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Effects of Spiritual Interventions on Health Outcome Among War Combats Suffer from Mental Disorders Hospitalized with COVID-19; A Randomized Controlled Trial

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ABSTRACT

Aims Effects of spiritual practice alongside medical care on health outcome in war combats suffered from mental disorders hospitalized due to COVID-19.

Materials & Methods In a single-blinded clinical trial study, hospitalized war survivors with COVID-19(n=70) were randomly assigned in two groups. Spiritual practice intervention was the recitation of "Surah Al-Hamd" and "Ya-Allah" for 7 days (total of 21times). Information gathered on demographic characteristics, Short Form Survey (SF-12), Satisfaction with Life Scale (SWLS), Hospital Anxiety and Depression Scale (HADS), length of hospitalization, ICU transfer, intubation, and death. Data were analyzed using SPSS and effect size.

Findings A total of 64 war combats completed the study (intervention (n=29), comparison (n=35)). In the group with spiritual practice, mean differences of social functioning (+11.5versus+4.3; effect size=0.3), vitality (+1.5versus-5; effect size=0.3) and mental component summary(+5.7versus+0.6; effect size=0.1) were more significantly improved ($p<0.05$). At the end of the study the life satisfaction score was significantly higher in the intervention group (P=0.007). Moreover, the mean difference of SWLS was better in the intervention group (+0.78versus-0.14; p=0.007; effect size=0.4). The mean difference of anxiety in the intervention group was +2.7 (±1.3) and in the control was -0.5 (±1.8; $p<0.001$; effect size=0.7). There was no significant difference between the two groups on the duration of hospitalization, ICU admission, intubation and death ($p>0.05$).

Conclusion The results of this study showed that spiritual practice along with routine medical management accompanied with better quality of life, more life satisfaction and less anxiety in war combat suffered from psychological disorders hospitalized due to COVID-19.

Keywords Spiritual Therapy; Quality of Life; Life Satisfaction; Veteran; COVID-19; Mental Health

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Introduction

The coronavirus disease (COVID-19), speeded to all countries across the entire [1]. COVID-19 became an international emergency without effective antiviral drugs among health, and 'stay at home' became the significant policy to prevent the disease [2].

Physical and mental consequences of COVID-19, demanded an inclusive attitude toward pandemic. The fear, panic, and uncertainty associated the pandemic draw individuals closer to religion. Religions brings theological explanations away from what human beings be able to realize [3]. Spiritual persons find comfort from the divine or sacred through tough moments [4] and ask for support from God in solving major stressors [4, 5]. Spirituality and religious beliefs has complementary role on effective dealing and controlling of diseases in society [3] and can nurture mental health, as well as, help buffer tension such as fear, hopeless, grief, or anger [6]. Spirituality, hope and faith in religion can comfort people affected by an epidemic for which health experts and politicians do not have an instant response. The relationship between science and spirituality, arguing for the significance of religious ideas in making science effective enough to combat societal health challenges like epidemics. Studies have shown that society turn to their spirituality and religious beliefs when confronted severe illness, and often pray spiritually to survive or cope with their problems [7, 8]. Islamic theological responses to incidence of diseases are rooted in the lessons of the holy Quran and traditions. Muslims are believed to accept that all human beings are weak, regardless of their social and financial situation. They believe that for every life events, Islam has a guidance or solution, as well [3]. As said in Quran, verse "and we send down from the Qur'an what is a source of healing and mercy for the believers" (Surat al-Isra', verse 82), and "Do you think that you will enter paradise without such trials as came to those who passed away before you? They were afflicted with severe conditions and ailments and were so shaken that even the messenger and those who believed along with him said, when will the help of Allah come? Yes! Certainly, the help of Allah is near!" (Surah Al Baqarah: 214), as well.

Quality of life, is a multidimensional concept that originates from people's beliefs and perceptions including: physical health, psychological state, social relationships, with personal and spiritual beliefs [9]. Life satisfaction and happiness are also directly related to religious beliefs and behaviors [10]. Quality of life is an important key to community health due to its relationship between a person's health and his ability to chase life goals [11]. Besides, satisfaction with life accompany with appropriate coping methods and higher quality of life [12-14]. Spirituality is a key aspect of nursing in caring for and relieving patients' suffering [15]. Spiritual practice brought hope and better health among the patients with COVID-19 and proved to be effective against COVID-19 pandemic [11, 16-18]. The pandemic has affected religious practice, cancelled pilgrimages and prohibited group interactions and celebrations. Although, there has been a significant dropping in religious connection during the last decades but, an alteration in general public religious habits happen during the pandemic and people were praying to get rid of the spread of coronavirus [19].

Some indicated that after pandemic the faith has intensified and very less reported that worsen [19]. There is evidence for an intensification of prayer activity during this pandemic and searches for "prayer" term on google has been doubled since the COVID-19 [20].

Since spiritual practice as a complementary approach have an important and potential role in health promotion, this study was accomplished to determine the effectiveness of spiritual practice on health recovery progress of war combats suffered from psychological disabilities hospitalized with COVID-19.

Materials and Methods

In this quasi-experimental clinical trial, we evaluated the effect of spiritual practice on the outcome of war combats suffered from psychological disabilities who admitted with COVID-19. The study carried out in one of the veterans' referral hospitals located in the city of Tehran 2020. All participants before entering study were evaluated for inclusion and exclusion criteria. The criterion for entering the study was to be admitted to the hospital due to a positive test for COVID-19, being a war survivor with history of psychological injuries. Any clinical condition including; patients admitted to the ICU or died within the first 48 hours, pregnancy, drowsiness or confusion, and inability to perform spiritual-religious practice (due to any reasons) considered to be excluded from the study. War combats hospitalized with inclusion criteria were asked to participate in the study. The volunteers were randomly assigned into intervention and random control groups with a total of 70 cases. The patients received their usual treatment protocol and medication according to the order of the attending physicians who were independent from the research team. Data of demographic, medical history of diseases and COVID-19 risk factors (BMI above 40, hyperlipidemia, hypertension, cardiovascular disease, diabetes, chronic respiratory disease, immune deficiency, malignancy or chemotherapy, organ transplants, AIDS, and recently corticosteroid use) were collected. Three questionnaires were used to determine the effect of the intervention on recovery of COVID-19. First, 12-Item Short Form Survey (SF12) 5-10 minutes, which has 8 subscales that determine quality of life. The SF-12 dimensions include; physical functioning, role physical, bodily pain, general health,

social functioning, emotional role, vitality, and mental health. The score is ranged from 0 to 100, with higher scores indicating better physical and mental health functioning. The validity of the questionnaire was examined by Montazeri *et al.* in Iran with Cronbach's alpha 0.73 for the physical component summary and 0.72 for the psychological component summary [21, 22]. Second, Satisfaction with Life Scale (SWLS) questionnaires; The scale consisted of 5 questions a separate scale a five-point Likert from strongly agree to strongly disagree, and it scores is between 5 and 25. A higher score indicates better life satisfaction. The validity of the Life Satisfaction Scale questionnaire in Iran was 0.83 using the Cronbach's alpha method [21]. Third, the Hospital Anxiety and Depression Scale (HADS) questionnaire was used in order to determine the symptoms of depression and anxiety. The HADS questionnaire is a 5 minutes screening tool for assessing anxiety and depression and estimating the severity of emotional disorders in hospitalized patients during the past week. This questionnaire is a 14-item self-report tool designed to screen the severity of symptoms and has seven questions for depression subscale and a seven-item for anxiety subscale. Each question is scored on a scale of zero to three (0-3). Therefore, the scores of the depression and anxiety subscales are in the range of 0 to 21. For both subscales, scores range from zero to seven consider as normal, 8-10 mild disorders, 11-14 moderate disorders and 15-21 is considered as severe condition. The translated Persian version of (HADS) questionnaire was used [23].

The two groups were compared based on, the score obtained from the 12-Item Short Form Survey (SF12), Satisfaction with Life Scale (SWLS), Hospital Anxiety and Depression Scale (HADS), length of hospital stay, ARDS (Acute respiratory Distress syndrome), transfer to ICU, intubation (mechanical ventilation), and death.

The complete information about the aims of the study were explained to eligible war combats, then, informed consent was obtained from all volunteer participants. The patients informed that their usual medical treatments were continued according to the physician's instructions without any interruption, with the right opting out of continuing their participation from the study any time they wanted.

Spiritual practices were recommended to intervention group with the intention for healing and recovery. Since patients were asked to pray for themselves, blinding them was not possible and the data analyst was blind (single-blind). Using religious teachings from the verse Surat al-Isra', verse 82, intervention group were asked to recite spiritual practice. Based on previous clinical trials, the Surah Al-Hamd (Surah Al-Hamd is the healing surah in the ancient text) and the "Ya Allah" zikr (the divine names) were used as intervention approach [17, 18, 24-28]. Patients were asked to recite Surah Al-Hamd three times and then "Ya-Allah" zikr 66 times in each spiritual-religious practice. They were asked to complete spiritual practice about 10 minutes three times a day for 7 days from the first day of admission which included a total of 21 sessions. The time of spiritual practice was considered at the same time as taking the patient's medicines (every 8 hours). During the 7-day intervention period, reciting the zikrs were checked by research team. Participants in the intervention group (35 cases) were given a spiritual practice registration form and they were asked to note their practice in the form after doing (this also reminded them of the considered practice) and the record was checked by research team. War combats who had recite the zikrs less than 15 times were excluded from the study.

This research was approved with the ethics ID of IR.SBMU.PHARMACY.REC.1400.006. The normality of the numerical data distribution was checked by Kolmogorov-Smirnov test, and the variables including age, level of education, employment and war related injuries had a normal distribution ($P>0.05$) and the other variables were not normal ($P<0.001$). Data were analyzed using Chi-square, independent t-test, Mann-Whitney, Fisher's exact tests and the effect size were also added. Data were analyzed by SPSS 20 at a significant level of $P<0.05$.

Findings

Hospitalized war combats with psychological disorders due to COVID-19 (n=70) were assigned to the two groups. In the intervention group, out of 35 cases, 6 patients recited their spiritual-religious zikrs less than 15 times which were excluded from the study (participation rate 83%). The total data of 64 cases are presented in this study.

Demographic and clinical characteristics of the studied cases before the intervention of both groups are provided in Table 1. Most participants in both groups were male, married and unemployed (Table 1). There was no significant difference between the two groups on; age, sex, level of education, employment, any risk factor, disability rate and additional war related injuries (Table 1).

The mean scores of all measures -SF-12, SWLS and HADS- were not significantly different between the two group ($p>0.05$) before the intervention. Of the total participants, 56 patients were alive (finished the study) and completed the three questionnaires at the end.

The median frequency of accomplishing the spiritual zikrs in the intervention group was 21 times, with an average of 20.3(±1.1). About 20 participants (69%) in the intervention group completely (21 times) performed their spiritual practices and 9 patients (31%) forgot to perform the zikrs at least once.

The mean scores of social functioning and mental component summary (MCS) were significantly improved only in the intervention group. Both groups acquired significantly better scores on physical

functioning; role physical; general health; bodily pain and physical component summary at the end of the study. In the control vitality mean score significantly decreased, at the end of the survey (Table 2).

The mean score of SWLS has been significantly improved in intervention (p=0.007) but in the control group the mean did not change before and after the intervention (p=0.3; Table 3).

Table 1. Demographic and clinical characteristics in war combats with psychological injuries hospitalized due to COVID-19

Demographic characteristics	Intervention Group (n=29)		Control Group (n=35)		p- value
	N	%	N	%	
Age (Mean±SD)	55.6±3.7		56.6±3.7		0.32+
Sex					
Male	28	96.6	34	97.1	0.70*
Female	1	3.4	1	2.9	
Marital status					
Married	27	93.1	33	94.3	-
Level of Education					
Under Diploma	12	41.4	14	40.0	0.91**
Diploma and above	17	58.6	21	60.0	
Employment status					
Employed	7	24.1	5	14.3	0.31**
Unemployed	22	75.9	30	85.7	
Additional war-related injuries					
Physical injuries	23	79.3	20	57.1	0.06**
Spinal cord injuries	8	27.6	9	25.7	0.87**
Chemical warfare agent injuries	5	17.2	11	31.4	0.20**
Disability rate (Mean±SD)	20.41±13.41		20.86±19.15		0.26+
Mild	20	69.0	27	77.1	
Moderate	8	27.6	3	8.6	0.06**
Severe	1	3.4	5	14.3	
Risk factors					
At least one risk factor	28	96.6	29	82.9	0.12*
Without any risk factor	1	3.4	6	17.1	

+mann-whitney test, *fisher exact-test, **chi-square test

Table 2. Mean scores of SF-12 (quality of life) in war combats suffered from psychological injuries admitted with COVID-19 at the beginning and end of the study

SF-12 subscales	Intervention Group (n=29)			Control Group (n=35)		
	Before(n=29) mean±SD	After(n=26)+ mean±SD	Pvalue	Before(n=35) mean±SD	After(n=29)+ mean±SD	Pvalue
Physical functioning (PF)	16.38±25.25	59.62±28.35	<0.000*	8.57±19.12	60.34±30.99	<0.000*
Role physical (RP)	6.90±22.06	50.00±50.99	0.001*	5.71±23.55	31.03±47.08	0.020*
General health (GH)	28.45±12.89	39.42±12.60	0.002*	21.43±16.21	30.17±13.98	0.003*
Social functioning (SF)	36.21±14.31	48.08±9.81	0.007*	36.43±16.43	44.83±13.98	0.096
Role emotional (RE)	68.97±47.08	76.92±42.97	0.157	60.00±49.71	65.52±48.37	0.564
Vitality (VI)	48.97±18.19	50.77±18.09	0.527	50.86±23.44	46.90±24.66	0.021*
Mental health (MH)	74.83±20.46	76.15±18.99	0.212	73.71±24.14	71.72±23.61	1.000*
Bodily pain (BP)	31.03±12.77	50.96±13.19	<0.000*	30.71±20.19	49.14±18.28	0.001*
Physical Component Summary (PCS)	20.69±13.48	50.00±21.51	<0.000*	16.61±13.89	42.67±23.15	<0.000*
Mental Component Summary (MCS)	57.24±20.42	62.98±17.54	0.006*	55.25±22.61	57.24±23.56	0.986

Table 3. Satisfaction with life scores (SWLS) in psychological war combats hospitalized with COVID-19 before and after intervention

Time	Intervention Group (n=27)+		Control Group (n=29)+		p- value**
	N	Mean±SD	N	Mean±SD	
Before	29	23.59±5.25	35	22.17±6.41	0.461
After	27	24.44±5.62	29	21.34±6.56	0.130
p-value*		0.007*		0.377	

* Wilcoxon test, ** mann-whitney test
+ 2 patients in intervention group and 6 in control group could not complete the study due to transferring to ICU.

Comparison of the mean difference of life satisfaction score between two groups of war combats with psychological injuries showed that the intervention group significantly achieved better score (p=0.006) with effect size of 0.38 (Table4). Moreover, The mean difference changes in social functioning, vitality and mental component summary were significant different between the two groups and the intervention group has better improvement compare to control group with effect size range from 0.07-0.3 (Table 4).

s shown in table 5, the spiritual practice had a significant effect on the final score of HAD subscale and the mean changes in the score of anxiety in the intervention group was higher than the control group with effect size of 0.67 (P<0.001).

The median admission time in the intervention was 7 days (between 3 and 10 days) and in control groups

was 6.8 days (between 3 and 15 days). Severe pneumonia, ARDS, ICU admission and death of the two groups are shown in Tables 6. A total of 8 cases were transferred to the ICU and all cases died (Table 6). As shown in table 6 the number of cases with ARDS, severe pneumonia, ICU admission and death were more observed in control group but no significant difference was found for the complications in the two groups.

In the intervention group, the patients who had recited their spiritual practices completely (21 times) (n-20) had a significantly lower rate of requiring BIPAP compare to the group who had practiced less than 21 times (n=9; P=0.02).

Table 4. Mean±SD difference in the quality of life and life satisfaction between the two groups

SF-12 domains	Intervention (n=27)+ Mean difference±SD	Control (n=29)+ Mean difference±SD	p- value*	Effect size
Physical functioning	41.35±35.31	50.00±32.73	0.356	0.12
Role physical	42.31±48.36	24.14±51.10	0.173	0.18
General health	9.62±12.40	7.76±11.77	0.567	0.08
Social functioning	11.54±19.01	4.31±13.48	0.030*	0.30
Role emotion	7.69±27.17	3.45±32.54	0.612	0.07
Vitality	1.54±12.55	-5.52±11.83	0.039*	0.30
Mental health	1.92±7.49	0.00±3.78	0.125	0.21
Physical Component Summary	27.88±21.16	24.14±21.24	0.575	0.09
Mental Component Summary	5.67±10.90	0.56±8.92	0.005*	0.07
Life satisfaction scores	0.78±1.34	-0.14±0.83	0.006*	0.38

* mann-whitney test
+ 2 patients in intervention group and 6 in control group could not complete the study due to transferring to ICU

Table 5. Comparison of anxiety and depression mean scores (HADS) in war combats with psychological injuries hospitalized with COVID-19 before and after intervention

	Intervention Group (n=26)			Control Group (n=30)				
HADS	Before intervention N=29 Mean±SD	After intervention N=27 Mean±SD	Mean difference N=27 Mean±SD	Before intervention N=35 Mean±SD	After intervention N=29 Mean±SD	Mean difference N=29 Mean±SD	p- value	Effect size
Anxiety	18.03±1.70	20.04±1.51	2.07±1.38	18.77±1.91	18.17±1.79	-0.48±1.83	<0.000*	0.669
Depression	15.03±0.98	14.96±1.16	-0.07±0.92	15.46±1.52	16.14±1.55	0.38±1.08	0.089	0.229

* mann-whitney test
+ 2 patients in intervention group and 6 in control group could not complete the study due to transferring to ICU/death

Table 6. Comparison of the duration of hospitalization and incidence of complication during COVID-19admission in war combats with mental health injuries before and after intervention

	Intervention Group (n=29)		Control Group (n=35)		P.value
	N	%	N	%	
Duration of hospitalization (mean±SD)	7.3±2.5		6.3±1.9		0.113+
Bipap					
Yes	3	10.3	4	11.4	1.000**
No	26	89.7	31	88.6	
Severe Pneumonia					
Yes	2		4		0.681**
No	27		31		
ARDS (Acute respiratory Distress syndrome)					
Yes	1		1		1.000**
No	28		34		
ICU admission					
Yes	2	6.9	6	17.1	0.275**
No	27	93.1	29	82.9	
Death					
Yes	2	6.9	6	17.1	0.275**
No	27	93.1	29	82.9	

**fisher exact-test, +mann-whitney test

Discussion

The results of this study showed that along with routine medical care, spiritual practices (recitation of the Quran) with the intention of healing have positive effects on quality of life, life satisfaction and mental health of war combats suffered from psychological injuries who hospitalized with COVID-19. In war combats who recited the spiritual practices the mean scores of in social functioning, vitality and mental component summary were improved.

The large effect size (above 0.3) indicates strong and powerful of the intervention effects. Similar studies have shown better outcome such as strengthening memory, mental health, reducing anger/aggression, anxiety, and depression, treating sleep disorders, improving vital signs, reducing pain, increasing

optimism and life expectancy with spiritual care [17, 18, 29-32].

Spiritual health self-care interventions such as reading Scripture, prayer, and self-reciting help gain health [33].

In times of emergency and catastrophe, religious and spiritual potentials can lessen burden of stress and conflicts in patients [19]. Spirituality and religious is among the possible strategies to cope with different tough situation and in severe life crisis [34]. Religious beliefs and spiritual practices can play a significant role to cope with stress, feeling of insecurity and anxiety [35-38]. It is a significant source for health and well-being for many adults [39]. Roman *et al.* stated spiritual practice strongly boost immune system against COVID-19 [40], and some clinicians supported and encouraged patients to use their faith to protect themselves and relieve anxiety during COVID-19 pandemic [37]. Integrative health care in COVID-19 commonly practiced in different setting of health care but limited human clinical trials concerned of its effectiveness in the COVID-19 pandemic. Some of these trials have been accomplished in the Middle-east such as meditation, Hijama (cupping therapy), acupuncture, massage, specific nutritional tonics, spirituality, holy Quran recitation, and herbs [40]. In recent years, much scientific surveys studied the effects of spiritual care on health improvement. The positive effects were more observed on the quality of life and spiritual well-being specially, among patients with terminal illness [41]. Studies confirmed by reciting spiritual care, the secretion amount of the hormones of cortisol, epinephrine, and adrenal gland is dropped in response to stress hormone (norepinephrine), and the immunity system is boosted [42-45]. The results of this study confirmed that for patients with anxiety, spiritual care may be useful alongside to standard medical care. Similar study showed that praying could play an important role to relieve anxiety and adapt to illness. Recognizing the role of spiritual and religious beliefs in patients' lives can help physicians and nurses improve the health of patients [15].

In our study, length of hospitalization, need BIPAP, ARDS (Acute respiratory Distress syndrome) and transfer to ICU were not significantly different in both groups. Previous study showed that the rate of transfer to ICU was significantly lower with spiritual practice in COVID-19 hospitalized patients [17]. Moreover, the rate of intubation and death were three times higher in control group, but it was not significant in the data analysis. Previous study showed that the rate of intubation and death was decreased by spiritual practices in COVID-19 inpatients [17]. Besides, different studies have shown diverse findings, from positive to without any effects on the rate of health status [15, 17, 45-52]. Future study with more samples is needed to investigate whether the spiritual practice can decrease the rate of death and intubation. Studies have emphasized the need for more researches in this field [17, 18, 50]. Therefore, it is emphasized that in order to determine the more precise role of spiritual care in the recovery of patients, it is necessary to develop more research in this field.

In this trial, the patients who had recited their spiritual practices completely (21 times) had a significantly lower rate of requiring BIPAP compare to the group who had not completed (less than 21 times) their zikrs (P=0.02). This results confirmed that completing the spiritual practice routinely and precisely could have better health outcome. This finding is in line with other previous studies [17]. The need to pray is a basic need in human beings [51].

Al-Hamd"; "Altowhid"; "Alqadr" and "YaAllah recitation" have been used as Quranic recitations to practice for the sake of healing. Numerous studies showed reducing pain in patients admitted in hospital, reducing severity of clinical and psychological symptoms, better quality of life and general health [17, 18, 25, 26, 28, 52, 53], and better quality of life and satisfaction [18, 54]. Although there are studies that they did not find any significant difference between the patients before and after praying [55].

All war combats in this study were male therefore, the effect of the spiritual practice on female needs further investigation. Increased interest in the connection between spirituality and mental health in the last decades has prompted growth in researches. More high-quality study is needed for the types of interventions to enhance patient care and progress in clinical applications. Future studies could detect whether and how specific spiritual-religious are differentially related to specific health index. Moreover, these associations might mostly be influenced by and gender and culture. More studies are needed to focus on how spirituality and religious beliefs help or hinder coping with other acute and chronic diseases, strategy that religious could play a role to enhance healthy preventative behavior, how acute and chronic health condition intensify or diminish religious beliefs, and issues that cushion the effects of diseases related religious struggles on subsequent suffering, physical or mental health problems.

Conclusion

Spirituality has now been identified to be a significant part of health. The World Health Organization and numerous countries are exploring spiritualy as the 4th Dimension of health- beyond physical, mental and social - and its impact on the overall health of the population. The curent study is one of the few that focus on the role of spiritual practices on the health outcomes in COVID-19. This study showed that spiritual-religious practice specifically Quranic recitations (including surah Al-Hamd and "Ya-Allah") with healing intentions alongside with routine medical treatments accompanied with better quality

of life, more satisfaction with life and less anxiety among war combats suffer from mental disorders hospitalized due to COVID-19. As the popularity of the role of spiritual health is rising, further investigations into spirituality should develop to be included into mainstream sciences.

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