

Effectiveness of Health Education on Improving Stress and Quality of Life among Parents Having Attention Deficit Hyperactivity Disorder Child.

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Abstract

Background: Attention Deficit Hyperactivity Disorder is a significant medical and public health concern because it has enormous social implications, such as financial costs, pressure on communities, negative effects on self-esteem and impacts on educational and vocational activities. **Objective:** The aims of this research were to assess the effectiveness of health education intervention on improving stress and Quality of Life of parents of children diagnosed with ADHD. **Method:** pretest posttest study was done at the Child Psychiatry Clinic in Zagazig University Hospital; it was consisted of three steps (pretest, education program and post test). 70 parents having child with ADHD were self completed the Quality of Life-Brief questionnaires and The Parental Stress Scale. **Results:** Education program improved all domains of Quality Of Life and all parental stress scales with statistical significance. Rural area and the marriage status were the factors that affect the psychological domains with significant difference, while the low social class affect the overall health domain with significant difference. Male gender of the parents was the factor that affects rewarding scale with statistical difference. Rural area was the factor that affects the loss of control scale of the parents of child with ADHD with statistical difference while low social class was the factor that affects the stress scale. **Conclusion** Parents having ADHD child have high scores of stress and lower Quality of Life scores. Increasing their levels of knowledge via health education can empower them in fighting the disease that may improve their Quality of Life and violate their stress.

Keywords: *Quality of Life, stress, parents, ADHD*

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Introduction

The most frequently diagnosed mental illness in children is attention deficit hyperactivity disorder (ADHD). It is described by inattention, physical behavior, problems with emotional regulation, impulsiveness, and action without regard to consequences and the age of the individual. It is associated with social, educational, adaptive, and work-related disability. These symptoms are present for more than six months.

And before a person are twelve years old.¹ ADHD is a significant medical and public health concern because it has enormous social implications, such as financial costs, pressure on communities,

negative effects on self-esteem and impacts on educational and vocational activities.² In Egypt, the prevalence ranged from 6.5% (8-10 years of age) to 7.5% among children 4-12 years of age. The prevalence ranged from 7.3% in Italy to 10.6% in the United States of America and France in Western countries.³ ADHD is a multi factorial condition; although it has been considered a genetic disorder, it has been associated with other environmental factors. Any risk factors are correlated with prenatal exposure to harmful substances such as cigarettes, tobacco, and excessive caffeine, environmental

Table (1) Quality of Life domains before and after health education intervention.

	Pre intervention Mean± S.D	Post intervention Mean± S.D	Paired t test statistic	P value
Stress	24.31±2.7	12.38±2.6	33.82	0.00*
Satisfaction	10.78±1.39	7.45±1.75	12.27	0.00*
Loss of control	12.8±1.5	6.84±1.53	27.24	0.00*
Rewarding	28.97±2.5	12.15±1.7	40.40	0.00*

*significant level <0.05

toxins such as lead and mercury, other antihypertensive and antidepressant substances.⁴ Besides low serum folic acid, iron and zinc levels, Lifestyle and psychosocial factors such as excessive exposure to electronic media, early institutional care, maternal stress and early traumatic events can also be attributed to ADHD.⁵ Health Related Quality Of Life (HRQOL) is a personal subjective perception of the impact on physical, psychological or social well-being of health conditions (e.g. illness and treatment). ADHD has been shown to have a negative impact on QOL among children affected and their family.⁶ Family is the foundation of ADHD management, beginning with the identification of symptoms, seeking advice on health care, making decisions and initiating treatment. Greater gains in ADHD outcomes are associated with active parental involvement, continuing family involvement, and involvement of caregivers and health care providers⁷. The condition is mainly handled through stimulant drugs and behavioral therapies that can be used alone or in conjunction with each other. Families often have a conflicted view of the treatments and a low adherence to the prescribed medical interventions for this condition, where the prevalence is estimated to be around 25 to 50%, which is declining over time. The level of knowledge of the parents about the disease and its treatment plans significantly affects how this issue is treated.⁸

Just few researches focused on identifying ADHD in Egypt, but there is also a low level of knowledge in the community about this condition.⁹

This research aimed to assess the effectiveness of health education intervention on improving stress and Quality of Life (QOL) of parents of children diagnosed with ADHD.

Method

Between January 2020 and April 2020 at the Child Psychiatry Clinic in Zagazig University Hospital, Sharkia, Egypt, an intervention study (a quasi-experimental model of the pretest-posttest method) was performed. In their follow up visits to the hospital, parents of children diagnosed with ADHD were interviewed. The research included parents of a child with ADHD diagnosed for more than a year (old diagnosis). The doctor made the diagnosis based on the DSM-IV diagnostic criteria at the Psychiatry Clinic. Families who had more than one child with ADHD were excluded in the study. Exclusion criteria were included parents who were having more than one child as this would have had cumulative effects on QOL and families who had other developmental difficulties with boys.

The sample size was determined by the Open Epi-info system at C.I 95 %, the test power 80 % the sample size ratio 1:1, the mean of the total QOL rating before intervention was (57.165± 15.340) and after intervention was (67.098±14.177).⁶ The total sample size was 70.

The study was conducted in three phases: The first phase was to assess the parents' stress and the QOL of parents with ADHD children by using a self-administered questionnaire consisting of three parts. The 1st of which included socio-demographic characteristics: sex,

Table (2) the Parental Stress Scales before and after health education intervention.

	Pre intervention Mean± S.D	Post intervention Mean ± S.D	Paired t test statistic	P value
Physical domain	11.3± 2.5	24.12±2.6	49.23	0.00*
Psychological domain	12.57±2.7	23.57± 2.7	55.17	0.00*
Social domain	4.9±1.4	11.97±1.5	35.27	0.00*
Environment domain	17.57±2.3	31.8±1.9	40.42	0.00*
Over all QOL	1.67±0.71	3.87±0.75	15.67	0.00*
Over all health	1.95±0.75	4.25±0.75	19.87	0.00*

*significant level <0.05

age, marital status, education, employment status, residence, and perceived income satisfaction.

The 2nd part was the Arabic edition of the Quality of Life-Brief (WHOQOL-BREF) World Health Organization¹⁰. It included 26 items; 24 of which covered 4 QOL domains: physical health (7 items), psychological health (6 items), social relations (3 items) and environment (8 items). Two additional elements assessed

overall QOL and overall health (2 items). Items were rated on a 5-point Likert scale (low score of 1 to a high score of 5). High scores indicated high QOL. The validity and reliability of the Questionnaire was checked and verified in an Arab general population. The questionnaire was validated using Validity Model. Reliability for questionnaire was performed with Cronbach's α 0.6.

Table (3) linear regression analysis of factors affecting QOL domains of the parents of the child with ADHD difference between pre –post intervention.

	Physical Domain	Psychological Domain	Social Domain	Environment Domain	Overall QOL	Overall Health
Parent Gender						
B coefficient	0.775	0.204	0.098	0.124	0.057	0.500
P value	0.142	0.617	0.809	0.858	0.844	0.031*
Residence						
B coefficient	0.1.03	0.429	0.149	1.423	0.396	0.426
P value	0.068	0.327	0.729	0.058	0.203	0.084
Social class						
B coefficient	0.567	0.242	0.904	2.015	0.100	0.0124
P value	0.286	0.558	0.03*	0.005*	0.734	0.590
Marital status						
B coefficient	1.202	1.049	0.664	0.277	0.376	0.495
P value	0.043*	0.024*	0.143	0.720	0.246	0.054

*significant level <0.05

The 3rd is The Parental Stress Scale. This scale was used to measure the level of parents stress due to the relationship between the parents and their ADHA child.¹¹

The questionnaire included 18 questions graded on a scale of 5 likert, ranging from complete disagreement to full agreement. To compute the parental stress score, items 1, 2, 5, 6, 7, 8, 17, and 18 should be reverse scored as follows: (1=5) (2=4) (3=3) (4=2) (5=1). The item scores are then summed. The validity test to measure the clarity of the language with reliability test was performed using the

reliability coefficients (Cronbach's alpha) α equal 0.7.

The scale is consisted of four sub scale: I- parental stress which contained 6 questions asked about Q3 time and energy, Q9source of stress, Q10 time and flexibility, Q11 financial burden, Q12 balance responsibilities and Q16 few choices and control.

II- satisfaction comprised from three questions asked about Q4doing worried whether doing enough for the child, Q13 behavior stressful and Q17 satisfied as parents

Table (4) linear regression analysis of factors affecting the stress scale of parents of the child with ADHD and difference between pre –post intervention..

	Stress	satisfaction	Loss of control	Rewarding
Parent Gender				
B coefficient	0.829	0.424	0.898	1.318
P value	0.224	0.458	0.04*	0.123
Residence				
B coefficient	0.615	0.333	0.44	0.411
P value	0.397	0.585	0.341	0.658
Social class				
B coefficient	2.475	0.241	0.505	0.560
P value	0.000*	0.677	0.248	0.524
Marital status				
B coefficient	0.415	0.684	0.679	0.242
P value	0.551	0.283	0.160	0.803

*significant level <0.05

III- lack of control comprised from three questions asked about Q2 nothing to do to my children if necessary, Q14 decide no children, Q15 overwhelmed.

IV- parental rewards comprised of six questions asked about Q1 happy in role, Q5 feel close, Q6 enjoy spending time, Q7source of affection, Q8 optimistic view and Q18 enjoyable.

The second phase was the intervention phase by using an educational program conducted on the outpatient clinic of psychiatry at the specific time of the visit (there were two days in the week were dedicated for the child psychiatry , the child with parents come every month to take the medicine , every parents took two sessions on the two consecutive month) either single personnel interview or a grouped interview according to number of the parents with using videos to help in delivering the education sessions. Each visit lasted for 45 to 60 minutes. The 1st education session consists of: explaining the ADHD disease as regards its Definition, prevalence, etiology and general principles of treatment and correcting parents' misconceptions about the nature of the disease. Expression of child-parent interactions and general principles of behavioral shaping reinforce the behavior and behavior modification. The 2nd visit was dedicated to give the parents chance to teaching new skills and managing misbehavior. And how to reduce the

child's inappropriate behavior planned ignoring and logical consequences, discussing the previous session and give their feedback

The third phase was done after 3 months from the educational programmed to evaluate the intervention.

Six domains of (WHOQOL-BREF) (physical psychological , social , environment, Over all QOL and overall health) and four domains of The Parental Stress Scale (stress, satisfaction, loss of control and rewarding).

Statistical methods

The data were entered and analyzed using IBM SPSS program version 20. The normal distribution of the data was tested by using Shapiro-Wilk test. Paired t test to analyse the statically significant effect of the education program. Linear regression was calculated to test the effect of sociodemographic variables (independent variables) and all domains of QOL questionnaires and Parent stress scale (difference between before and after intervention). Pearson correlation to test relationship between QOI, parent stress scale and overall health.

Administrative design and ethical aspects: Approval was obtained from Zagazig University Institution and Review Board 2020(IRB#6061-) (5-1-2020). Informed written consent was obtained from each parent according to the ethics committee of the Faculty of Medicine, Zagazig University.

Results

As regard socio demographic characters of the parents of the child with ADHD, 60% of them were male, 40% were female with mean of age (35.2 ± 4.6 , range 22-45). Most of our sample were low social class (58.6%), live in rural area (60%) and the percentage of divorce was low (30%). In studying the effect of the health education programmed on the QOL (Table 1), there was improved on all domains of QOL with statistically significant difference ($p < 0.05$). Also, all scales of the stress scales were improved after education programmed with statistical significant difference ($p < 0.05$) (Table 2). In analysis of the factors that affecting QOL domains of the parents of child with ADHD difference between pre-post intervention (Table 3), Marital status of the parents affected the physical and psychological domain of QOL with statistical significant difference, while the low social class was the factor that affect social and environmental domain with statistical significant difference.

Table (5) Correlation Matrix between Total QOL, Overall Health and Total Stress Scale

	Total QOL r (p)	Overall Health r (p)	Total stress scale r (p)
Total QOL	1	0.661 (0.00)**	-0.047 (0.69)
Overall health	0.661 (0.00)*	1	-0.212 (0.04)*
Total stress scale	-0.047 (0.69)	-0.212 (0.04)*	1

*significant level < 0.05

Overall health was affected by the male gender of the parents with statistically significant difference. As regarding the factors that affecting the stress scales of the parents of child with ADHD (Table 4), Male gender of the parents was the factor that affects loss of control scale with statistical difference. While low social class was the factor that affects the stress scale with statistically significant

difference. The table (5) show that there was positive correlation between total QOL and overall health with statistically significant (p value 0.00) correlation coefficient (0.661). There was negative correlation between total stress scale and overall health with statistical significant difference (p value, 0.05) correlation coefficients, -0.212 respectively.

Discussion

ADHD is a major clinical and public health problem that has a negative impact on QOL of parents and carrying more stress.

Lower scores of QOL of parents having a child diagnosed with ADHD were noticed in many studies.¹² In this study, significant improvement was noticed in different QOL domains, especially in the social domain after the intervention (table 1). The lower scores in social domain may be explained by the bullying and the stigma that usually follow psychological disorders from the community. That may raise the attention for the importance of health education in providing parents with the knowledge and skills that may help in improving their QOL. The great importance of parents' interventions, specially in the form of health education in improving their QOL and helping better management was noted by research¹³. Moreover, Sarah et al. 2017¹⁴ recommended the role of integrated interventions (not only medical treatment) on improving QOL of families of children with ADHD. In contrast Storebø et. al 2019¹⁵ found a little evidence to support the role of non-pharmaceutical interventions as knowledge support in improving QOL of parents.

The ADHD child's behavior likes a "wrecking ball"; that drives parents to high stress. In this study the investigators tried to ameliorate the level of stress among parents by health education that was significantly

decreased after the intervention (table 2). The high stress rate may be referred to their children's behavior, intense feelings of stigma and scrutiny perceived from professionals and their community. The success of health education in stress mitigation may be explained by increasing awareness that may increase tranquility and understanding of parents about the nature of this disorder. Consistently, Sally et al. 2019¹⁶ noted that parents who attended health education programs led to reduced parental stress and improved parenting skills to better manage their children. The beneficial effect of psycho-educational programs on reducing the stressful condition usually parents live was demonstrated by Pelham 2008¹⁷. Additionally, Webster et al. 2013¹⁸ suggested that providing accurate information helps parents make decisions and support parenting skills which can improve children behavioral that reduce parental stress.

The relation between QOL domains and sociodemographic criteria was assessed in (table 3). The residence in rural areas and those who are married had lower scores in the psychological domain. This may be explained by the living in rural areas usually lacks the health services and associated with lower social conditions that may lead to lower QOL. Besides marriage carries multiple demands in addition to the stress of the diseases and its management. The low social class was associated with lower overall health domain scores. That may be referred to parents with low social class usually complains of multiple health conditions that affect their health status. The socio- demographic effects as predictors of QOL were different between studies. For example, and in consistence with these results; Samar et al. 2018² noted that there is a significant relationship between psychological scores of QOL and residence in rural areas and relation between all domains

and education. Yu et al. 2018¹⁹ found that parents' educational level, income and having major medical conditions were significantly correlated with lower one or more domains of QOL. The parents' educational level was the only predictor of their QOL in study²⁰.

Identifying the sociodemographic factors that affect stress was very important in controlling it, so they were assessed in table 4. Stress domain was higher among parents with low social class that may be attributed to multiple stressors in addition to the disease among this class. Fathers had higher scores in the rewarding domain than mothers, may be due to shorter time of contact with the child in addition to the image of the fathers as money payers. Parents living in rural areas had lower scores in the control scale that may be attributed to open social environment and extended families in these areas. Mothers had higher stress scales, Rosa et al. 2018²¹ explained that as mothers are taking more responsibility in the upbringing and everyday life of ADHD child. In contrast, Moen et al. 2011²² found no significant effect of parents' gender, the child's age, and place of residence on the level of parents' distress.

Stress scale was negatively correlated with QOL and overall health. That may be explained by the demanding nature of the disease, unperceived social support and impaired social life that increase the level of stress among parents and decrease their QOL scores. Theule et al. 2013²³ found that the effect of stress on QOL and overall health of parents depend upon both child and family contextual factors specially severity of the disease, co- morbidity and the strength of familial relationships. Astudy²⁴ identified familial factors as more important than the child's condition in measuring the degree of parental stress and QOL.

Conclusion

Parents having ADHD child have high scores of stresses and lower QOL scores. Increasing their levels of knowledge via health education can empower them in fighting the disease that may improve their QOL and violate their stress.

Limitation and strength of this study: As the disease severity and subgroups of ADHA disease weren't considered in the study. Difficult to generalize the result of the study as it was hospital based as it was involved only the parents who seek medical advice or care for their child with ADHD.

This study was one of very few numbers of researches that focus on ADHD and design a health education program to raise the parents' awareness about their Childs' condition for better management.

Recommendation

On the light of the results of the research, it was found that great association between QOL and stress of the parents and the disease of their child. So, improvements in the health-related QOL of parents with child with ADHD should be integrated into the overall planning of the treatment goals for ADHD child. So it was recommended to Increase the educational programs to spot light on this problems and how to deal with

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