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## Effectiveness of Tonge Group Education on General Health of Mothers with under Drug Therapy Autistic Children

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### Abstract

**Purpose:** purpose of present research is to investigate effectiveness of Tonge group education on general health of mothers with under drug therapy autistic children.

**Methodology:** this study was semi-experimental with a pre-test/post-test design with a control population. Studied population includes mothers of autistic children visiting Tehran Psychiatric Institute clinic, which a group of 20 was chosen from mothers of autistic children that were randomly placed in two groups of test group and control group (10 persons in each group); then interventions based on Tonge pattern were performed during ten sections of two hour classes while the control group had not received any intervention. Goldberg and Hiller General Health Questionnaire was used to collect data.

**Results:** data was analyzed via covariance analysis test. Covariance analysis showed that Tonge group education has been effective on mothers of autistic children ( $p < 0.5$ ).

**Discussion:** Tonge group education is effective on elements of anxiety, depression, and social functioning signs but there is no positive effect on elements of physical signs.

**Keywords:** Tonge Group Education; General Health; Autism

## 1. Introduction

Family is a societal system which any disorder in each of its members disturbs all of system and this disordered system exacerbates members' disorders and develops new problems. A parameter affecting family societal system is children's disability. Presence of a disabled child in a family usually creates irreparable inconveniences to family. This inconvenience in the family is sometimes family's vulnerability extent is to the amount that causes serious damages to mental health of family [1]. Studies suggest that negative effects of having disabled children causes tension and pressure to family members, particularly to mother [2]. Of children's disabilities that seems to have serious effects on family, particularly to parents, one can suggest Autism. Presence of disabled children threatens mothers' compatibility and physical and mental health and it usually has negative influences on her [3, 4]. Studies also show that mothers of children with disorders in autism spectrum are exposed to psychological pressures caused by having disabled child more than mothers of children with other mental disorders [5, 6]. Autism spectrum disorders or pervasive developmental disorders are characterized by extensive and pervasive damage in various developmental fields such as disorder in social interaction and communicational skills and/or presence of certain stereotypical behaviors and activities. These disorders are diagnosed before age of three, however, diagnosis age can be reduced to under age of two [7]. Of damages that mothers of autistic children experience one can name damages they receive in general health. World Health Organization (2004) defines general health as a form of welfare in which an individual recognizes his or her own capability, uses them effectively and productively, and is useful for his or her own community. Prevalence of holistic model and increase in followers of this approach health's concept to be viewed in a whole different point of view and for this purpose different aspects are considered for it. counting aspects like physical, social, emotional, rational, spiritual, and psychological are results of this approach. Mental health includes a wide area of general health (including social aspects, stress, and depression).

Standard of health for a person includes behavior and feeling. A person who owns mental and psychological health, beside receiving satisfied feeling of individual personality, confront with problems. In other words, people who have a healthy mind are able to adjust with environment along with gaining individuality [8]. Therefore, according to necessity of mental health, education of parents always has been an important substance in interventions associated with autistic children [9]. Osborne et al. [10] has found out that early interventive programs, especially the ones who need longer periods, will be less effective in case that parents are highly stressed. Despite this, educating paring for performing interventions will lead to reduction in their stress and depression and increases their sense of empowerment [11]. Studies have shown that these educations improve operational communication and interaction between parents and child. Assessment of treatment process shows that knowledge of parents about education methods might stabilize the learnt skills and behavioral changes during time [12] and reduces stress and increases confidence of parents [13]. Novel approaches used nowadays to increase health of mothers of autistic children; of them one might point out education of parents and Tonge Behavioral Management that is well-known as PEBM plan (Parent Education and Behavior Management).

In educational PEMB plan, parents receive education based on education model and behavior management model. Cognitive and behavioral technics are used in abundance in this plan and treatment sessions consist education about autism, communication characteristics, game and dysfunctional behaviors, change and behavior management principles, learning new skills, improving social interaction and communication, stress management, problems associated to mental health and community response to autism [14]. Ref [14] investigated parents of 5-5.5 years old children diagnosed with autism which were under a 20 weeks' intervention for educating parents and behavior management. Results of this study showed that contributing parents had experienced a better improvement in health comparing to control population. Regarding that mothers of autistic children are of individuals that are exposed to severe affliction after their children's disorder, therefore, recognizing their characteristics and needs is so important. Therefore, present study investigated effectivity of Tonge group education on population of mothers of autistic children and attempts to answer this question that whether Tonge group education intervention is effective on general health of mothers of autistic children. According to this question, the following assessment assumption is investigated:

Tonge group education is effective in general health and its substances of mothers of autistic children who are under medicine therapy.

## **2. Methodology**

Methodology of the present study is semi-experimental with design of pre-test/test-test with a control population, and statistical population of study consists of mothers of autistic children who visited clinical center of Tehran Psychological Institute. Number of sample is 20 which is selected randomly by availability and volunteer method among individuals visiting aforementioned center which are divided to two groups of test group and control group (each group includes 10 persons).

### **2.1 Study Materials**

**2.1.1 General Health Questionnaire:** 28 question General Health Questionnaire is presented by Goldberg and Hiller (1979). General Health Questionnaire is a “screening questionnaire” with self-measuring method which is used with purpose of tracing persons who have a psychological disorder is clinical complexes. (Goldberg and Hiller, 1972).

Two main class of phenomena is noticed in this questionnaire: disability of individual about having a “healthy” functioning and appearance of new phenomena with disabling nature. Currently, this point has been disclosed that some parts of symptom levels can be diagnosed by standardized psychological interviews, however, for lower than a certain level, there is possibility of presence of disorder in under-threshold stage and not diagnosing it [15]. General health questionnaire may be considered as a set of several questionnaires which are composed of lowest degrees of common sickness symptoms and are in various mental disorders, and therefore they can distinguish mental sickness as a quantitative stage from individuals that think of themselves as healthy. Therefore, purpose of this questionnaire is not to reach a certain diagnosis in mental sickness sequence [15], quoted Ref [16]. Results of several studies by Benjamin et. al. (1982) suggests a strong correlation between results yielded from the 28 and 60 paragraphs general health questionnaire in diagnosis of psychological inconveniences (Hossein Mahdavi zade 1386). 28 paragraphs form of general health questionnaire has the advantage that is designed for all people in society. This questionnaire, as a “screening tool”, can determine probability of a psychological disorder in a person. Currently,

implementation of this questionnaire has yielded vast results in various populations, correlation between main form of general health questionnaire Goldberg et al. 1972 and “concise tracking test” (screening test) with medical diagnosis is proved, and possibility of understanding relation between self-measurement and evaluation based on clinical observations are provided (Dadsetan, 1377). Existence of four measures is proven according to statistical analysis of the answers (Factor analysis). First sub-measure includes the ones about persons feeling about his own health and their tiredness feeling and includes physical signs [15]. Second sub-measure includes the ones that are related with stress and sleeplessness [15]. Third sub-measure evaluates individuals’ capability range against expert demands and daily life issues and reveals their feeling about way of dealing with common situations of life [15]. Fourth sub-measure includes the ones that are related with intensive depression and certain tendency to suicide. Overall point of each person is gained from summation of these four categories [15]. Simple “Likret” scaling method is used for pointing. Results of Benjamin et. al. studies about scaling method showed that using short versions of G.H.Q via Likret scaling increases test’s sensitivity -to diagnosis of patients- significantly, but decreases particularity of test (ration of healthy to patient individuals [17].

## 2.2 Implementing the Test

After selecting 20 persons between mothers of autistic children and randomly placing them in two groups (10 persons in test group and 10 persons in control group), a pre-test was taken from all contributors. Then, the test group attended 10 sessions of Tang group educational class. They attended this classes once a week and 90 min. for each session. Necessary interventions were performed in these classes according to Tonge educational plan. Control group didn’t receive any intervention. After the course ended (one week after finishing interventions) post-test was taken from both groups to measure effectivity and comparing two groups. Summary of treatment session based on Tonge model (2006) are listed in table below.

Sessions	Overall Title of Session	Educational Aspects
First	Overall design – goals and plan	What are purposes, crew rules, and autism?
Second	Issues of parents after diagnosis	Stress recognitional reaction and sealing with
Third	Recognition and management of problematic behavior	What is behavior management? How do we start?
Fourth	How to change improper	Encouraging behavior, turning punishment off

	behavior by manipulating consequences	
Fifth	Hot to empower new behaviors	Guidance, shaping, sequencing
Sixth	Communicative problems of autistic children	How these linguistic problems affect autistic children who can talk?
Seventh	Communicative problems of children who can't talk	How these linguistic problems affect autistic children who can't talk? How to improve non-linguistic communication by supplementary system.
Eighth	Social inadequacy in autism	Treatment approaches for younger children Treatment approaches for older children and adolescents
Ninth	How to play and work with each other	Importance of game How to gain child attention To increase eye contact, attention and continuing a task, remembering, etc.
Tenth	Reviewing past sessions	Presenting feedbacks and conclusion Introducing education for effective transition to real environment

## 2.3 Data Analysis

General health of mothers of autistic children which were under drug treatment were assessed in pre-test and post-test stages for both test and control groups. Therefore, initially investigation data are interpreted by descriptive statistics method, and then necessary statistical presumptions for implementation of covariance analysis are performed. At the end, inferential statistics methods of “single variable covariance analysis” is used for analyzing study assumption. The reason for using covariance analysis for analyzing study data is existence of pre-test/ post-test design with control group.

## 3. Findings

### 3.1 There Statistical Description of Data and Indexes in Groups

Descriptive data of general health variable according to pre-test and post-test in test-group and control-group and in all sample population is presented at Table 1.

Variable	Group	Measurement stage	Number	Ave.	Std. dev.
General health	Test	Pre-test	10	33.10	9.91
		Post-test	10	19.50	11.11
	Control	Pre-test	10	29.80	8.94
		Post-test	10	36.80	16.74

**Table 1:** Descriptive data of general health according to measurement stage in groups. As can be seen in table 1, the average of post-test in general health variable is less than of control group.

Descriptive data of variable of general health substances is presented in table 2 according to pre-test and post-test and control and test groups.

Variable	Group	Measurement stage	Number	Ave.	Std. dev.
Physical Symptoms	Test	Pre-test	10	7.50	5.08
		Post-test	10	7.60	5.16
	Control	Pre-test	10	7.80	4.93
		Post-test	10	14.00	18.87
Stress	Test	Pre-test	10	8.20	3.76
		Post-Test	10	4.90	4.28
	Control	Pre-test	10	5.70	3.30
		Post-test	10	9.00	5.04
Social Functioning	Test	Pre-test	10	12.80	2.74
		Post-test	10	5.00	2.58
	Control	Pre-test	10	11.60	2.01
		Post-test	10	8.70	2.71
Depression Signs	Test	Pre-test	10	4.60	5.12
		Post-test	10	2.00	2.53
	Control	Pre-test	10	4.70	4.32
		Post-test	10	5.10	3.03

**Table 2:** Descriptive Data of variable of general health substances according to measurement stage in groups.

According to the results shown in table 2, average for test group after post-test of stress, social functioning, and depression signs substances has decreased comparing to pre-test, but an increase is seen in physical symptoms; while average for control group for after test for substances of physical symptoms, stress, and depression signs has increased comparing to pre-test and it has only decreased for social functioning after post-test.

### 3.2 Statistical Analysis of Study Assumptions

Single variable covariance analysis is used to analyze study assumption by considering statistical tests presumptions.

Results are reported in Table 3.

Resources of Change	Summation of Squares	Degree of Freedom	Average of Squares	F	P	Effect Magnitude
Pre-Test	1188.28	1	1188.28	7.83	0.01	0.31
Between Groups	1903.51	1	1903.51	12.54	0.003	0.42
Inside Groups		17	151.70			
Total	21230.00					

**Table 3: Results of covariance analysis for general health variable.** Results of table 3 shows that after damping pre-test points, there is a positive difference in general health variable between groups – it means that the test was effective ( $P < 0.01$ ,  $F = 12.54$ ).

Resources of Change	Summation of Squares	Degree of Freedom	Average of Squares	F	P	Effect Magnitude
Pre-Test	461.95	1	461.95	2.63	0.12	0.13
Between Groups	185.66	1	185.66	1.05	0.31	0.05
Inside Groups	2986.44	17	175.67			
Total	5986.00	20				

**Table 4: Results of covariance analysis for physical symptoms variable.** Results of table 4 shows that after damping pre-test points, there is no positive difference in between groups – it means that Tonge group education was not effective on physical symptoms ( $P < 0.05$ ,  $F = 1.05$ ).

Resources of Change	Summation of Squares	Degree of Freedom	Average of Squares	F	P	Effect Magnitude
Pre-Test	5.01	1	5.01			
Between Groups	87.76	1	87.76	4.84	0.04	0.22
Inside Groups	307.88	17	18.11			
Total	21363.000					

**Table 5: Results of covariance analysis for stress variable.** Results of table 5 shows that after damping pre-test points, there is a positive difference in between groups - it means that the test was effective ( $P < 0.05$ ,  $F = 4.84$ ).

Resources of Change	Summation of Squares	Degree of Freedom	Average of Squares	F	P	Effect Magnitude
Pre-Test	0.30	1	0.30	0.03	0.84	0.002
Between Groups	52.02	1	52.02	6.60	0.02	0.28
Inside Groups	133.89	17	7.78			
Total	1172.00	20				



**Table 6: Results of covariance analysis for social functioning variable.** Results of Table 6 shows that after damping pre-test points, there is a positive difference in between groups in social functioning variable - it means that the test was effective ( $P < 0.05$ ,  $F = 6.60$ ).

Resources of Change	Summation of Squares	Degree of Freedom	Average of Squares	F	P	Effect Magnitude
Pre-Test	15.15	1	15.15	2.04	0.17	0.10
Between Groups	47.44	1	47.44	6.41	0.02	0.27
Inside Groups	125.74	17	7.39			
Total	441.00	20				

**Table 7: Results of covariance analysis for depression variable.** Results of Table 7 shows that after damping pre-test points, there is a positive difference in between groups in depression variable - it means that the test was effective ( $P < 0.05$ ,  $F = 6.44$ ).

#### 4. Results and Discussion

Results of covariance analysis in table 3 showed that Tonge group education generally had a positive effect on general health. Most of studies in Iran focus on comparing psychological traits of mothers of autistic children with usual mothers (e.g. ). There are few studies focus on general or psychological health and attempted to improve symptoms of various diseases and it seems that there are no attempts on Tonge group education. Results of present work is more consistent to foreign countries studies. of such researches one can name Tonge et. al. (2006). Tonge et. al. (2006) investigated parents of 2-5 years old children diagnosed with autism who were under a 20 weeks' intervention for educating parents and managing behavior. Results of their study showed that contributing parents in this plan experienced a better improvement in general health. Results of Tonge et. al. study also showed that contributors in test group reported improvement in substances of general health, including stress, sleeplessness, physical symptoms, and family malfunctioning, which these differences were positive comprising to control group. Between other compatible researches one can also point out study of Harris's research. Ref [9] showed in his research that education of behavior management to parent of autistic children has a positive effect on general health of parents. Although Tonge educational plans were not used in Harris's research, however because of presence of

common basics in Tonge educational plan and other educational plans that are based on behavioral and cognitive principles, one can consider the present work as consistent with Harris's research. Two other foreign works that are consistent with present work are Shields (2001) and Barlo (1997). To explain results of present work one may say that according to the fact that Tonge group education is based on prior intervention and cognitive-behavioral principles and its main focus is on education of parents about inability and improving parental skills in behavior management [18] and because research have shown that most of mothers of autistic children are affected by their children's disease and are exposed disturbance in psychological health -which usually have strong cognitive aspects- therefore one can expect that contributors in groups under Tonge education plan to experience more improvement in substances that have stronger cognitive parameters – e.g. depression, stress, and social functioning. Beck [19] believes negative beliefs about oneself is an important factor in psychological and even physical disorders. At one side, change in any different parts of cognitive systems -including memory, attention and consciousness- causes changes moods. Therefore, one cannot neglect effect of regulating cognitive emotion on compatibility of people with stressful situation of life [20]. In more novel approaches, imperfection in general health is attributed to some extent to failure in cognitive controls, in a way that incapability to control negative emotion caused by negative thoughts and beliefs about worries and using improper confrontation methods. Results of covariance analysis showed that Tonge group education has a positive effect on substances like stress, social functionality, and depression signs. Part of finding associated with research assumption can be considered consistent with work of Tonge et. al. (2006). One would believe that parents can be addressed as a treatment agent (and not only treater agent). Because by change in parent-child relation one can create fundamental changes in disease symptoms. Therefore, main goal of “treatment intervention by parents” plan is to teach different parenting skills to the parents that have a child with special needs (Autistic Disorders Treatment and Rehabilitation Regulating Center, 1393). Therefore, because in Tonge's educations there is special emphasize on parents and teaching necessary skills to them, one would expect that parents who contribute in these sessions spread their knowledge in family environment, create a healthier environment, and have an improved general health in different indexes by creating this healthy environment which will be supported by other family members. Another finding of the present work is that Tonge's educations had no positive effect on physical health substance. This finding is inconsistent with Tonge et. al. (2006) reports. To explain this difference between findings of recent study and the later one may say it is because of difference between samples of two researches. In Tonge's research, contributors' average age was about 35 while

average age of contributors in present work is 42. Therefore, maybe because the sample of Tonge's study were younger, this finding may be justified. Because age is an important factor in physical health and younger people usually have more physical activity and this can affect their physical health. Generally, cognitive treatments have less physical effects and more psychological-cognitive influence. Also, it seems that this treatment has stronger cognitive aspect comparing to behavioral aspect, therefore it is normal that the most influence is observed in cognitive aspects of sample. Furthermore, to explain recent findings one may say that despite the fact that Tonge's educations mostly emphasize on cognition, but meanwhile some subjects of parents can be signs of other factors and fields of health which necessarily would not improve or decrease by such treatment.

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