Health Education Program to Alleviate Anxiety and Depression Symptoms in Asthmatic Children

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Abstract

Background: Bronchial asthma (BA) is a chronic inflammatory disorder that can influence social, physical and psychological status of the patient.

Aim: To assess the correlation between anxiety and/ or depression symptoms and asthma in children and to alleviate them by health educational program.

Methods: One hundred (100) children having BA with age range (7- 10) years, in which 41 children completed sessions of educational program who attended Abassia Chest Hospital in Cairo and fulfilled the inclusion criteria, in the period from 1st January to 31st December 2015. They subjected to full history taking, thorough examination and assessments of depression by Middlesex Hospital questionnaire and anxiety by Child Anxiety Scale. Educational program was implicated to children, then reassessment was done again.

Results: The mean age of children was (8.48± 1.15) years (59 male, 41 female). Results showed high frequency of both depression and anxiety symptoms with a statistical significant correlation between these symptoms and severity, control and duration of asthma as well as with type of asthma treatment. The results of applied program denoted high statistical significant difference (P= 0.000) between asthma severity and control, depression and anxiety symptoms before and after the educational program.

Conclusion: Asthmatic children were found to have increased frequency of depression and anxiety symptoms which might be due to the nature of BA or its medications. Educational program diminished BA severity, improved its control, reduced frequency and severity of depression and anxiety symptoms. Therefore, early detection of these symptoms and appropriate education is of great importance and should be initiated to every asthmatic child.

Keywords: Asthma, Children, Depression, Anxiety, Educational Program.

برنامج تثقيف صحى لتخفيف أعراض الاكتئاب والقلق فى الأطفال المصابين بالربو

المقدمة: الربو الشعبى هو أكثر الأمراض المزمنة شيوعاً فى مرحلة الطفولة، وله كثير من التأثيرات السلبية على حياة الطفل.

الهدف: تقييم العلاقة بين الربو فى الأطفال وأعراض القلق والإكتئاب، وتقليل هذه الأعراض من خلال تغييرمعرفتهم ومواقفهم وممارساتهم ببرنامج التثقيف والتوعية الصحية.

منهجية البحث: هذا البحث تم على١٠٠ من الأطفال المصابين بالربو ويترددون على مستشفى الصدر بالعباسية ويتراوح اعمارهم بين ٧ و١٠ سنوات منهم ٤١ طفلا اكملوا برنامج التثقيف الصحى فى الفترة مِنْ الأول مِنْ يناير ٢٠١٥ حتى نهاية ديسمبر ٢٠١٥ حسب معايير الإدخال. جميع الاطفال المُسَجَّلون تم أخذ التاريخ المرضى لهم بالتفصيل، والفحص الاكلينيكى، واستخدام النسخة العربية من مقياس قلق الطفل وإستبيان مستشفى ميدلسيكس للإكتئاب. ثم تطبيق برنامج تثقيف صحى واعادة التقييم ثانية فى نهاية البرنامج.

نتائج البحث: اشارت نتائج البحث لوجود زياده فى أعراض الاكتئاب والقلق فى الاطفال الذين يعانون من الربو وهذه الأعراض تزداد بزيادة شدة الأزمة الربوية. وقد حدثت هذه الأعراض نتيجة لمرض الربو او للادوية المستخدمة فى علاجه. وأدى تطبيق برنامج التوعية والتثقيف الصحى الى التقليل من شدة الربو والتحكم فى اعراضه مع التقليل من شدة الاكتئاب، والقلق.

الخلاصة: الربو مرض مزمن له تأثيرعلى الحالة البدنية والنفسية والاجتماعية للاطفال. كل من المرض والادوية المعالجة له قد يؤدى الى وجود أعراض الاكتئاب والقلق فى الاطفال. لذلك تطبيق برنامج التثقيف الصحى للأطفال المصابين بالربو عنصرا أساسيا فى خطة علاج الربو الناجحة من خلال تحسين المعرفة والوعى والمهارات والامتثال للعلاج.

الكلمات الكاشفة: الربو الشعبى، الاطفال، القلق، الإكتئاب، برنامج التوعية والتثقيف الصحي.

Introduction:

According to Global Initiative for Asthma (GINA, 2016) asthma is the most common pediatric chronic disease. It is a heterogeneous disease, characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and/ or cough.

Recently it has been proposed that children with bronchial asthma had an increased risk of psychological comorbidity with anxiety and depression. Accordingly, they might not seek help for asthma, or follow their asthma management plan leading to additive functional impairment, increased asthma burden, and increased hospitalizations (Tedner et.al., 2016 and Sami et.al., 2016).

Depression is a common mental disorder, characterized by sadness, loss of interest, feelings of guilt or low self- worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. Impairing an individual's ability to function or cope with daily life. Severe depression can lead to suicide (WHO, 2017).

Anxiety is characterized by feelings of tension, worried thoughts and physical symptoms such as sweating, trembling, dizziness or rapid heartbeat. It is associated with feeling of apprehension and recurring intrusive thoughts (APA, 2017).

Aim of the study:

1. To assess the correlation between anxiety and/or depression symptoms and asthma in children.
2. To alleviate anxiety and depression symptoms in asthmatic children through changing their knowledge, attitudes and practices by health educational program.

Subjects and Methods:

This study was conducted on 100 asthmatic children with age range (7- 10) years, who attended the pediatric department of El- Abassia Chest Hospital, in the period from 1st January 2015 to the end of December 2015 and fulfilled the inclusion criteria. 41 children completed the sessions of the health educational program.

All studied children were subjected to the following three phases:

1. Phase I (Pre- Assessment):
   a. Full history taking and thorough clinical examination.
   b. Classification of asthma according to GINA guidelines (Gina, 2016).
   c. Assessment of I Q by non- verbal (Draw- a- man) Test prepared by (Harris, 1963) and standardized into Arabic version by (Farghaly et.al., 2004).
   d. Assessments of symptoms of depression by 8 items questionnaire of Middlesex Hospital (M.H.Q) prepared by (Crown& Crisp, 1966) and translated into Arabic version by (Abdel Gwad et.al., 1993).
   e. Assessments of symptoms of anxiety by 20 items questionnaire of Child Anxiety Scale (C.A.S.) prepared by (Gillis, 1980) and translated into Arabic version by (Saad et.al., 2008).
2. Phase II (Health Awareness and Educational Program): It is an individual program composed of (6- 8) sessions, 2 sessions per week; each approximately 60 minutes. It was designed and implicated to asthmatic children and their parents to enhance the health and general condition of the children suffering from bronchial asthma.
3. Phase III (Post- Assessment): Children reassessed by C.A.S. and M.H.Q. at the end of the program and another follow up reassessment was done after 3 months interval at least, to assess the impact of the program on the children.

Results:

The children included in the study were 100 children. The age ranges from (7 to 10) years. The mean age was (8.48± 1.150). Gender distribution was 59 males and 41 females.

Figure (1) showed high frequency of depressive symptoms in asthmatic children 65 cases (65%) in which the majorities (58 cases) were mildly depressed and (7 cases) were severely depressed. Also, it showed high frequency of anxiety symptoms 80 children (80%) in which majorities (65 cases) had mild anxiety and (15 cases) had severe anxiety.

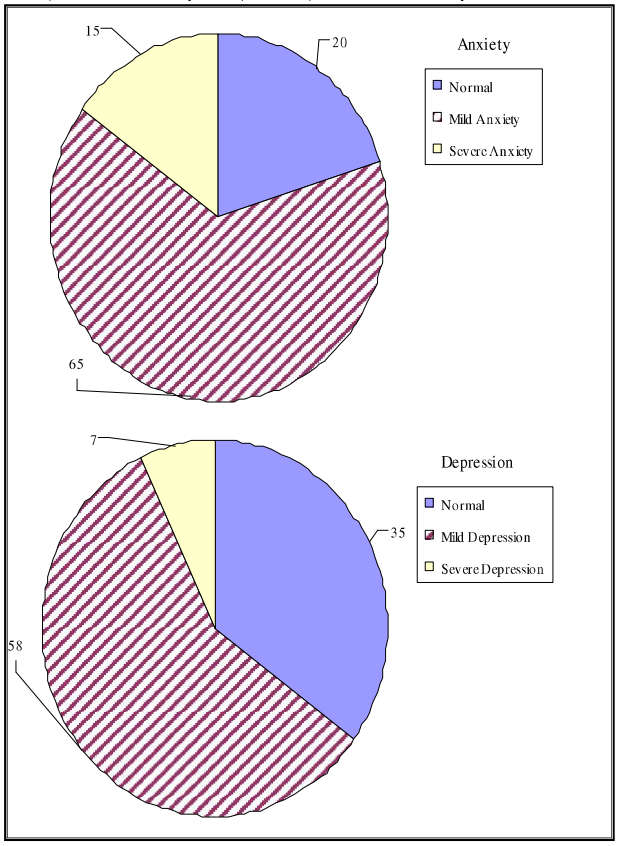

Figure (1) Frequency distribution of cases according to depression and anxiety symptoms

There was a high statistical significance with positive correlation between BA severity and depression symptoms (P= 0.006) and also anxiety symptoms (P= 0.001). Over more, There was a high statistical significance (P= 0.003) with negative correlation between BA control and depression symptoms while it was a statistical significant (P= 0.031) with anxiety symptoms. As regarding BA duration, results showed a high statistical significance with positive correlation with depression symptoms (P= 0.007) and with anxiety symptoms (P= 0.001).

Table (1) Frequency distribution of cases according to type of bronchial asthma treatment and depression symptoms

Type Of BA Treatment		Depression			Total	X²	P-Value	r
		Normal	Mild	Severe				
Non Corticosteroids	N	26	18	3	47	18.619	0.001 (H.S)	0.355
	%	55.3%	38.3%	6.4%	100%			
Inhaled Corticosteroids	N	8	31	2	41			
	%	19.5%	75.6%	4.9%	100%			
Oral Corticosteroids	N	1	9	2	12			
	%	8.3%	75%	16.7%	100%			
Total	N	35	58	7	100			
	%	35%	58%	7%	100%			

Table (1) showed a high statistical significance (P= 0.001) with positive correlation between BA treatment and depression symptoms. Also, there was a statistical significance (P= 0.037) with positive correlation between BA treatment and anxiety symptoms. The studied group that completed the sessions of health educational program was 41 asthmatic children, in which 35 had depression while 40 had anxiety.

Table (2) Frequency distribution of cases according to bronchial asthma severity before and after the program

Ba Severity	Before	After	X²		P- Value
Intermittent	N	0	21	8.107	0.008 (H.S)
	%	0%	51.2%		
Mild Persistent	N	0	8		
	%	0%	19.5%		
Moderate Persistent	N	29	12		
	%	70.7%	29.3%		
Severe Persistent	N	12	0		
	%	29.3%	0%		
Total	N	41	41		
	%	100%	100%		

Table (2) showed a high statistical significant difference (P= 0.008) between bronchial asthma severity before and after the program.

Table (3) Frequency distribution of cases according to bronchial asthma control before and after the program

Ba Control	Before	After	X²	P- Value	
Uncontrolled	N	11	0	15.367	0.000 (H.S)
	%	26.8%	0%		
Partially Controlled	N	26	9		
	%	63.4%	22%		
Controlled	N	4	32		
	%	9.8%	78%		
Total	N	41	41		
	%	100%	100%		

Table (3) showed a high statistical significant difference (P= 0.000) between bronchial asthma control before and after the program.

Table (4) Frequency distribution of cases according to depression symptoms before and after the program

Depression	Before	After	X²	P- Value	
Normal	N	6	36	27.659	0.000 (H.S)
	%	14.6%	87.8%		
Mild	N	28	5		
	%	68.3%	12.2%		
Severe	N	7	0		
	%	17.1%	0%		
Total	N	41	41		
	%	100%	100%		

Table (4) showed a high statistical significant difference (P= 0.000) between depression symptoms before and after the educational program. The total mean score was (4.41± 2.073) after the program compared to (9± 2.941) before the program with (paired t= 16.679).

Table (5) Frequency distribution of cases according to anxiety symptoms before and after the program

Anxiety	Before	After	X²	P- Value	
Normal	N	1	17	11.449	0.000 (H.S)
	%	2.4%	41.5%		
Mild	N	29	24		
	%	70.7%	58.5%		
Severe	N	11	0		
	%	26.8%	0%		
Total	N	41	41		
	%	100%	100%		

Table (5) showed a high statistical significant difference (P= 0.000) between anxiety symptoms before and after the educational program. The total mean score was (5.32± 1.709) after the program compared to (10.20± 2.600) before the program with (paired t= 18.470).

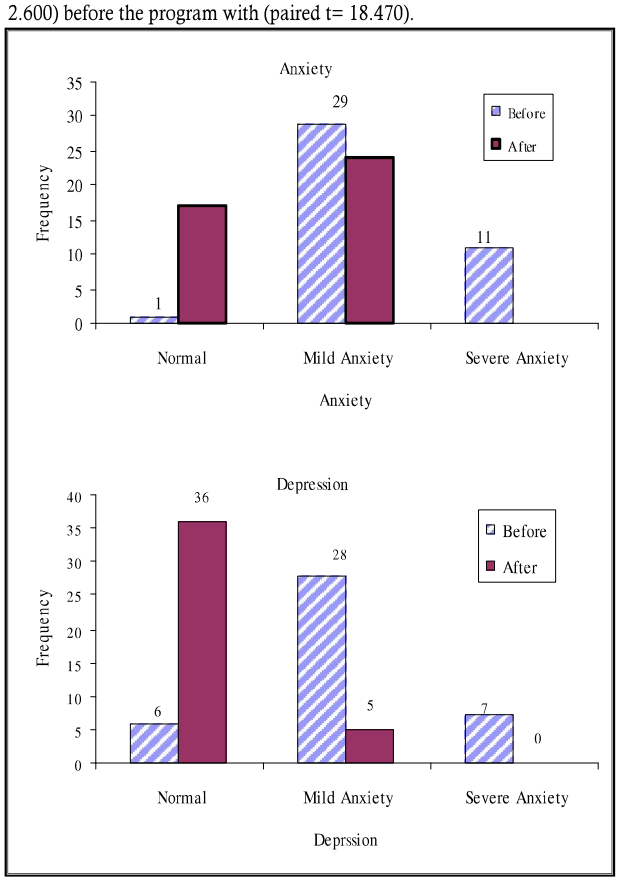

Figure (2): Frequency distribution of cases according to depression and anxiety symptoms before and after the educational program

Discussion:

On studying the demographic data, regarding the gender distribution, males were 59 and females were 41. This indicates that asthma is more prevalent in boys than girls. These results coincided with most of the asthma studies as asthma had a higher prevalence in boys than in girls before puberty and a higher prevalence in women than in men in adulthood (Abdel Latif, 2000 and Postma, 2007). The reasons for this sex-related difference are not clear. However, lung size is smaller in males

than in females at birth but larger in adulthood (GINA, 2016).

In the present study most of the studied cases had low economic status, thus poverty predominated. In studied cases, (8%) of fathers were dead, absent, or unemployed, (11%) were unskilled workers, (27%) were partially skilled workers and (17%) were skilled workers while the majority of mothers (88%) were housewives. These coincided with Forno and Celadon (2009) who found that socioeconomic status was a very important determinant of differences in asthma prevalence and severity.

As regards depression symptoms, the results indicated that majority of cases 65 (65%) had depressive symptoms in which (58) were mild and (7) were severe.

Recent studies enforced our results and found that depression was more prevalent in asthmatic patients when compared to the healthy control subjects and its early recognition is necessary to control asthma thus preventing psychogenic episodes of acute asthma exacerbations (Escriche et.al., 2016& Sami et.al., 2016).

Moussas et.al. (2008) suggested that bronchial asthma entail serious difficulties, frequent hospital admissions and dependency on oxygen. This suffocating status may explain the high percentage of depression among BA patients.

Similarly, concerning anxiety symptoms, our results indicated that the majority of cases 80(80%) had anxiety symptoms in which (65) were mild and (15) were severe cases.

The study results coincided with Wong et.al. (2013) who reported higher prevalence of anxiety among asthmatic patients. Which might be influenced by the temporary reversible airway obstruction that cause sudden onset of chest tightness triggering severe psychogenic symptoms like anxiety due to fear of complications.

The current study showed high statistical significance with positive correlation between bronchial asthma severity and depression (P= 0.006), and anxiety symptoms (P= 0.001).

These results came in line with those of several authors who had reported that children with severe asthma were 3 times more likely to have severe psychiatric problems as anxiety and depression when compared to children without chronic conditions, also the frequency of these problems increased as the severity of asthma increased (Halterman et.al., 2006 and Blackman et.al., 2007).

In contradiction to our results, some studies showed no significant differences between asthma severity and the presence of psychiatric comorbidities (Bojorges et.al., 2013 and Escriche et.al., 2016).

According to our study there was a statistical significance (P= 0.031) with negative correlation between asthma control and anxiety symptoms. This was against Trzcińska et.al. (2012) who found no correlation between the degree of asthma control and anxiety levels. In contrast, the same study showed that prevalence of depression and its severity were significantly correlated with the degree of asthma control. This coincided with the present study's results where there was a high statistical significance (P= 0.003) with depression symptoms.

Our study results coincided with Escriche et.al. (2016) who found that higher asthma control was associated with lower incidence of anxiety and depression.

Concerning bronchial asthma duration, the results of the study showed that 50 (66.7%) of cases with long term asthma had mild depression and 5 (6.7%) had severe depression with high statistical significance (p= 0.007). Almost the same results found with anxiety where 51(68%) of cases had mild anxiety and 15 (20%) had severe anxiety with a high statistical significance (P= 0.001).

These results came in line with those of Di Marco et.al. (2011) that found association between long term asthma with daily symptoms and psychiatric comorbidities mainly anxiety and depression.

The results in the present study showed a high statistical significance (P= 0.001) between type of BA treatment and depression symptoms where 80.5% of cases treated by inhaled corticosteroids and 91.7% of cases treated by oral corticosteroids had depression symptoms.

While in anxiety the results showed a statistical significance (P= 0.037) between type of bronchial asthma treatment and anxiety symptoms. It was found that 85.4% of cases treated by inhaled corticosteroids and 91.7% of cases treated by oral corticosteroids had anxiety symptoms.

This is supported by the study of Stuart et.al. (2005) who found adverse psychological effects of systemic steroids in children including anxiety and depression. Moreover, study of Varies et.al. (2008) that conducted on asthmatic children with inhaled corticosteroids (ICS), found that there were negative effects of inhaled corticosteroids on anxiety and depression.

Several authors suggested that it is strongly recommend educating children with asthma and their caregivers about self- management to successfully manage asthma and reduce its impact. Also, enrolling children in a comprehensive management programs to alleviate comorbid psychological conditions as depression and/or anxiety (NHLBI, 2015 and Chambers et.al., 2015).

The current study showed a high statistical significant difference (P= 0.008) between bronchial asthma severity before and after the heath educational program. Our program decreased the severity of asthma and possibly did so by increasing children's and their parents' compliance with preventive measures and therapy.

These results coincided with Coffman et.al. (2008) who concluded that a valid educational program, reduced asthma severity, exacerbations and hospitalizations.

The present study showed a high statistical significant difference (P= 0.000) between bronchial asthma control before and after the educational program.

This improvement of asthma control came in line with a study that raised the importance of other strategies rather than preventive therapy including education of patients and regular follow up to attain asthma control (Bahadori et.al., 2009).

Studies were recommended that interventions such as health

educational programs and guided self- help could assist patients in developing self- management and control strategies. Moreover, children with well- controlled asthma enrolled in a comprehensive asthma management program do not have an increased risk of anxiety and depression (Chambers et.al., 2015 and Letitre et.al., 2014).

Current results coincided with previous studies whereas the study showed a high statistical significant difference (P= 0.000) between depression symptoms before and after the educational program. After completion of the program the total mean score was (4.41± 2.073) compared to (9± 2.941) before the program.

Also, this study showed a high statistical significant difference (P= 0.000) between anxiety symptoms before and after the program with total mean score (5.32± 1.709) after the program compared to (10.20± 2.600) before the program.

Other studies strengthened our findings that educational and prevention programs are viable strategies for reducing the population burden of depression and anxiety. Completing the program can reduce a child's risk of developing a disorder for up to six years (Avenevoli et.al., 2015 and Barrett, 2010).

Prompted by the fact that asthmatic children and their parents lack knowledge about asthma, depression, anxiety, and the relation between them, a good educational program was required to raising their awareness, knowledge, and teaching them practical and useful skills to cope with these comorbid conditions.

Conclusion:

Children suffering from asthma were found to have increased frequency of depression and anxiety symptoms. This reflected the negative effect of asthma and/ or its treatment on psychological health of the children. Health education to asthmatic children was an essential component of successful asthma management through improvement of knowledge, awareness, management skills and compliance to treatment. The educational program to asthmatic children and their parents diminished the severity of asthma and improved the level of asthma control. Completing the program can reduce frequency and severity of depression, and anxiety symptoms with evidence supporting the positive impact of the program on children's mental health outcomes and reduction of the child's risk of developing the psychiatric disorder.

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