ORIGINAL ARTICLE

Assessment of Quality of life of Asthmatic Children Attending the Outpatient Clinic in Zagazig University Hospital (Quality of life of Asthmatic Children)

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ABSTRACT

Background: Bronchial asthma is considered one of the common chronic disorders in children. Asthma has a great impact on the quality of life of the affected children at many areas (physical, emotional, social and educational). This study aimed to assess the quality of life of asthmatic children and risk factors affecting it to improve the quality of life of asthmatic children and their families.

Methodology: A cross sectional study was conducted in Zagazig University Hospitals. A total of 176 asthmatic children were assessed by PedsQL questionnaire version 4.0. The collected data were analyzed by SPSS program version 20 with considering statistical significance when P value<0.05.

Results: The mean age of asthmatic children was 9.57±1.62 and the higher percentage of them was male. The majority of asthmatic children had family history of allergic sensitization (85.2%). Asthmatic children had low score of quality of life on physical, emotional, social and educational aspects. There was highly statistical significant association between low PedsQL and older age > 9.5 years old and female sex. Also, there was statistically significant association between low PedsQL and residence, father's education and allergic sensitization where urban residence, high education and past exposure were more associated with lower quality of life.

Conclusion: It can be concluded that bronchial asthma had adverse effects on the life of the children suffering from it in physical, emotional, social and educational aspects. Also older age, female sex, positive family history and allergic sensitization were associated with lower quality of life scores.

Keywords: Quality of life / Asthma/ children.

INTRODUCTION

Bronchial asthma is a chronic disorder that can affect persons of all age groups. Many factors are claimed to cause asthma. Bronchial asthma usually results from interaction between genetic and environmental factors. The main pathology in bronchial asthma is chronic inflammation reactions in the air ways. Over the past decades, bronchial asthma morbidity rates had increased worldwide and the global prevalence ranged from 10 to 15% [1].

Early childhood asthmatics children usually have poor quality of life (QOL)

compared to those who are non-asthmatic. Multiple factors as hospitalizations due to acute attacks, food restrictions, in addition to disturbed sleep and daytime somnolence contribute mainly to the poor state of QOL in these children. Therefore, assessment of QOL of an asthmatic child is very important [2].

Asthma is relatively common in Egypt and probably under diagnosed and under treated, particularly among children from poor families. In Egypt, it was reported that the prevalence of asthma among school children in the Nile delta region was nearly 7.7 %. [3].

Asthma has a great effect on the quality of life at different aspects as physical, emotional, social and educational aspects. Therefore, appropriate asthma management may improve the quality of life of these patients and their families, as well as on public health outcomes [4].

The current study was conducted at the Outpatient clinic in Zagazig University Hospital to assess the QOL of asthmatic children and risk factors affecting it to improve the quality of life of asthmatic children and their families.

METHODOLOGY

The current study was a cross sectional study that was conducted in pediatric outpatient clinics at Zagazig University Hospitals from July 2018 to June 2019. The study included a total of 176 asthmatic children aged (6-12) years old. Any co-morbid chronic diseases such as (hypertension, congenital heart diseases, handicapping…etc.) were excluded from the study.

The data were collected through interviewing the caregivers of asthmatic children and filling the study questionnaires was done. A structured questionnaire included:

a) Socio-demographic characteristics of the studied children such as age, sex and residence; also socio-economic data of parents (including: educational level, occupation, income and crowding index) [5].

b) Some associated risk factors for asthma: family history of asthma, presence of other allergies, passive smoking, and nearby source of pollution e.g. factory, workshop.

c) Modified questionnaire of PedsQL 4.0questionnaire:

The Pediatric Quality of Life Inventory (PedsQL) version 4.0 is a modular instrument designed to measure health related quality of life (HRQOL) in children [6].

The 23-item PedsQL™ 4.0 Generic Core Scales encompass: physical functioning (8 items), emotional functioning (5 items), social functioning (5 items), and school functioning (5 items)

The questionnaire determines the impact of asthma on the quality of life of children.

Physical functioning: It is measured by 8 questions. These questions ask about walking, running, participating in sports activity or exercise, lifting something heavy, taking bath, having hurts and the energy level.

Emotional functioning: It is measured by 5 questions about feeling afraid or scared, feeling depressed and sad, feeling angry, trouble sleeping and worrying about what will happen.

Social functioning: It is measured by 5 questions about getting along with other children, other children not wanting to be his or her friend, getting teased by other children, not able to do things that children in the same age do and keeping up with other children.

School functioning: It is measured by 5 questions about paying attention in class, forgetting things, keeping up with school

work, missing school because of not feeling well and missing school to go to the doctor or hospital.

Administrative and Ethical Design

The study protocol was approved from the Ethical Committee at Faculty of Medicine Zagazig University and Institutional Review Board (IRB).

An Official permission was obtained from the Family Medicine department at Faculty of Medicine Zagazig University.

An official written administrative permission letter was obtained from Zagazig hospital manager, to the pediatric department in the same university. The title and objectives of the study were explained to them to ensure their cooperation.

A written consent was also obtained from all participants and their parents. They were informed about the nature of the study and confidentiality of information was assured.

The study has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Operational Design
Pilot study:

Before starting to collect the final data, a pilot study was conducted on 10 % of the sample size to test the feasibility of the study, assess any difficulty as well as assessing the clarity of the tools and to estimate the time needed to fill each questionnaire.

Field work:

All participants included in this study were interviewed and the questionnaire sheets were filled from their caregivers. It took about 15-20 minutes for each participant and all ethical considerations were taken throughout the whole work.

Statistical Design
Scoring system:
Scoring of Social class:

Social class was classified according to modified El-Gilany et al., 2012 [5]. The total score equals 18. Subjects were classified into three social classes: low < 50% of total score (<9), middle 50-75% of total score (9-13.5), and high > 75% of total score (>13.5).

Scoring system of PedsQL:

The instructions ask how much of a problem each item has been during the past one month. A five point response scale is utilized (4= never a problem, 3= almost never a problem, 2= sometimes a problem, 1= often a problem, 0= almost always a problem) according to Varni et al., 2004 [6]. The total score equals 92. Subjects were classified into two categories: maximum and minimal impairment as follows: maximum impairment: $\leq$ median of total score ($\leq$ 53), minimal impairment: > median of total score (> 53).

Data analysis:

Data obtained from the present study were tabulated, summarized and analyzed using SPSS versions 20. Continuous data were expressed in the form of mean $\pm$ SD while categorical data were expressed in the form of frequency and percentage. Comparison of qualitative data was performed utilizing chi square or fisher test when appropriate. P value less than 0.05 was considered statistically significant.

RESULTS

The mean age of asthmatic children was 9.57$\pm$1.62 and the higher percentage of them was male living in rural areas. The majority of father's education was secondary education and the majority was workers. They had enough income and crowding index <1 person/room. [Table 1]

The majority of asthmatic children had similar condition in family history of allergic sensitization, no history of passive smoking and history of nearby air pollution exposure (85.2%, 79%, 59.1%, and 54%) respectively.

When assessing the physical functioning domain of PedsQL among the asthmatic children, it was noticed that a higher proportion of asthmatic children had sometimes problem with (walking, lifting heavy, doing chores, hurts), often with (running, low energy), almost never with exercise, and never with bath. [Table 2]

Regarding the emotional functioning domain, the higher proportion of asthmatic children had almost always feeling afraid, sometimes feeling sad & trouble sleeping, almost never feeling angry, and often worrying about what will happen. [Table 3]

Most of asthmatic children had almost never problem with getting along with other children, sometimes with other kids not wanting & getting teased by other children, often with not able to do things other children can do, and almost always with keeping up if playing. [Table 4]

Regarding the School achievement, the higher proportion of asthmatic children had sometimes problem with paying attention in class & missing school because of not feeling well, almost never with forgetting things & keeping up with schoolwork, and often with missing school to go to the doctor or hospital. [Table 5]

When comparing socio demographic factors and total score of PedsQL among the asthmatic children, there was highly statistical significance association between low PedsQL and age, sex, father's occupation, family income, and crowding index where older age > 9.5 years old, female sex, professional work, enough income, and 1-<2 /room were more associated with lower quality of life score. Also, there was statistically significancant association between low PedsQL ≤ median and residence & father's education where urban & high educations were more associated with lower QoL. [Table 6]

Relation between risk factors of asthma and total score of PedsQL, there was highly statistical significance association between PedsQL ≤ median (maximum impairment) and allergic sensitization where past exposure was more associated with lower quality. [Table 7]

Table (1): Socio demographic characteristics of the asthmatic children (n=176).

Variables	Value	
Age (years): Mean± SD (minimum- maximum)	9.57±1.62 (6.5-12)	
	No	**%**
Sex		
Female	81	46
Male	95	54
Residence		
Rural	117	66.5
Urban	59	33.5
Father's education		
Illiterate	39	22.2
Read and write-Primary education	31	17.6
Secondary education	79	44.9
High education	27	15.3
Father's occupation		

Variables	Value	
Not working	24	13.6
Farmer	46	26.1
Worker	48	27.3
Employee	47	26.7
Professional	11	6.3
Family income:		
Not enough	44	25
Enough	108	61.4
Enough and more	24	13.6
Crowding index:		
>3 persons /room	20	11.4
2-3 persons /room	24	13.6
1-<2 persons/room	11	6.3
<1 person/room	121	68.8

Table (2): Physical functioning domain of PedsQL among the asthmatic children (n=176).

Variables	No	%
Walking more than one block		
Almost Always	0.0	0.0
Often	0.0	0.0
Some-times	104	59.1
Almost Never	22	12.5
Never	50	28.4
Running		
Almost Always	25	14.2
Often	61	34.7
Some-times	45	25.6
Almost Never	39	22.2
Never	6	3.4
Participating in sports activity or exercise		
Almost Always	25	14.2
Often	21	11.9
Some-times	47	26.7
Almost Never	77	43.8
Never	6	3.4
Lifting something heavy		
Almost Always	0.0	0.0
Often	0.0	0.0
Some-times	86	48.9
Almost Never	35	19.9
Never	55	31.3
Taking a bath or shower by him or herself		
Almost Always	0.0	0.0
Often	0.0	0.0

Variables	No	%
Some-times	51	29
Almost Never	41	23.3
Never	84	47.7
Doing chores around the house		
Almost Always	0.0	0.0
Often	36	20.5
Some-times	73	41.5
Almost Never	47	26.7
Never	20	11.4
Having hurts or aches		
Almost Always	51	29
Often	25	14.2
Some-times	70	39.8
Almost Never	20	11.4
Never	10	5.7
Low energy level		
Almost Always	0.0	0.0
Often	40	22.7
Some-times	37	21
Almost Never	54	30.7
Never	45	25.6

Table (3): Emotional functioning domain of PedsQL among the asthmatic children (n=176).

Variables	No	%
Feeling afraid or scared		
Almost Always	52	29.5
Often	34	19.3
Some-times	35	19.9
Almost Never	22	12.5
Never	33	18.8
Feeling sad or blue		
Almost Always	41	23.3
Often	0.0	0.0
Some-times	86	48.9
Almost Never	20	11.4
Never	29	16.5
Feeling angry		
Almost Always	0.0	0.0
Often	10	5.7
Some-times	59	33.5
Almost Never	78	44.3
Never	29	16.5
Trouble sleeping		
Almost Always	0.0	0.0

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Variables	No	%
Often	17	9.7
Some-times	90	51.1
Almost Never	45	25.6
Never	24	13.6
Worrying about what will happen to him or her		
Almost Always	40	22.7
Often	64	36.4
Some-times	62	35.2
Almost Never	0.0	0.0
Never	10	5.7

Table (4): Social functioning domain of PedsQL among the asthmatic children (n=176).

Variables	No	%
Getting along with other children		
Almost Always	0.0	0.0
Often	11	6.3
Some-times	64	36.4
Almost Never	68	38.6
Never	33	18.8
Other kids not wanting to be his or her friend		
Almost Always	0.0	0.0
Often	0.0	0.0
Some-times	91	51.7
Almost Never	35	19.9
Never	50	28.4
Getting teased by other children		
Almost Always	0.0	0.0
Often	30	17
Some-times	60	34.1
Almost Never	53	30.1
Never	33	18.8
Not able to do things that other children his or her age can do		
Almost Always	0.0	0.0
Often	78	44.3
Some-times	61	34.7
Almost Never	37	21
Never	0.0	0.0
Keeping up when playing with other children		
Almost Always	75	42.6
Often	17	9.7
Some-times	67	38.1
Almost Never	17	9.7
Never	0.0	0.0

Table (5): School functioning domain of PedsQL among the asthmatic children (n=176).

Variables	No	%
Paying attention in class		
Almost Always	0.0	0.0
Often	0.0	0.0
Some-times	130	73.9
Almost Never	40	22.7
Never	6	3.4
Forgetting things		
Almost Always	0.0	0.0
Often	15	8.5
Some-times	42	23.9
Almost Never	101	57.4
Never	18	10.2
Keeping up with schoolwork		
Almost Always	0.0	0.0
Often	36	20.5
Some-times	42	23.9
Almost Never	98	55.7
Never	0.0	0.0
Missing school because of not feeling well		
Almost Always	15	8.5
Often	61	34.7
Some-times	76	43.2
Almost Never	24	13.6
Never	0.0	0.0
Missing school to go to the doctor or hospital		
Almost Always	29	16.5
Often	69	39.2
Some-times	68	38.6
Almost Never	10	5.7
Never	0.0	0.0

Table (6): Relation between socio demographic factors and total score of PedsQL among the asthmatic children (n=176).

Variables		PedsQL≤ median(n=111)		PedsQL> median(n=65)		X^2	P value
		No	%	No	%		
Age (years):							
≤ 9.5 (n=92)		45	48.9	47	51.1	16.58	**<0.001**
> 9.5 (n=84)		66	78.6	18	21.4		**
Sex							
Female (n=81)		65	80.2	16	19.8	19.01	**<0.001**
Male (n=95)		46	48.4	49	51.6		**
Residence							

Variables	PedsQL≤ median(n=111)		PedsQL> median(n=65)		X²	P value
	No	%	No	%		
Rural (n=117)	64	54.7	53	45.3	10.49	**0.001***
Urban (n=59)	47	79.7	12	20.3		
Father's education						
Illiterate(n=39)	29	74.4	10	25.6	14.77	**0.002***
Read& write/Primary (n=31)	11	35.5	20	64.5		
Secondary (n=79)						
High education(n=27)	50	63.3	29	36.7		
	21	77.8	6	22.2		
Father's occupation						
Not working(n=24)	14	58.3	10	41.7	30.55	**<0.001 ****
Farmer(n=46)	15	32.6	31	67.4		
Worker(n=48)	36	75	12	25		
Employee (n=47)	35	74.5	12	25.5		
Professional(n=11)	11	100	0.0	0.0		
Family income:						
Not enough(n=44)	14	31.8	30	28.2	33.45	**<0.001 ****
Enough (n=108)	73	67.6	35	32.4		
Enough & more(n=24)	24	100	0.0	0.0		
Crowding index:						
>3 /room(n=20)	0.0	0.0	20	100	44.16	**<0.001 ****
2-3 /room(n=24)	14	58.3	10	41.7		
1-<2 /room(n=11)	11	100	0.0	0.0		
<1 /room(n=121)	86	71.1	35	28.9		

Table (7): Relation between risk factors of asthma and total score of PedsQL among the asthmatic children (n=176).

Variables	PedsQL≤ median(n=33)		PedsQL> median(n=33)		X²	P value
	No	%	No	%		
Similar condition in family:						
Yes (n=150)						
No (n=26)	96	64	54	36	0.379	0.538
	15	57.7	11	42.3		
Allergic sensitization:						
Yes (n=139)	111	79.9	28	20.1	80	**<0.001 ****
No (n=37)	0.0	0.0	37	100		
Passive smoking:						
Yes (n=72)	39	54.2	33	45.8	4.15	**0.042***
No (n=104)	72	69.2	32	30.8		

Variables	PedsQL≤ median(n=33)		PedsQL> median(n=33)		X^2	P value
	No	%	No	%		
Nearby source of air pollution:						
Yes (n=95)	62	65.3	33	34.7	0.427	0.513
No (n=81)	49	60.5	32	39.5		

DISCUSSION

A total of 176 asthmatic children were included in the current study with their mean age was 9.57±1.62 and (54%) of them were males and (66.5%) had rural residence. The majority of father's education was secondary education (44.9%) and the majority was workers (27.3%).

In agreement with an Egyptian study conducted by Shaaban et al. [7] which reported that asthma was common in boys than girls with no significant difference.

On the other hand, Wigoeno et al. [8] reported that males had higher risk of asthma during childhood than females, but become equal during puberty. He explained that is caused by hormonal difference between two genders.

Regarding the residence of cases they were mostly in the rural areas. This could be explained by the rural environment has a rich mixture of allergens.

This was matched with the study of Shaaban et al. [7] that was done in Assuit, but not consistent with the study done by Zedan et al. [3] in Nile Delta region which found no great difference between the childhood asthma in urban and rural areas.

Regarding risk factors, the majority of asthmatic children had similar condition in family, history of allergic sensitization, no history of passive smoking, and history of nearby air pollution exposure with percent (85.2%, 79%, 59.1%, and 54%) respectively. The previous results were supported by Shaaban et al. [7], Zedan et al. [3] and Haby et al. [9] who stated that positive family history was strongly associated with occurrence of childhood asthma (OR= 4.2, 4.78, 2.05) respectively.

On assessing the physical functioning domain of PedsQL, it was noticed that a higher proportion of asthmatic children had sometimes problem with (walking more than one block, lifting something heavy, doing chores around the house, having hurts or aches) (59.1%, 48.9%, 41.5%, 39.8%), often with (running, low energy level) (34.7%, 30.7%), almost never with participating in sports activity or exercise (43.8%). This can be explained that asthmatic children are less physically active, fearing of inducing an episode of asthma & they are concerned about managing their symptoms.

These findings were in the same attitude of the study performed by Varni et al. [10] in United States of America (USA), Trzcieniecka-Green et al. [11], and Reichenberg and Broberg, [12] which reported significantly lower physical score among asthmatic children in comparison to healthy children.

Regarding the emotional functioning domain of PedsQL, the higher proportion of asthmatic children had almost always feeling afraid or scared (29.5%), sometimes feeling sad or blue (48.9%) & trouble sleeping (51.1%), almost never feeling angry (44.3%), and often worrying about what will happen to him or her (36.4%).

The results of Gandhi et al. [13] and Zandieh et al. [14] reported also significantly lower emotional score among asthmatic children.

However, Ayuk et al. [15] reported that asthmatic children had lower emotional functioning score than normal children but without significance difference. This could be supported by the fact that such economically advanced countries may benefit from social services that provide psychological support to these patients.

As regard the social functioning domain of PedsQL, most of asthmatic children had almost never problem with getting along with other children (38.6%), sometimes with other kids not wanting to be his or her friend (51.7%) & getting teased by other children (34.1%), often with not able to do things other children his or her age can do (44.3%), and almost always with keeping up when playing with other children (42.6%).

Similarly, Fuhlbrigge et al. [16] who reported that asthma has potential interference with social life. Varni et al. [6] also had low scores in the physical, emotional and educational domains, but relatively better scores in social domain.

Regarding the school functioning domain of PedsQL, the higher proportion of asthmatic children had sometimes problem with paying attention in class (73.9%) & missing school because of not feeling well (43.2%), almost never with forgetting things (57.4%) & keeping up with schoolwork (55.7%), and often with missing school to go to the doctor or hospital (39.2%).

These findings may be due to repeated school absenteeism either due to physical or psychological problems. Also, poor asthma control may cause impaired concentration, poor memory and distractibility problems which have bad impact on school performance.

In consistent with El-Saady et al. [17] and Varni et al. [10] who reported significantly lower educational score among asthmatic children in comparison to healthy children.

The total score of PedsQL among the asthmatic children showed that about two third (63%) of the asthmatic children had total score of PedsQL ≤ median that mean maximum impairment of the QOL.

When comparing socio demographic factors and total score of PedsQL, there was highly statistically significance association between low PedsQL ≤ median and age, sex, father's occupation, family income, and crowding index where older age > 9.5 years old, female sex, professional work, enough income, and one to less than two person /room were more associated with lower QOL score. Also, there was statistically significance association between low PedsQL ≤ median and residence & father's education where urban residence & high education were more associated with lower QOL.

In agreement with Ayuk et al. [15] who demonstrated a decline in QOL scores with increasing age. Also, the studies done by El-Saady et al. [17] and Ayuk et al. [15] found that female gender was statistically significant associated with poorer QOL. They explained by boys have higher scores in self-esteem & self-worth.

On the other hand, the studies carried out by Nogueira et al., [18] and Zandieh et al. [14] found that QOL was more impaired in males than females.

On comparing between social class and total score of PedsQL among the asthmatic children, there was highly statistical significance association (P<0.001**) between PedsQL ≤ median and social class where high social class was more associated. While, the study of El-Saady et al. [17] in which they found that there was no statistically significant effect of the socioeconomic level on the QOL scores.

Relation between risk factors of asthma and total score of PedsQL, there was

highly statistical significance association between past exposure of allergic sensitization and lower quality.

The study of Shaaban et al. [7] concluded that the presence of food allergy, allergic rhinitis, allergic conjunctivitis and eczema were risk factors for asthma. Also, in agreement with Taminskiene et al. [1] who found that the majority (60.9%) of children with asthma were diagnosed with other allergies.

Unlike most of the previous studies [14,17,19], in the current study passive smoking had no statistically significant effect on the occurrence of asthma. This means that smoking exposure was not found to have impact on occurrence of asthma. This can be justified on the background of parents' sense of responsibility towards their asthmatic children, who were keen not to smoke in front of their asthmatic children.

LIMITATIONS

This study had some limitations which included relatively small sample size and the data couldn't be generalized as the study design institutional based and not community based.

CONCLUSION

It can be concluded that bronchial asthma had adverse effects on the life of the children suffering from it in physical, emotional, social and educational aspects. Also older age, female sex, positive family history and allergic sensitization were associated with lower quality of life scores.

RECOMMENDATIONS

Continuous medical follow up of the asthmatic children is recommended to evaluate their condition and allow them to participate in the suitable activities. Counseling sessions for these children and their families are recommended to empower them and help them to overcome difficulties either social or educational. Encouraging the medical staff to provide knowledge to these children and their families and apply

the holistic approach. More studies are needed with larger samples to verify the results of the study.

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