

Effect of mobile parenting skills education on anxiety of the mothers with autistic children

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ABSTRACT

Background: The parents of autistic children suffer from anxiety and tension. Unawareness of parenting skills required for autistic children (parenting) doubles their anxiety. Researchers have recently considered research on mobile education, especially mobile text messages. The present study aimed to investigate the effect of mobile parenting skills education on the anxiety of mothers with autistic children.

Materials and Methods: This is a clinical trial conducted on 64 mothers of children suffering from autism who had a medical file. The participants were recruited by convenient sampling in selected autism centers in Isfahan, Iran. Then, the participants were randomly assigned into two 32-subject groups of study and control. Spielberger Anxiety Inventory was adopted for the mothers. The book "Parenting skills for the mothers with autistic children" was distributed in the study and control group, and then, the study group underwent a structured mobile text messages education. Sixty text messages were sent daily to the participants in the study group for two months. Data were analyzed by Mann–Whitney, Chi-square, independent *t*-test, and paired *t*-test using Statistical Package for the Social Sciences version 16.

Results: The obtained results showed a significant decrease in mothers' anxiety mean score after intervention in the study group compared to control group ($P = 0.04$). There was also a significant reduction in mothers' anxiety mean score after intervention, compared to before intervention ($P < 0.001$).

Conclusions: Mobile parenting skills education, especially through text messages, could reduce the level of anxiety among the mothers with autistic children.

Key words: Anxiety, autism, Iran, mobile education, parenting

INTRODUCTION

One of the common neural pervasive developmental disorders is autistic disorder which includes the shortcomings in social communication and

interactions, problems with nonverbal communication skills and perception of relationships and behavior, and interest and repetitive and limited activities, which manifest in early childhood.^[1,2]

Based on the latest report of Centers for Disease Control and Prevention, one out of 68 births was an autistic child in USA in 2014.^[3] According to the report of charity association of Fatemeh Zahra, a specified center for autistic clients, there are 443 autistic children who have been detected in Isfahan province.^[4]

Because of the nature of the disease, the focus of treatment is on patients' rehabilitation more and few patients are hospitalized. Consequently, a majority of care is done by the

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families. Autism is associated with stress and accountability among the patients' parents. The parents taking care of an autistic child experience a higher level of stress, depression, and anxiety, compared to the parents of children with other mental growth and physical disabilities.^[5] Khorram Abadi *et al.*^[6] in a study on comparison of parenting stress in autistic children's mothers compared to those with healthy children reported that the stress was significantly higher in the first group compared to the second.

On the other hand, the parents of these children suffer from anxiety, acute concern, and confusion due to a lack of knowledge about the care required for these children.^[7] Moreover, mothers experience more stress than the fathers.^[8] A major part of the stress that these mothers experience is associated with their children's behavioral problems. Their lack of knowledge about required parenting skills can double their anxiety.^[9] It is the parents' rights to receive scientific and research oriented information about their children's disease and they deserve to receive such information.^[10] Although parents' education is important, the parents cannot attend educational sessions due to their involvement in their children. On the other hand, due to their various working shifts, holding such sessions is difficult for the nurses. Various studies in the context of nursing showed that text message education may complete or even replace face to face education.^[11,12] Mobile technology, especially text messaging, has been proven to be a hopping method in management of chronic diseases and promotion of various health-related behaviors.^[13,14] Research shows that mobile is not only common but has been proved efficient in the treatment of psychiatric disorders.^[15,16]

There are several studies on the effect of education through mobile in chronic diseases,^[17-19] but no studies have been conducted on its effect on education of parents with autistic children. Therefore, the present study aimed to investigate the effect of mobile parenting skills education on anxiety of the mothers with autistic children.

MATERIALS AND METHODS

This was a clinical trial (IRCT2015080223454N1), with two-group (study, control), two-stage (pre-test-post-test) design to investigate the effect of mobile parenting skills education on anxiety of the mothers with autistic children. Study population comprised the mothers of autistic children undergoing education in selected autism centers in Isfahan. The researcher referred to study environment after getting an introduction letter from Isfahan wellbeing organization and giving necessary explanations about the research goal to the authorities and attaining their agreement and cooperation, following which sampling was conducted.

The subjects were selected after obtaining their informed written consent by convenient sampling from all mothers with autistic children, referring to study environment and meeting the inclusion criteria. Spielberger questionnaire, containing demographic information, was filled, and then, the subjects were randomly assigned to either study or control group. The study was conducted on 64 mothers ($n = 32$, $n = 32$). Inclusion criteria were availability of a mobile, ability to read a text message, motivation to attend the study and ability to cooperate during the study, having a mobile with Persian texting service, lack of any acute or chronic physical known diseases during study, and attending other concurrent similar studies. Exclusion criteria were lack of cooperation with study at any stage due to any reason and the mothers facing severe stressful factors during the study.

Both groups were given a parenting skills book, specified for parents with autistic children. Mobile text reading method and necessary education were given to the study group. They were also asked to read not only the main text message (including parenting skills, specified for the parents with autistic children) but also the indicated pages of the book at the end of that message on that day. Meanwhile, they were asked only to read the determined pages of the book within the days they received neutral messages (including hopping and energetic texts for the mothers themselves). The mothers in the study group were also asked to have no communication with the control group concerning their text message program.

To diminish mothers' sensitivity to the nature of autism and their concern, neutral messages (containing hopping and energetic texts for the mothers themselves) were also sent. Approximately 60 text messages (including 30 main and 30 neutral messages) were sent to the subjects in study group.

The messages were sequentially sent (one day the main text the other day the neutral text was sent). These text messages were interactive and the researcher followed up the progression of the intervention through phone calls (twice a week). To collect the data, the Spielberger questionnaire in addition to the demographic information (that was added to the questionnaire) was adopted. It contains 20 items on a five-point Likert's scale that measures subjects' emotions. Scoring was from zero to four while the items measuring the anxiety were scored inversely so that the lowest and highest anxiety scores were 20 and 80, respectively.

In Iran, Mahram conducted a study to standardize Spielberger questionnaire and investigated the reliability index of the test in norm and criterion groups separately. The reliability for norm group ($n = 600$) was attained with

Cronbach alpha of 0.90 whereas it was 0.94 in criterion group ($n = 130$). In addition, this study had concurrent criterion validity. For validity, with regard to criterion sample size (130 patients with anxiety, diagnosed by a psychiatrist), 130 subjects were randomly selected from norm group (with respect to gender and age groups of the criterion group members). The validity of the test was significant over 90%.^[20] Its reliability was found to be 87% in various studies. Kazemi Malek Mahmoudi *et al.*^[21] and Roohi *et al.*^[22] obtained the reliability of Spielberger questionnaire as 89 and 90%, respectively, in a pilot study. Data were analyzed by Mann–Whitney, Chi-square, independent *t*-test, and paired *t*-test using Statistical Package for the Social Sciences version 16 (IBM software version 16.0 British Virgin Islands).

Ethical considerations

The research proposal of this study has been approved by Isfahan University of Medical Sciences.

RESULTS

Results showed no significant difference in demographic variables such as mothers' age (mean = 36 years), number of children (mean = 2), rank of the child (60% were the first child), occupation status (80% homemaker), mothers' education (42% bachelor's degree), child's gender (80% male), and children's age (mean = 8 years) between study and control groups ($P > 0.05$).

Independent *t*-test showed no significant difference in mother's anxiety mean scores between study and control group before intervention ($P = 0.96$), whereas after intervention, the mothers' anxiety mean score was significantly lower in the study group compared to control ($P = 0.04$) [Table 1].

Paired *t*-test showed no significant difference in mother's anxiety mean scores in control group before and after intervention ($P = 0.94$) while it significantly decreased in the study group after intervention compared to before ($P < 0.001$).

Independent *t*-test showed a significant difference in mean changes of mothers' anxiety scores between the study and control groups ($P = 0.04$) [Table 2].

DISCUSSION

The present study aimed to define the effect of mobile parenting skills education on the anxiety of the mothers with autistic children. Results showed that mothers' mean anxiety score was significantly less in the study group

Table 1: Determination and comparison of mean scores of anxiety of mothers, between the study and control groups before and after the intervention

| Time | Study group | | Control group | | t-test | |
|-------------------------|-------------|------|---------------|------|--------|---------|
| | Mean | SD | Mean | SD | t | P value |
| Before the intervention | 49.8 | 11.4 | 49.6 | 10.6 | 0.04 | 0.96 |
| After the intervention | 44.5 | 11.5 | 49.7 | 9.2 | 2.02 | 0.04 |
| Paired t-test | | | | | | |
| t | 3.87 | | 0.07 | | | |
| P value | <0.001 | | 0.94 | | | |

Table 2: Comparison of the changes of mean scores of anxiety of mothers between the study and control groups before and after the intervention

| The changes of score | Study group | | Control group | | t-test | |
|----------------------|-------------|-----|---------------|-----|--------|---------|
| | Mean | SD | Mean | SD | t | P value |
| Anxiety of mothers | 5.3 | 1.4 | 0.09 | 1.3 | 2.84 | <0.006 |

compared to control. There was a significant reduction in mothers' mean anxiety score after intervention, compared to before intervention.

Having an autistic child imposes high mental pressure in form of anxiety and depression to the parents and affects their coping with their child's needs. Education of the parents with autistic children led to reduction of stress, physical signs, and depression among their parents.^[4] In addition, the results of the studies on the effect of parenting skills education on reduction of mothers' tension showed a significant reduction.^[23]

The results of the present study are in line with Sarabi *et al.* showing a significant increase in parenting mean stress score after positive parenting group education in the study group compared to control at post-test stage.^[24] It is also consistent with the study of Sarabi Jamab *et al.*^[25] on the effect of parenting skills education on stress of the mothers with autistic children that showed a significant reduction in parents' stress from pre-test to follow up session ($P = 0.01$). The present study also showed that parenting skills education had a positive effect on the mothers with autistic children.

Riahi *et al.*^[26] in a study on the effect of negative mood management training on mental health and depression in mothers of autistic children, reported that this method could significantly reduce anxiety ($P = 0.02$), which is consistent with the present study showing the effect of education and increase of knowledge on anxiety, and consequently,

promotion of mental health. Clarke and Yarborough^[27] conducted a study on the effect of mental health self-efficacy (MHSE) (for mobile-based and web-based education) on depression, anxiety, and minor to moderate stress, and showed that the participants had a significant progression in MHSE in the study group after intervention, compared to control group ($P < 0.001$). A significant association was also observed between anxiety and MHSE in study group after intervention ($P < 0.001$) so that the anxiety decreased in study group.^[27] Burns *et al.*^[28] showed that anxiety signs decreased after an educational intervention through mobile and internet ($P < 0.001$). Therefore, based on aforementioned studies, mobile education was effective on the reduction and treatment of the diseases such as anxiety disorders.

CONCLUSION

Based on the results, mobile education through text message could diminish the anxiety among the mothers with autistic children, which is in line with other studies and reveals that prediction and provision of such psychological services is very essential in health care providing system.

Among the limitations of this study was sending commercial texts from various operators to subjects' mobiles. It is suggested to diminish this limitation as much as possible and to recruit more subjects and have a longer follow up time.

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Conflicts of interest

There are no conflicts of interest.

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