    | 302.48  | 116 | -     | -    | -      |

The contents of Table 6 show that with a controlled pre-test, motivational interviewing has a significant effect on the perceived susceptibility of military health workers who have not received any vaccine, due to the calculated F being significant at the  $P<0.03$  level. Therefore, motivational interviewing has increased the perceived susceptibility to the COVID-19 disease in these workers. In addition, the results of this table show that with a controlled pre-test, motivational interviewing has a significant effect on the perceived severity of these workers, due to the calculated F being significant at the  $P<0.01$  level.

The next part of this table also show that with a controlled pre-test, motivational interviewing has a significant effectiveness on perceived benefits, due to the calculated F being significant at the  $P<0.04$  level. Also, the

results show that with a controlled pre-test, motivational interviewing exerted a notable influence on the perceived barriers, due to the calculated F being significant at the  $P<0.05$  level. The contents of this table also show that with a controlled pre-test, motivational interviewing has a significant effect on the cues to action of military health workers, due to the calculated F being significant at the  $P<0.04$  level. Finally, the contents of Table 5 show that with a controlled pre-test, motivational interviewing has a significant effect on the self-efficacy of military health workers who did not want to receive the COVID-19 vaccine, and has increased their self-efficacy, due to calculated F being significant at the  $P<0.02$  level.

**Discussion & Conclusions**

As seen in the above section, motivational interviewing has increased the level of perceived susceptibility, perceived severity, perceived benefits, cues to action and self-efficacy. It also has reduced the perceived barriers in military health workers who had not been vaccinated, and according to the health belief model, it has generally decreased the reluctance to receive the COVID-19 vaccine in these workers. Thus, it can be stated that perceived susceptibility is the level of cognitive stimulation of people toward a potential risk.

In the discussion of infectious diseases, the more a person evaluates the rate of infection in their mind, the more susceptible they will be to the risk that they are exposed to. It seems that motivational interviewing has been able to increase the level of risk susceptibility in military health workers and reduce their reluctance to receive the vaccine. This finding aligns with the research conducted by Gagneur et al., who stated in their study that motivational interviewing shows potentially dangerous situations surrounding a disease in the form of perception of an actual dangerous situation for people at risk and minimizes the level of doubt about the decision to be vaccinated (Gagneur, Battista, et al., 2019).

On the other hand, if the level of perceived susceptibility is low, it leads to the adoption of a lower level of self-care decisions. Motivational interviewing has been able to highlight the need to adopt more self-care behaviors such as vaccination in these people. This finding aligns with the the results of MC Cleaver's research, which showed that regarding parents who were hesitant to

vaccinate their children, motivational interviewing, along with some other limited methods, were among the promising approaches that were successful in reducing parents' doubts by increasing the sensitivity of parents towards their children's health (McClure, Cataldi, & O'Leary, 2017).

Motivational interviewing has increased perceived severity in health and military workers. It can be said that motivational interviewing is fostered by creating an empathetic atmosphere through techniques such as affirming, reflecting, controlling risk on the part of workers rather than controlling fear, and because the perceived severity is determined more according to risk control than fear control, motivational interviewing has been able to help increase the perceived severity in these workers to reduce the level of reluctance to vaccinate.

This finding aligns with the study of Limtra et al., who showed that in order to convince mothers who did not want their infant to be vaccinated, we should increase the severity of the perceived threats through a type of short-term motivational interviewing to immunize the body of these infants against these possible threats. But these findings are contrary to the results of Zolezzi et al.'s study on the subject of increasing the perceived severity. In fact, in some situations, there is an inverse relationship between the perceived severity and health behaviors, and high perceived severity not only does not drive the person to make decisions regarding their health but also creates perceived threat and avoidance of action (Zolezzi, Paravattil, & El-Gaili, 2021).

The results of this study indicated that motivational interviewing has increased the amount of perceived benefits of the COVID-19 vaccination in military health workers. Thus, it can be said that these workers are looking for gaining the highest benefit from the existing conditions, meaning that, until they reach the stage of believing that vaccination is definitely useful and beneficial for them, they will not seek out vaccination.

Therefore, motivational interviewing has tried to encourage these workers to discover the benefits of vaccination instead of the risks as much as possible. Thus, the amount of perceived benefits that can be obtained as a result of vaccination has increased for these workers, and at the same time, they also realized the possibility of harm as a result of not getting vaccinated. This discovery aligns with the results of Wermers et al.'s study, which stated that in order to reduce the reluctance to receive the vaccine in students, motivational interviewing can make them inclined to investigate and evaluate the vaccination process by showing them the benefits of receiving the vaccine (Wermers, Ostroski, & Hagler, 2021).

On the other hand, in addition to the usefulness of maintaining health at the individual level, motivational interviewing has also proven to be able to increase the mentality of usefulness at the social level in these workers, and that it can create the mindset that each person can play an active role in returning society to normalcy before the COVID-19 pandemic. This finding is in agreement with the results of other studies that have stated that the social component and

collective interests are also among the areas that people consider when evaluating their motivation to receive the vaccine through the motivational interviewing method (Gagneur, Gosselin, Bergeron, Farrands, & Baron, 2019).

The results of the present study showed that motivational interviewing reduced the perceived barriers of military health workers and their reluctance to get vaccinated. In explaining this finding, it can be said that when there is a will and a motivation for a behavior such as getting vaccinated, there is also an unwillingness and a lack of motivation at the same time. This lack of motivation does not arise by itself but arises when perceived barriers are formed in the mind of a person.

In fact, each of these barriers acts as an anti-motivation proposition, and until the number of these propositions is sufficiently reduced, the necessary will to perform a behavior such as receiving the COVID-19 vaccine will not be formed in military health workers. For example, some of these propositions are: the fear of the vaccine's side effects, waiting for the vaccine, and the belief in traditional medicine to prevent COVID-19 disease, etc.

Motivational interviewing encouraged workers to reinforce motivational statements such as: With vaccination I can stay healthy and be protected against the COVID-19 virus (Breckenridge et al., 2022).

This finding is in agreement with the results of Opel et al.'s study, which stated that one of the pillars of motivational interviewing to increase the probability of vaccination

occurring is to create an empathetic environment so that the person feels that they have been heard enough that they have been able to raise their concerns in a friendly environment (Opel et al., 2020).

The results of this study have demonstrated the impact of motivational interviewing on the variable of cues to action in health and military workers. In explaining this finding, it can be mentioned that since the COVID-19 virus is a new virus that is largely unknown, therefore, there is no extensive specialized information about it, and it is not possible to act on the basis of personal taste in the discussion of vaccination.

Therefore, we need sources of information that can be relied upon with high confidence and act accordingly. Motivational interviewing by creating a kind of internal conflict and challenge in the military health workers has caused these workers to investigate the fact that most likely they are unmotivated and indifferent to vaccination because they did not have a reliable source of information to ensure whether vaccination should be done or not, and to cope with this challenge, motivational interviewing has helped them to search for sources around them that they can rely on as a cue to action in the direction of receiving the vaccine.

This finding aligns with the results of Fisher et al.'s study, which showed that in many cases there is interest among people to receive the vaccine, but there is not enough internal trust for such an action (Fisher-Chavez, Martinez, & Prapasiri, 2022).

Finally, the results of this study demonstrated that motivational interviewing ultimately increases the self-efficacy of military health workers. In clarifying this finding, it can be declared that self-efficacy means that a person can have the will to act that is effective. Motivational interviewing provides an opportunity for these workers to discuss their existing concerns about the vaccine, the risks of vaccination, its possible complications, etc. in a psychologically safe environment.

In addition, motivational interviewing, with the technique of confirming these concerns and not agreeing with them, provides a basis for them to show more interest in getting vaccinated, be more committed toward this interest, and also see the challenges and problems ahead as an exercise to acquire skills (McElfish et al., 2021).

According to the findings of this research, motivational interviewing is an effective method to increase the level of perceived susceptibility, perceived severity, perceived benefits, cues to action and self-efficacy. It is also an effective method to reduce the perceived barriers in military health workers who are reluctant to receive the COVID-19 vaccine.

Therefore, motivational interviewing as a human-centered and patient-centered therapy can lead to an increase in the tendency to receive vaccines among these workers by drawing a therapeutic atmosphere free of judgment and creating an empathetic environment. The limitations of this study

include conducting the study online, using short-term motivational interviewing, and not taking the type of vaccine into consideration.

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