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The Impact of Gardener Therapy on Behavioral Problems in Slow-Step Students

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ABSTRACT

Aim: The purpose of this study was to investigate the effectiveness of gardener therapist on behavioral problems of slow-step children.

Methods: This was a semi-experimental design research study with pre-test and post-test design with control group. The statistical population included all the slow-step students in the step-by-step educational program of Ramadan in Mash city in 2017, in which 30 students were accessible by method. The title of the research was selected. Subjects were randomly assigned into experimental and control groups (15 experimental and 15 control groups). At first, their instructor completed the Conner's Behavioral Problem Questionnaire (instructor's form) (pre-test). Subsequently, the experimental group was exposed to 12 sessions of the therapist for the period of 45 minutes per week. Instructor again filled the questionnaire at the end and after two weeks, for both groups (post-test). The data were analyzed with the help of covariance analysis.

Results: The results showed that the observed difference between the mean scores of behavioral problems of the participants in the experimental and control group according to the group membership in the post-test stage was considerably significant with 99% confidence interval. The effect of the intervention was 88%.

Conclusion: Gardener therapy is effective on the behavioral problems of slow-graded students and it can be used as a therapeutic tool.

Keywords: *Gardening Therapist; Behavioral Problems; Slow Steps; Slow Educational Steps.*

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Introduction

A slow step (Slow paced) is a kind of global problem that exists in every country and is not just a medical problem, but also a problem, educational, psychological, and social (Jadal, 2012, Quoted by Kalantari & Tahan et al., 2017). Slow learning children are those who are comparatively at lower side in achieving academic skills and often ignored by other people. Slow learners struggle to cope with the academic demands of the regular classroom and face difficulty in writing, reading and mathematics (Karande, S et al 2008). Multiple studies have demonstrated that their academic functioning could be improved by structured and individualized training programs (Krishnakumar, Pet al. 2006). The most important limitation of such type of training sessions organized outside the school is that the academic improvement could not be replicated or sustained at school. To be sustainable, individualized training programs should be integrated with mainstream education (Malik, S. et al. 2009). It is suggested that every school should have a resource room with facilities to provide remedial educational activities to children with learning problems. (Krishnakumar P et al. 2011) Resource room should provide appropriate remedial educational instruments available to the child, taking into consideration his/her strengths and weaknesses (John, P et al. 2001). Slow learners also lag behind the other students in academics and the areas of social, emotional and psychological well-being. It has been observed that there is multiple school going child population affected by scholastic backwardness (Gupta et al., 2017).

The earlier identification of student population who are at the higher risk for educational failure is an important process that deserves much attention and research work to be done in future. Some students are sometimes identified when they are at their infancy stage but majority of children are not identified until and unless they start with their school system. Children with intelligence level in the low average or borderline IQ range can be grouped together as Slow-Learners (Keyes et al., 2017). These types of children do not get enough attention in the mainstream education system. They fail to clear their examinations repeatedly. Establishing an altogether different set up for such type of kids is not advisable and practical. It is always ideal and practical to develop different types of strategies to provide education to these children in the normal school itself. Another practical aspect for not establishing a special type of schools for the slow learners in comparison with the mentally retarded children is their higher levels of intelligence. If these children are left unattended without any proper initiatives, care and attention then they are more likely to lose interest and become school drop outs. Also, chances are more to suffer from low self-esteem, lack of goal setting, and problem-solving skills, poor memorizing abilities, lack of achievement motivation, emotional disturbances, poor peer relationship etc. (Doménech B et al., 2017) Although, they don't have intellectual disability, no any identifiable neurological impairments and learning disorders, slow learners perform poorly in school and exhibit discrepancy between expected achievement goals based on their intellectual ability, assessment scores and actual achievement. Slow learners face numerous issues. Their low level of academic functioning has consequences to themselves, the school and the society as a whole. Simultaneously, they possess inadequate coping skills when faced with personal crisis; hence they require additional support to be successful (Kamal et al., 2009).

A child with EBD is a child which exhibits one or more of the emotional characteristics lasting a sufficient period of time, frequency and intensity that impacts the scholastic performance to an extent where need of

special education becomes mandatory (Ogundele et al., 2018). Child psychology experts from the University of Oxford and University of Pittsburgh say that the term “Disorder” should not be used loosely at the drop of a hat and questions its validity.

Therapies like Gardner’s Therapists are believed to have renowned results globally. In slow step students having IQ and lower output creates a big conflict like situation in academic achievements. Gardening therapy encourages involvement of these types of children and is made to think like imagining the nature, viewing the nature and is also made to participate in the gardening activities like planting a seed and saplings. When they watch them grow, they get a sense of achievement and accomplishment lowering the stress level and frustration. They start to find worthiness amongst themselves and there is a remarkable reduction in the episodes of self-doubt and indifference. Gardner’s therapy is used to influence healing, alleviate stress, increase well-being and promote participation in social life and re-employment for people with mental or physical illnesses (Conversano et al., 2010). The Gardner’s therapy is used in mediating mental healing, recreation, social interaction, sensory stimulation, cognitive re-organization and training of sensory motor function emphasizing pre-vocational skills and teaching of ergonomically body positions assessments (Singh et al., 2004).

Method

Participants

The present study was designed as a semi-experimental with a pre-test and post-test design with control group. The research population included all the slow-step students who were studying at the Ramadan slow-moving educational institution in the city of Mashhad in 2017, with 30 of them available as a sample population. Subjects were randomly assigned to experimental and control groups (15 experimental and 15 control groups). At first, their instructor completed the Conner's Behavioral Problem Questionnaire (Coach Form) (pre-test). Subsequently, the experiment group was exposed to 12 sessions of gardener therapy based on a therapist's gardening intervention program using cost studies (as conducted by Catlin in 1976, Kennedy in 1994) and confirmed by its credibility (Haller & kramer, 2006) (45 minutes per week). At the end and after two weeks, the trainer completed the questionnaire for both groups (post-test).

Inclusion criteria were 1) Epidemic (70-50); 2) Absence of any physical impairment; 3) Staying in the center for at least more than 3 years, while exclusion criteria were suffering with any other disease and failure to overall cooperation.

Procedure and Measures

Connors Behavioral Problems Grading Scale: Connor Crossing Scales by Kate Connors was developed in 1960. This scale was first developed to evaluate the effect of stimulant drugs on overactive children. Initially, questions of this scale were obtained through unofficial information gathering from parents who referred their children to Johns Hopkins University Hospital. The data obtained by Connors in 1970 were analyzed by different factors and total 73 items were extracted. In 1973, Connors produced a special parental rating scale that assessed childhood disorder in 25 different domains. Subsequently, factors were analyzed by seven factors

(Gianarris, Golden, & Greene, 2001). After eight years, by eliminating some of the short form factors, the scale was provided by 48 points by Goyette, Conners, & Ulrich (1978). The 35-point special form of the teacher was also constructed by Connors. This form was later converted to a 28-point scale form by Goyett et.al. And the original version was produced and published (Reitman, Hummel, Frantz, & Gross, 1998). The Conners (Special Teacher) form has 39 levels. It measures three classes of Class behavior, Group participation, and Attitudes towards powerful authorities.

Grades: Scan grade was based on a 4-point Likert scale, so the range scores varied from zero (not at all correct, or never and rarely) to 3 (perfectly correct, or often and almost always). Completion of this scale lasts about 10 to 15 minutes (Conners, 1990). In Canada, the standard scores for this scale are awarded by Conner for children aged 4 to 11 years in groups aged 4 to 5 years old, 6 to 8 years old, and 9 to 11 years old.

Conners' reliability of the teacher's form: This scale lasts from one month to one year from 72% to 92% and the reliability of teachers scoring was reported to be 70 %. Cronbach's alpha coefficients for this scale were between 61 % to 95 %; reported by Connors in 1990. Shayyyen, Shahim and Yousefi (2007) reviewed standardization and psychometric properties of the Converz-Teacher-Grading Scale. They surveyed 529 children (257 girls and 272 boys). Using factor analysis, following 5 behavioral problems, i.e. hyperactivity, negligence, depression, anxiety-shy and passivity were reported. The scale was tested with a re-test method for the whole scale of 76%. For sub-scales, from 68%, for passivity up to 82%. It was variable for behavioral problems. Cronbach's alpha coefficients for the whole questionnaire were 86/86, for sub-scales from 74%. For hyperactivity up to 89%.

The practical training of the gardener includes: 1-Training on soil preparation; 2- Learning different flower names and their storage conditions; 3- Training the planting of different types of flowers; 4 - Training how to irrigate; 5 - Teaching how to sink flowers...etc.

Meetings	Description of the sessions of practical training of the gardener
First session	Familiarity with members to communicate with them and to express the logic and goals of the training sessions
Second session	Understanding soil and all types of soils and nutrients and fertilizers for flowers and touching the annex by the subject.
Third session	Familiar with different types of flowers and different parts of a flower, planting type and their storage conditions
Fourth Session	Visiting greenhouses and all kinds of flowers in it
Fifth meeting	Familiar with the pot and how to plant the flower in the pot
Sixth session	Planting flowers in the pot and irrigation of flower plants
Seventh session	Irrigation to flower plants and exposure to sunshine and planting the rest of flower plants in the pot in a group
Eighth session	Rebellion to flowers and sunbathe to flowers, flower restoration, weed management, creating a sense of belonging and attachment to planted plants
Ninth meeting	Investigating individually and group planted flowers and communicating emotionally with plants and with each other and paying attention to changes observed in the plant, teaching emotional exhaustion when communicating with nature
Tenth meeting	Investigating flowers planted individually and collectively and communicating with plants and with each other
Eleventh session	Investigating individually and group planted flowers, and communicating emotionally with plants and each other, and circling between flowers and greenhouses, encouraging flower care
Twelfth Session	Handling flowers planted and circulating between flowers and greenhouses

Table 1. Summaries of training courses for gardeners (Catlin, 1976; Kennedy, 1995)

Results

In order to analyze the research data, SPSS version 22 was used. In the descriptive part, we used mean and standard deviation, and in the inferential part, ANOVA was used. In the present study behavioral problems as dependent variables and therapist gardener were considered as independent variables. The frequency distribution of group status variables was 15 in the experimental group and 15 in the control group. Table 2 shows the moderated averages, i.e. the effect of the pre-test variable has been eliminated statistically.

Group	M	SD
Experiment	20.08	1.18
Control	43.65	1.18

Table 2. Modified Modes of Behavioral Problems

Average values show that the mean score of behavioral problems in the experimental group is more than the control group. Therefore, we can say that the gardener therapy is effective in reducing the behavior problems of slow-step children.

Multivariate covariance analysis was used to investigate the effectiveness of gastroenterologist's test on behavioral problems. At first, the assumptions were normal (Shapiro Wilco test was used to check the normality of the data). Shapiro Wilk's statistics (W) were calculated for all and variables before and after the test, which were found to be non-significant for all variables (all variables were normal – Table 3).

Variables	Pre		Post	
	W	p	W	p
Behavior problems	.972	.586	.925	.039
Neglect-dreaming	.968	.489	.956	.301
ADHD	.946	.134	.935	.067
Shy anxiety	.973	.621	.933	.057
Passivity	.932	.056	.918	.023
behavioral problems	.956	.301	.971	.581

Table 3. Shapiro Wilk test -Estimation of the assumption that the variables are normal

Initially, the normal assumptions to verify the normality of the data using Shapiro's test showed that the data are normal distribution function (pre-test: .956; $p = 0.013$ and post-test: .971; $p = .581$).

The same test for slope of regression line and the precondition for equalization of variances (Levin test) are the same for the experimental and control groups (the interaction between the experimental conditions and the homogeneous variable is not significant) and the use of covariance analysis is valid ($p < .05$).

Results showed Test of regression line slope (Test and Control groups) [$F(1,28)=32.69$; $p=.21$]. The prerequisite for variance is Levin's test results are as follows: [$F=0.25$; $p=.62$].

The ANCOVA was calculated in order to determine the effectiveness of therapist gardeners on the behavioral problems of slow-graduated students and confirmed statistical differences in Pre-test behavioral problem [$F(1,27)=179.97$; $p=.001$] and in Original effect (tutorial): [$F(1, 27) =195.9$; $p=.001$].

The results of ANOVA showed that by eliminating the effect of behavioral problems, pre-test as a substitute variable. The main effect of the therapist's training course on behavioral scores in post-test was found to be significant. In other words, it shows that the observed difference between the mean scores of behavioral problems in the experimental and control group was significant in terms of group membership in the post-test phase with 99% confidence ($p < 0.01$).

Discussion and Conclusion

Our study was designed to investigate the effectiveness of Gardeners' therapy on behavioral problems of slow-step children in educational process. Results demonstrated that gardener's therapy has a significant effect on reducing behavioral problems of slow-step girls. The results of our study were similar to the results of Kim et al. (2012), Meshkuhi et al. (2014), Kotozaki and Shishido (2014), which showed that therapist gardeners improve the attention and social skills of children with mental disabilities, reduce stress and elderly anxiety, child psychological social support. Step by step, the increase in social motor skills and reduction of behavioral problems is effective and consistent. The study also coincides with the studies conducted by Vychrosky, Whitson, Hass, Mull and Ray (2005), Fried and Yoshrouki (2008), Ramsey, Ramsey and Maine (2007). They showed that the therapist gave the individual the opportunity to express his individuality and, based on their will and ability, to participate in the planting of various types of vegetables, and to support their identity and freedom of action.

Previous studies have also shown that the gardener has a cognitive (Herzog, et al., 1997; Cimprich, 1993), psychological (Rodiek, 2002; Waliczekz, Mattson & vZajicek, 1996), social (Langer, Rodin, 1976; Nicole et al., 2000) and physical (Van Den Berg, Custers, 2011) curative effects, and studies also showed that gardener therapy improved mild symptoms of PTSD, improved depression and levels of salivary cortisol (Kotozaki, 2014a; Aldridge, Sempik, 2002). Several studies also found that therapist gardener is beneficial for adults and children with intellectual disabilities (Aldridge, Sempik, 2002) and it can reduce the anxiety of mentally handicapped people (Kotozaki, 2014b).

At the meetings of the therapist, the participants were first indifferent and silent, when they began to work on flower plants, they all smiled and were excited when they were preparing and arranging the

pots, they felt calm when they touched flowers and plants. They started to initiate and interact with each other's (Kotozaki, Shishido, 2014).

As a result of engaging with horticultural activities, people experience a lot of benefits, such as increasing personal gain in horticultural knowledge, employment skills, personal development, positive changes in behaviors toward themselves and others, reducing stress, and in general, the factor Feeling good was a key to increasing life satisfaction.

The mechanisms provided for this impact included: 1. interacting with a natural environment, increasing the inner and subjective motivation of participating in a variety of activities and opportunities for expanding gardening skills. Therefore, the use of gardener therapists is considered as a therapeutic approach to improving the health and well-being of users (Gonzalez, Hartig, Patil et al., 2011). Berger argues that gardening teaches the learner how to get away from negative feelings and avoid distractions. Baptism establishes a strong relationship between the individual and the plant, helping the mind to relieve and relieve excitement to the extent permitted (Berger, 2009).

The gardener therapist will make a positive relationship between human being and nature. Slow-step children will feel pride, respect and honor as a gardener because other community members enjoy the plants they have planted and raised, and they also encourage and admire to the patient. Individuals and plants are independent of each other. Plants can create and restore self-esteem and reduce behavioral problems in mentally disabled children. As the plants and the gardener's space are safe and have a friendly atmosphere that pleases everyone. The plants do not judge or threaten and discriminate (Dahmani, et al., 2014).

The therapist will reduce behavioral problems and increase their health by creating a space for self-expression, a sense of personal control, creating a space for social engagement, a sense of usefulness, a sense of ability and production in the individual slowly. In fact, the observation of the flower and the plant and the touch of its components cause human mental relaxation. Man cannot live without food and oxygen provided by the plants. Additionally, plants are found to be associated with physical, intellectual, social and emotional well-being. The therapist makes a purposeful use of plants and engages patients in horticultural activities to improve their physical, intellectual and spiritual condition. Humans are in contact with the plants which they cultivate, nurture and maintain their healing effects. Therefore, it can be said that the gardener plays an effective role in reducing the behavioral problems of girls with mental disabilities (Ahangri & Tahan, 2017).

Of the research constraints, it is possible to refer gardner therapy to the low sample size and the limited extent of it to slow-learners. Therefore, it is advisable that in the upcoming research work, number of children with fewer and more severe retardation should be considered for same purpose, so that the results we will receive must be clearer in this area and it is suggested that gardening and

gardening facilities be provided at the backyard child care centers so that children can benefit from the beneficial effects of gardeners.

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