



Effectiveness of Acceptance and Commitment Therapy and Hope Therapy Based on Positive Psychology in the Promotion of Psychological Well-being and Mental Health in Medical Staff during the COVID-19 Pandemic

Mohammad Tahan^{1,2*} , Hashem Sabriyan² 

¹ Department of Psychology and Education of Exceptional Children, University of Tehran, Tehran, Iran

² Research Center for Cognitive & Behavioral Sciences in Police, Directorate of Health, Rescue & Treatment, Police Headquarter, Tehran, Iran

***Corresponding author:**

Mohammad Tahan, University of Tehran, Tehran, Iran.
Tel: +989120252104
Email: Tahan@ut.ac.ir

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Abstract

Background and Objective: The present study aimed to compare the effectiveness of acceptance and commitment therapy and hope therapy based on a positive psychology approach in psychological well-being and improvement of mental health among medical staff during the Covid-19 pandemic.

Materials and Methods: This quasi-experimental study was conducted based on a pre-test post-test control group design. In this research, the statistical population included all the medical staff (nurses and doctors) of Valiasr (A.S.) and Samen Ala'mh hospitals during the Covid-19 pandemic, and 90 subjects were selected from each hospital via available sampling. They were assigned randomly to four groups, two experimental groups and two control groups (n=30 in each group). The first experimental group (ACT) received 8 sessions (one session per week for 120 min), and the second experimental group received 10 sessions of hope therapy based on positive psychology based on Seligman's treatment protocol, 2011) (one session every week for 90 min). The tools used in this research were psychological well-being and general health questionnaires. The information obtained in the pre-test and post-test phases were analyzed in SPSS software (version 25) using covariance analysis.

Results: The results pointed out that the therapy of acceptance and commitment and hope therapy based on a positive psychology approach was effective in psychological well-being and improvement of mental health of the medical staff in Valiasr (a.s.) and Saman Al-Aimeh (a.s.) hospitals during the Covid-19 pandemic ($P < 0.01$).

Conclusions: As evidenced by the results of this study, the mental health and psychological well-being of the medical staff can be improved by new psychological solutions. These treatments are effective to a large extent in improving employees' individual and social performance.

Keywords: Acceptance and commitment, Covid-19, Mental health, Psychological well-being, Therapeutic hope

Background

A novel coronavirus (COVID-19) instantly appeared in Wuhan, China, in early December 2019, causing desperation and panic while spreading swiftly worldwide [1]. Although relentless efforts have been made to identify patients with infection and constitute effective treatment protocols, the mortality rates have progressed up to 10% in some countries [2]. The increased daily deaths due to COVID-19 have led to lockdown measures, quarantine, and some restrictions worldwide, affecting billions of people. In addition, the COVID-19 pandemic has seriously affected the mental health status of medical professionals (including efforts made to identify and treat patients with COVID-19 infection, and protect themselves

against contamination). In order to maintain the continuity of healthcare services, it is, therefore, necessary to promote the psychological well-being or mental health of healthcare workers to the extent that it prevents the spread of COVID-19 infection and mental disorders among them [3].

Medical staff (nurses and physicians) is more exposed to burnout, depression, and anxiety due to occupational stress compared to people engaged in other occupations. The incidence of depressive symptoms among nurses widely ranged from 10%-80%, while the prevalence of anxiety among nursing professionals was reported to be as high as 66% [4,5]. Previous studies pinpointed that mental disorders were significantly associated with hard

work conditions, working on shifts, insufficient rest, and job dissatisfaction [6,7,3]. Therefore, having psychological well-being and mental health is one of the most important issues related to occupational therapy to advance the goals of this organization [8]. Van der Velden found that the psychological well-being of employees has significant effects on their productivity. They also indicated that the lack of psychological well-being and mental health in employees leads to the possibility of absence from work, improper performance of duties, and finally, leaving a job. Consequently, the employees' productivity would decrease, presenting serious problems to the organization and society [9].

Psychological well-being is a multidimensional concept that includes self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery, and autonomy [10]. The group hope therapy based on positive psychology is one of the methods for increasing mental health and psychological well-being, as well as reducing hopelessness and pessimism. The expansion of the application is to the extent that positive therapy has been discussed in the last few years [11,12]. In addition to the group hope therapy based on positive psychology, numerous studies have demonstrated that acceptance and commitment therapy (ACT) is also effective in the promotion of mental health and psychological well-being and can be used as an effective method to reduce stress and anxiety in medical staff [13,14,15]. In fact, the main goal of ACT is to increase psychological flexibility or the ability to enter the present moment more fully and either change or persist in behavior when doing so serves valued ends. Finally, creating incentives to perform a committed action, i.e., activity toward specified objectives and values with acceptance of subjective experience [16,13]. Given that during the COVID-19 pandemic, studies on healthcare providers are often limited to their mortality rates, risk of self-contamination, and disease prevention, attempts to keep nurses and doctors disease-free, identify their concerns and remove these concerns will help them to support themselves and survive and care for the injured. Considering that mental health and psychological well-being are the main factors affecting the job performance of medical staff as one of the leading institutions in society, they are more exposed to reduced mental health and psychological well-being due to difficult working conditions. Therefore, the present study aimed to answer the following questions: (1) whether the acceptance and commitment therapy and hope therapy based on a positive psychology approach are effective in the promotion of psychological well-

being and mental health of medical staff in Valiasr and Samen Al-Aeme hospitals during the COVID-19 pandemic or not? And (2) whether these two treatments are different or not.

Objectives

The present study aimed to compare the effectiveness of acceptance and commitment therapy and hope therapy based on a positive psychology approach in psychological well-being and improvement of mental health among medical staff during the Covid1-19 pandemic.

Materials and Methods

This quasi-experimental was conducted based on a pretest-posttest control group design (two experimental groups and one control group). The study population consisted of all the medical staff (nurses and doctors) working in Valiasr and Samen Al-Aeme hospitals during the COVID-19 pandemic (n=90). A total of 90 medical staff from each hospital were selected using multistage sampling. Due to the limitations related to the COVID-19 pandemic, all the medical staff of Valiasr and Samen Al-Aeme hospitals were first asked to respond to the study questionnaires. Thereafter, among those who got low scores on these instruments, 90 people from each hospital were selected by cluster sampling and randomly assigned to four groups: two experimental and two control groups (n=30 per group). Accordingly, two identical groups were obtained.

The study inclusion criteria were as follows: willingness to participate in the study, having a bachelor's degree or higher (Nurses, midwives, doctors, and specialists), obtaining a low score in the general health questionnaire and psychological well-being scale, and providing the written informed consent form to participate in the study. On the other hand, the exclusion criteria entailed absence from one of the training sessions, taking certain medications, simultaneous participation in the same training intervention, and non-cooperation in the study.

The study instruments

This study collected data using the short form (18-item) of Ryff's Scale Of Psychological Well-Being and General Health Questionnaire-28 (GHQ-28). The training protocols were based on positive psychological training and ACT training [17,18].

A) Short form (18-item) of Ryff's Scale of Psychological Well-Being

In the last decade, Ryff and Keyes proposed a model of psychological well-being, which was

widely investigated by researchers. This scale was developed by Carol Ryff (1989) at the University of Wisconsin. Psychological well-being is a multidimensional concept that includes (1) self-acceptance: a positive attitude towards self and an individual's acceptance of all of his/her attributes, positive or negative, (2) positive relations with others: having warm, satisfying, trusting relationships with others and capable of strong empathy, (3) autonomy: having a sense of self-determining and independent; able to resist social pressures), (4) purpose in life: having goals in life and a sense of directedness), (5) personal growth: having a feeling of continued development, and (6) environmental mastery: having a sense of mastery and competence in managing the environment).

To measure these constructs, Ryff developed a psychological well-being scale containing 20 items, 14 items, 9 items, and 3 items. After the assessment, the original version of the psychological well-being scale containing 84 items was prepared. Following that, the 54-item version and the 18-item short form were designed. The short form (18-item) of this scale evaluates the six main components of psychological well-being and therefore has six subscales (each subscale contains three items).

Scoring system

In this questionnaire, which is prepared for adults, the subject must indicate to what extent he/she agrees or disagrees with each of the items measured on a six-point scale ranging from 1 (completely disagree) to 6 (completely agree). To obtain the score related to each subscale, it is enough to add the scores of all items related to the given subscale. The total psychological well-being score is obtained from the sum of all 18 items. Items 3, 4, 5, 9, 10, 13, 16, and 17 are reversely scored.

Validity and reliability

In the study by Khanjani et al. (2013), the validity and reliability of Ryff's scale of psychological well-being were confirmed. Cronbach's alpha coefficients in six factors of self-acceptance, environmental mastery, positive relations with others, purpose in life, personal growth, and autonomy were obtained at 0.61, 0.76, 0.75, 0.73, 0.64, and 0.72, respectively, and for the whole scale, it was reported as 0.71

B) General Health Questionnaire-28 (GHQ-28)

This questionnaire developed by Goldberg is a valid and useful screening instrument for assessing

mental disorders available in the forms of 12 items, 28 items, 30 items, and 60 items. In this 28-item questionnaire, there are four subscales consisting of seven items in each case. Items 1-7 are related to the subscale of physical symptoms and general health status, items 8-14 are related to the anxiety subscale, items 15- 21 are related to the social dysfunction subscale, and items 22-28 pertain to the depression subscale. There are two scoring systems for GHQ-28. In the traditional scoring method, the options are scored as (0-0-1-1), and the subject's score varies from 0-28. Another scoring system is the Likert method, in which the options are scored as (0-1-2-3). The subject's maximum score of this method is 84. Likert scoring is the most widely used method in most studies. Moreover, a higher score represents greater mental health if the obtained scores have not been recorded. The GHQ-28 has been validated for different populations in Iran and different countries. In a study, this questionnaire was simultaneously measured by the MHQ scale, and the correlation coefficient of the two scales was 55, and the correlation coefficients between the subtests of this questionnaire with a total score varied from 0.72-0.87, indicating its high reliability. The study was conducted on the students. In addition, this scale has high reliability, and the alpha value calculated for all its items is 0.90.

Steps to implement training sessions

After receiving permission from Deputy Health, Rescue and Treatment of Iran Police Force and Applied Research Center of Behdad Deputy and receiving the code of ethics in research and registration of the clinical trial, the following steps were implemented to perform this study:

1. The permission was obtained from the authorities of Valiasr and Samen Al-Aeme Hospitals after explaining the purpose and importance of the study to them, considering their conditions.
2. The study participants were invited, and the importance and necessity of this study were explained to them in a briefing session while introducing themselves. Written informed consent was obtained from all participants, and they were assured that all the obtained information would be kept strictly confidential and participation in this study does not imply any costs or losses for them.
3. All the medical staff (nurses and doctors) of Valiasr and Samen Al-Aeme Hospitals (n=) were asked to respond to items related to Ryff's scale of psychological well-being and GHQ (pre-test).
4. Among those who got low scores in these instruments, we selected 90 people from each

hospital using random cluster sampling and randomly assigned them to two experimental groups and two control groups (n=30 per group). The participants in experimental group 1 (hope therapy based on the positive psychology (Seligman treatment protocol, 2011) received 10 weekly positive psychological training sessions (90 min each session). Experimental group 2 (acceptance and commitment therapy) received 8 weekly ACT training sessions (120 min each session), and the control group did not receive any training.

5. After the completion of the training sessions, both groups were re-assessed by the above-mentioned scales, and the scores were regarded as post-tests. In addition, one month after the intervention, the same questionnaires were again completed by both groups for the follow-up stage. It is worth noting that the return rate of the questionnaires was reported to be

100% due to the free implementation of the intervention program in the clinic and the supervision of the procedure for returning completed questionnaires.

The outlines of the training sessions were as follows [17, 18]:

Statistical analysis

Descriptive statistics (such as frequency, mean and standard deviation) were employed to analyze the data obtained from the questionnaires that were completed by the participants in the pre-test and post-test. Moreover, inferential statistics (such as the analysis of covariance (ANCOVA)) were applied to assess the research questions. In addition, $P \leq 0.05$ was considered statistically significant. All statistical analyses were performed in SPSS software (version 25).

Table 1. Content of positive psychological training sessions

Training sessions	The content of training sessions
1	Getting acquainted with group members and introducing them, becoming familiar with the rules and norms of the group, becoming familiar with the goals and process of group therapy, and justifying positive psychological therapy group Assignment: studying the brochures prepared for the next meeting
2	Forming group solidarity, building trust with group members, encouraging members to talk about themselves and their emotions about their illness, becoming familiar with the role of positivity towards their activities in their behavioral health and mental health through identifying negative and positive thoughts and getting familiar with the term empowerment and its types Assignment: Identifying the group members' capabilities by writing a truly positive story about themselves (Worksheet no. 1)
3	Assessing stories written by the group members, training the group members to pay attention to their strengths and weaknesses and promoting their strengths and trusting in their abilities, and encouraging the group members to express their positive experiences regarding their activities and express their emotions regarding their abilities Assignment: Applying their capabilities in practice (Worksheet no. 2)
4	Assessing the assignment related to the previous session, helping the client understand the role of good and bad memories in maintaining the symptoms of depression, helping the client express anger, bitterness, and other negative emotions, discussing the effects of these emotions on depression and well-being, and training to write three bad memories and the emotions related to them Assignment: Writing three bad memories (Worksheet no. 3)
5	Assessing the assignment related to the previous session and focusing on the construct of forgiveness and experiencing the power of forgiveness Assignment: Encouraging the group members to write a forgiveness letter to someone they are holding a grudge against (Worksheet no. 4)
6	Re-discussing the role of good and bad memories and the effects of gratitude on these memories, becoming familiar with the effects of gratitude on individual emotions and behavior and social relationships, acquiring the habit of gratitude, encouraging the group members to discuss in a group about gratitude and its role in increasing happiness and improving social communication Assignment: writing a letter to a person who has been influential in their life and they have never thanked him/her enough and send it to the person in question (Worksheet no. 5)
7	Evaluating the assignments and getting feedback from the previous session, becoming familiar with the effects of hope and happiness and the relationship between these two components, explaining the effects of happiness and hope in life as positive processes, and encouraging members to express their experiences about hope and its impact in their lives, and providing models that bring hope, happiness, and positivity to their lives Assignment: Closed and open practices (Worksheet no. 6)
8	Assessing the assignments and getting feedback from the previous session, finding meaning through using outstanding abilities to serve others, and encouraging the clients to use their abilities to serve others Assignment: Guidelines for allocating time to others (Worksheet no. 7)
9	Evaluating the assignments and getting feedback from the previous session, becoming familiar with the concept of taste (tasting pleasures), group discussion regarding the emotions that can be felt when performing daily tasks, encouraging the group members to express their emotions towards daily tasks and preparing them to complete the group therapy Integrating the contents obtained from the previous sessions, explaining the group therapy experience and its effects, getting feedback from the members about their emotions and opinions towards the group, getting feedback from the members about the end of the training sessions, preparing them to leave the group and use its achievements.
10	Summarizing and concluding the group therapy by reviewing the previous materials and the group process, expressing the emotions and attitudes of the members about the group therapy experience, explaining the future challenges facing the members, determining the day of performing the post-test, and appreciating the group members

Table 2. Content of ACT training sessions

Training sessions	Content of training sessions
1	Appointment with the clients, explaining the rules of the group, describing the therapeutic approach, giving homework, and providing a list of 5 cases of the most important problems faced by patients
2	Assessing the assignment related to the previous session, evaluating the patients' problems from the point of view of mindfulness-based acceptance therapy (extracting the avoidance experience, fusion, and individual values), and giving homework, such as providing a list of advantages and disadvantages and ways to manage problems
3	Assessing the assignment related to the previous session, clarifying the ineffectiveness of controlling the negative events by using metaphors and training the tendency towards emotions, and giving homework, such as recording the cases where patients have succeeded in abandoning ineffective control methods
4	Assessing the assignment related to the previous session, training to separate evaluations from personal experiences (bad cup metaphor), adopting a position of observing thoughts without judgment, and giving homework, such as recording the cases where patients have succeeded in observing and not evaluating their experiences and emotions
5	Assessing the assignment related to the previous session, connecting to the present moment and considering oneself as the context (the chessboard metaphor), teaching mindfulness techniques, and giving homework, such as recording the cases where patients have succeeded in observing thoughts using mindfulness techniques.
6	Assessing the assignment related to the previous session, identifying the life values of the patients and assessing the values based on their importance, and giving homework, such as providing a list of obstacles to the realization of people's values
7	Assessing the assignment related to the previous session, providing the practical solutions to remove the obstacles while using metaphors and planning for commitment to the pursuit of values, and giving homework, such as reporting the steps of pursuing values and thinking about the achievements of treatment sessions
8	Summarizing the concepts assessed during the treatment sessions, asking the members to describe their achievements from the treatment and their goals and plans for continuing life, preparing for the end of the treatment, and coping with possible failures after the treatment

Results

In the present study, the experiment groups consist of: (30 participants (Commitment and Acceptance Therapy) and 30 participants (Hope Therapy) plus the control group (30 participants). Based on the results, 95 participants (52.8%) were male, and 85 cases (48.2%) were female. Moreover, 55 participants (30.7%) were 23-29, 44 (24.4%) subjects were 30-39, and 81 (44.9%) cases were 40-52 years old. In addition, the age range of participants was 23-52 years, and their average age was 36.92 years. The average psychological well-being and mental health increased in post-experiment situations compared to pre-experiment situations. Therefore, the descriptive statistics show evidence of the positive impact of the interventions. Analysis of covariance illustrated that these interventions were significant. In order to choose

the appropriate statistical method, the normal distribution of the data was initially examined using the Kolmogorov-Smirnov statistical test, and the variables were shown to be normal ($P < 0.05$). The significant levels obtained were calculated for Levene's test value. The results indicated that the obtained significant level for both variables was more than 0.05; therefore, the prerequisite of homogeneity of variances was established ($P < 0.05$).

As displayed in Table 1, the value ($F_{1/155} = 13.71$) indicates the effect of the independent variable, which is significant at the level of ($P < 0.001 < 0.05$). In other words, there is a significant difference between the post-experiment psychological well-being scores of the experiment group and those of the control group (by adjusting the pre-experiment effect).

Table 3. Results of the analysis of covariance related to the effect of "Commitment and Acceptance Therapy" on the psychological well-being of the medical staff during the COVID-19 pandemic

Source of changes	sum of squares	DF	mean square	F	P-value	Effect size
pre-test	14.648	1	14.648	46.044	0.00	0.286
group	4.362	1	4.362	13.711	0.00	0.107
Gender	0.005	1	0.005	0.015	0.90	0.00
Group * Gender	0.002	1	0.002	0.005	0.94	0.00
Error	36.586	115	0.318			

Table 4. Results of the analysis of covariance related the effect of "Commitment and Acceptance Therapy" on two experiment and control groups in the post-experiment stage

Source of changes	sum of squares	DF	mean square	F	P-value	Effect size
pre-test	9.864	1	9.864	93.012	0.00	0.447
Group	1.368	1	1.368	12.897	0.00	0.101
Gender	0.009	1	0.009	0.080	0.77	0.001
Group * Gender	0.123	1	1.123	1.158	0.28	0.010
Error	12.196	115	0.106			

As illustrated in Table 4, the value ($F_{1/115} = 12.89$) points to the effect of the independent variable, which is significant at the level ($P < 0.001 < 0.05$). In other words, there is a significant difference between the post-experiment mental health scores of the experiment group and those of the control group (adjusting the pre-experiment effect).

As presented in Table 5, the value ($F_{1/115} = 15.18$) indicates the effect of the independent variable, which is significant at the level of ($P < 0.001 < 0.05$). In other words, there is a significant difference between the post-experiment psychological well-being scores of the experiment group and those of the control group (by adjusting the pre-experiment effect).

As shown in Table 6, the value ($F_{1/115} = 24.103$) suggests the effect of the independent variable, which is significant at the level ($P < 0.001 < 0.05$). In other words, there is a significant difference between the post-experiment mental health scores

of the experiment group and those of the control group (adjusting the pre-experiment effect).

Based on the results of the analysis of covariance of Commitment and Acceptance Therapy and Hope Therapy on psychological well-being and improving mental health displayed in Table 7, apparently, there are some differences between the effect (η^2) of Commitment and Acceptance Therapy and Hope Therapy on psychological well-being and improving mental health. Therefore, in the case of psychological well-being, the effect of Commitment and Acceptance Therapy was greater than the effect of Hope Therapy (0.107 vs. 0.101). Moreover, regarding mental health improvement, the effect of Hope Therapy is higher than that of Commitment and Acceptance Therapy (0.173 vs. 0.117). Nonetheless, in order to test the significance of these differences, the Bonferroni post hoc test was used in covariance analysis.

Table 5. Results of the analysis of covariance related to the effect of "Hope Therapy" based on a positive psychology approach on psychological well-being in two experiment and control groups in the post-experiment stage

Source of changes	sum of squares	DF	mean square	F	P-value	Effect size
pre-test	13.390	1	13.390	49.598	0.00	0.301
Group	4.100	1	4.100	15.186	0.00	0.117
Gender	0.102	1	0.104	0.377	0.54	0.003
Group * Gender	0.006	1	0.06	0.22	0.88	0.000
Error	31.047	115	0.270			

Table 6. Results of the analysis of covariance related to the effect of "Hope Therapy" based on a positive psychology approach on psychological well-being in two experiment and control groups in the post-experiment stage

Source of changes	sum of squares	DF	mean square	F	P-value	Effect size
pre-test	0.977	1	0.977	7.328	0.00	0.060
group	3.214	1	3.214	24.103	0.00	0.173
Gender	0.625	1	0.625	4.685	0.032	0.39
Group * Gender	0.015	1	0.015	0.111	0.740	0.001
Error	15.336	115	0.133			

Table 7. Summary of the results of the analysis of covariance related to the effect of "Commitment and Acceptance Therapy" and "Hope Therapy" based on the positive psychology approach on psychological well-being and mental health improvement

Variable		F	P-value	Effect size
Psychological well-being	Group -acceptance and Commitment Therapy	1.7113	0.00	0.107
	Group- hope therapy	0.139	0.00	0.101
Mental health	Group -acceptance and Commitment Therapy	1.7841	0.00	0.117
	Group-hope therapy	7.590	0.00	0.173

Discussion

This study aimed to compare the effectiveness of acceptance and commitment therapy and hope therapy based on positive psychology in the promotion of psychological well-being and mental health in the medical staff of Valiasr and Aamen Al-Aeme hospitals during the COVID-19 pandemic. Consistent with previous studies, the results of this research demonstrated that both ACT and hope therapy based on positive psychology were effective in the promotion of psychological well-being and mental health of medical staff in Valiasr and Aamen Al-Aeme hospitals during the COVID-19 pandemic

[19, 20, 21, 22, 23]. In a similar vein, in their study, Feros et al. pinpointed that ACT could increase psychological flexibility, improve quality of life, and reduce distress [24]. In line with the present study, Waters et al. reported that ACT could significantly improve depression or anxiety symptoms [25]. The COVID-19 pandemic poses various challenges to medical staff in hospitals. The COVID-19 outbreak can affect healthcare providers who are at high risk of infection. A high-pressure work environment, lack of medical protective equipment, and COVID-19 deaths can have a considerable impact on the mental health and psychological well-

being of medical staff. On the other hand, several studies have pointed out that some psychological methods, such as hope therapy and ACT, can reduce suffering in this group. For instance, Hoffman showed that the ACT could bring clear benefits to mood and quality of life [26]. Studies have demonstrated that the ACT could improve interpersonal relationships and increase life satisfaction [27].

Askari and Tahan demonstrated that the ACT could cause a positive change in communication and increase psychological flexibility in people [28]. Hoffman indicated that the main objectives of the ACT-based intervention are to treat emotional avoidance, expand responses to cognitive content, and maintain commitment to behavioral changes. They reported that the ACT could encourage people to attract to their true values. The identification of the boundaries that prevent people from having a good life is the key component of ACT-based interventions [26]. The objective of the ACT-based intervention is to create a rich and meaningful life, while accepting the pain or suffering that inevitably goes with it [22].

On the other hand, other studies have suggested that hope therapy based on positive psychology is the most effective coping strategy for managing stressful situations during the COVID-19 pandemic. Hope therapy based on positive psychology as a type of psychotherapy can significantly affect multiple psychological and physical components [29]. According to Snyder, hope and positivity are considered sources of resilience that can positively affect one's psychological health and well-being when facing stressful situations and becoming despair [30]. Snyder, who is the founder of the hope-based treatment theory, defines hope as a structure containing two concepts: "The ability to design passes toward desired goals despite obstacles or motivating factors for using these passes." Hope therapy, derived from Snyder's hope theory and cognitive behavioral therapy, is a solution-focus therapy and treatment of a story or narrative [31, 32]. Moreover, it aims to help clients to formulate goals and design several pathways to reach them, motivate themselves to pursue goals and reframe obstacles as challenges to overcome.

Therefore, in explaining this hypothesis, it can be stated that hope therapy based on positive psychology and ACT leads to the correction of people's unreasonable expectations and gives them a positive outlook on their future. Therefore, these treatment methods have been successful in correcting people's cognition regarding life situations, and they correct people's negative

cognitions regarding life and the future, thereby reducing their problems and conflicts. Therefore, it can be concluded that ACT-based intervention and hope therapy based on positive psychology and ACT were effective in the promotion of psychological well-being and mental health of medical staff in Valiasr and Samen Al-Aeme hospitals during the COVID-19 pandemic.

Conclusions

The medical staff, especially nurses, can play an essential role in managing and preventing the Coronavirus and its complications during the COVID-19 pandemic. Accordingly, the important role of medical staff as the powerful arm of hospitals during the COVID-19 pandemic should be emphasized. In addition to the healthcare services provided by the medical staff, especially nurses and doctors, the type of communication with patients has a significant impact on the treatment process and their satisfaction; moreover, the quality of communication with patients and the provision of healthcare services to them are directly associated with the satisfaction of medical staff. The satisfaction and comfort of medical staff greatly determine the quality of healthcare service. Therefore, it is necessary to improve the mental health and psychological well-being of medical staff through new psychological methods. These treatments can greatly improve the personal, social, and occupational performance of employees. In the explanation of these findings, it can be stated that the ACT-based intervention is an important field of emerging psychotherapies, and studies demonstrate its effective role in the reduction of stress, anxiety, depression, and symptoms of other clinical conditions and in increasing the quality of life in people who suffer from chronic pain. William Herbert, Esvri, and Wilson are among the researchers who introduced ACT as an effective intervention in adaptability to diseases. Other studies conducted on the use of ACT have pointed out that ACT-based intervention could cause psychological flexibility in the medical staff, leading to changes in people's quality of life, suffering, and mood. On the other hand, mindfulness is considered the conceptual heart of mindfulness-based acceptance theory, and also the findings indicated that stress management based on acceptance and mindfulness could reduce psychological suffering and improve the quality of life and mental health in people. Moreover, hope, as one of the positive attributes, creates positive thoughts and actions in human life. Hope can also help people make positive predictions about their future, and this is an important factor in moving

toward the future, which can improve mental health among people. Hopeful people usually reduce their anxiety symptoms by finding their purpose in moments and seconds and moving towards their goals since a part of their anxiety is due to lack of ability, and in case of any illness, people who are optimistic about treatment and health recovery will reach this goal faster. Therefore, it could be concluded the ACT and hope therapy based on positive psychology were effective in the promotion of psychological well-being and mental health of medical staff in Valiasr and Samen Al-Aeme hospitals during the COVID-19 pandemic.

Compliance with ethical guidelines

The study participants first read the written informed consent form and completed it if they were willing to participate in the study. In addition, the study protocol was approved by the Research Ethics Committee (the ethical code: IR.BMSU.REC.1401.002) and registered in the clinical trials database (Code: IRCT20160925029962N1).

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Authors' contributions

First author, idea design, article writing and revision, data collection, data analysis, second author, project supervisor; All the authors participated in the initial writing of the article and its revision, and all accept the responsibility for the accuracy and correctness of the contents of the present article with the final approval of this article.

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Conflicts of Interest

Hereby, the authors of the article declare that there is no conflict of interest regarding the present study.

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