



The Effect of Clay Therapy on Anxiety, Depression, and Happiness in People with Physical Disabilities

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Abstract

Background: Physical disability is a damage that limits the major activities of a person's life and leads to anxiety, depression, mental health problems, and lowers happiness levels. In light of these consequences, it seems necessary to carry out some intervention to reduce depression and anxiety as well as promote the happiness of people with physical impairment.

Objectives: Therefore, this study sets out to investigate the effect of clay therapy on anxiety, depression, and happiness in physically impaired individuals under the Welfare Organization support in Qaen city.

Methods: In this randomized controlled clinical trial, 50 individuals with a physical disability, under the Welfare Organization support in Qaen city, in the year 2016, who fulfilled the criteria for entering the study, were selected by convenience sampling and assigned to two groups, the experiment group (25 people) and the control group (25 people), through systematic random sampling. The experiment group received a clay-working program for 12 sessions of 60 minutes each (two sessions per week). The data collection tool was a demographic questionnaire, a Depression, Anxiety, and Stress Scale (DASS-21), and the Oxford Happiness Inventory. Data were analyzed using SPSS 15 software, chi-square, independent *t* test, Mann-Whitney U test, Friedman test, and Wilcoxon test.

Results: The results of the present study show that the mean score of happiness after completing the sixth session was significantly higher in the experiment group than in the control group. The mean depression and anxiety scores after the intervention in the experiment group were significantly lower than that in the control group, while the mean score of happiness after the clay therapy was significantly higher in the experiment group than that in the control group ($P < 0.001$).

Conclusions: Based on the results, clay therapy has the potential to reduce anxiety and depression as well as increase the happiness of people with physical impairment under Welfare Organization support.

Keywords: Clay Therapy, Anxiety, Depression, Happiness, Physical Disability

1. Background

Disability is an undeniable fact. It has always existed as a social phenomenon in human communities. Physical deficiency is the result of a disorder that reduces one or more natural functions based on age, roles, and other social and cultural factors (1). One such disability is physical impairment. Physical-motor disability is defined as a damage that limits one or more major activities of a person's life (2). Worldwide statistical studies report that the prevalence of physical impairment, before the age of 50, is 0.7%; this rate is expected to be higher as age increases (3).

Disability has physical and psychological dimensions that affect not only the physical health of individuals but also their psychosocial compatibility and mental health

(4). The effects of physical disability are manifested in various forms of psychological behavior, which can lead to a person's failure. This in turn results in maladaptive behaviors such as aggression.

Moreover, negative attitudes and psychosocial barriers affect the mental health of people with disability. This is often manifested as anxiety and depression and a general lack of pleasure and joy (5). Depression affects the physical and mental aspects of people with disability, causes their absence from work, reduces their productivity, and increases their risk of suicide (6). In a longitudinal analysis, Battalio et al. (7), also reported that individuals with physical impairment have a lower mental health status, less satisfaction with health, and higher levels of depression and anxiety.

Atadokht et al. (8), stated that physically disabled individuals experience more depression and anxiety than normal people, and have lower levels of social interactions, self-esteem, and happiness. Happiness refers to a set of emotions and a cognitive assessment of life and is considered as a degree of life quality that is positively evaluated (9).

People who are happy have consistent and helpful thoughts and behaviors. They have a clear view of the world, are directly involved in solving problems, and seek help from others at appropriate times. On the other hand, unhappy people think and act pessimistically, live in their imagination, blame themselves and others, and avoid working to solve problems (10).

In light of the consequences of physical impairment for an individual, it seems necessary to take efforts to reduce these outcomes. The attitude of people toward psychological therapy on one hand and challenging classical treatments on the other has paved the way for the emergence of a new type of treatment, including creative art therapy (11).

Art therapy, in the domain of art, refers to the use of artistic materials to express and empower individuals through the recognition and resolution of inner conflicts in the presence of trained therapists. No previous skill or experience in the field of art is needed for participating in therapeutic art. Through the creation of artworks and personal reflections in their work, participants can increase their awareness about themselves and others and emotion regulation and self-concept (12).

Clay therapy is among the most accessible and most commonly used art therapy practices. Working with clay is an ideal way to express strong emotions. This flexible and soft material, as a regressive element, engages the person's hands in a physical activity. Manifested or suppressed emotions can often be expressed by clay. Squeezing, kneading, separating, rolling, and flattening a lump of clay reveals emotions hidden in the subconscious mind of individuals.

Clay is used by the children as a media to experience protection, containment, as well as release emotions (13). Perez-Saez et al. (14), in his study on the impact of a pottery workshop on the well-being of people with dementia, concludes that pottery art has a significant effect on the mood and self-esteem.

Anu Mary et al. (15), evaluated the effectiveness of clay therapy on anxiety in pre-school children and confirm that the mean anxiety score, after intervention in the clay therapy group, is significantly lower than that in the control group ($P < 0.01$).

Physically handicapped individuals have lower mental health status and higher levels of depression and anxiety (16). Consequently, in order to help them in reducing

the negative symptoms and mental disorders associated with their disease and to find a way to connect these patients with others and enable them to have a normal life, it is essential to carry out some interventions to decrease their depression and anxiety and promote their happiness. Therefore, this study aims to investigate the effect of clay therapy on anxiety, depression, and happiness in patients with physical disability under Welfare Organization.

2. Methods

In this randomized controlled clinical trial, 50 physically impaired individuals under Welfare Organization support in Qaen city, in 2016, who fulfilled the criteria for entering the study were selected through convenient sampling. Due to the absence of a similar study, a preliminary study was performed on 20 physically disabled patients and the sample size obtained was based on the formula:

$$\frac{(u + \nu)^2 (s_1^2 + s_2^2)}{(m_1 - m_2)^2} \quad (1)$$

At the Type 1 error 5% and Type 2 error 10% in each group of 25 people. After obtaining permission from the Welfare Organization authorities, we consulted the welfare centers in Qaen city. After the goals of the study were explained and informed consent obtained, the demographic characteristics (age, sex, and marital status), Depression, Anxiety, and Stress Scale (DASS-21), and Oxford Happiness Inventory were completed by people with physical impairment through an interview with a facilitator, who had not been informed about the type of intervention. Subjects with a score of less than 40 in the happiness questionnaire were selected and assigned to two groups, the experiment group (25 people) and the control group (25 people), through systematic random sampling. In this process, a draw was conducted between the first two people. Individuals who drew an even number were placed in one group and those who drew odd numbers in the other group. This score was considered as a pre-test score.

The inclusion criteria consisted of an age range of 10 - 40 years, willingness to participate in the study, ability to work with clay, and the use of upper limbs. The exclusion criteria included a history of using anti-depressant and anti-anxiety medicines, severe mental problems (IQ less than 90 based on their records), reluctance to continue to cooperate and attend meetings, and absence in more than two training sessions.

The experiment group received a clay work program for 12 sessions in six weeks (two sessions per week) and each session of 60 minutes (Table 1).

During the first 15 minutes of the meeting, training on using clay was provided by the researcher, after which the

Table 1. Contents of Training Sessions

Sessions	Contents of Sessions
Session one	Getting acquainted with people in the group, familiarity of the group members with clay work and its techniques, practice for preparation and adaptation to clay work.
Session two	Building a tool using Pinch method by members of the group (Pinch is known as the finger method. This method is used without any contact with tools and is as old as the history of working with mud and pottery and is one of the simplest methods).
Session three	Building what people in the group think of as monsters.
Session four	Making statues of family members
Session five	Show fears of the group members by clay
Session six	Making a magical form
Session seven	Completion of depression and anxiety and stress questionnaire DASS-21 and Oxford Happiness Inventory, expressing positive and negative emotions of group members by clay
Session eight	Showing objects based on love, making three things that group members like most and making three things they like least.
Session nine	Displaying objects based on what they have and what don't have, making three things that they have more and making three things that they have less.
Session ten	Showing feelings of depression and anxiety by clay work
Session eleven	Making clay tablets by group members
Session twelve	Building a human figure and practicing items related to the previous sessions and observing group rules.

clay work started with simple and small steps, which required less mental and motor skills. After the sixth session and one week after completing the intervention, the questionnaires for depression, anxiety, and happiness were again administered to the subjects of both groups. In order to observe ethical considerations, after the study, a therapeutic clay session was also held for the control group.

The data collection tools were the Depression, Anxiety, and Stress Scales (DASS) and the Oxford Happiness Inventory:

2.1. Depression and Anxiety

DASS-21 questionnaire was first presented by Lovibond and Lovibond (1995) and includes 21 questions that evaluate three components, depression, anxiety, and stress (each component covered by seven questions).

The questions are formulated using a four-point Likert scale ranging from 0, which means "did not apply to me at all," to 3, which means "applied to me very much or most of the time". The minimum score in each dimension is zero and the maximum is 21. Asghari Moghdam et al., confirmed the construct validity of this questionnaire by factor analysis ($KMO = 0.96$ and $X^2 = 10318/76$). The internal consistency coefficients of the questionnaire for three subscales, depression, anxiety, and stress, were found to be 0.93, 0.90, and 0.92 respectively. With a time interval of three weeks, they were equal to 0.84, 0.89, and 0.90, respectively (17). In this study, only questions related to the dimensions of depression and anxiety are included.

2.2. Happiness

To measure happiness, the Oxford Happiness Inventory, given by Argyle and Lu (1990), was applied. This scale consists of 29 questions, scored from a = 0 to d = 3, formulated on a four-point Likert scale.

The highest score that a subject can obtain on this scale is 87, which indicates the highest level of happiness. The lowest score is zero, which confirms the subject's dissatisfaction with life and depression. The normal score ranges from 40 to 42. Alipour and Agah Heris confirm the construct validity of this questionnaire by factor analysis ($KMO = 0.92$ and $X^2 = 34161.36$) (18). In a study by Najafi et al. (19), Cronbach's alpha for Oxford Happiness Inventory was found to be 90%.

Data were entered in the SPSS 15 software and analyzed using Kolmogorov Smirnov test for normal distribution. To compare the qualitative demographic characteristics and the mean age of the two groups, chi-square and independent *t* tests were applied, respectively.

Considering that the only happiness score had normal distribution in both groups before the intervention, independent *t* test was used for comparison of the mean. However, the scores of anxiety and depression variables and changes in the scores of different stages did not reflect a normal distribution. Consequently, Mann-Whitney U test was used for comparing the two groups and Friedman test was applied for changes in the three stages. If the result of the test became significant, Wilcoxon test was used for a pairwise comparison. The significance level in all tests is considered 0.05.

3. Results

Among 50 physically motion-impaired subjects, the highest proportion were male (72%), aged more than 30 years (58%), and educated with a diploma or lower levels (82%). There was no statistically significant difference between the frequency distribution of gender and education level and the mean score of age in the two groups ($P < 0.05$) (Table 2).

The mean scores of depression, anxiety, and happiness, before the intervention, were not significantly different in the experiment and control groups ($P > 0.05$). The mean values of depression and anxiety scores after the sixth session (during the intervention) were not significantly different in the two groups ($P > 0.05$), however, the mean score of happiness after completing the sixth session was significantly higher in the experiment group than in the control group ($P < 0.001$). The mean depression and anxiety scores after intervention in the experiment group were significantly lower than in the control group. The average value of happiness after the intervention significantly increased in the experiment group compared to the control group ($P < 0.001$).

The results illustrate that in the experiment group, the mean of depression and anxiety scores decreased significantly during and after the intervention compared to before the treatment and also after the intervention in comparison to during the treatment ($P < 0.001$). The mean score of happiness was significantly higher during and after the intervention than before the treatment and also after the clay therapy in comparison to during the intervention ($P < 0.001$).

The results prove that the mean depression score in the control group was significantly lower in the control group during and after the intervention than before ($P < 0.001$), however, the mean scores of anxiety and happiness before,

during, and after the intervention show no significant difference ($P > 0.05$) (Table 3).

The result of the Mann-Whitney U test shows that there is no significant difference between the mean depression scores before and during intervention in the two groups ($P = 0.22$). However, the mean of depression scores before and after the clay therapy and the mean depression scales during and after the intervention in the experiment group were significantly higher than that in the control group ($P < 0.001$).

The mean values of anxiety scores before and during the intervention, before and after the clay therapy, and before, during, and after the intervention, were significantly higher in the experiment group than in the control group ($P < 0.001$). Mean changes in happiness score before and during the intervention, before and after the intervention, and during and after the intervention were significantly higher in the experiment group than in the control group ($P < 0.001$) (Table 4).

Since the average changes in different stages did not reflect a normal distribution, non-parametric Mann-Whitney U test was used.

4. Discussion

The results of this study show that the average happiness score, after the sixth session, was significantly higher in the experiment group than in the control group. The mean depression and anxiety scores, after the intervention in the experiment group, are significantly lower than in the control group and the mean score of happiness after the intervention is significantly higher in the experiment group than in the control group ($P < 0.001$).

De Morais et al. (20), in their study on the effect of art therapy by clay in hospitalized psychiatric patients in a hospital in Londrina, Brazil, reflect that clay work, as a therapeutic approach, reduces anxiety. Anu Mary et al. (15), by evaluating the effectiveness of clay therapy on anxiety in pre-school children, show that the mean anxiety score after the intervention in the treatment group was significantly lower than that in the control group ($P < 0.01$).

In addition, the results of the research by Tang et al. (21), indicated that the mean anxiety of children after clay therapy decreased significantly in the experiment group, although there was no difference in the control group ($P < 0.001$).

Perez-Saez et al., (14), shows that pottery has a significant effect on self-esteem, depression, anxiety, and stress in schizophrenic patients ($P < 0.05$). Similarly, Zaynaliyan et al. (22), concluded that working with clay reduces the symptoms of anxiety disorder ($P < 0.05$).

Table 2. Frequency Distribution of Subjects in the Two Groups According to Demographic Characteristics^a

Variable	Experiment	Control	P Value
Gender			
Male	20 (80)	16 (64)	0.21 ^b
Female	5 (20)	9 (36)	
Education level			
Diploma and lower	19 (76)	22 (88)	0.27 ^b
Higher than diploma	6 (24)	3 (12)	
Age (mean \pm SD)	27.32 \pm 8.49	30.80 \pm 6.97	0.12 ^c

^a Values are expressed as frequency (%) unless otherwise indicated.

^b Chi square.

^c Independent *t* test.

Table 3. Comparing the Mean of Depression, Anxiety, and Happiness Before the Sixth Session and After the Intervention in Patients of the Two Groups^a

Variable	Before Intervention	After the Sixth Session	After Intervention	Friedman Test Result
Depression				
Experiment	10.60 ± 2.69	8.92 ± 2.36	6.16 ± 1.77	< 0.001
Control	10.64 ± 2.66	9.60 ± 2.06	9.44 ± 2.24	< 0.001
P value	0.95 ^b	0.18 ^b	< 0.001 ^b	-
Anxiety				
Experiment	9.44 ± 2.02	7.76 ± 1.53	5.68 ± 1.38	< 0.001
Control	8.60 ± 1.78	8.36 ± 1.44	8.28 ± 1.51	0.49
P value	0.21 ^b	0.10 ^b	< 0.001 ^b	-
Happiness				
Experiment	23.48 ± 3.45	29.24 ± 2.28	39.04 ± 5.68	< 0.001
Control	21.80 ± 3.76	22.64 ± 3.15	22.24 ± 2.92	0.47
P value	0.11 ^c	< 0.001 ^b	< 0.001 ^b	-

^a Values are expressed as mean ± SD.^b Mann-Whitney U.^c Independent t test.**Table 4.** Comparing the Mean Depression, Anxiety, and Happiness Scores Before the Sixth Session and after Intervention in Patients of the Two Groups^a

Variable	Before and After the Sixth Session	Before and After Intervention	After the Sixth Session and Completion of the Intervention
Depression			
Experiment	-1.68 ± 1.49	-4.44 ± 3.11	-2.76 ± 2.79
Control	-1.04 ± 1.14	-1.20 ± 1.19	-0.16 ± 1.07
P value	0.22	0.001	< 0.001
Anxiety			
Experiment	-1.68 ± 1.70	-3.76 ± 2.44	-2.08 ± 1.96
Control	-0.24 ± 1.09	-0.32 ± 1.18	-0.08 ± 1.19
P value	0.001	< 0.001	< 0.001
Happiness			
Experiment	5.76 ± 2.67	15.56 ± 6.28	9.80 ± 4.81
Control	0.84 ± 2.32	0.44 ± 2.47	-0.40 ± 2.48
P value	< 0.001	< 0.001	< 0.001

^a Values are expressed as mean ± SD.

In light of the results of the current study and studies conducted in this field, it can be concluded that many interventional and corrective researches are conducted to investigate the therapeutic methods in reducing depression and anxiety and in increasing happiness, which are mainly based on behavioral, cognitive behavioral, and psychoanalytic approaches. Nevertheless, therapeutic methods, from the inter-disciplinary background of art and psychology, have become significant, along with other therapeutic approaches, especially in recent decades.

Clay therapy is among such treatments that are classified under the category of therapeutic art. Working with

clay is an ideal way to manifest strong emotions. Squeezing, kneading, separating, flattening, and rolling a lump of clay reveals the covert emotions in the subconscious as well as the soul of an individual. Clay therapy is an ideal method for the expression of strong emotions (13).

Barzegar Bafrooei et al. (23), argued that disabled children consider themselves as weak and vulnerable due to negative feedback received from their environment, and that they are afraid of encountering new situations since they do not see themselves as powerful enough to handle them. Consequently, by combining the creative factors of art through clay work and making statues, children are

able to create changes in the story of their lives, which had been dominated by disability. Through the process of clay working, they become capable of destroying this negative image and eventually achieve a sense of mastery and empowerment.

By creating physical changes in materials instead of changing events and themes and making a comparison between their previous life events and the changes they are making, children can experience a feeling of power (22).

In other words, working with clay is a sensory motor craft that can enhance sensory and physical power in individuals and help them to reduce disorders such as depression, anxiety, paranoia, etc. (14). The tangible and flexible shape of clay, particularly its tactile and physically stimulating quality, provides an opportunity for people to engage with clay directly with their own hands, shape it easily, destroy it, squeeze it, or separate it. These interactions lead to the catharsis of negative emotions such as anxiety and depression and consequently enhance happiness among people with physical disability (23, 24).

4.1. Conclusion

The results of this study show that clay therapy reduces anxiety and depression and increases the happiness of physically impaired people. Therefore, it is recommended to include clay work in the art curriculum of schools for exceptional children.

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Footnotes

Conflict of Interests: There are no conflict of interests.

Ethical Considerations: After obtaining permission from the Welfare Organization authorities, the goals of the study were explained and informed consent was obtained. In addition, it was registered in the clinical trial site with the code (Ir.bums.REC.1396.18).

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