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Quality of Life of Children with Asthma

Noraini H., Javilah M., Nosliza A.R. & Raihana R.
Faculty of Health Science, Universiti Teknologi Mara (UiTM),
Puncak Alam Campus, Selangor

ABSTRACT

Asthma is a serious global health problem that causes limitations on child's quality of life. The aims of this study were to identify the quality of life of asthmatic children and the relationship between QOL with age and gender. This cross-sectional study was conducted at outpatient paediatric clinics of three selected hospitals in Selangor area. The hospitals include Selayang Hospital, Sungai Buloh Hospital and HTAR hospital. QOL data were collected using the original Malay version of the PAQLQ and was answered by 106 subjects aged 7 to 12 years old. The relationship between QOL and two groups of gender, and the relationship between age and QOL in this study were compared by using chi-square test. Meanwhile, total mean score for PAQLQ result is 4.37 (moderately impairment of QOL). The total mean scores of domain symptoms, activities and emotions of PAQLQ were 4.20, 4.20 and 4.88, respectively. Nonetheless, no significant association was reported between gender and degree of impairment in QOL of asthmatic children ($p = 0.221$). Furthermore, there was no significance different between age of the asthmatic children and QOL in this study ($p = 0.681$). The results of the study are important to improve the management of asthmatic children. For the next research, the researcher may be adding duration of asthma experienced by each sample as it may strongly affect the quality of life of asthmatic children.

Keywords: Quality of life, Asthma, Pediatric, Quality of life impairment

INTRODUCTION

Asthma is the most common chronic disease among children and it currently affects 235 million people (WHO, 2011), while the prevalence of clinical asthma in Malaysia is 4.8% (Masoli *et al*., 2004). Paediatric asthma accounts for a large proportion of childhood hospitalizations, healthcare visits, absenteeism from school and missed work days by parents (Giampaolo *et al*., 2009). In addition, the impact of asthma and their treatment can adversely affect the QOL of the child as a result of hospital appointments, restricted activities and general worry (Eiser & Jenney, 2007). Although the concern of asthma patient is related to the treatment of asthma attacks, severity of asthma and its prevention, the prognosis of asthma is improved with the improvement of medication. Therefore, the main concern now is to allow asthmatic patients to lead a better life and improve their Quality of Life (QOL) (La Scala *et al.,* 2005). The assessment of QOL among children is still challenging but the QOL values are increasingly recognized by both clinicians and researchers (Eiser & Jenney, 2007). The aims of this study are to investigate quality of life of asthmatic children and to determine the relationship between gender and age of asthmatic children with their quality of life. The outcome of this study can be useful in promoting a better understanding on asthma problem among children by doctors, nurses and other health practitioners, while effective intervention can be designed to improve healthy and mentality fit lifestyle among children.

METHOD

Study Design

This study used descriptive approach and this is a cross sectional study. This study employed descriptive study design to describe a group of individuals on a set of variables and to document their characteristics using questionnaires. In addition, quantitative research is used to measure the outcomes by using numerical data under standardized condition. A total of 106 participants aged between 7 to 12 years old were sampled (58 males, 48 females). This study used a convenience sampling technique in which the most accessible patients were chosen as the subject and the asthmatic patients undergoing regular checkups at outpatient clinic between January 2012 and April 2012 were chosen. The inclusion criteria for the subject includes patient who were patients diagnosed with asthma, parents or

guardians of the sample allowed their children to take part and the subjects must be able to speak either Malay or English, or both. The subjects were excluded if they have other chronic illness that might impair on their QOL.

Instrument

The original Malay version of the Paediatric Asthma Quality of Life Questionnaire (PAQLQ) from Juniper (Juniper, 2001) was used as the written questionnaire to conduct this research. PAQLQ comprises of 23 questions that were divided into three domains or categories. The domain activities include five questions comprising of play, sports and other everyday activities of the children. The domain symptoms consist of ten questions that include cough, wheezing, tightness of chest and tiredness. For emotional domain, it consists of eight questions that include reactions such as being frightened, frustrated, feeling different, irritable and worried. For physical activities, three of the five activity items were individualized. The patients have to select three activities from a variety of activities that are limited because of asthma (or to add his/her own activities). PAQLQ is answered based on 7-point Likert scale ranging from 1 to 7. The scores were calculate as described in the original publication (Juniper *et al*., 1996). The overall PAQLQ score is the mean of the responses to each of 23 questions. The scores on all questions were summed up and divided by 23, giving the overall score. A child's score on the questions belonging to each domain were summed and divided by the number of questions of the domain. The result's overall score was found to be between 1 and 7. The best score is 7, which means the child has no impairments due to asthma. The original interpretation of the questionnaire uses 1 to 7 values (1 = severe impairment, 4 = moderate impairment and 7 = No impairment). For the intermediate value, the researchers categorized the results into three degree of impairment. 1.00 to 2.44 are categorized into severe impairment, 2.45 to 5.44 are categorized into moderate, while 5.45 to 7 indicate normal result. Before conducting the study, ethical approval was retrieved from the Research Ethical Committee in UiTM Puncak Alam, National Medical Research Register (NMRR), the hospital's director and the head of department of each Paediatric Clinic of each hospital. All the ethical approval was approved by all the departments and institutions mentioned.

DATA ANALYSIS

All data collected were processed and analysed using the computer programme, i.e. Statistical Package for the Social Sciences version 18.0 (SPSS 18.0 for Window). In testing the hypothesis of the three domains and overall the scores of Paediatric Asthma Quality of Life Questionnaire (PAQLQ), Chi square test was used to determine the relationship between QOL and two groups of gender, as well as to determine the relationship between age and QOL. Results for the categorical variables were presented as the frequency and its percentage. The results were expressed as a mean score per item for each three domains and the overall scores, ranging from 1 (indicating maximum impairment) to 7 (no impairment at all). However, numerical variable results were presented as the mean ± SD. Significance level was set at $\alpha = 0.05$.

RESULTS

Data from 106 eligible respondents were analyzed. As shown in Table 1, younger children represent the participants aged 7 to 9 year old and older children represented the participants from 10 to 12 year old. The percentage of younger children was 45% (29 males and 19 females) and the percentage of older children was 55% (29 males and 29 females).

Table 1. Demographic characteristic.

Characteristic	N[1] (%)
Gender	
Male	58 (54.7)
Female	48 (45.3)
Age	
Age in years, Mean±SD[2]	9.76 (1.67)
Younger children	48 (45)
Older children	58 (55)

Table 2 shows the mean of overall QOL and also the mean for each domain (activity, symptoms and emotion). For this research, the mean (SD) for overall QOL of asthmatic children is 4.37 (1.221), ranging from 2.22 to 6.35 (1 = maximum impairment, 4 = moderate impairment, 7 = no impairment).

Table 2. Distribution of QOL and each domain.

	Mean	SD	Range
QOL[3]	4.37	1.221	2.22 – 6.35
Activity	4.20	1.191	2.00 – 7.00
Symptom	4.20	1.327	1.70 – 6.60
Emotion	4.88	1.602	2.13 – 7.00

Table 3 shows the mean (SD) of QOL, total activity, total symptoms and total emotion in gender and age for this research. The lower value of mean indicates the increase of impairment in QOL of children. In two groups of gender, females (mean = 4.19) reported more impairment in QOL compared to males (mean = 4.52). Meanwhile, the older children (mean = 4.31) reported more impairment in QOL than the younger children (mean = 4.44).

Table 3. The mean (SD) of overall score and each domain in gender and age.

	Gender		Age	
	Male Mean (SD)	Female Mean (SD)	Younger Mean (SD)	Older Mean (SD)
QOL	4.52 (1.274)	4.19 (1.142)	4.44 (1.237)	4.31 (1.217)
Activity	4.31 (1.340)	4.06 (0.976)	3.94 (1.156)	4.41 (1.185)
Symptoms	4.31 (1.340)	4.06 (0.976)	4.13 (1.378)	4.26 (1.292)
Emotion	5.04 (1.643)	4.69 (1.546)	4.69 (1.546)	5.04 (1.643)

Table 4 shows the list of the activities as the most restricted as reported by the respondents. From all the activities listed, the most common restricted activities are running 72.6% (n = 77). Among 77 children (41 males and 36 females) reported restrictions in running.

The normality of this study was tested by using Kolmogorov-Smirnov and it was found that the results were approximately not normally distributed. Therefore, non-parametric statistical analyses were used to determine the relationship between age and gender of asthmatic children with their QOL.

Table 5 shows the relationship between QOL and gender of children with asthma problem. Nonetheless, no significant difference was reported between gender and degree of impairment in QOL of asthmatic children (p = 0.221).

Table 4. Restricted activity reported by the respondents.

Activity	Male N (%)	Female N (%)	Total N (%)
Running	41 (70.7)	36 (75.0)	77 (72.6)
Football	37 (63.8)	5 (10.4)	42 (39.6)
Playing with pets	15 (25.9)	14 (29.2)	29 (27.4)
Walking upstairs	6 (10.3)	13 (27.1)	19 (17.9)
Walking uphill	7 (12.1)	11 (22.9)	18 (17.0)
Playing with friends	8 (13.8)	10 (20.8)	18 (17.0)
Riding a bicycle	10 (17.2)	5 (10.4)	15 (14.2)

Table 5. Comparison of QOL between male and female children with asthma.

Gender	Impaired QOL N (%)	Normal QOL N (%)	X^2 statistic[4] (df)	*p* value
Male	47 (81)	11 (19.0)	1.498 (1)	0.221
Female	43 (89.6)	5 (10.4)		

p = 0.05

Table 6 shows the relationship between QOL and age of children with asthma problem. Based on this result, there is no significant difference between age and degree of impairment in QOL of asthmatic children ($p = 0.681$).

Table 6. Comparison of QOL between younger and older children with asthma.

Gender	Impaired QOL N (%)	Normal QOL N (%)	X^2 statistic[4] (df)	*p* value
Younger	40 (83.3)	8 (16.7)	0.169 (1)	0.681
Older	50 (86.2)	8 (13.8)		

p = 0.05

DISCUSSION

Measuring asthmatic patient's QOL has become an important value in child health (Eiser & Jenney, 2007). There are limited studies on the quality of life for asthmatic children conducted in Malaysia. In Malaysia, asthma was ranked at sixth place for the leading burden of disease (NSPNCD, 2010). In line with the vission for Health and the mission of the Ministry of Health to improve the quality of life among the Malaysian population, this study was done to measure the quality of life of asthmatic children in Malaysia and to offer recommendations for futher research.

In this study, the overall score for PAQLQ is 4.368, indicating a moderate impairment. The findings of this study contradict with those of the previous research which reported the score to be significantly worse (Sawyer *et al*., 2004). A number of previous research by La Scala *et al*. (2005) and Giampaolo *et al*. (2009) found a good QOL among Italian and Brazil paediatric asthma, while other research by Boran *et al*. (2008) demonstrated a mild impairment of the overall PAQLQ among Turkish asthmatic children. The moderate impairment of paediatric QOL results in this study might probably be due to the inadequate knowledge of asthma received by parents. In fact, parents' limited knowledge of asthma is associated with worse care measures for children with asthma (DeWalt *et al*., 2007), which may result in impairment of paediatric QOL. Other than that, a number of research have shown that there is a lack of sufficient knowledge of asthma among parents in Malaysia and Southeast Asia (Baidibahari & Mat, 2005; Prapphal, Laosunthara, Deerojanawong, & Sritippayawan, 2007). Although physician is the main source of asthma related knowledge the results of other studies have demonstrated the poor level of communication between parents and physician (Baidibahari & Mat, 2005). Parents received knowledge about asthma more from pharmacist rather than physician. Therefore effective communication between parents and physician may increase parent's knowledge about the disease and its management. Thus this is the first step to increase the quality of life among paediatric patient with asthma.

Play and sports are important to children as parts of their daily activities in life. The research demonstrated running as the most common restricted activity among these children. Although running is important in many sports, it is impaired in bronchial obstruction patients, and the fitness level is also lower among asthmatic patients compared to their non-asthmatic peers (Lucas & Platts-Mills, 2005). Even though running can contribute to asthma attack, many studies have shown that regular exercises can help asthmatic children to get involved in physical activities (Basaran *et al*., 2006; Welsh *et al*., 2005). Thus, physical training programme must also be included in the management of asthma in Malaysia to overcome exercise induced asthma problem.

The findings of this study show that older children (mean = 4.31) reported more impairment in QOL compared to younger children (mean = 4.44). The results may be related to lower self management in older children. In order to improve asthmatic children's self management, health education is crucial especially to school age children

(Horner & Fouladi, 2008). Therefore, the Ministry of Health should implement some health education programmes for children in their school. This result also revealed that although the older children are more knowledgeable and assume more responsibility to disease management, their adherence is lower than the younger child patients (Sin *et al*., 2005). In addition, older child patients are more active and may be exposed to the environment that can trigger their asthmatic attack such as weather, food and others. These patients are also more prone to be involved in outdoor activities including those that can induce their asthma. The other reason that can explain why older children have been reported to have more impairment in their quality of life is due to parental perception of the current level of asthma control among their children. It is important to determine parental concerns to ensure a child's health (Gustafsson *et al*., 2006). Parents' degree of responsibility in the medical management of their asthmatic children decreases as the age of the children increases (Orrell-Valente *et al.*, 2008). Meanwhile, poor health control by parents may also contribute to the increase in the frequency of asthma attack due to lower parental concern on child's medical management. Among the two groups of gender, females (mean = 4.19) reported more impairment in QOL compared to males (mean = 4.52). This result finding is in contrast with that of the study by Huang and Yu (2010). Female patients appeared to be more exposed to psychological impairment which impaired their quality of life (Di Marco *et al*., 2006). Considering the fact that there are very limited studies done on this issue, the finding of the current research is considered to be related to psychological effect of the disease.

In this area of study, no difference is reported for the relationship between impairment of the quality of life (QOL) in male and female children with asthma. The result is similar to those of the studies by Boran *et al*. (2008) and Reichenberg and Broberg (2000). This is probably because the management provided for male and female patients in Malaysia is the same. Thus, the outcome of the patients' quality of life may be quite similar as well.

Furthermore, the relationship between QOL and age of children with asthma problem reported no significant difference. The results of this study have indicated a rather minor effect of age on the QOL of asthmatic children. This finding contradicts with the study done in Sweden which shows that there is a significant difference between quality of life and age of asthmatic children (Reichenberg & Broberg, 2000). This is probably because most children, irrespective to gender and age, judged their QOL as being rather good despite their chronic disease. Furthermore, the limited number of children sample used in this study might contribute to this result as well. For future research, increasing the number of sample might give more accurate results.

CONCLUSION

It appears that in this sample, the quality of life of asthmatic children aged 7 to 12 is moderately impaired. This study has demonstrated that the quality of life among male and female children has no significant difference. Moreover, there is no relationship between age and the QOL of asthmatic children in this area of population.

In order to improve the quality of life of this population of children, healthcare providers should extend their treatment approach and apply more behavioural interventions. Screening for emotional or behavioural symptoms in clinical practice could be useful in identifying children who need additional mental health service and more comprehensive treatment. In addition, programmes that related to the improvement of asthmatic children's health status can be planned and given by the government to improve patients' QOL.

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