

Childhood Bronchial Asthma and Quality of Life

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Abstract: Asthma is the most common chronic disease in children, which restricts their physical, emotional, and social aspects of life. In North African countries including Egypt, asthma has a major negative impact on the daily activities of asthmatic children. It is approved that the assessment of quality of life (QOL) of asthmatic children is important for enhancing communication between health care providers and patient and it helps in monitoring of treatment. In developing countries, there are not enough data regarding the issue of quality of life especially among asthmatic children. A case control study design was used to investigate the quality of life among asthmatic children compared to non-asthmatic children at Mansoura city, Dakahlia, Egypt. The study included a total number of 392 children (196 children for each study and control group) who were interviewed at the outpatient clinic of Mansoura Chest Hospital. Socioeconomic level of the children's family was determined based on the scoring system of Fahmy and El-Sherbini. A 5-point likert scale was developed according to the World Health Organization "Measurement of Quality of life in children". The study findings revealed a significant poor level of quality of life in relation to physical domain among the asthmatic children compared to non-asthmatic children. Severity of asthma showed a negative significant correlation with the level of quality of life in relation to the three domains. In conclusion, suffering from bronchial asthma negatively affects the children's quality of life, therefore there is a need special attention to provide information about measures to reduce daily activities restrictions.

Key words: Quality of Life; Asthmatic Children; Socioeconomic; Severity of Asthma

INTRODUCTION

Bronchial asthma affects around 300 million people throughout the world^(1,2). The prevalence of asthma is high in western countries and has been rising throughout the late 20th century. It was estimated that the prevalence of asthma was 7.4% among children in Petersburg, and 9% among children in Spain^(3,4). In Tehran physician-confirmed asthma was reported in 2.1% of the 6-7 year olds and 2.6% of the 13-14 age group. ⁽⁵⁾ The mean prevalence of asthma among Middle East countries and North African countries is 5.8% and

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3.9% respectively in Egypt, bronchial asthma is affecting about 8.2% of children aged 3-15 years.⁽⁶⁾ While the physician-diagnosed asthma was 9.4%, in Cairo⁽⁷⁾.

Asthma is the most common chronic disease in children in developed countries that requires a considerable amount of health and social resources, as it is a heavy burden both for patients and their families and for society as well⁽⁸⁾. Asthma is the most common chronic pediatric disease that results in variable restriction in physical, emotional, and social aspects of the child's life⁽⁹⁾. It was found that asthma has a major impact on children's lives in Maghreb, and one in four of Egyptian children is unable to attend school regularly because of poor asthma control^(10,11).

Quality of life (QOL) is a concept including the child and parents' subjective experience with the

disease, providing information about how the condition affects everyday functioning and well-being.⁽¹²⁾ Current ability to treat children with chronic disease, coupled with the inability to offer absolute cure, raises the issue of the quality of life of these children.⁽¹³⁾

The assessment of QOL among children gives a better understanding on the children's feelings on their condition, and in enhancing communication between clinicians and patients that helps in the monitoring of treatment, in combination with clinical measures^(9, 14).

Asthma is known to reduce the quality of life of its sufferers; however, there are no appropriate measures to estimate quality of life in developing countries with diverse cultural beliefs, and values⁽¹⁵⁾. Accordingly, the present study aims to investigate the quality of life among asthmatic children compared to non-asthmatic children at Mansoura city.

Subjects and methods

Study design: Case control study design was used to explore the quality of life in asthmatic children compared to non-asthmatic children.

Study Setting:

The study was conducted at the outpatient chest clinic of chest hospital, affiliated to Ministry of Health at Mansoura city.

Study population and size:

Children who attended this clinic and fulfilling the study inclusion criteria were included.

The inclusion criteria of study participants are:

- The children involved in the study group should be free from any other disease rather than bronchial asthma
- Child age ranges from 3-12years old
- Children who were selected for control group from the outpatient clinic

of the same hospital. They were matched to have the same criteria of age, and health condition of the study group rather than to be free from bronchial asthma. Sample size was calculated to be 196 asthmatic children and 196 control according to Fleiss 1981 by using Epiinfo statistical package version 6.00.⁽¹⁶⁾

Study tools

1- A pre-designed interview sheet

Interview sheet was used to collect the following data from the child and or his/her parents:

1. Personal data: including age, sex, and socioeconomic data included education and occupations of Parents, crowding index and income. The socioeconomic level of the children's family was determined based on the scoring system of Fahmy and El-Sherbini (1983)⁽¹⁷⁾.

The total score ranged from 5 to 19. Those with scores 15 or more (equal 80% of total score) were considered of high socioeconomic class, scores 11-14 (60-<80%) of middle socioeconomic class and scores < 11(< 60%) of low socioeconomic class.

2. Disease characteristic: including severity of asthma in last four weeks, according to the report of National Heart, Lung and Blood Institute (2007)⁽¹⁸⁾.

2- Quality of life scale

Assessment quality of life's scale was developed according to the World Health Organization "Measurement of Quality of life in children" 1994 and The World Health Organization Quality of Life (WHOQOL)-BREF 2004^(19,20). An Arabic version was developed by the researchers and than tested by forward and backward translation by a bilingual

expert. The developed scale is a 5-point likert scale included 25 items that measure three main domains namely: physical, psychosocial and environment domains. The total scores of the scale are 110 scores.

- **Physical domain** included eight items to measure how asthma interferes with physical activities mobility, daily functions and sleep pattern. This domain gained 40 scores

- **Psychosocial domain** included eight items to measure interaction with friends, family, and playing, this domain gained 40 scores.

- **Environment domain** included six items to measure safety and healthy living environment at home and school in addition to availability of food preferences, this domain gained 30 scores.

Participants were asked to indicate how much they are "satisfied" or

"bothered" with their life or how much asthma symptoms prevent them from doing activities in the last four weeks.

The quality of life degree calculated for each domain and for allover quality of life scores as following:

Poor quality of life = < 60%

Good quality of life = ≥60%

Methods:

1-Administrative process and ethical considerations:

a- Official permission was obtained from Mansoura Chest Hospital which is affiliated to Ministry of Health, to collect data from outpatient clinic.

b- Written consent was obtained from child's parents to enroll their children in the study. They were informed that all the obtained information would be analyzed anonymously and will be considered as confidential information.

2-Development of the study tool:

a- The researchers developed the

interview sheet and Arabic version of quality of life measuring scale after reviewing recent literatures.

b- Validity of the developed tools was tested by 4 experts in the field of pediatrics and community health.

c- A pilot study was carried out on 15 children chosen randomly from the same outpatient clinic to ensure the clarity of the tools.

d- Reliability of the scale was statistically tested by using alpha model test and the unrealistic questions were omitted.

3-Data collection:

Data collection was conducted during the period from March to April 2009 through interviewing of children with bronchial asthma attending the Outpatient Chest Clinic. Two visits per week were done to the Outpatient Chest Clinic.

Statistical analysis:

SPSS package (version 0.13) was

used for the statistical analysis of the obtained data. Chi square test was used to illustrate the difference between asthmatic and non- asthmatic children regarding to their demographic characteristic and different quality of life items. Spearman test was used to estimate the correlation between the quality of life scores of each domain and the socioeconomic level and the degree of asthma.

Results:

Table 1 shows insignificant difference between asthmatic children and non - asthmatic children regarding to their socio-demographic characteristics. Preschool age children (3-<6 years old) constitute 36.3% of non –asthmatic children and 45.9% of asthmatic children, while males children constitute nearly two thirds of both groups. Most of children included in the study live in urban community, and nearly half of

them are belonging to the low middle social class.

Table 2 shows that nearly two thirds of asthmatic children suffered from mild intermittent bronchial asthma and only 6.6% suffered from sever persistent attacks during the last six months.

Results in table 3 describe the distribution of studied children according to their quality of life. There was a significant difference between asthmatic and non- asthmatic children in relation to several issues of quality of life. Most of asthmatic children (89.5%) reported that pain prevent them from doing what they need to do and (58.2%) of them depend very much on medical treatment to function daily activities compared to (3.5%) and no one of non- asthmatic children respectively.

Regarding to the extension of healthy environment that child lives in, 26% of asthmatic children found their

living environment to be little healthy environment compared to 11% of non-asthmatic children. Furthermore, 18.8%, 4.5%, 16.8% and 2.6% of asthmatic children were dissatisfied with their sleep pattern, performance of daily activities, food choice, and ability of playing, compared to 0%, 2%, 5.5%, and 0% of non-asthmatic children respectively.

Data in table 4 demonstrates the difference between asthmatic and non-asthmatic children in relation to their quality of life's level. Poor level of physical domain was more likely to be observed among 17.3% of asthmatic children compared to only 3.6% of non-asthmatic children (OR 0.18, CI 95% 0.076: 0.41 $P \leq 0.05$) the difference was significant. On the other hand, psychosocial and environmental quality of life's domains showed slight insignificant difference between the two groups. Poor level of psychosocial quality

of life was found among 16.3% of asthmatic children compared to 13% of non-asthmatic children (OR 0.64 CI 95% 0.36: 1.2).

A negative significant correlation observed between the degree of asthma and the level of quality of life in relation to the three domains, while a positive significant correlation was found between the socioeconomic class and environmental domain.

Discussion

Asthma is one of the most common chronic diseases worldwide that constitutes a considerable health problem among children. (2) Grading of bronchial asthma severity usually indicates that the largest percentage of asthmatic children suffering from moderate or intermittent asthma and a small numbers suffer from severe asthma. In a Turkish study, the intermittent asthma was reported among

82% of asthmatic children and only 7% had persistent asthma⁽²¹⁾ This confirms the findings of the present study which found that 63.8% suffered from intermittent asthma with less prevalence of persistent asthma either mild, moderate or severe attacks.

All over the world, asthmatic children have lower physical abilities and suffer from sleep disturbance more than their non-asthmatic peers. Asthmatic children describe asthma as a restricting factor of their life at school and recreational activities⁽²²⁾. The present study indicated that asthmatic children showed a poor level of physical domain compared to non-asthmatic; however, the daily living of asthmatic children is negatively affected by asthma symptoms and dependency on medication. Recurrent symptoms of asthma that need lifelong medication truly have an impact on children's quality of life⁽¹³⁾. This effect

was revealed in their dissatisfaction with ability to play, sleeping pattern, and daily activities. Several studies have confirmed that the effects of asthma on quality of life, as reported by El-Fetouh et al (2009) who found that 73.0% children from North Africa were considered to be handicapped in their everyday activities always or most of the time because of asthma.⁽¹⁰⁾ In addition, Jordanian as well as Taiwanese asthmatic children reported decreased exercise endurance and restrictions in relation to running and playing with friends.^(23,24) Furthermore, Gent *et al* (2007) reported that scores of quality of life in children with a diagnosed asthma was lower than in children with undiagnosed asthma for all domains.⁽²⁵⁾

The psychosocial and environmental domains did not greatly differ in asthmatic children from non-asthmatic children included in this study. This could

be interpreted on the highlight of the phenomena of the children belonging to lower socioeconomic class experience more life stressors⁽²⁶⁾. However; nearly half of the encountered study participants belonged to the low middle class and around one quarters are belonging to the low social class in asthmatic and non-asthmatic children. Furthermore, a positive correlation was found between the socioeconomic class of asthmatic children and their scores of the environmental domain.

The grade of asthma was negatively correlated with the scores of the three quality of life domains, which is in agreement with Chapman (2005) who reported that quality of life is roughly affected by the severity of

asthma.⁽²⁷⁾

Conclusion and recommendations:

In conclusion, suffering from bronchial asthma negatively affects the children's quality of life, especially the components of physical domain namely sleeping pattern, as well as limited daily activities due to suffering from pain and dependency on treatment. It is recommended that asthmatic children need to be provided with information regarding healthy behaviors and measures to reduce restrictions on daily activities. In addition, further researches are required to explore the quality of life among asthmatic children in relation to the perception of their caregivers and health care providers.

Table 1: Distribution of studied children according to their Socio-demographic characteristics

Items	Non-asthmatics children N= 196		Asthmatics children N= 196		X ²	P
	No	%	No	%		
Age						
Preschool (3 -)	75	36.3	90	45.9	2.3	0.14
School (6-12)	121	61.7	106	54.1		
Gender						
Male	125	63.7	112	57.1	1.53	0.128
Female	71	36.2	83	42.3		
Residency area						
Urban	150	76.5	145	73.6	1.29	0.255
Rural	41	20.9	52	26.5		
Socio-economic level						
High middle social class	49	25	69	35.2	5.2	0.072
Low middle social class	93	47.4	85	43.4		
Low social class	54	27.5	42	21.4		

Table 2: Distribution of asthmatic children according to the severity of asthma

Severity of asthma	Number	%
Mild intermittent	125	63.8
Mild persistent	37	18.9
Moderate persistent	21	10.7
Severe persistent	13	6.6

Table 3: Distribution of studied children according to their physical and psychosocial quality of life

Items	Non-asthmatics children N= 196					Asthmatics children N= 196					X ²	P
	Not at all	A little	A moderate amount	Very much	An extreme amount	Not at all	A little	A moderate amount	Very much	An extreme amount		
Extent of feeling that physical pain prevents from doing things	156 (79.5%)	26 (13.3%)	7 (3.5%)	7 (3.5%)	0 (0%)	2 (1%)	28 (14.3%)	79 (40.3%)	86 (89.5%)	1 (0.5%)	278	0.00
Extent of need medical treatment to function in daily life	142 (72.4%)	19 (9.6%)	35 (17.8%)	0 (0%)	0 (0%)	11 (5.5%)	26 (13.3%)	39 (19.8%)	114 (58.2%)	6 (3.1%)	233	0.00
Extent of healthy physical environment	4 (2%)	22 (11%)	75 (38.3%)	95 (48.5%)	0 (0%)	7 (3.5%)	51 (26%)	70 (35.9%)	66 (33.6%)	2 (1%)	19.7	0.00
	Very satisfied	Satisfied	Neither satisfied nor dissatisfied	Dissatisfied	Very dissatisfied	Very satisfied	Satisfied	Neither satisfied nor dissatisfied	Dissatisfied	Very dissatisfied		
Satisfaction with sleep	26 (13.3%)	155 (79.1%)	15 (7.6%)	0 (0%)	0 (0%)	4 (2%)	128 (65.3%)	24 (12.2%)	37 (18.8%)	3 (1.5%)	60	0.00
Satisfaction with ability to perform daily living activities	5 (2.6%)	176 (89.7%)	4 (2%)	4 (2%)	7 (3.5%)	0 (0%)	152 (77.5%)	33 (16.8%)	9 (4.5%)	2 (1%)	34	0.00
Satisfaction with food choice	7 (3.5%)	163 (83.2%)	15 (7.6%)	11 (5.5%)	0 (0%)	8 (4.1%)	121 (61.7%)	23 (11.7%)	33 (16.8%)	11 (5.5%)	29	0.00
Satisfaction with ability of playing	19 (9.6%)	159 (81.1%)	18 (9.2%)	0 (0%)	0 (0%)	13 (6.6%)	124 (63.3%)	53 (27%)	5 (2.6%)	1 (0.5%)	28.7	0.00

Table 4: Quality of life difference between asthmatic and non-asthmatic children

QOL domains	Asthmatic N= 196		Non- asthmatic N= 196		Odds ratio (CI 95%)	P
	N	%	N	%		
Physical domain						
Good	162	82.6	189	96.4	0.18 (0.076- 0.41)	0.0001*
Poor	34	17.3	7	3.5		
Psychosocial domain						
Good	164	83.6	174	88.7	0.64 (0.36- 1.2)	0.14
Poor	32	16.3	22	13.0		
Environmental domain						
Good	182	92.8	170	86.7	0.93 (0.53- 1.63)	0.7
Poor	30	15.3	26	13.3		

* Significant

Table 5: Correlation of level of quality of life with socio-economic class and degree of asthma among asthmatic children

Quality of life domains	Socio-economic class		Severity of Asthma	
	r	P	r	P
Physical domain	0.057	0.204	-0.33	0.000*
Psychosocial domain	0.066	0.195	-0.16	0.025*
Environmental domain	0.23	0.000*	-0.157	0.028*

* Significant

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