Psychiatry Research 239 (2016) 325–330

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

The clinical effectiveness of cognitive behavior therapy and an alternative medicine approach in reducing symptoms of depression in adolescents

Mansoureh Charkhandeh [a,*], Mansor Abu Talib [b], Caroline Jane Hunt [c]

[a] Mood Disorder Department, Toronto Western Hospital, 399 Bathurst Street Toronto, ON, Canada M5T 2S8
[b] Department of Psychology of Child Development, Faculty of Human Ecology, University Putra Malaysia, Malaysia
[c] School of Psychology, The University of Sydney, Sydney, NSW 2006, Australia

ARTICLE INFO

Article history:
Received 27 October 2015
Received in revised form
27 February 2016
Accepted 25 March 2016
Available online 30 March 2016

Keywords:
Adolescents
Cognitive behavior therapy
Reiki and depression

ABSTRACT

The main aim of the study was to investigate the effectiveness of two psychotherapeutic approaches, cognitive behavioral therapy (CBT) and a complementary medicine method Reiki, in reducing depression scores in adolescents. We recruited 188 adolescent patients who were 12–17 years old. Participants were randomly assigned to CBT, Reiki or wait-list. Depression scores were assessed before and after the 12 week interventions or wait-list. CBT showed a significantly greater decrease in Child Depression Inventory (CDI) scores across treatment than both Reiki ($p < .001$) and the wait-list control ($p < .001$). Reiki also showed greater decreases in CDI scores across treatment relative to the wait-list control condition ($p = .031$). The analyses indicated a significant interaction between gender, condition and change in CDI scores, such that male participants showed a smaller treatment effect for Reiki than did female participants.

Both CBT and Reiki were effective in reducing the symptoms of depression over the treatment period, with effect for CBT greater than Reiki. These findings highlight the importance of early intervention for treatment of depression using both cognitive and complementary medicine approaches. However, research that tests complementary therapies over a follow-up period and against a placebo treatment is required.

1. Introduction

Depressive disorders in adolescents are known to have a high prevalence and recurrence (Chu and Harrison, 2007; Curry et al., 2011; Rose et al., 2014; Ryan, 2005; Stikkelbroek et al., 2013; Thapar et al., 2012). It is estimated that 14-25% of adolescents experience at least one episode of depression before entering adulthood (Ryan, 2005; Stikkelbroek et al., 2013). Depression is the leading condition related to cause of disability worldwide and is now the leading disease-related cause of disability (Reynolds et al., 2012). Depression is associated with many comorbid problems, including development of social problems (Pine et al., 1998), teen pregnancies (Hall et al., 2015), negative life events, substance abuse (Boger et al., 2014), eating problems (Meng and D'Arcy, 2015), diabetes (Yu et al., 2015), schizophrenia (Samsom and Wong, 2015), and learning problems (Goodyer and Cooper, 1993; Meng and D'Arcy, 2015; Rivet-Duval et al., 2011; Rose et al., 2014). Epidemiological studies on mental health of youth indicate that depression, drug abuse and suicide are among the three most common causes of death among young people (Brookman-Frazee et al., 2006). It is, therefore, important to treat depression in an early stage of life with effective treatments (Birmaher et al., 2007).

Although the exact cause of depression is not well-known, there is strong scientific evidence that genetics, psychological and environmental factors increases the risk of developing depression (Fakhoury, 2015; Zarrei et al., 2015). A large number of genes are involved in the manifestation of this disorder and genetic factors may account for 40-50% of risk (Bielczyk et al., 2015).

Depression has also been documented as a significant problem in Iran, with 0.5% of lifetime suicide attempts related to depression (Malakouti et al., 2009; Nojomi et al., 2008). The prevalence of mental disorders, including depression, is as high as 9.7% in some communities, particularly in northwestern Iran (Mohammadi et al., 2005). Moreover, the link between depression, substance abuse and infectious diseases has been well documented in Iranian communities (Mokri, 2002).

Prescribing antidepressants is the most common pharmacological intervention for treating depression (Femenia et al., 2015).

* Corresponding author.
E-mail address: macharkhandeh@gmail.com (M. Charkhandeh).

http://dx.doi.org/10.1016/j.psychres.2016.03.044
0165-1781/

However, there are many side effects attributed to the use of these drugs (Hodgson et al., 2015), and the use of psychological interventions are effective therapies in treatment of depression. Cognitive Behavioral Therapy (CBT) and Reiki are two such therapies that will be in the focus of this paper.

The American Psychiatric Association guidelines indicate that among psychotherapeutic approaches, CBT has the best documented effectiveness for the treatment of depression disorders (Association, 2000). Additionally, several studies, including a number of meta-analyses, have demonstrated the effectiveness of CBT in treating depressed patients (Fernie et al., 2015; Klein et al., 2007; Michael and Crowley, 2002; Qin et al., 2015; Weisz et al., 2006). The CBT psychotherapist aims to bring about change by helping patients to reduce distorted perceptions, achieve problem solutions, learn coping skills and promote active participation in healthy and pleasant activities (Goodyer et al., 2000; March et al., 2007). Although the result of earlier studies is promising, there is a significant group of depressed adolescents who do not recover after CBT treatment (Stikkelbroek et al., 2013). Moreover, the effectiveness of this therapeutic treatment has not yet been investigated in Iran.

The use of complementary and complementary therapies such as Reiki in treating the mental disorders particularly depression has been investigated (Bowden et al., 2011; Ernst, 2000; Koithan, 2009; Roe et al., 2015). Reiki is a commonly practiced therapy in Asian countries (Joyce and Herbison, 2015). One of the most significant health benefits of Reiki is stress relief and relaxation, which triggers the body's natural healing abilities for improving and maintaining health. Reiki helps to bring about inner peace and harmony; it can be a valuable instrument in the search for spiritual growth (Ellyard, 2004). Reiki is described by supporters as a holistic therapy which brings about healing on physical, emotional, mental and spiritual levels, in the belief is that the energy will flow through the practitioner's hands whenever the hands are placed on or held near a potential recipient (Ellyard, 2004). The effectiveness of Reiki in reducing depression in adults has been previously investigated, with findings that Reiki is effective in reducing depression significantly in the experimental group compared with the wait-list (Richeson et al., 2010). However, such a study is lacking for Iranian adolescents with depression.

The main aim of the current research was to investigate the effectiveness of CBT versus Reiki for depression in adolescents in Iran, and to specifically assess the effect on different subscales of depression.

2. Methods

2.1. Participants

We recruited participants who were adolescents aged 12–17 years from the different districts of the city of Tehran. Informed consent was obtained in writing, and the study was approved by local research ethics boards. Tehran is a metropolitan city which accommodates more than 10 million inhabitants with different socioeconomic and cultural backgrounds. This city is geographically divided into different zones by the organizations of urban planning and management (Abbaspour and Gharagozlou, 2005). We used a multistage random sampling method for randomly selecting our participants from clients who had been referred to the psychotherapy clinics in different districts of the city to provide each depressed client with an equal chance of being included in our experiment (Agresti and Finlay, 2008).

The following inclusion criteria were required for inclusion in the experimental or control conditions: i) a minimum Child Depression Inventory (CDI) score of 20 (Kovacs, 1983), ii) DSM-IV-TR (Association, 2000) criteria for major depression based on a structural interview by two separate clinical psychologists, and iii) completion of a pre-treatment assessment. In order to account for the possible confounder effects in our statistical analyses, we did not recruit participants who were already undergoing any psychiatric or psychological treatments, including psychotropic medications, supportive groups, and current practice of relaxation techniques. The participants were randomly assigned into three conditions using a computerized random sampling method by the practitioner nurse at the centers, a waitlist control condition (n=60), a CBT condition (n=65) treatment, and a Reiki condition (n=63). A total of 188 participants were included in the study, with approximately equal numbers of male and female assigned to each condition. Participants who did not complete the treatment were not included in the final analysis. The demographic characteristics of the participants recruited into the study are provided in Table 1.

Table 1
Demographic information of the subjects recruited for the current study.

	CBT		Reiki		control		X^2	p
$N=188$	n	%	n	%	n	%		
Gender								
Male	31	48	29	29	27	27	45	0.93
Female	34	52	34	34	33	33	55	
Age								
12–13	8	12.3	8	12.7	8	13.3	0.146	0.997
14–15	24	36.9	24	38.1	21	35		
16–17	33	50.8	31	49.2	31	51.7		
Education								
Father								
PhD/master	4	6.2	2	11.10	4	6.7	6.6	0.759
Bachelor	35	53.8	34	54	24	40		
Diploma[a]	19	29.2	19	30.2	26	43.3		
Under diploma	7	10.8	3	4.8	6	10		
Mother								
PhD/master	8	12.3	5	7.9	3	5	4.186	0.652
Bachelor	28	43.1	25	39.7	24	40		
Diploma	13	20	19	30.2	15	25		
Under Diploma	16	24.6	14	22.2	18	30		
Medical status[b]								
Yes	11	16.9	10	15.9	7	11.7	0.752	0.687
No	54	83.1	53	84.1	53	88.3		
Living status								
Mother and father	55	84.6	56	88.9	51	85	4.636	0.591
Only mother	7	10.8	3	4.8	6	10		
Only father	3	4.6	2	3.2	1	1.7		
none	0	0.00	2	3.2	2	3.3		
Family income (monthly)[c]								
>800 USD	21	32.3	19	30.1	18	30	1.093	0.983
<800 USD	44	67.7	44	69.8	41	70		

[a] Diploma=high school diploma.
[b] Yes=currently have a medical problem; No=no medical problem declared.
[c] Min: $200; max=$4000; mean=834.82; SD=$600.17.

2.2. Questionnaire measure

The data for the current study were collected in two stages; prior to administrating the psychotherapeutic treatment (pre-test) and after 12 weeks of treatment (CBT and Reiki)(post-test). The measure used was the CDI (Kovacs, 1983). The CDI is a self-rating scale modeled on the Beck Depression Inventory (Beck, 1972) and adapted to adolescents aged 7-17 years. The depressive symptoms assessed include cognitive, affective, somatic and behavioral aspects. The CDI has five subscales: negative mood (e.g., *sad and felt like crying, worrying about bad things*), interpersonal problems (e.g. *social avoidance, social isolation*), ineffectiveness (e.g., *incapacitation in assessments, skills and educational*), anhedonia (*impairment*

of the ability to experience pleasure) and negative self-esteem (e.g., *self-dislike, the feeling of being unloved*) (Saylor et al., 1984). The 27 items were scored between 0 and 2, with 0 rated as the least depression score and 2 as the highest depression score.

2.3. Assessment

The content of the CBT included two sessions of one and a half hours per week with a total of 36 hours in twelve sessions over twelve weeks. Therapy sessions provided programs using a number of principles such as teaching participants how to work on their problems and approaching educational problems from a psychological perspective (Page and Hooke, 2012; Rossello et al., 2008). Reiki therapy was administered over twelve weeks with 20 minutes session once per week (Nield-Anderson and Ameling, 2001). The Reiki treatment proceeded with the practitioner placing his hands in various positions. They used the non-touching technique, where the hands were held a few centimeters away from the recipient's body, for some or all of the positions.

2.4. Data analysis

The statistical analysis of the data was performed using the Statistical Package for Social Science (SPSS for Windows v16; SPSS Inc., Chicago, Illinois, USA)(Norusis, 2008) and R (RCore, 2015). A Pearson's chi-squared statistical test was performed to check for any significant associations among the demographic variables and assignment to the three conditions. A series of $2 \times 3 \times 2$ mixed model ANOVAs were used to test the within-subject effect for depression scores (pre-test, post-test for the CDI total score, as well as the five CDI subscales) and the between-subject effects of condition (CBT, Reiki, wait-list) and gender (male, female), and their interactions. Between-subject contrasts tested the difference in treatment effects between the two active treatments and the waitlist condition, and between the CBT and Reiki conditions.

3. Results

3.1. Demographic characteristics

Pearson's chi-squared analyses did not show any significant association between the Demographic variables and the three experimental and control conditions (Table 1). For instance, there was no significant difference between of three conditions by sex. We also stratified the age into three subcategories (12–13, 14–15, and 16–17 years old) to investigate whether there is a difference among the clients in age differences (Table 1). The educational status of the parents was divided into four levels (below high school diploma, high school diploma, bachelor, and master/doctorate). The outcome of the Pearson's chi-squared test showed that there is no significant difference among the subcategories of age, educational status. Medical problems were defined as bodily changes due to the release of sexual hormones (androgen and estrogen) and genetic problems, and were evaluated in the interview by a question requiring "yes" or "no" response. This question was answered by parents. There were no statistically significance differences between the participants by medical problems.

3.2. Change in CDI depression scores for the experimental control conditions across treatment

In respect to the CDI total score, there was a significant treatment by condition effect ($F(2)=78.46$, $p<.001$), with contrast tests indicating a significant difference between CBT and waitlist ($p<.001$), Reiki and waitlist ($p=.031$), and between CBT and Reiki ($p<.001$) (See Figs. 1 and 2). There was also a significant treatment by condition by gender interaction ($F(2)=6.71$, $p=.002$); Fig. 2 suggests that male participants showed a significantly smaller treatment effect for Reiki than their female counterparts. Table 2 shows the mean and standard deviation scores for the pre and post-test CDI scores, and the size of treatment effect (Cohen's *d*) (Cohen, 1988) for each condition. The treatment effects for both CBT and Reiki were large.

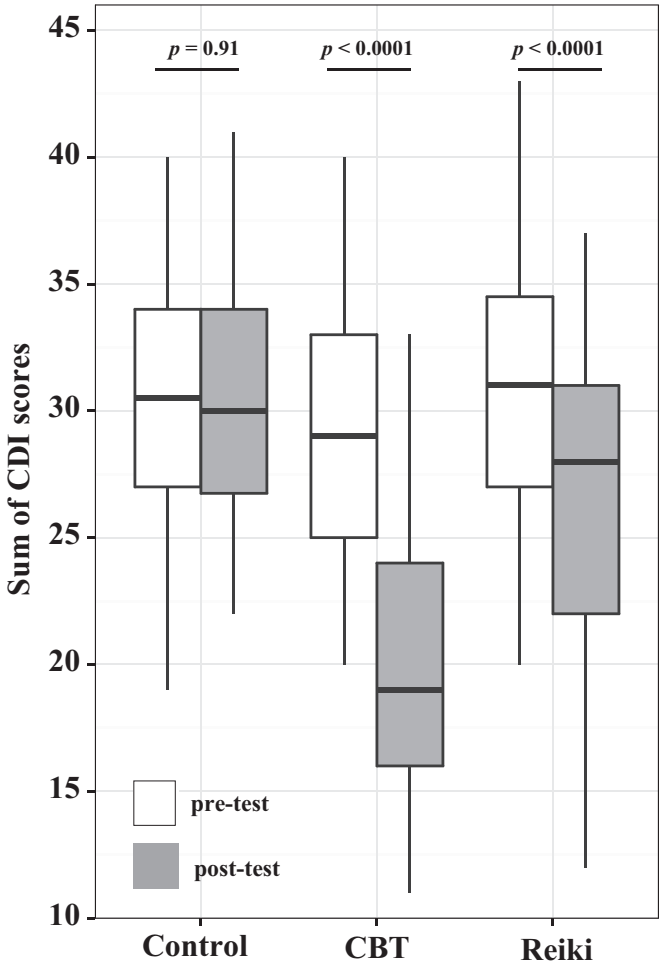

Fig. 1. Comparison of the depression scores measured using Child Depression Inventory (CDI) of subjects analysed in the three groups, i.e. control group and two experimental groups (cognitive behavioral therapy=CBT and Reiki) at the beginning of experiments (=pre-test) and after the 12 weeks of therapies (=post-test). The Y-axis shows the sum of CDI scores per each subject. A higher CDI score indicates a more severe depression in the subject. The *p*-value computed using a paired *t*-test of sum CDS scores in pre-test and post-test group.

3.3. CDI depression subscale scores

We subsequently analysed the five subscales of depression (i.e. negative mood, interpersonal problems, ineffectiveness, anhedonia, and negative self-esteem) again using mixed-model ANOVAs. Significant treatment by condition effects were found for all five subscales ($p<.001$) but the pattern of effects differed when considering the contrast tests. CBT showed a significantly greater decrease in scores across treatment relative to waitlist for all subscales with the exception of negative self-esteem ($p=.109$; Fig. 3; Table 3). On the other hand, Reiki was associated with significant treatment effects relative to wait-list on only one subscale, anhedonia ($p=.006$; Table 4). CBT and Reiki differed in the size of the treatment effect across all five subscales. Interestingly,

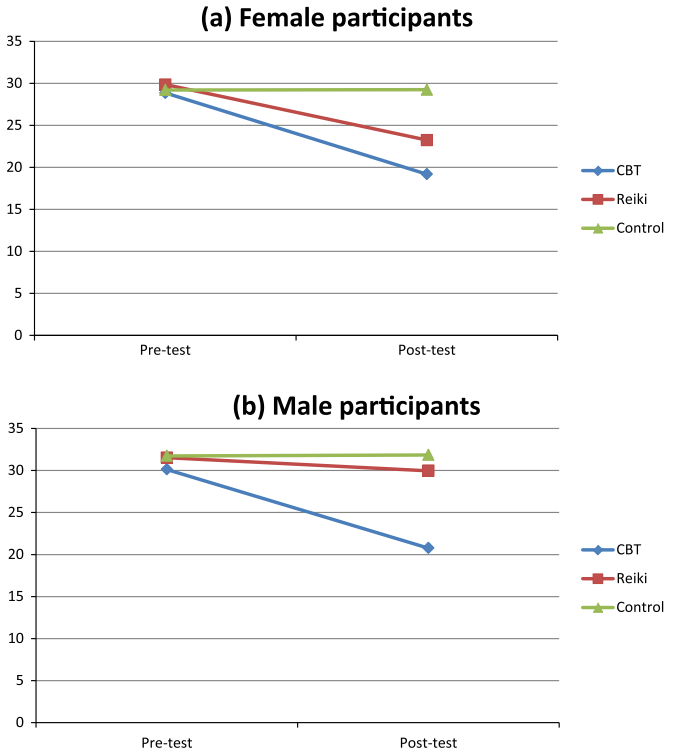

Fig. 2. Comparison of the depression scores measured using Child Depression Inventory (CDI) of participants analysed for a) females and b) males in the three conditions, i.e. control condition and two experimental conditions (cognitive behavioral therapy (CBT) and Reiki) at the beginning of experiments (pre-test) and after the 12 weeks of therapies (post-test). The Y-axis shows the sum of CDI scores per each participant. A higher CDI score indicates a more severe depression in the participant.

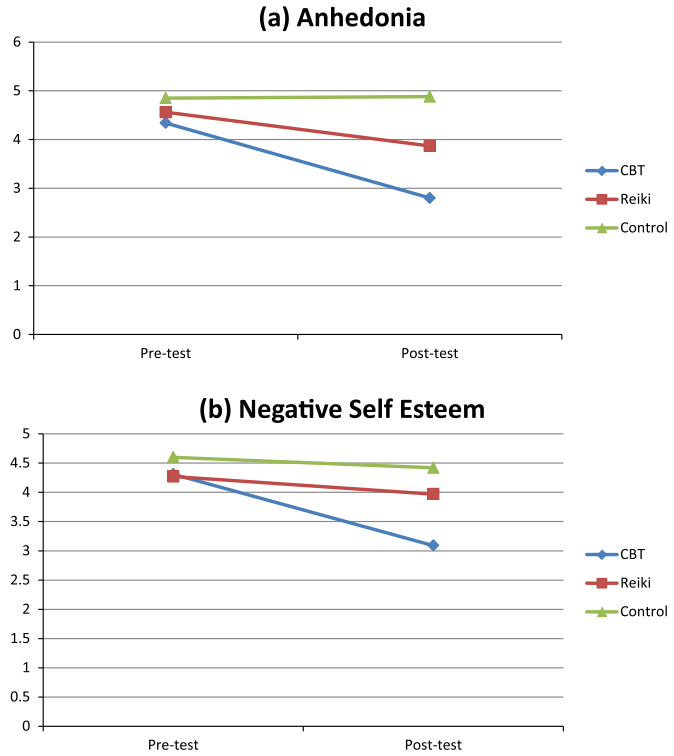

Fig. 3. The effect of CBT and Reiki on two of depression subscales, i.e. a) anhedonia and b) negative self-esteem. The Y-axis shows the mean depression score at then pre-test and post-test assessments.

Table 2
CDI depression scores at pre-test and post-test for control, CBT, and Reiki groups.

Group	Test	N	Mean	SD	Cohen's *d*
Control	**Pre-test**	60	30.35	5.45	−0.006
Control	**Post-test**	60	30.38	4.66	
CBT	**Pre-test**	65	29.46	5.47	1.73
CBT	**Post-test**	65	19.94	5.59	
Reiki	**Pre-test**	63	30.00	5.37	0.76
Reiki	**Post-test**	63	26.33	5.88	

in contrast to the CDI total score, no subscale showed any interaction between gender and the treatment effects across each condition.

4. Discussion

The present study examined the effect of cognitive behavioral therapy and Reiki on depression among a large sample of adolescents. The effectiveness of CBT on depression has been studied on adults and young people across a wide age range (Pennant et al., 2015), but at the start of this project there had not been such an extensive study that focused on adolescents aged 12–17 years. Moreover, the effectiveness of Reiki therapy in treating adolescent depression has not been studied before. Earlier studies have investigated this therapy on patients with several other comorbidities and the results might be skewed due to confounder effects, such as religion belief, parent's education, or a placebo effect. Our study showed that both CBT and Reiki are effective on improving the depression scores of adolescents; however, we observed that CBT had a significantly larger treatment effect than Reiki.

Table 3
Paired *t*-test for the subscales in the pre-test and post-test in the CBT group (N=65).

Test	Subscales	Mean	SD	Cohen's *d*
Pre-test	*Negative mood*	4.52	1.45	1.34
Post-test	*Negative mood*	2.49	1.58	
Pre-test	*Interpersonal problem*	3.4	1.31	1.21
Post-test	*Interpersonal problem*	1.89	1.19	
Pre-test	*Ineffectiveness*	3.31	1.17	1.56
Post-test	*Ineffectiveness*	1.91	1.25	
Pre-test	*Anhedonia*	4.34	1.41	1.05
Post-test	*Anhedonia*	1.80	1.52	
Pre-test	*Nnegative self-esteem*	4.31	1.58	0.81
Post-test	*Negative self-esteem*	3.09	1.44	

Table 4
Paired *t*-test for the subscales in the pre-test and post-test in the Reiki group (*N*=63).

Test	Subscales	Mean	SD	Cohen's *d*
Pre-test	*Negative mood*	4.7	1.49	0.52
Post-test	*Negative mood*	3.86	1.73	
Pre-test	*Interpersonal problem*	3.9	1.31	0.50
Post-test	*Interpersonal problem*	3.2	1.50	
Pre-test	*Ineffectiveness*	3.56	1.23	0.49
Post-test	*Ineffectiveness*	2.95	1.26	
Pre-test	*Anhedonia*	4.55	2.02	0.38
Post-test	*Anhedonia*	3.88	1.50	
Pre-test	*Negative self-esteem*	4.27	1.76	0.17
Post-test	*Negative self-esteem*	3.97	1.70	

A large scale study in Iran revealed that depression is the most common psychological problem among adults aged 26-65 years old who committed suicide (Mohammadi et al., 2005). Other studies also indicated that depression is now the leading disease-related cause of disability (Reynolds et al., 2012). Early

interventions to alleviate the symptoms of this disorder are therefore very important.

Our results support earlier findings of the use of CBT intervention on depression treatment both in Iran and elsewhere in the world (Klein et al., 2007; March et al., 2007; Michael and Crowley, 2002; Qin et al., 2015; Weisz et al., 2006). Our findings indicate that a statistically significant improvement in the depression scores as measured by CDI across time was observed in the treatment conditions, but not in the control condition. These results suggested that CBT was a reliable intervention for reducing adolescent depression, but also that Reiki may have some promise. The subscale results showed a different pattern of results, particularly in terms of findings that did not differentiate between Reiki and waitlist, and the lack of a gender interaction. However, it is likely that these results may have arisen from a relative lack of variance in the subscale scores relative to the full scale CDI, as Cohen's *d* calculations indicated a medium treatment effect for Reiki across all subscales with the exception of negative self-esteem.

The Reiki therapy is an alternative complementary medicine approach to heal symptoms (Hammerschlag et al., 2014). In this therapy, a practitioner tries to find and correct any imbalance in patients "life energy" (O'Mathuna and Ashford, 2014). However, no scientific instruments have been able to detect this energy (O'Mathuna and Ashford, 2014) and the evidence base for this therapy could be questioned. Although Reiki reduces depression symptoms in patients, it did not alleviate it and patients were presented with a milder depression after treatment.

Understanding the mechanisms underlying this treatment approach is particularly important given our findings that it may not be as effective for male adolescents as it is for female adolescents. A possible reason for this differential effect could be that girls have a higher appositive attitude towards Reiki treatment more than boys do. There are many factors that might be contributing to the effectiveness of this approach including belief to this method and trust to the practitioner (Van Aken and Taylor, 2010). Reiki therapy has been mostly studied in patients with cancer for reducing pain, depression, and anxiety (Fleisher et al., 2014) and other disease where patients experience pains and depression such as osteoarthritis (Lu et al., 2013). There are mixed results for the effectiveness of this approach in treating symptoms of disease across different studies, with some studies not supporting a vigorous effect of this therapy in reducing pain, anxiety, and depression (Lee et al., 2008; Thrane and Cohen, 2014). For example, careful review studies did not find any robust evidence for the use of therapeutic touch including Reiki in healing acute wounds (O'Mathuna and Ashford, 2014) or oral pain in pediatric patients (Kundu et al., 2014). In a systematic review of 27 papers (Bao et al., 2014), Bao et al. found a low level support for the use of complementary and alternate medicine for alleviating cancer pain but the results need to be interpreted in the light of a small sample size. In contrast, other studies have reported a statistically significant reduction in depression score in cancer patients who experiences Reiki sessions (Bowden et al., 2011; Fleisher et al., 2014; Richeson et al., 2010; Shore, 2004; Vitale, 2007).

Our study is the first to investigate the effectiveness of Reiki in improving depression scores among adolescents, using a sample size larger than earlier studies. We saw a statistically significant improvement in the overall symptoms of depression in our patients with a large effect size. The outcome of this research demonstrated the potential efficacy of Reiki interventions for improving depression symptoms in adolescents. However, we don't rule out a possible placebo effect and further methodologically rigorous research assessing whether Reiki produces more than a placebo effect is needed to confirm the benefit of Reiki on depression. A follow-up research would evaluate the degree of maintaining the effectiveness of these methods. However, we did not perform such a study. Moreover, in our study we assessed the symptoms of depression both before administrating our therapeutic approaches and after applying them.

It is expected that using the CBT and Reiki approaches in the present study pioneers further work in this particular area of depression in youth. The result of this study could address the significance of juvenile conduct problems especially in the middle-eastern context, and lead to development of psychotherapies for reducing the prevalence of depression among children. However, there are controversies about the use of Reiki. Patients may avoid clinically proven treatments for serious conditions in favour of unproven Reiki, and we advise to consult with a physician before administering this therapy.

5. Implications

The insights from this study show that CBT specifically addresses the problem of adolescent depression. Moreover, CBT may well help to solve the social and individual problems associated with depression, and it is recommended that counseling centers implement CBT to address the problem of mental disorders among Iranian youth. Reiki research by the scientific community should be encouraged and the potential of this traditional art of healing to enhance treatment outcomes, particularly for those individual who may not seek CBT.

Ethical approval

The study protocol was approved by the ethics committee of the state welfare organization of Iran.

Acknowledgments

We thank the patients and their family for agreeing to participate in our study. We also thank the many clinics who contributed to this study with inviting patients for treatments and follow ups. The first author would like to thank Siti Nor Yaacob and Mariani Bte Mansor for their support for conducting this research.

References

Abbaspour, M., Gharagozlou, A., 2005. Urban planning using environmental modeling and GIS/RS: a case study from Tehran. Environ. Qual. Manag. 14 (4), 63–72.
Agresti, A., Finlay, B., 2008. Statistical Methods for the Social Sciences. Prentice Hall, Pearson.
Association, A.P., 2000. Diagnostic and Statistical Manual of Mental Disorders. American Psychiatric Association, Washington.
Bao, Y., Kong, X., Yang, L., Liu, R., Shi, Z., Li, W., Hua, B., Hou, W., 2014. Complementary and alternative medicine for cancer pain: an overview of systematic reviews. Evid. Based Complement Altern. Med. 2014, 170396.
Beck, A., 1972. Depression: Causes and Treatment. University of Pennsylvania Press, Philadelphia.
Bielczyk, N.Z., Buitelaar, J.K., Glennon, J.C., Tiesinga, P.H., 2015. Circuit to construct mapping: a mathematical tool for assisting the diagnosis and treatment in major depressive disorder. Front. Psychiatry 6, 29.
Birmaher, B., Brent, D., Issues, A.W.GO.Q., Bernet, W., Bukstein, O., Walter, H., Benson, R.S., Chrisman, A., Farchione, T., Greenhill, L., Hamilton, J., Keable, H., Kinlan, J., Schoettle, U., Stock, S., Ptakowski, K.K., Medicus, J., 2007. Practice parameter for the assessment and treatment of children and adolescents with depressive disorders. J. Am. Acad. Child Adolesc. Psychiatry 46 (11), 1503–1526.
Boger, K.D., Auerbach, R.P., Pechtel, P., Busch, A.B., Greenfield, S.F., Pizzagalli, D.A., 2014. Co-occurring depressive and substance use disorders in adolescents: an examination of reward responsiveness during treatment. J. Psychother. Integr. 24 (2), 109–121.
Bowden, D., Goddard, L., Gruzelier, J., 2011. A randomised controlled single-blind trial of the efficacy of reiki at benefitting mood and well-being. Evid. Based

Complement Altern. Med. 2011, 381862.
Brookman-Frazee, L., Haine, R.A., Garland, A.F., 2006. Innovations: child and adolescent psychiatry: measuring outcomes of real-world youth psychotherapy: whom to ask and what to ask? Psychiatr. Serv. 57 (10), 1373–1375.
Chu, B.C., Harrison, T.L., 2007. Disorder-specific effects of CBT for anxious and depressed youth: a meta-analysis of candidate mediators of change. Clin. Child Fam. Psychol. Rev. 10 (4), 352–372.
Cohen, J., 1988. Statistical Power Analysis for the Behavioral Sciences, 2nd edn Erlbaum, Hillsdale, NJ.
Curry, J., Silva, S., Rohde, P., Ginsburg, G., Kratochvil, C., Simons, A., Kirchner, J., May, D., Kennard, B., Mayes, T., Feeny, N., Albano, A.M., Lavanier, S., Reinecke, M., Jacobs, R., Becker-Weidman, E., Weller, E., Emslie, G., Walkup, J., Kastelic, E., Burns, B., Wells, K., March, J., 2011. Recovery and recurrence following treatment for adolescent major depression. Arch. Gen. Psychiatry 68 (3), 263–269.
Ellyard, L., 2004. Reiki Healer: A Complete Guide to the Path and Practice of Reiki. Lotus Press.
Ernst, E., 2000. Prevalence of use of complementary/alternative medicine: a systematic review. Bull. World Health Organ. 78 (2), 252–257.
Fakhoury, M., 2015. New insights into the neurobiological mechanisms of major depressive disorders. Gen. Hosp. Psychiatry 37 (2), 172–177.
Femenia, T., Magara, S., DuPont, C.M., Lindskog, M., 2015. Hippocampal-dependent antidepressant action of the H3 receptor antagonist clobenpropit in a rat model of depression. Int. J. Neuropsychopharmacol. 18, 9.
Fernie, B.A., Kollmann, J., Brown, R.G., 2015. Cognitive behavioural interventions for depression in chronic neurological conditions: a systematic review. J. Psychosom. Res. 78 (5), 411–419.
Fleisher, K.A., Mackenzie, E.R., Frankel, E.S., Seluzicki, C., Casarett, D., Mao, J.J., 2014. Integrative Reiki for cancer patients: a program evaluation. Integr. Cancer Ther. 13 (1), 62–67.
Goodyer, I., Cooper, P.J., 1993. A community study of depression in adolescent girls. II: the clinical features of identified disorder. Br. J. Psychiatry 163, 374–380.
Goodyer, I.M., Herbert, J., Tamplin, A., Altham, P.M., 2000. First-episode major depression in adolescents. Affective, cognitive and endocrine characteristics of risk status and predictors of onset. Br. J. Psychiatry 176, 142–149.
Hall, K.S., Kusunoki, Y., Gatny, H., Barber, J., 2015. Social discrimination, stress, and risk of unintended pregnancy among young women. J. Adolesc. Health 56 (3), 330–337.
Hammerschlag, R., Marx, B.L., Aickin, M., 2014. Nontouch biofield therapy: a systematic review of human randomized controlled trials reporting use of only nonphysical contact treatment. J. Alter. Complement Med. 20 (12), 881–892.
Hodgson, K., Tansey, K.E., Uher, R., Dernovsek, M.Z., Mors, O., Hauser, J., Souery, D., Maier, W., Henigsberg, N., Rietschel, M., Placentino, A., Craig, I.W., Aitchison, K. J., Farmer, A.E., Dobson, R.J., McGuffin, P., 2015. Exploring the role of drug-metabolising enzymes in antidepressant side effects. Psychopharmacology 232 (14), 2609–2617.
Joyce, J., Herbison, G.P., 2015. Reiki for depression and anxiety. Cochrane Database Syst. Rev., 4, CD006833.
Klein, J.B., Jacobs, R.H., Reinecke, M.A., 2007. Cognitive-behavioral therapy for adolescent depression: a meta-analytic investigation of changes in effect-size estimates. J. Am. Acad. Child Adolesc. Psychiatry 46 (11), 1403–1413.
Koithan, M., 2009. Introducing complementary and alternative therapies. J. Nurse Pract. 5 (1), 18–20.
Kovacs, M., 1983. The Children's Depression Inventory: a self-rated depression scale for school-aged youngsters. University of Pittsburgh School of Medicine.
Kundu, A., Lin, Y., Oron, A.P., Doorenbos, A.Z., 2014. Reiki therapy for postoperative oral pain in pediatric patients: pilot data from a double-blind, randomized clinical trial. Complement Ther. Clin. Pract. 20 (1), 21–25.
Lee, M.S., Pittler, M.H., Ernst, E., 2008. Effects of reiki in clinical practice: a systematic review of randomised clinical trials. Int. J. Clin. Pract. 62 (6), 947–954.
Lu, D.F., Hart, L.K., Lutgendorf, S.K., Perkhounkova, Y., 2013. The effect of healing touch on the pain and mobility of persons with osteoarthritis: a feasibility study. Geriatr. Nurs. 34 (4), 314–322.
Malakouti, S.K., Nojomi, M., Bolhari, J., Hakimshooshtari, M., Poshtmashhadi, M., De Leo, D., 2009. Prevalence of suicide thoughts, plans and attempts in a community sample from Karaj, Iran. Community Ment. Health J. 45 (1), 37–41.
March, J.S., Silva, S., Petrycki, S., Curry, J., Wells, K., Fairbank, J., Burns, B., Domino, M., McNulty, S., Vitiello, B., Severe, J., 2007. The Treatment for Adolescents With Depression Study (TADS): long-term effectiveness and safety outcomes. Arch. Gen. Psychiatry 64 (10), 1132–1143.
Meng, X., D'Arcy, C., 2015. Comorbidity Between Lifetime Eating Problems and Mood and Anxiety Disorders: Results from the Canadian Community Health Survey of Mental Health and Well-being. Eur. Eat. Disord. Rev. 23 (2), 156–162.
Michael, K.D., Crowley, S.L., 2002. How effective are treatments for child and adolescent depression? A meta-analytic review. Clin. Psychol. Rev. 22 (2), 247–269.
Mohammadi, M.R., Ghanizadeh, A., Rahgozart, M., Noorbala, A.A., Malekafzali, H., Davidian, H., Naghavi, H., Soori, H., Yazdi, S.A., 2005. Suicidal attempt and psychiatric disorders in Iran. Suicide Life Threat Behav. 35 (3), 309–316.
Mokri, A., 2002. Brief overview of the status of drug absuse in Iran. Arch. Iran. Med. 5 (3), 184–190.
Nield-Anderson, L., Ameling, A., 2001. Reiki. A complementary therapy for nursing practice. J. Psychosoc. Nurs. Ment. Health Serv. 39 (4), 42–49.
Nojomi, M., Malakouti, S.K., Bolhari, J., Hakimshooshtari, M., Fleischmann, A., Bertolote, J.M., 2008. Epidemiology of suicide attempters resorting to emergency departments in Karaj, Iran, 2003. Eur. J. Emerg. Med. 15 (4), 221–223.
Norusis, M., 2008. SPSS 16.0 Statistical Procedures Companion. Prentice Hall Inc.
O'Mathuna, D.P., Ashford, R.L., 2014. Therapeutic touch for healing acute wounds. Cochrane Database Syst. Rev., 7, CD002766.
Page, A.C., Hooke, G.R., 2012. Effectiveness of cognitive-behavioral therapy modified for inpatients with depression. ISRN Psychiatry 2012, 461265.
Pennant, M.E., Loucas, C.E., Whittington, C., Creswell, C., Fonagy, P., Fuggle, P., Kelvin, R., Naqvi, S., Stockton, S., Kendall, T., the Expert Advisory, G., 2015. Computerised therapies for anxiety and depression in children and young people: a systematic review and meta-analysis. Behav. Res. Ther. 67C, 1–18.
Pine, D.S., Cohen, P., Gurley, D., Brook, J., Ma, Y., 1998. The risk for early-adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. Arch. Gen. Psychiatry 55 (1), 56–64.
Qin, B., Zhou, X., Michael, K.D., Liu, Y., Whittington, C., Cohen, D., Zhang, Y., Xie, P., 2015. Psychotherapy for depression in children and adolescents: study protocol for a systematic review and network meta-analysis. BMJ Open 5 (2), e005918.
RCore, T., 2015. R: a language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.
Reynolds 3rd, C.F., Cuijpers, P., Patel, V., Cohen, A., Dias, A., Chowdhary, N., Okereke, O.I., Dew, M.A., Anderson, S.J., Mazumdar, S., Lotrich, F., Albert, S.M., 2012. Early intervention to reduce the global health and economic burden of major depression in older adults. Annu Rev. Public Health 33, 123–135.
Richeson, N.E., Spross, J.A., Lutz, K., Peng, C., 2010. Effects of Reiki on anxiety, depression pain, and physiological factors in community-dwelling older adults. Res. Gerontol. Nurs. 3 (3), 187–199.
Rivet-Duval, E., Heriot, S., Hunt, C., 2011. Preventing adolescent depression in mauritius: a universal school-based program. Child. Adolesc. Ment. Health 16 (2), 86–91.
Roe, C.A., Sonnex, C., Roxburgh, E.C., 2015. Two meta-analyses of noncontact healing studies. Explore 11 (1), 11–23.
Rose, K., Hawes, D.J., Hunt, C.J., 2014. Randomized controlled trial of a friendship skills intervention on adolescent depressive symptoms. J. Consult. Clin. Psychol. 82 (3), 510–520.
Rossello, J., Bernal, G., Rivera-Medina, C., 2008. Individual and group CBT and IPT for Puerto Rican adolescents with depressive symptoms. Cult. Divers. Ethn. Minor. Psychol. 14 (3), 234–245.
Ryan, N.D., 2005. Treatment of depression in children and adolescents. Lancet 366 (9489), 933–940.
Samsom, J.N., Wong, A.H., 2015. Schizophrenia and depression co-morbidity: what we have learned from animal models. Front. Psychiatry 6, 13.
Saylor, C.F., Finch Jr., A.J., Spirito, A., Bennett, B., 1984. The children's depression inventory: a systematic evaluation of psychometric properties. J. Consult. Clin. Psychol. 52 (6), 955–967.
Shore, A.G., 2004. Long-term effects of energetic healing on symptoms of psychological depression and self-perceived stress. Alter. Ther. Health Med. 10 (3), 42–48.
Stikkelbroek, Y., Bodden, D.H., Dekovic, M., van Baar, A.L., 2013. Effectiveness and cost effectiveness of cognitive behavioral therapy (CBT) in clinically depressed adolescents: individual CBT versus treatment as usual (TAU). BMC Psychiatry 13, 314.
Thapar, A., Collishaw, S., Pine, D.S., Thapar, A.K., 2012. Depression in adolescence. Lancet 379 (9820), 1056–1067.
Thrane, S., Cohen, S.M., 2014. Effect of Reiki therapy on pain and anxiety in adults: an in-depth literature review of randomized trials with effect size calculations. Pain Manag Nurs. 15 (4), 897–908.
Van Aken, R., Taylor, B., 2010. Emerging from depression: the experiential process of Healing Touch explored through grounded theory and case study. Complement. Ther. Clin. Pract. 16 (3), 132–137.
Vitale, A., 2007. An integrative review of Reiki touch therapy research. Holist. Nurs. Pract. 21 (4), 167–179, Quiz 180-161.
Weisz, J.R., McCarty, C.A., Valeri, S.M., 2006. Effects of psychotherapy for depression in children and adolescents: a meta-analysis. Psychol. Bull. 132 (1), 132–149.
Yu, M., Zhang, X., Lu, F., Fang, L., 2015. Depression and risk for diabetes: a meta-analysis. Can. J. Diabetes 39 (4), 266–272.
Zarrei, M., MacDonald, J.R., Merico, D., Scherer, S.W., 2015. A copy number variation map of the human genome. Nat. Rev. Genet 16 (3), 172–183.