



ORIGINAL ARTICLE

The effect of cognitive behavior therapy on attitude of infertile individuals toward child adoption

AMINIZADEH SHIRIN¹, AHMADI ATEFEH², DEGHAN MAHLEGHA³, ALIDOUSTI KATAYOUN⁴

¹ Department of Midwifery, Nursing Research center, Kerman Medical Science University, Kerman, Iran; ² Department of Midwifery, Razi Faculty of Nursing and Midwifery, Kerman Medical Science University, Kerman, Iran; ³ Department of Critical Care Nursing, Razi Faculty of Nursing and Midwifery, Kerman University of Medical Sciences, Kerman, Iran; ⁴ Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran

Key words

Infertility • Child adoption • Attitude • Cognitive behavior therapy

Summary

Background. Infertility is one of the most important life-threatening crises that will cause serious psychological problems and serious stressful experiences for couples. Granting the parenting of neglected children can benefit both infertile couples and those children.

Purpose. The study aimed to investigate the effect of Cognitive-Behavioral Counseling (CBT) on the attitude of infertile individuals towards child adoption.

Methods. It is a clinical trial study. Forty samples were determined in each case and control group. Five 90-minute cognitive-behavioral counseling sessions were held for the intervention group. Control group participants were on the waiting list. Data were reported based on frequency distribution, central distribu-

tion, dispersion, Wilcoxon, and paired T-test. The level of significance was set at $p < 0.05$.

Findings. Participants in this study had a mean age of 32.5 years old, the mean years without children was 6.29 years, most of them had higher education. The majority of individuals in the control and intervention groups referred more than once to treat infertility. Based on the current study results, the attitude score of the intervention group before the consultation was 100.74, and it was 112.46 after counseling ($p = 0.046$). Moreover, the score of attitudes toward adoption after counseling in the control group was 97.10 and 112.46 in the intervention group ($p < 0.001$).

Conclusions. CBT has been influential on the attitude of infertile people towards adoption.

Introduction

Infertility is one of the most important life-threatening crises that will cause serious psychological problems and serious stressful experiences for couples. In addition to being deprived of their children, these couples also face other personal, social, and economic problems. In Iran, the prevalence of primary infertility, according to the WHO's clinical, epidemiological and demographic definitions, are 20.2, 12.8, and 9.2%, respectively. In addition, secondary infertility rate is 4.9% [1]. The 12-month prevalence rate of infertility ranges from 3.5 to 16.7% in more developed countries and from 6.9 to 9.3% in the less-developed states, with an estimated overall median prevalence of 9%. The prevalence of primary infertility in 2019 was 20.2% for clinical definition, 12.8% for epidemiological definition, and 9.2% for demographic definitions [2]. The prevalence of infertility varies from region to region, and in some areas, it is reported to be up to 30% [3]. Infertility can have many negative effects on individual and social life. As research shows, sexual dissatisfaction is closely related to issues such as crimes, sexual assaults, psychiatric illness, depression, anger, anxiety, fear, suicidal thoughts and divorce [4]. Infertility is one of the bitter and stressful experiences

of the marital life of couples. Long-term medicinal and therapeutic programs, hazardous diagnostic and therapeutic procedures, planned sexual activity are among these tensions [5, 6]. Family failure, as well as other factors such as parental conflicts, loss of parents, etc., have caused many families to neglect the children in the world, including the Iranian society [7]. Poorly supervised and neglected children are deprived of parental care, effective support, and the benefits of family life [8]. The family-related distress causes these children to be subject to psychological disorders such as depression, anxiety, physical complaints, deterrence, aggression, law-breaking behavior, hostility, arousal, deviance from social norms, destruction of property, and harm to others that will have lasting effects on the child's life [9]. As we know, attitudes represent one's overall assessment of a subject. Even among infertile couples, there is a poor, inefficient attitude towards adoption [10]. The existing legal considerations and the conventional attitude towards the foster child, and issues related to identity and its formation are the most important challenges of these families, and they are considered the most important factors for weak and inefficient attitudes towards adoption [11]. On the other hand, difficult and hardworking treatments, long waiting periods, a sense of loneliness, and rejection

and acceptance of a foster child make these people show high levels of anxiety and physical symptoms, and they have difficulty adapting. This stress and psychological pressure prevent them from thinking reasonably in stressful conditions [12]. Granting the parenting of neglected children under the care of a welfare organization to families who are legally eligible to support neglected children can have benefits both for infertile couples and neglected children [13].

Sometimes couples consider cultural practices, fears of being judged by others, financial implications, and legal (technical) problems as barriers so that they prefer not to have a child or think about new therapies. Factors such as long waiting (2-5 years), increase in financial costs, paperwork and extensive documents and surveys of family, need for fingerprinting, criminal and medical controls, and rigid rules [14], fear of abnormal behavior of the foster child, cultural dissent, fear of some genetic diseases, abnormalities of the foster child, religious opposition, non-similarity of the child to the woman or the man (foster father and foster mother) [15], concern about the eventual adoption of the child (abilities, behavioral and medical problems, etc.) make them unwilling for the practice of adoption [16]. The hope of fertilization [10] and the reason that adoption makes the woman feel that her maternal role is not complete [17] are among the obstacles. Hasanpoor's qualitative study showed that the importance of blood relations, cultural factors, and infertility treatment are among the barriers to adoption in our society. The results show that increasing awareness and enlightenment in the community through the media is essential to minimize the socio-cultural consequences of adoption [18]. Charlottee stated many women are unaware of the adoption process. Most had a positive attitude towards the issue but did not do so [19]. Hajiyan found that Infertile women with a history of unsuccessful ART had high levels of infertility stress and moderate adoption rates. We need to pay more attention to the psychological aspects of infertility and treatment failure. There is a clear need to raise public awareness of adoption and promote "adoption" as a sensible choice for starting a family [20].

The cognitive-behavioral counseling approach is one of the most common approaches to treating sexual and psychiatric disorders, psychological disorders, improved anger control and social skills, and increased adaptability [21].

According to numerous studies, psychotherapy and especially CBT dominate the international guidelines for psychosocial treatments, making it the first-line treatment for many disorders, as noted by the National Institute for Health and Care Excellence's guidelines [2] and American Psychological Association [3]. Therefore, CBT is the gold standard in the psychotherapy field, being included in the significant clinical guidelines based on its rigorous empirical basis [22].

Infertility has multiple injuries in different physical, psychological, mental, and social dimensions in other societies and cultures. In addition, the adoption of a child can be an option for infertile couples to fulfill

their desire for parents; the poor attitude of different communities, despite awareness of adoption, puts couples in a challenge that makes decision-making difficult. It is necessary to increase community awareness and promote adoption as a reasonable choice and the effect of cognitive-behavioral counseling on adoption and marginal infertility issues such as anxiety, Post Traumatic Stress Disorder (PTSD), and infertility-related stress. Knowledge of the positive effect of attitudes toward adoption helps infertile couples think about a foster child. So current study aimed to determine the impact of cognitive-behavioral counseling on the attitude of infertile people towards adoption.

Methods

STUDY DESIGN

This is an interventional study with pretest, posttest design, and control groups to investigate the effect of cognitive-behavioral counseling on the attitude of infertile individuals towards adoption. Participants were Infertile people seeking infertility treatment. The study was performed at Afzalipour Hospital in Kerman, Iran. Afzalipour Hospital is the only governmental infertility treatment center in Kerman province. Sampling and data collection lasted for five months, from 15-10-2019 till 27-3-2020.

SAMPLING

Based on the study population, the type of study and the inclusion criteria, and the 95% confidence interval, and the second type of error 20%, the sample size was estimated to be 31 individuals for each group (control group and intervention group). Sampling was done on even and odd days. Patients who came for treatment on even days were in the intervention group, and patients who came in on odd days were in the control group. Ninety-four persons were eligible. Eleven persons did not have inclusion criteria. 2 persons declined to participate, and one person was excluded for other reasons.

At last, 80 persons participated in study-40 in each group. Nine persons discontinued the survey in the control group because of the extensive time interval between pretest and posttest and pregnancy. In the experimental group, three persons did not participate in 3 counseling sessions due to many meetings and the distance. Two persons discontinued intervention because they got pregnant.

MEASUREMENT SCALE

The data collection tool includes a researcher-made questionnaire of attitude towards adoption. The first part of the questionnaire was related to demographic information. This information included age, education, income, years of infertility, and the frequency of attempts for fertility. A researcher-made questionnaire of attitude towards adoption was used to measure attitude toward adoption. Because the definition of adoption is different in different societies and doing it depends on the culture

and custom of the society and the religious and legal issues governing that society, Therefore, the questionnaire was designed under the beliefs and laws of the Iranian people and different articles and opinions of psychologists and lawyers were also used. The questionnaire was also designed based on individual experience as a midwife, psychologist, and studies. To determine the content validity ratio, we sent the questionnaire to 12 specialists working in infertility health, midwifery, psychology, and health education. All items of the questionnaire had an acceptable CVR greater than 0.80. It was found medium internal consistency (alpha range of 0.70-0.79) and desirable construct validity. The reliability of the questionnaire was confirmed by Cronbach alpha (0.88). The designed questionnaire had 38 questions prepared on a 4-point Likert scale from strongly agree to disagree strongly. Agree got a score of 1, and absolutely opponent got a score of 4. The minimum score of this questionnaire was 38, and the maximum was 152. The cutoff point of the questionnaire was 95, and the mean scores above 95 were considered as positive attitudes and below 95 as negative attitudes.

PROCEDURE

Mental health midwife as a researcher generated the random allocation sequence, enrolled participants, and assigned them to interventions. Participants were infertile individuals seeking infertility treatment. Inclusion criteria were history of primary infertility and lack of history of mental illness, known psychiatric disorder, and hospitalization. Exclusion criteria were getting pregnant while studying and not attending at least two counseling sessions. Since the samples were not all available together, whenever the number of samples reached 10, their intervention started as a group. It took five months until all the samples were available and the intervention was performed. Informed consent was fulfilled. Then pretest form was completed. Then five 90-minute cognitive-behavioral counseling sessions were held for the experimental group. Control group participants were on the waiting list. Post-test was performed in the last counseling session.

INTERVENTION

Both groups' conditions

Participants were asked not to participate in any counseling or educational sessions related to child adoption or study any text about this issue during the study. If anybody acts differently should inform the researcher to exclude her from the study. Participants fill the pretest at the initiation of the first session and the posttest at the end of the last session.

Group one (counseling group): for this group, counseling based on cognitive behavior Beck's CT model was applied. A manual had been prepared based on infertile couples' cognitive and behavioral needs towards the child adoption issue. This manual considered all attitude-related items of the "Attitude towards Child Adoption" questionnaire. These questions are subsets of the main domains of the scale that influence the beliefs, attitudes, and behaviors towards child adoption. The main aim of this counseling approach is the creation and development of a positive attitude towards child adoption. This manual includes five/ 90 minutes' weekly sessions, as shown in (Tab. I) in detail.

Group two (control group)

The control group only attends the ART (assistant reproductive technology) visits in the hospital infertility center during the intervention period. They are on the waiting list for counseling intervention upon their request after the intervention period.

DATA ANALYSIS

SPSS 25 for windows and independent t-test, paired t-test, and Chi-square test were used depending on the case. To investigate and ultimately ensure the ineffectiveness of demographic variables on intervention, the two interventions and control groups were matched in terms of all variables at the beginning of the study. However, the relationship between the two groups and each of the demographic variables was measured by the Chi-square test for more certainty. Shapiro-Wilk and Kolmogorov tests were used to determine the normality of the data. The level of significance was set at $p < 0.05$

Tab. I. Content of CBT toward child adoption.

Session	Topic of the meeting	Content
First	Introduction and purpose presentation	Pre-test, introduction, purpose of meetings, definition of infertility and its types, childbearing strategies, summary of dysfunctional thoughts and attitudes in adoption and their effects on avoidance adoption behaviors
Second	Investigating dysfunctional attitudes	Review previous session, discuss stigmas, tags and views, and where others comment on adoption, Behavioral techniques including: Reducing anxiety, Anger management, Stress management, Stop thinking, Respiratory and muscle relaxation
Third	Spirituality	Review of the previous session, the effect of secure attachment to God on quality of life, discussion on the sense of ownership over the adopted child and his legitimacy, some cognitive errors in adoption
Forth	Relaxation	Review of the previous session, poverty and luxury in adoption, the topic of genetic and environmental differences in the real child and the adopted child and in the fate of human beings
Fifth	Legal procedures	Review of the previous session, legal steps of adoptive adoption in the country, review of behavioral techniques and cognitive errors, conclusion, post-test

Results

There was no significant difference between the two intervention and control groups regarding the variables of age and years of living without children after marriage, and the two groups were similar.

There was no significant difference between the two groups in the variables of sex, level of education, occupation, income level, the cause of infertility, history of the disease, and the two groups were similar. But there was a significant difference between the two intervention and control groups in the place of residence and the frequency of the infertility treatment. In other words, 94.3 and 71.0% of the samples were residents in the city in the intervention and control groups, and there was a significant difference between the two groups ($p = 0.01$). In the intervention and control groups, 34.6 and 18.5%, respectively, underwent treatment four times or more, and there was a significant difference between the two groups ($p = 0.03$) (Tab. II).

There was no significant difference in the mean score of

attitudes before and after the intervention in the control group.

The mean score of attitudes before the intervention was 100.74 and 98.19 in the intervention and control groups, respectively. After the intervention, the mean score of attitudes was 112.46 and 97.10 in the above groups, respectively. There was a significant difference in the attitude scores before and after the intervention in the intervention group ($p < 0.001$). In other words, the samples had a more positive attitude toward adoption after the intervention. But in the control group, there was no significant difference in the scores before and after the intervention. Also, there was a statistically significant difference between the two intervention and control groups in the attitude score after the study ($p < 0.001$). However, there was no significant difference between the two groups before intervention. The difference in the scores before and after intervention showed that the attitude score increased by 0.29 in the intervention group and decreased by 0.03 in the control group. There was a significant difference between the two groups ($p = 0.002$) (Tab. III).

Tab. II. The demographic information of the units in the intervention and control groups.

Group Variable	Control group		Control group		Statistical test	P-value
	Frequency	Percent	Frequency	Percent		
Sex						
Female	18	51.4	16	51.6	0.00	0.99
Male	17	48.6	15	48.4		
Education level						
High school	8	22.9	9	29.0	0.74	0.69
Diploma	11	31.4	11	35.5		
Associate degree and higher	16	45.7	11	35.5		
Occupation						
Self-employed	15	42.9	13	48.1	2.98	0.23
Employed	10	28.6	3	11.1		
Housewife	10	28.6	11	40.7		
Income level						
Lower than one million tomans	13	37.1	19	61.3	4.01	0.13
One-two million tomans	13	37.1	8	25.8		
Above two million tomans	9	25.7	4	12.9		
Residential place						
City	33	94.3	22	71.0	6.44	0.01
Village	2	5.7	9	29.0		
Cause of infertility						
Man-related	12	34.3	6	19.4	3.34	0.34
Woman-related	5	14.3	8	25.8		
Both	8	22.9	5	16.1		
Unknown	10	28.6	12	38.7		
History of illness other than infertility*						
Yes	3	8.6	1	3.2	0.62	0.35
No	32	91.4	30	96.8		
The frequency of treatment for infertility						
Once	8	30.8	18	66.7	6.90	0.03
Two or three times	9	34.6	4	14.8		
Four times and more	9	34.6	5	18.5		

* Fischer's exact test Chi-square test in other cases.

Tab. III. Mean attitude toward adoption before and after intervention in the control and intervention groups.

Time Group	Before intervention		After intervention		T-paired test	P-value	Mean of difference before and after intervention		Effect size (mean of difference)
	Mean	SD	Mean	SD			Mean	SD	
Intervention	100.74	12.62	112.46	14.16	6.18	< 0.001	0.29	0.52	0.56
Control	98.19	12.18	97.10	10.91	- 1.61	0.12	- 0.03	0.18	-0.17
Statistical test	t = 0.83	t = 4.89			Z = -3.11				
Effect size	0.206	1.22			0.82				
P-value	0.41	< 0.001			0.002				

SD: Standard deviation; t: Independent t-test; Z: Mann-Whitney U.

Discussion

According to the results of this study, the score of attitudes towards adoption was 100.74 before intervention (counseling) in the intervention group, and in the control group, it was 98.19. That is, both groups had approximately the same attitude before the consultation. Faramarzi's study (2008) was conducted on "the treatment of depression and anxiety of infertile women: cognitive-behavioral counseling and fluccitin." The mean score of anxiety before intervention in the intervention and control groups did not differ significantly, the same as the current study [23].

Based on the current study results, the attitude score of the intervention group before the consultation was 100.74, and it was 112.46 after counseling. This difference was significant. According to Hamzhepour (2014) study, the anxiety score in the intervention group after the consultation reduced from 48.67 to 32.67, which was a considerable difference. It was similar to the present study, and CBT counseling has been influential on the anxiety of infertile women [24]. In this research, the score of attitudes toward adoption after counseling in the control group was 97.10 and 112.46 in the intervention group. After the intervention, the attitude score in the intervention group (who received counseling) was higher than the control group. It was consistent with a previous study with the goal of the effect of CBT on the anxiety of infertile couples [25]. It seems the use of the same counseling method was the reason for consistency. One study with the effect of CBT on women's knowledge, attitude, and sexual self-esteem, found that all the variables improved, and it was aligned with present study results [26].

Results showed that the mean score of attitudes toward adoption decreased in the control group during counseling for the intervention group. Some studies also showed the same results [24, 25]. Although a decrease in the attitude score in the control group was not significant, it is better to study the factors affecting the attitude towards adoption in this group. The reason might be that during this time, the people of the control group faced those who had a foster child and their problems, and the legal path might be a complex process for them.

In the intervention group, the number of people with

negative attitudes was 25.7%. After the intervention, those with negative attitudes decreased to 14.4%, and the attitude score of those who had a positive attitude before intervention improved from 74.3 to 85.7%.

A study in 2020 found that cognitive-behavioral therapy altered dysfunctional attitudes and irrational beliefs in infertile women [27]. CBT could also improve the infertile individuals' attitude toward child adoption in this clinical trial.

STUDY LIMITATION

Lack of access to infertile people referring to private treatment centers was the limitation of this research. People who go to governmental centers are usually middle and lower economic levels. Also, most people who come from small towns (cities) for infertility treatment go to governmental centers. Therefore, since the study was conducted in a governmental infertility treatment center, there is no information about clients referred to a private center economically and perhaps socially different.

Conclusions

According to the results, infertile individuals in the intervention group and participated in CBT sessions changed their attitude toward child adoption. They found child adoption as another way of being parents other than going for infertility treatment and looking forward to Assisted reproductive technology (ART), which is a complicated, long, and stressful process. Since adopting a child can have mutual benefits and both a couple has a child and a homeless child is supported and cared for by parents, it is better to talk about adoption in pre-infertility treatment counseling.

Ethical approvals

The study was granted approvals by the Research Ethics Committee (IR.KMU.REC13970114) and the clinical trial code is (IRCT20151103024866N10). Informed consent was obtained from all participants.

Acknowledgement

This research was supported by Kerman University of Medical Sciences. Thanks, and appreciation will come to all participants.

Conflict of interest statement

Authors must fully disclose any existing or potential conflicts of interest of a financial, personal or any other nature that could affect or bias their research. If applicable, authors are also requested to describe the role of the funding source(s) in the study design, data acquisition, analysis and interpretation, and writing of the manuscript. No potential conflicts of interest must also be explicitly stated.

Authors' contributions

The individual contributions of authors to the manuscript should be specified in this section.

References

- [1] Delpishe A, Direkvand Moghadam A, Moradi Z, Mir Moghadam N. Aspects of epidemiology of infertility in Ilam in 2013. *Iranian J Obstet Gynecol Infertil* 2014;17:8-14. <https://doi.org/10.22038/ijogi.2014.2831>
- [2] Akhondi MM, Ranjbar F, Shirzad M, Behjati Ardakani Z, Kamali K, Mohammad K. Practical Difficulties in Estimating the prevalence of primary infertility in Iran. *Int J Fertil Steril* 2019;13:113-7. <https://doi.org/10.22074/ijfs.2019.5583>
- [3] Komijani M, Shaykh-Baygloo N, Ghasemi S M, Azad F. A systematic review on the role of infectious agents in female and male infertility. *J Urmia Univ Med Sci* 2018;29:295-304. <http://umj.umsu.ac.ir/article-1-4334-en.html>
- [4] Fallahzadeh H, Zareei Mahmood Abadi H, Momayyezi M, Malaki Moghadam H, Keyghobadi N. The comparison of depression and anxiety between fertile and infertile couples: a meta-analysis study. *Int J Reprod Biomed* 2019;17:153-62. <https://doi.org/10.18502/ijrm.v17i3.4514>
- [5] Julian MM, McCall RB. Social skills in children adopted from socially-emotionally depriving institutions. *Adopt Q* 2016;19:44-62. <https://doi.org/10.1080/10926755.2015.1088106>
- [6] Bahrami N, Yaghoobzadeh A, SharifNia H, Soliemani M, Haghdoost A. Psychometric properties of the Persian Version of Larson's Sexual Satisfaction Questionnaire in a sample of Iranian infertile couple. *Iran J Epidemiol* 2016;12:18-31. <http://irje.tums.ac.ir/article-1-5513-en.html>
- [7] Yassini SM, Shavazi MT, Shavazi NT. Factors associated with adoption acceptance rate from the view point of infertile couples. *Iran J Reprod Med* 2012;10:413-8.
- [8] Megan MJ, McCall RB. Social skills in children adopted from socially-emotionally depriving institutions. *Adopt Q* 2016;19:44-62. <https://doi.org/10.1080/10926755.2015.1088106>
- [9] Sullivan MW, Carmody DP, Lewis M. How neglect and punitiveness influence emotion knowledge. *Child Psychiatry Hum Dev* 2010;41:285-98. <https://doi.org/10.1007/s10578-009-0168-3>
- [10] Hajian T, Afshari P, Abedi MR, Hashemi E. Investigating infertility-related stress and adoption in Iranian infertile females with assisted reproductive technology failure. *Jundishapur J Chronic Dis Care* 2017;6. <https://doi.org/10.5812/jjcdc.39632>
- [11] Palacios J, Adroher S, Brodzinsky DM, Grotevant HD, Johnson DE, Juffer F, Martínez-Mora L, Muhamedrahimov R J, Selwyn J, Simmonds J, Tarren-Sweeney M. Adoption in the service of child protection: an international interdisciplinary perspective. *Psychol Public Policy Law* 2019;25:57-72. <https://doi.org/10.1037/law0000192>
- [12] Samadaee-Gelehkolaee K, McCarthy BW, Khalilian A, Hamzehgardeshi Z, Peyvandi S, Elyasi F, Shahidi M. Factors associated with marital satisfaction in infertile couple: a comprehensive literature review. *Glob J health Sci* 2015;8:96-109. <https://doi.org/10.5539/gjhs.v8n5p96>
- [13] Bokaie M, Faraj khoda T, Enjezab B, Heidari P, Karimi Zarchi M. Barriers of child adoption in infertile couples: Iranian, s views. *Iranian J Reprod Med* 2012;10:429-34.
- [14] Naylor LA. Increased adoption and reducing the number of children in foster care in the US and abroad. *Patimens American Society for Public Administration* 2013.
- [15] Ezugwu FO, Obi SN, Onah HE. The knowledge, attitude and practice of child adoption among infertile Nigerian women. *J Obstet Gynaecol* 2002;22:211-6. <https://doi.org/10.1080/0144361020113463>
- [16] Mohanty J. Attitudes toward adoption in Singapore. *J Fam Issues* 2014;35:705-28. <https://doi.org/10.1177/0192513X13500962>
- [17] Nwobodo E, Isah YA. Knowledge, attitude and practice of child adoption among infertile female patients in Sokoto north-west Nigeria. *Niger Postgrad Med J* 2011;18:272-5.
- [18] Hasanpoor-Azghahy SB, Simbar M, Vedadhir A, Amiri Farahani L. Exploring the challenge of adoption from the perspective of Iranian infertile women. *JCCNC* 2016;2:19-26. <https://doi.org/10.32598/jccnc.2.1.19>
- [19] Nguefack CT, Ourtching C, Gregory HE, Priso EB. Knowledge, attitudes and practices of infertile women on child adoption in Douala (Cameroon). *Open J Obstet Gynecol* 2014;4:1065-71. <https://doi.org/10.4236/ojog.2014.416146>
- [20] Hajjyan T, Afshari P, Abedi MR, Hashemi E. Investigating infertility-related stress and adoption in Iranian infertile females with assisted reproductive technology failure. *Jundishapur J Chronic Dis Care* 2017;6:e39632. <https://doi.org/10.17795/jjcdc-39632>
- [21] Mosalanejad L, Khodabakshi Koolaee A, Jamali S. Effect of group cognitive behavioral therapy on hardness and coping strategies among infertile women receiving assisted reproductive therapy. *Iran J Psychiatry Behav Sci* 2012;6:16-22.
- [22] David D, Cristeal I, Hofmann SG. Why cognitive behavioral therapy is the current gold standard of psychotherapy. *Front Psychiatry* 2018;9:4. <https://doi.org/10.3389/fpsy.2018.00004>
- [23] Faramarzi M, Alipor A, Esmaelzadeh S, Kheirkhah F, Poladi K, Pash H. Treatment of depression and anxiety in infertile women: cognitive behavioral therapy versus fluoxetine. *J Affect Disord* 2008;108:159-64. <https://doi.org/10.1016/j.jad.2007.09.002>
- [24] Abdolahi HM, Ghojzadeh M, Abdi S, Farhangi MA, Nikniaz Z, Nikniaz L. Effect of cognitive behavioral therapy on anxiety and depression of infertile women: A meta-analysis. *Asian Pac J Reprod* 2019;8:251-9. <https://www.apjr.net/text.asp?2019/8/6/251/270102>
- [25] Faramarzi M, Pasha H, Esmailzadeh S, Kheirkhah F, Heidary S, Afshar Z. The effect of the cognitive behavioral therapy and pharmacotherapy on infertility stress: a randomized controlled trial. *Int J Fertil Steril* 2013;7:199-206.
- [26] Hosseini F, Alidousti Shahraki K, Azizzadeh Forouzi M, Ahmadi A, Dehesh T. The effect of cognitive behavioral counsel-

ing on sexual knowledge, motivation to avoid risky sexual relationships, and sexual depression in female university students. *Trends Psychiatry Psychother* 2020;42:122-128. <https://doi.org/10.1590/2237-6089-2019-0052>

[27] Dayhimi M, Kariman N, Azadfar Z. The effectiveness of cognitive-behavioral therapy on dysfunctional attitudes and irrational beliefs in infertile women. *RRJ* 2020;8:99-106. <http://frooyesh.ir/article-1-1703-en.html>

Received on November 17, 2021. Accepted on January 3, 2022.

Correspondence: Alidousti Katayoun, Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran – Tel.: 0989132421749 - Fax: 0983431325218 - E-mail: alidoosti@kmu.ac.ir; kalidousti@gmail.com

How to cite this article: Shirin A, Atefeh A, Mahlegha D, Katayoun A. The effect of cognitive behavior therapy on attitude of infertile individuals toward child adoption. *J Prev Med Hyg* 2022;63:E97-E103. <https://doi.org/10.15167/2421-4248/jpmh2022.63.1.2411>

© Copyright by Pacini Editore Srl, Pisa, Italy

This is an open access article distributed in accordance with the CC-BY-NC-ND (Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International) license. The article can be used by giving appropriate credit and mentioning the license, but only for non-commercial purposes and only in the original version. For further information: <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>