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The Effect of Life Skills Training on Functioning in Schizophrenia: A Randomized Controlled Trial

Hatice ABAOĞLU[1], Emre MUTLU[2], Sertaç AK[3], Esra AKI[4], A. Elif ANIL YAĞCIOĞLU[5]

SUMMARY

Objective: Psychosocial approaches including occupational therapeutic interventions constitute an important part of mental health treatments. This research was planned to investigate the effects of individualized life skills training on the functionality of individuals diagnosed with schizophrenia.

Method: A total of 32 individuals diagnosed with schizophrenia were assigned randomly to the study (n=15) and the control groups (n=17). The participants were evaluated with the Positive and Negative Syndrome Scale for symptom severity, the Clinical Global Impression Scale for illness severity and improvement and response to treatment, the Katz Index of Independence in Activities of Daily Living and the Lawton – Brody Instrumental Activities of Daily Living Scale for adequacy of performance of basic activities and tasks of daily living, the Functioning Assessment Short Test and Social Functioning Scale for assessing the level of functionality before and after the scheduled interventions for both groups. The control group received a single-session awareness training to increase independence in daily living activities and the study group received individualized life skills training in 2 sessions per week for 8 weeks (=16 sessions).

Results: At the end of the research program, improvements were observed in the negative symptoms, general psychopathology, severity of illness and independence in basic and instrumental activities of daily living and functioning in the study group as compared to the control group.

Conclusion: On the basis of the obtained results, we believe that the individualized life skills training may be an effective therapeutic method for the rehabilitation of individuals diagnosed with schizophrenia. The results of our study should be supported by long-term follow-up studies.

Keywords: Schizophrenia, life skills, functioning, activities of daily living

INTRODUCTION

Given its early onset age, variable clinical course, and persistent and chronic nature, schizophrenia is an important public health problem. It affects social participation and quality of life by causing disabilities in self-care, social relationships, learning, working and leisure time skills (Andersan 2010, Marcsisin et al. 2016). In schizophrenia, the combined use of both pharmacological and non-pharmacological psychosocial interventions are seen as the most effective treatment approaches to improve the long term outcomes (Deveci et al. 2008, Mortan Sevi and Tekinsan Sütçü 2012). The psychosocial interventions for improvement of social skills, self-efficacy, independence in activities of daily living and interpersonal communication in people diagnosed with schizophrenia include various approaches, such as cognitive behavioral therapy, cognitive remediation, therapies for the individual, group or the family, life skills trainings and vocational rehabilitation. These interventions are focused on managing symptoms, preventing relapses, increasing functioning and ensuring the reintegration of individuals into society (Sadock and Sadock 2007, Fatani et al. 2017, Kane and Correll 2010).

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[1]PhD., [4]Prof., Hacettepe University, Faculty of Health Sciences, Department of Occupational Therapy, Ankara, [2]MD., Etimesgut Şehit Sait Ertürk State Hospital, Department of Psychiatry, Ankara, [3]Assoc. Prof., [5]Prof., Hacettepe University, Faculty of Medicine, Department of Psychiatry, Ankara, Turkey.

e-mail: *haticeabaoglu@hacettepe.edu.tr*

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A multicenter, cross-sectional investigation in individuals diagnosed with schizophrenia demonstrated that functional capacity and everyday life skills are centrally located in the network of relationships between the cognitive, psychopathological and psychosocial variables (Galderisi et al. 2018). In this respect, improving independent living skills, including participation in activities of daily living, has an important role in intervention approaches (Buchain et al. 2003, Bejerholm and Eklund 2006).

Although there is not a consensus on the definition of life skills in the literature, life skills are defined in general terms as the basic skills that individuals need to live independently and take on meaningful and productive roles (Samuel et al. 2018, Abaoğlu et al. 2017). It has been shown that lack of life skills in schizophrenia leads to serious disability (Ivarsson et al. 2004, Bowie et al. 2006) and that deficits in life skills are associated with psychopathology, quality of life, cognitive functions and negative symptoms (Green et al. 2015, Samuel et al. 2018).

Life skills training approaches aim assisting individuals to gain the skills necessary for fulfilling their roles in the environment they live in and include techniques such as assessment, teaching, behavioral practice, feedback, and homework, covering areas such as self-care, money management, communication and social skills, home management and community life (Nicol et al. 2000). The training programs can be implemented in the individual's home or in various community areas such as banks, markets, streets as individual training; or, as appropriate, in group workshops that provide opportunities for individuals to learn from each other (Mitchell and Gunaratne 2007).

Occupational therapy interventions that also include life skills, consist of individual-centered approaches that take into account the individual's past experiences, interests, priorities, and expectations from the intervention. By analyzing the activity performance areas of individuals and related environmental factors through the intermediation of life skills trainings, individualized goals are developed with the aim to increase social participation by affecting symptoms and t level of functionality through participation in activities (Crouch 2014, Roberts 2008). Although life skills training is a widely used occupational therapy intervention and rehabilitation tool in the field of mental healthcare, it has limitations in not being generalisable beyond the training environment and unfocusable to individual targets and needs.

The evidence provided in this area has been found to be limited by inadequately planned studies with respect to numbers of the cases investigated and the mesasures on randomization and control (Mairs and Bradshaw 2004, Arbesman and Logsdon 2011, Ammeraal and Coppers 2012). After literature review, reliable evidence based on randomized controlled studies were not found although life skills interventions aiming to increase the quality of life and independence of individuals with chronic mental disorders had been designed (Tungpunkom and Nicol 2008, Ammeraal and Coppers 2012). This study aimed to investigate the effect of individualized life skills training on functioning in people diagnosed with schizophrenia with a randomized controlled design.

METHOD

Participants

Individuals with schizophrenia diagnosis consulting the outpatient clinic of Hacettepe University Psychiatry Department were included in this randomized controlled study conducted between April 2017 and June 2018. A total of the 58 individuals were interviewed to be evaluated by the physician for the symptoms and severity of the disease, when 5 individuals were excluded for not meeting the inclusion criteria and 15 individuals declined to participate in the study. The remaining 38 individuals were referred to the Occupational Therapy Department of Hacettepe University Faculty of Health Sciences and randomly assigned to the study and control groups by the computer software. Due to reasons of the time taken, transportation problems or other reasons 3 individuals included in the study group discontinued with the intervention, and 2 individuals in the control group who did not complete the schedules were excluded from the study. Consequently, a total of 32 individuals diagnosed with schizophrenia, 15 of whom were in the study group and 17 of whom were in the control group, constituted the sample of the study.

The inclusion criteria were specified as being 18-65 years of age and literate, meeting the diagnostic criteria of schizophrenia according to the DSM-5 after evaluation by two psychiatrists, maintaining medical treatment, having a score of 3 or less on items P7 (hostility) and G8 (uncooperativeness) of the Positive and Negative Syndrome Scale and being willing to participate in the study. Individuals who were in the flare up or acute episode of the disease, with mental retardation or having any treatment resistant physical or neurological disease were excluded from the study. Informed written consent was obtained from the participants and caregivers after the purpose and scope of the study were explained in detail. The study was ethically approved by Hacettepe University Non-Interventional Clinical Researches Ethics Board with the approval number GO 17/14 dated January 31, 2017.

Data Collection Tools

The Demographic Information Form: The demographic and clinical characteristics of the participants, including age,

gender, working status, marital status, education years, age of onset and duration of disease and medication use were collected on the demographic information form which was designed by the researchers.

The Positive and Negative Syndrome Scale (PANSS): The PANSS is a semi-structured interview tool developed to evaluate the severity of positive and negative symptoms and the level of general psychopathology. It consists of 30 items, including a 7-item positive symptoms subscale, a 7-item negative symptoms subscale, and a 16-item general psychopathology subscale. According to the severity of the symptoms, each item is rated by the clinician from 1 to 7 as *absent, minimal, mild, moderate, moderate-severe, severe or extreme*. The sum of the 30 items is defined as the PANSS total score and ranges from 30 to 210 (Kay et al. 1987). The validity and reliability of the Turkish language version of the scale were conducted at Hacettepe University Faculty of Medicine Department of Psychiatry in 1999 (Kostakoğlu et al. 1999).

The Clinical Global Impression (CGI) Scale: *The CGI* was developed to evaluate the severity and course of psychiatric disorders for clinical and research purposes. The scale is completed by the clinician based on observation during the semi-structured interview. It comprises the three dimensions of *illness severity, improvement and side effects*. The sub-dimension of *illness severity* is rated on a 7-point scale as: 1 (not at all ill), 2 (borderline ill), 3 (mild ill), 4 (moderately ill), 5 (markedly ill), 6 (severely ill) and 7 (extremely ill) (Guy 1976). In the present study, the first dimension of the scale, *illness severity*, was used.

The Katz Index of Independence in Activities of Daily Living (ADL): The ADL assesses the individual's independence in performing daily life activities (Katz et al. 1963). The six items, including *bathing, dressing, toileting, transferring, continence* and *feeding* are scored using a dichotomous scale (0-dependent, 1-independent). A score of 6 indicates complete independence and a score of 0 indicates that complete dependence of the individual. The validity of the Turkish language version was carried out by Arık et al. (2015).

The Lawton and Brody Instrumental Activities of Daily Living (IADL) Scale: The IADL scale consists of 8 questions on the activities of *telephone use, food preparation, shopping, housekeeping, laundry, transportation, financial management* and *medication use* (Lawton and Brody 1969). The Cronbach's alpha reliability coefficient of the IADL scale was found to be 0.88 in people diagnosed with schizophrenia (Çetin et al. 2013). In calculating the scoring on the IADL, the dichotomous (0-dependent, 1-indepent) or the trichotomous (1-unable, 2-needs assistance 3-independent) scales are used (Vittengl et al. 2006). In this study, the trichotomous scoring system was preferred, and accordingly 0-8 points were evaluated as the patient being dependent, 9-16 points as being semi-independent and 17-24 points as being independent.

The Social Functioning Scale (SFS): The SFS was developed to assess social functioning and its changes over time in individuals diagnosed with schizophrenia (Birchwood et al. 1990). The scale consists of seven subscales which provide detailed information on daily functions of *social withdrawal, interpersonal functioning, pro-social activities, recreation, independence-competence, independence-performance,* and *employment/occupation*. It is a self-report scale and it has separate patient and caregiver report forms. Higher scores from the subscales indicate better functioning. Since the scale does not have standardized population norms, it is used in comparative studies. Validity and reliability analyses of the Turkish language version were conducted by Yaprak Erakay (2001).

The Functional Assessment Short Test (FAST): The FAST was developed by Rosa et al. (2007) and the validity and reliability of the Turkish language version were conducted by Aydemir and Uykur (2012). It is a 24-item scale that assesses functioning. The test has the six sub-dimensions *autonomy, occupational functioning, cognitive functioning, financial issues, interpersonal relationships* and *leisure time*, which are evaluated by the clinician. The items in the test are rated on a four-point Likert scale. The cut-off score of the scale was not calculated. High scores indicate poor functioning.

Training

The life skills necessary to live independently and which support meaningful, productive roles, of the individuals in the study group were determined together with the individual by taking into account the individual's wishes and expressions during the assessment interview. Individuals were included in an individualized life skills training program 2 days per week for 8 weeks (=16 sessions). At the end of the training program, the psychometric tests were repeated with each individuals. Life skills training was designed for four performance areas including personal management (dressing, healthy and regular eating, personal hygiene, transportation, money management, coping skills), social skills (problem solving, decision making, organization, creative and critical thinking, empathy, interpersonal communication), vocational skills (awareness of the importance of productivity, identification of professional interests, pre-vocational skills, job search, finding, maintaining) and leisure time use (leisure time structuring, time management, participation in recreational activities). Life skills training was structured to include the following steps:

Session 1: Preparatory Session: Adaptation and cooperation to skills training, goal setting;

Sessions 2-5: Giving information about life skills and creating awareness for providing knowledge and awareness about life skills necessary to develop participation in meaningful daily living activities, concening what they wanted what bare needed or expected from them and including *personal management, social skills, vocational skills,* and *leisure time use*.

Sessions 6-12: Teaching life skills**:** Observing the success in performing those specified life skills; teaching skills to identify activity demands and to meet them effectively; using teaching techniques such as written and oral instructions, photographs, and video demonstrations; providing feedback on the process; follow-ups with homework.

Sessions 13-15: Training in real-life situations: Encouraging the individual to generalize the skills learned in the clinical environment to real-life conditions with all the factors affecting independent living activities.

Session 16: Closing Session: Summarizing the skills learned, getting feedback, encouraging sustainability and making suggestions.

During the course of teaching life skills, a therapeutic relationship, including empathy and respect for the individual's decisions and organising the communication with the individual according to changing needs was formed in order to increase the cooperation between the individual and the therapist; and also encouragement and motivational communication was used to enhance adjustment to the therapy and thereby be able to meet activity needs and to use personal capacity. Activity grading was performed in order to gradually increase activity demands from easy to complicated, simple to complex and one step to more, as the ability of the individual increased, or to reduce these demands if the individual lost functionality. In the cases where the individual could not perform the activity in his / her own environment during the training, simulations were used to make the clinical settings the closest to the natural environment of activity. Also, techniques including performing in real-life situations, homework and follow-up schedules were utilized (Cordingley and Pell 2014).

After an initial assessment, the individuals in the control group were given a single-session awareness training to increase their independence in daily living activities ; and, while continuing their standard medical treatment with medication and physician control, they were added on the waiting list to be included in general occupational therapy interventions and re-evaluated at the end of the 8th week.

Statistical Analysis

Statistical analyses were made performed using The Statistical Package for the Social Sciences (SPSS), Version 23.0, for Windows. Descriptive statistics were calculated to determine the general characteristics of the groups. The median and minimum / maximum values were used for the variables with non-normal distribution and the mean ± standard deviation values were used for the variables with normal distribution. For the comparison of independent variables, the Chi-square or Fisher's Exact tests were used for categorical variables such as gender, marital status, and educational status, and the Student's t-test was used for continuous variables including age and disease duration. Conformity of the data with normal distribution was tested by the Shapiro-Wilk Test. Repeated measures analysis of variance (ANOVA) was performed to test group and time interaction effect in normally distributed data. For the data with non-normal distribution, the Wilcoxon Signed Ranks Test was used to compare the differences in pre- and post-training assessment findings within each group and the Mann-Whitney U Test was used for assessing the differences between the groups. The significance level was determined at $p<0.05$.

RESULTS

Although 38 individuals met the inclusion criteria and volunteered to participate in the present study, only 32 (84%) of these completed the study by actively participating in life skills training The study and control groups did not differ signficantly on the bases of age, gender, working status, marital status, education years, age of onset and duration of disease (see Table 1). When medication use of both groups was examined, it was seen that the groups were similar in terms of treatment options (see Table 2), with 66% of the participants being on treatment with atypical antipsychotic (AP) alone, and with 4 patients in both the study and control groups receiving clozapine augmentation treatment.

The mean scores of the groups obtained on the PANSS, the CGI, Katz ADL and Lawton-Brody IADL scales are presented in Table 3. Group-time interaction was statistically significant for the PANSS negative symptoms, general psychopathology subscales, and total score. Significant difference was not observed in group-time interaction ($p=0.664$ in the PANSS positive symptoms subscale of the study and control groups. These findings indicate that negative symptoms and general psychopathology scores decreased significantly in favour of the study group (Table 3). When the mean CGI pre-test and post-test scores of the study and control groups were compared, the pre-test scores did not differ significantly between the groups ($p=0.954$), but there was a statistically significant difference in the post-test mean scores ($p=0.019$). Also, the change in the pre-test and post-test scores was not significant within the control group ($p=0.132$), but the change within the study group was found to be significant ($p=0.004$). While the two groups were initially comparable in terms of disease severity, there was a significant decrease in

Table 1. Demographic and Clinical Characteristics of the Participants (n=32)#

	Study Group	Control Group		
	Mean±SD	**Mean±SD**	**t**	**p**
Age	40.33±11.90	38.89±9.38	-0.385*	0.703
Disease duration (year)	15.40±12.61	15.18±8.77	-0.059*	0.954
	n=15 (%)	**n=17 (%)**	**χ^2**	**p**
Gender			0.427***	0.513
Female	7 (46.7)	6 (35.3)		
Male	8 (53.3)	11 (64.7)		
Marital status			3.883**	0.197
Married	0 (0%)	4 (24%)		
Single	13 (87%)	11 (65%)		
Separate / Divorced	2 (13%)	2 (11%)		
Working status			0.005***	0.946
Working	6 (40%)	7 (41%)		
Not working	9 (60%)	10 (59%)		
	Median (Min/max)	**Median (Min/max)**	**U**	**p**
Education period (year)	11 (8/15)	11 (5/15)	92.500	0.155
The onset age of disease	22 (16/39)	20 (16/40)	116.500	0.676
Numbers of psychotic episodes	2 (1/6)	3 (1/5)	80.000	0.067

Student t-test, Chi-square test, Fisher Exact test and Mann-Whitney U test results
*df=30, **df=2, ***df=1

the disease severity in the study group after the training (see Table 3).

The pre-test ADL scale mean scores of the two groups did not differ significantly (p= 0.744), but a significant difference was found in the post-test scores (p=0.010) after the 8-week treatment While the mean pre-test and post-test scores were not changed in the control group (p=0.317), the study group showed a significant within-group change (p=0.015). The group-time interaction was statistically significant (p=0.001) in the Lawton-Brody IADL Scale scores of the control and study groups. These findings showed that independence in basic and instrumental daily living activities increased after the life skills training in favour of the study group (Table 3).

When the pre-and post-test mean SFS scores of the control and study groups were compared, the group time interaction was statistically significant in the social withdrawal, recreation, independence-competence and independence-performance subscale scores. The pre-test and post-test interpersonal functioning and pro-social activities subscale scores that did not show normal distribution, were not significantly different between the groups at the pre-test stage (p=0.016), but a statistically significant difference was found after the training (p=0.001), but, the post-test scores of the two groups on the employment/occupation subscale did not differ significantly (p=0.674). Whereas the intra-group changes in the control group scores for these last 3 subscales

Table 2. Details of Medication Use in the Participants#

	Study Group	Control Group		
	N=15 (%)	**N=17 (%)**	**χ^2**	**p**
Antipsychotic (AP)			0.406*	0.816
1) Typical AP alone	1 (6%)	0 (0%)		
2) Atypical AP alone	10 (67%)	13 (76%)		
- Clozapine	5	5		
- Non-clozapine AP	5	8		
3) Clozapine augmentation	4 (27%)	4 (24%)		
Antidepressant	10 (67%)	10 (59%)	0.209**	0.647
Benzodiazepine	1 (6%)	1 (6%)		

#There were no participants who used combined therapy except clozapine augmentation. None of the participants used mood stabilizers.
* df=2, **df=1

Table 3. Comparison of the PANSS, the CGI, the Katz ADL, the Lawton-Brody IADL, the SFS and the FAST Results of the Groups

Variables	Group	Pre-test	Post-test		
PANSS		**Mean±SD**	**Mean±SD**	**F**	**p[a]**
Positive Symptoms	Control	14.76±5.98	13.82±4.80	0.193	0.664
	Study	12.40±5.63	10.87±3.66		
Negative Symptoms	Control	18.12±5.80	17.41±6.02	7.862	0.009**
	Study	18.53±8.91	13.27±5.65		
General Psychopathology	Control	31.41±7.91	32.76±9.58	8.165	0.008**
	Study	29.87±7.52	25.40±4.29		
PANSS Total	Control	64.59±16.34	64.18±17.61	16.272	0.001**
	Study	63.00±15.86	49.53±11.84		
		Median (Min/max)	**Median (Min/max)**	**Z**	**p[b]**
CGI	Control	4 (1/6)	4 (1/6)	-1.508	0.132
	Study	4 (1/6)	3 (1/5)	-2.919	0.004**
	p[c]	0.954	0.019*		
		Median (Min/max)	**Median (Min/max)**	**Z**	**p[b]**
KATZ ADL Scale	Control	5 (2/6)	6 (2/6)	-1.000	0.317
	Study	6 (4/6)	6 (5/6)	-2.428	0.015*
	p[c]	0.744	0.010**		
		Mean±SD	**Mean±SD**	**F**	**p[a]**
LAWTON-BRODY IADL Scale	Control	17.12±3.62	16.88±3.55	41.869	0.001**
	Study	17.13±4.05	20.27±2.43		
SFS		**Mean±SD**	**Mean±SD**	**F**	**p[a]**
Social withdrawal	Control	7.53±2.85	7.82±2.77	33.684	0.001**
	Study	8.33±3.06	11.53±2.72		
Recreation	Control	9.24±3.46	8.53±3.34	36.904	0.001**
	Study	9.87±4.39	16.33±5.65		
Independence-competence	Control	28.12±6.16	27.53±6.37	33.446	0.001**
	Study	28.27±5.11	33.87±3.42		
Independence-performance	Control	16.29±8.30	15.59±7.50	56.860	0.001**
	Study	18.20±7.81	27.07±6.33		
		Median (Min/max)	**Median (Min/max)**	**Z**	**p[b]**
Interpersonal functioningw	Control	5 (3/9)	5 (3/9)	-0.710	0.478
	Study	5 (3/8)	7 (5/9)	-2.970	0.003**
	p[c]	0.878	0.016*		
Pro-social activities	Control	7 (0/14)	6 (1/13)	-1.701	0.089
	Study	6 (1/22)	13 (4/38)	-3.299	0.001**
	p[c]	0.677	0.001**		
Employment/occupation	Control	3 (0/10)	3 (0/10)	-0.272	0.785
	Study	2 (0/10)	3 (0/10)	-2.994	0.003**
	p[c]	0.383	0.674		
FAST		**Mean±SD**	**Mean±SD**	**F**	**p[a]**
Autonomy	Control	8.71±2.76	8.71±2.80	30.036	0.001**
	Study	8.00±3.48	5.20±3.08		
Occupational functioning	Control	12.12±3.31	12.06±3.38	30.482	0.001**
	Study	10.47±4.72	8.80±4.20		
Cognitive functioning	Control	9.65±4.15	9.65±4.15	16.266	0.001**
	Study	9.93±3.73	8.00±4.07		
Financial issues	Control	3.88±1.93	4.00±1.90	7.694	0.009**
	Study	3.40±2.10	2.60±1.99		
FAST Total	Control	53.88±14.28	54.24±14.48	34.911	0.001**
	Study	49.00±18.69	38.53±18.86		
		Median (Min/max)	**Median (Min/max)**	**Z**	**p[b]**
İnterpersonal relationships	Control	14 (9/18)	14 (8/18)	-1.941	0.052
	Study	13 (3/18)	10 (1/17)	-3.084	0.002**
	p[c]	0.391	0.006**		
Leisure time	Control	6 (4/6)	6 (4/6)	-1.000	0.317
	Study	6 (0/6)	5 (0/6)	-2.799	0.005**
	p[c]	0.489	0.003**		

*<0.05, **<0.01, p[a] =Analysis of Variance in Repeated Measurements (ANOVA), p[b] =Wilcoxon Signed Rank Test, p[c] = Mann Whitney U Test, PANSS = Positive Negative Syndrome Scale, CGI = Clinical Global Impression Scale, ADL = Activities of Daily Living, IADL = Instrumental Activities of Daily Living, SFS = Social Functioning Scale, FAST = Functional Assessment Short Test.

were not statistically significant (p=0.478, p=0.089, p=0.785, respectively), they were highly significant in the study group (p=0.003, p=0.001, p=0.003, respectively). Based on these findings, it is concluded that the life skills training improves social functioning, including social withdrawal, recreation, independence in terms of performance and competence, interpersonal functioning, pro-social activities and employment/occupation (Table 3).

Group-time interaction was found to be statistically significant in the autonomy, occupational functioning, cognitive functioning, financial issues subscales and the total score of the FAST. This finding shows that life skills education increases the functionality in autonomy, occupational functioning, cognitive functioning, financial issues.

When the non-normally distributed scores of interpersonal relationships and leisure time subscales were compared, significant difference was not determined at the pre-test between the two groups, but a statistically significant difference was found for the two subscales after the training (p=0.006, p=0.001, respectively). When the changes were examined in the control group and the study group, the intra-group change between the pre-test and post-test scores on the FAST in the control group was not significant for both subscales (p=0.052, p=0.317, respectively), while the change in the study group was significant (p=0.002, p=0.005, respectively). According to these results, it was concluded that functioning increased in interpersonal relationships and leisure time activities of the study group as compared to the control group after the training (Table 3). while the pre-test results were similar for the two groups.

DISCUSSION

The results of this study showed that life skills training given to individuals diagnosed with schizophrenia caused improvement in the negative symptoms, general psychopathology and disease severity, basic and instrumental activities of daily living, and functioning outcomes when compared with an untrained control group.

In a review examining treatment engagement in individuals diagnosed with schizophrenia and proposing strategies for facilitating engagement, it was stated that although the incidences varied with the studies, about one-third of individuals with severe mental disorders discontinued treatment. Also, it was emphasized that individual-centered and evidence-based studies involving shared decision-making may increase treatment engagement (Kreyenbuhl et al. 2009). In our study, the participation rate in the individualized life skills training was high. As the participants were included in the study in the stable phase of the disease, changes were not made in treatment medication during the follow-up period, any effect of medication use on intergroup differences was eliminated. Hence, the positive change in the negative symptoms and general psychopathology in the study group was thought to be mainly related to the life skills training.

When the literature is examined, it is seen that there are various studies on the effectiveness of life skills trainings in the treatment of individuals with mental disorders. However, there are not sufficient number of studies with the required quality of evidence to support the effect of training on symptoms (Tungpunkom and Nicol 2008). Studies on occupational therapy interventions, reporting evaluations of the effect of life skills training on the disease symptoms and severity in schizophrenia, were generally conducted during long-term hospitalization (Tatsumi et al. 2011, Foruzandeh and Parvin 2013, Hoshii et al. 2013, Karbalaee-Nouri et al. 2015). When critically evaluated, most of these were not reports of direct life skills training; and demonstrated effects on the acute/subacute phase symptoms without any results related to the chronic period. Our study showed that the training planned to improve life skills in individuals with chronic schizophrenia during the transition from the hospital to the community environment decreased the negative symptoms and had a positive effect on the general psychopathology and disease severity. It is considered that training programs designed to improve life skills are important when planning individual-centered occupational therapy interventions for individuals diagnosed with chronic schizophrenia in the transition to the community.

Despite the evidence showing the positive effects of psychosocial interventions on the negative symptoms of schizophrenia, the effects on the positive symptoms are subject of debate (Lutgens et al. 2017, Bighelli et al. 2018). In our study, it was found that the 8-week life skills training resulted in a decrease in the positive symptom scores, but this effect was not statistically significant, probably because the planned life skills training was not directly focused on the positive symptoms. Nevertheless, our randomized and controlled research demonstrated that life skills training reduced negative symptoms of schizophrenia and had a positive effect on general psychopathology.

It is seen that most of the studies in the literature on the functionality of individuals with schizophrenia involve social skills training interventions (Yıldız et al. 2002, Roberts and Penn 2009, Li et al. 2018, Taksal et al. 2016). Social skills training is a psychological intervention, mainly comprising structured group training, that focuses primarily on the development or improvement of social interaction, social performance or interpersonal skills offered to patients diagnosed with schizophrenia spectrum disorders or other psychotic disorders (Perilli et al. 2018, Turner et al. 2017).

Our study differed from these trainings, by designing individual centered life skills training that focused less on social learning principles and aimed to increase independence in daily life and demonstrated positive effects on patient functionality. It is believed that psychosocial interventions targeting functionality, which is an important indicator of recovery, should be supported by complementary individual and group trainings.

Not including follow-up evaluations on the sustainability of learned skills and the long-term effects after completion of the given training is regarded as a limitation of this research. Although the training duration was sufficient for achieving significant results, given its highly comprehensive content, prolonged follow up would have enabled better generalization of the results to daily living.

In conclusion, it is recommended on the basis of the results of this study that interventional programs planned for improvement of functionality in schizophrenia should focus on life skills and be supported with long term follow-up studies.

REFERENCES

Abaoğlu H, Cesim ÖB, Kars S et al (2017) Life skills in occupational therapy. Occupational Therapy, Huri M (Ed), Intech Open. Retrieved on January 12, 2019, from https://www.intechopen.com/books/occupational-therapy-occupation-focused-holistic-practice-in-rehabilitation/life-skills-in-occupational-therapy

Ammeraal MA, Coppers J (2012) Understanding living skills: First steps to evidence-based practice. Lessons learned from a practice-based journey in the Netherlands. Occup Ther Int 19: 45-53.

Andreasen NC (2011) Concept of schizophrenia: past, present, and future. Schizophrenia, Weinberger DR, Harrison PJ (Eds), Blackwell Publishing Ltd. Retrieved on December 12, 2018, from https://onlinelibrary.wiley.com/doi/abs/10.1002/9781444327298.ch1

Arbesman M, Logsdon DW (2011) Occupational therapy interventions for employment and education for adults with serious mental illness: A systematic review. Am J Occup Ther 65: 238-46.

Arık G, Varan HD, Yavuz BB et al (2015) Validation of Katz index of independence in activities of daily living in Turkish older adults. Arch Gerontol Geriatr 61: 344-50.

Aydemir Ö, Uykur B (2012) Reliability and validity study of the Turkish version of Functioning Assessment Short Test in bipolar disorder. Turk Psikiyatri Derg 23: 193-200.

Bejerholm U, Eklund M (2006) Engagement in occupations among men and women with schizophrenia. Occup Ther Int 13: 100-21.

Bighelli I, Salanti G, Huhn M et al (2018) Psychological interventions to reduce positive symptoms in schizophrenia: Systematic review and network meta-analysis. World Psychiatry 17: 316-29.

Birchwood M, Smith J, Cochrane R et al (1990) The social functioning scale the development and validation of a new scale of social adjustment for use in family intervention programmes with schizophrenic patients. Br J Psychiatry 157: 853-9.

Bowie CR, Reichenberg A, Patterson TL et al (2006) Determinants of real-world functional performance in schizophrenia subjects: Correlations with cognition, functional capacity, and symptoms. Am J Psychiatry 163: 418–25.

Cordingley K, Pell H (2014) Life skills Creek's Occupational Therapy and Mental Health, 5. Baskı, W Bryant, J Fieldhouse, K Bannigan (Eds), London, Churchill Livingstone, p. 294.

Crouch R, Alers V (2014) The occupational therapy approach to the management of schizophrenia. Occupational Therapy in Psychiatry and Mental Health, 5th Editon, West Sussex, John Wiley & Sons Ltd, p. 435-45.

Çetin N, Demiralp M, Oflaz F et al (2013) The relationship between daily life activity levels of schizophrenia patients and care burden and expressed emotion statuses of their family members. Anadolu Psikiyatri Derg 14: 19-26.

Deveci A, Esen-Danaci A, Yurtsever F et al (2008) The effects of psychosocial skills training on symptomatology, insight, quality of life, and suicide probability in schizophrenia. Turk Psikiyatri Derg 19: 266-73.

Fatani BZ, Aldawod R, Alhawaj FA et al (2017) Schizophrenia: Etiology, pathophysiology and management - a review. Egypt J Hosp Med 69: 2640-6.

Foruzandeh N, Parvin N (2013) Occupational therapy for inpatients with chronic schizophrenia: A pilot randomized controlled trial. Jpn J Nurs Sci 10: 136-41.

Galderisi S, Rucci P, Kirkpatrick, B et al (2018) Interplay among psychopathologic variables, personal resources, context-related factors, and real-life functioning in ındividuals with schizophrenia: A network analysis. JAMA psychiatry 75: 396-404.

Green MF, Llerena K, Kern RS (2015) The "right stuff" revisited: What have we learned about the determinants of daily functioning in schizophrenia? Schizophr Bull 41: 781-5.

Guy W (1976) ECDEU Assessment Manual for Psychopharmacology - Revised, Rockville, US Department of Health, Education, and Welfare, p. 218-222.

Hoshii J, Yotsumoto K, Tatsumi E et al (2013) Subject-chosen activities in occupational therapy for the improvement of psychiatric symptoms of inpatients with chronic schizophrenia: A controlled trial. Clin Rehabil 27: 638-45.

Ivarsson AB, Carlsson M, Sidenvall B (2004) Performance of occupations in daily life among individuals with severe mental disorders. Occup Ther Ment Health 20 (Suppl. 2): 33–50.

Kane JM, Correll CU (2010) Pharmacologic treatment of schizophrenia. Dialogues Clin Neurosci 12: 345-57.

Karbalaee-Nouri A, Hosseini A, Hajebi A et al (2015) Independent and social living skills training for people with schizophrenia in Iran: a randomized controlled trial. Iranian rehabilitation journal 13: 84-8.

Katz S, Ford AB, Moskowitz RW et al (1963) The Index of ADL: a standardized measure of biological and psychosocial function. JAMA 185: 914-9.

Kay SR, Fiszbein A, Opler LA (1987) The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr Bull 13: 399-404.

Kostakoğlu AE, Batur S, Tiryaki A (1999) Pozitif ve Negatif Sendrom Ölçeği'nin (PANSS) Türkçe uygulamasının geçerlik ve güvenirliği. Türk Psikoloji Dergisi 14: 23-32.

Kreyenbuhl J, Nossel IR, Dixon LB (2009) Disengagement from mental health treatment among individuals with schizophrenia and strategies for facilitating connections to care: a review of the literature. Schizophr Bull 35: 696-703.

Lawton MP, Brody EM (1969) Assessment of older people: self maintaining and instrumental activities of daily living. Gerontologist 9: 179-86.

Li J, Huang YG, Ran MS et al (2018) Community-based comprehensive intervention for people with schizophrenia in Guangzhou, China: effects on clinical symptoms, social functioning, internalized stigma and discrimination. Asian J Psychiatr 34: 21-30.

Lutgens D, Gariepy G, Malla A (2017) Psychological and psychosocial interventions for negative symptoms in psychosis: systematic review and meta-analysis. BrJ Psychiatry 210:324-32.

Marcsisin MJ, Rosenstock JB, Gannon JM (2016) Schizophrenia and Related Disorders. New York, Oxford University Press s. 248.

Mitchell L, Gunaratne E (2007) Occupational therapists as life skills educators: experiences at the gage transition to independent living program. Occupational Therapy Now 9: 20-1.

Nicol M, Robertson L, Connaughton J (2000) Life skills programs for chronic mental illnesses. Cochrane Database Syst Rev 2: CD000381.

Perilli V, Stasolla F, Maselli S et al (2018) Occupational therapy and social skills training for enhancing constructive engagement of patients with schizophrenia: A review. Clin Res Psychol 1:1-7.

Roberts DL, Penn DL (2009) Social cognition and interaction training (SCIT) for outpatients with schizophrenia: a preliminary study. Psychiatry Res 166: 141-7.

Roberts M (2008) Life skills. Occupational Therapy and Mental Health. 4th Editon, Creek J, Lougher L (Eds), London, Churchill Livingstone, p. 359-81.

Rosa AR, Sanchez-Moreno J, Martinez-Aran A et al (2007) Validity and reliability of the Functioning Assessment Short Test (FAST) in bipolar disorder. Clin Pract Epidemiol Ment Health, 3: 5.

Sadock BJ, Sadock VA (2007) Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry. Philadelphia, Lippincott Williams & Wilkins, p. 491.

Samuel R, Thomas E, Jacob KS (2018) Instrumental activities of daily living dysfunction among people with schizophrenia. Indian J Psychol Med 40:134-8.

Sevi Mortan O, Tekinsav Sütcü S (2012) Cognitive-behavioral group treatment for schizophrenia and other psychotic disorders- A systematic review. Türk Psikiyatri Derg 23: 206-18.

Taksal A, Sudhir PM, Janakiprasad KK et al (2016) Impact of the integrated psychological treatment (IPT) on social cognition, social skills and functioning in persons diagnosed with schizophrenia: a feasibility study from India. Psychosis 8: 214-25.

Tatsumi E, Yotsumoto K, Nakamae T et al (2011) Effects of occupational therapy on hospitalized chronic schizophrenia patients with severe negative symptoms. Kobe J Med Sci 57: 145-54.

Tungpunkom P, Nicol M (2008) Life skills programmes for chronic mental illnesses. Cochrane Database Syst Rev 2: CD000381.

Turner DT, McGlanaghy E, Cuijpers P et al (2017) A meta-analysis of social skills training and related interventions for psychosis. Schizophrenia bulletin44: 475-91.

Vittengl JR, White CN, McGovern RJ et al (2006) Comparative validity of seven scoring systems for the instrumental activities of daily living scale in rural elders. Aging Ment Health 10: 40-7.

Yaprak Erakay S (2001) Şizofreni tanılı hastalarda sosyal işlevsellik ölçeği (SİÖ) Türkçe formunun geçerlilik ve güvenilirliğinin araştırılması. Yayımlanmamış uzmanlık tezi, İzmir, Atatürk Eğitim ve Araştırma Hastanesi.

Yıldız M, Yazıcı A, Ünal S et al (2002) Social skills training in psychosocial therapy of schizophrenia: A multicenter study for symptom management and medication management modules. Türk Psikiyatri Derg 13: 41-7.