Validity and Reliability of the Thai Mini Asthma Quality of Life Questionnaire

Sunee Lertsinudom BCP*,
Nutjaree Pratheepawanit Johns PhD*, Suthan Chanthawong GradDiplo*,
Watchara Boonsawat MD, PhD**, Chanee Samosorn MSc***

** Faculty of Pharmaceutical Sciences, Khon Kaen University, Khon Kaen, Thailand*
*** Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*
**** Pharmacy, Srinagarind Hospital, Khon Kaen, Thailand*

Objective: *The present study assessed the validity and reliability of the Thai Mini AQLQ in the Easy Asthma Clinic, Srinagarind Hospital.*
Material and Method: *The present study used a cross sectional design, using an interview method by two trained-interviewers. The Thai Mini AQLQ consists of 15 items categorized into Symptoms, Activities, Emotions, Environment and Overall Scores. Scores range from 0 to 7 with higher scores meaning better quality of life. Cronbach's alpha was used to test for internal consistency reliability. Known group validation regarding asthma control was analyzed by the t-test and multiple regression, adjusting for age, gender and education.*
Results: *Of 168 patients recruited, 113 were controlled and, of these 55 were uncontrolled asthma patients, with an average age 53 $\pm$ 13 years. Patients with controlled asthma reported significantly better scores in all domains compared with uncontrolled asthma: symptoms 6.6 $\pm$ 0.54 vs. 4.7 $\pm$ 1.14, $p < 0.001$; Activity 6.7 $\pm$ 0.57 vs. 5.0 $\pm$ 1.36, $p < 0.001$; emotion 6.4 $\pm$ 0.91 vs. 4.6 $\pm$ 1.67, $p < 0.001$; environment 5.3 $\pm$ 1.10 vs. 4.1 $\pm$ 1.24, $p < 0.001$ and overall scores 6.3 $\pm$ 0.51 vs. 4.6 $\pm$ 0.96, $p < 0.001$. Adjusting for age, gender and education using multiple regression, there was also a significant difference in all domains of Thai MiniAQLQ between the controlled and uncontrolled asthma patients. Internal consistency reliability was within the acceptable range (> 0.7) for all domains, except environment (overall 0.910; symptoms 0.855; activities 0.886; emotions 0.765 and environment 0.616).*
Conclusions: *Thai Mini AQLQ has known to be reliable and valid. Further study on test-retest reliability and responsiveness to change are warranted.*

Keywords: *Quality of life, Asthma, Thai MiniAQLQ, Routine care*

J Med Assoc Thai 2010; 93 (3): 373-7
Full text. e-Journal: *http://www.mat.or.th/journal*

Asthma is a chronic disease with increased prevalence in Thailand and the globalized world[1]. The National Heart, Lung and Blood Institute (NHLBI) of the United States of America (USA) and the World Health Organization (WHO) published a guideline for asthma treatment in 1995, which is known as Global Initiative for Asthma (GINA)[2]. The GINA guidelines have been used in Thailand for many years, but it has been found that asthma control is lower than the level set for the normal standard goal *i.e.*, approximately 14.8 percent of asthma patients with severe asthma being admitted to hospitals during the course of the past year. In addition, 21.7 percent of the asthma patients visited the emergency room in the past year. As a result, more than half of these patients had poor quality of life, being not as capable to perform the activities of daily life as healthy patients. This may be because these patients did not receive proper medical care as suggested in the treatment guideline. Only 6.7 percent of asthma patients in Thailand have taken inhaled corticosteroids and 28 percent of patients received pulmonary function tests[3]. The result of the present

Correspondence to: Lertsinudom S, Pharmacy Practice Division Faculty of Pharmaceutical Sciences, Khon Kaen University, Khon Kaen 40002, Thailand. E-mail: parnpinpun@yahoo.com

study is consistent with those studies carried out in America[4] and Europe[5].

An Easy Asthma Clinic at Srinagarind Hospital, Thailand, is an outpatient clinic aimed to control asthma, as well as improve the quality of life (QOL) of asthmatic patients. Incorporating QOL evaluation into a routine asthma care is the first important step.

Few asthma-specific QOL questionnaires have been translated to the Thai language. These are Asthma Control Questionnaire (ACQ), Pediatric Asthma Quality of Life Questionnaire (PAQLQ), St. George's Respiratory (SGRQ), Asthma Quality of Life Questionnaire (AQLQ) and Mini Asthma Quality of Life Questionnaire (MiniAQLQ). Considering the covered domains, length and psychometric properties, the Mini AQLQ appears to be suitable for use in the clinic. With no empirical data reported on its validity and reliability in such a setting, the purpose of the present study was to assess the validity and reliability of the Thai Mini AQLQ in patients with asthma in an outpatient clinic.

Material and Method

The present study was a cross sectional design. Adult asthma patients were recruited from the Easy Asthma Clinic, Srinagarind Hospital. Patients had given written informed consent prior to participating in the present study. The Thai Mini AQLQ questionnaire consists of 15 items, divided into four categories: symptoms (5 items); activity (4 items); emotion (3 items); and environment (3 items). The overall score is calculated from an average score of all 15 items. Scores range from 0 to 7, with higher scores representing better quality of life. The Thai MiniAQLQ was administered before the physician's consultation using two interviewers specifically trained not to induce bias or interpret the questions. After consultation, the physicians classified each patient into being controlled, partly controlled or uncontrolled asthma based on the GINA guideline. Known group validation regarding asthma control (controlled and uncontrolled) was analyzed by t-test and multiple regressions, adjusting for age, gender and education. Cronbach's alpha was used to test internal consistency reliability. P-value less than 0.05 was used for statistical significance.

Results

There were 200 patients recruited for the present study; 113 controlled, 32 partly controlled and 55 uncontrolled asthmatic patients. Of 168 patients evaluated for the present study, the mean age was 53 $\pm$ 13 years (Table 1). There was no significant difference in age and gender between the controlled and uncontrolled asthma groups. However, there were significant differences in their education levels ($p < 0.001$), career ($p = 0.011$), income per month ($p < 0.001$) and healthcare scheme ($p = 0.041$). The patients in the controlled asthma group had higher education, higher income, mostly civil servants or employees in business firms, and receiving broader coverage of healthcare scheme than those in the uncontrolled group.

In Table 2, patients with controlled asthma reported significantly better scores in all domains compared with uncontrolled asthma: symptoms 6.6 ± 0.54 vs. 4.7 ± 1.14, $p < 0.001$; activity 6.7 ± 0.57 vs. 5.0 ± 1.36, $p < 0.001$; emotion 6.4 ± 0.91 vs. 4.6 ± 1.67, $p < 0.001$; environment 5.3 ± 1.10 vs. 4.1 ± 1.24, $p < 0.001$ and overall scores 6.3 ± 0.51 vs. 4.6 ± 0.96, $p < 0.001$. Adjusting for age, gender and education using multiple regression, there was also a significant difference in all domains of the Thai Mini AQLQ between the controlled and uncontrolled asthma patients ($p < 0.05$): symptoms 1.953, 95% CI 1.678-2.228, $p < 0.001$; activity 1.519, 95% CI 1.206-1.832, $p < 0.001$; emotion 1.676, 95% CI 1.258-2.093, $p < 0.001$; environment 1.257, 95% CI 0.862-1.652, $p < 0.001$ and overall 1.643, 95% CI 1.405-1.880, $p < 0.001$.

The internal consistency reliability was acceptable (Cronbach alpha > 0.7) in most domains (Symptom = 0.855; activity = 0.886; emotion = 0.765 and overall scores = 0.910), except the environment (0.616) (Table 2).

Discussion

The presented questionnaire takes 5 minutes to interview a patient. The results of the present study are consistent with those of Juniper EF[6] in that the Mini AQLQ had high structural validity and could be used to assess quality of life. The result of the present study also agrees with that of Hubert Chen et al[7] who found that the more prevalence of asthma the more difficult it was to control it. In addition, the patients' quality of life will be reduced.

The present study shows that most domains have high reliability, except for environment, which had lower reliability coefficient. Questions in that item were slightly longer than others. However, there was no problem of the patients' understanding of the questions, based on a test using think aloud technique in 10 asthma patients (unpublished data). Low reliability coefficient may reflect cultural different

Table 1. Demographic characteristic of the study patients (n = 168)

	Controlled asthma (n = 113)	Uncontrolled asthma (n = 55)	p-value
Age* (mean ± SD)	53.26 ± 12.30	53.73 ± 14.10	0.254
Gender□ (%)			0.356
Male	41 (36.3)	16 (29.1)	
Female	72 (63.7)	39 (70.9)	
Education□ (%)			<0.001
Secondary school or less	38 (33.6)	37 (67.3)	
Diploma or higher than diploma level	75 (66.4)	18 (32.7)	
Occupation□ (%)			0.011
No job	28 (24.8)	23 (41.8)	
Labor or agriculture	16 (14.2)	12 (21.8)	
Civil servants or business	69 (61.1)	20 (36.4)	
Income per month□ (%)			<0.001
Less than 5,000 baht	28 (24.8)	33 (60.0)	
5,000-30,000 baht	51 (45.1)	14 (25.5)	
> 30,000 baht	34 (30.1)	8 (14.5)	
Healthcare scheme□ (%)			0.041
Universal coverage	13 (11.5)	13 (23.6)	
Others (broader coverage)	100 (88.5)	42 (76.4)	

SD = standard deviation, * Chi-square test, □ t-test

Table 2. Validity and reliability of the Thai mini asthma quality of life questionnaire

Domains	Validity			Reliability
	Controlled asthma (n = 113) (mean ± SD)	Uncontrolled asthma (n = 55) (mean ± SD)	p-value*	Cronbach's alpha
Symptoms	6.6 ± 0.54	4.7 ± 1.14	<0.001[a]	0.855[b]
Activities	6.7 ± 0.57	5.0 ± 1.36	<0.001[a]	0.886[b]
Emotions	6.4 ± 0.91	4.6 ± 1.67	<0.001[a]	0.765[b]
Environments	5.3 ± 1.10	4.1 ± 1.24	<0.001[a]	0.616
Overall	6.3 ± 0.51	4.6 ± 0.96	<0.001[a]	0.910[b]

SD = standard deviation, * t-test

[a] The domain is valid based on known group validation

[b] The domain has internal consistency reliability (Cronbach's alpha > 0.7)

among population. Therefore, reliability of Thai Mini AQLQ is within acceptable range.

Further study should be conducted on test-retest reliability to determine stability of QOL scores over time. Responsiveness of the questionnaire to changes should also be tested in asthma patients who have various degrees of change over time. This will determine whether the questionnaire can detect changes. Both properties will help ensuring its suitability for repeated used in routine asthma care.

Conclusion and Suggestion

Thai MiniAQLQ has known to be reliable and valid. Further study on test-retest reliability and responsiveness to change are warranted.

Acknowledgements

The authors wish to thank Professor Elizabeth Juniper, author of the English version of the questionnaire for assessing quality of life in asthma patients, which was later translated into Thai

MiniAQLQ. The authors also wish to thank Associate Professor Aporanee Chaiyachum, who gave both practical consultation and suggestions. Last but not least, the researchers would like to thank Khon Kaen University for making this process successful.

References

1. National Heart, Lung and Blood Institute/World Health Organization. Global initiative for asthma. Bethesda, MD: NHLBI/WHO; 2007.
2. Global initiative for asthma: global strategy for asthma management and prevention: NHLBI/WHO Workshop report. (NIH publication no. 95-3659). Bethesda, MD: NHLBI; 1995.
3. Boonsawat W, Charoenphan P, Kiatboonsri S, Wongtim S, Viriyachaiyo V, Pothirat C, et al. Survey of asthma control in Thailand. Respirology 2004; 9: 373-8.
4. Adams RJ, Fuhlbrigge A, Guilbert T, Lozano P, Martinez F. Inadequate use of asthma medication in the United States: results of the asthma in America national population survey. J Allergy Clin Immunol 2002; 110: 58-64.
5. Rabe KF, Vermeire PA, Soriano JB, Maier WC. Clinical management of asthma in 1999: the Asthma Insights and Reality in Europe (AIRE) study. Eur Respir J 2000; 16: 802-7.
6. Juniper EF, Guyatt GH, Cox FM, Ferrie PJ, King DR. Development and validation of the Mini Asthma Quality of Life Questionnaire. Eur Respir J 1999; 14: 32-8.
7. Chen H, Gould MK, Blanc PD, Miller DP, Kamath TV, Lee JH, et al. Asthma control, severity, and quality of life: quantifying the effect of uncontrolled disease. J Allergy Clin Immunol 2007; 120: 396-402.

การประเมินความตรง และความเที่ยงของแบบสอบถามสำหรับวัดคุณภาพชีวิตของผู้ป่วยโรคหืด ฉบับย่อที่มีการแปลเป็นภาษาไทย ในคลินิกโรคหืดแบบง่าย ๆ โรงพยาบาลศรีนครินทร์

สุณี เลิศสินอุดม, นุจรี ประทีปะวณิช จอห์นส, สุธาร จันทะวงศ์, วัชรา บุญสวัสดิ์, ฌานี สโมสร

วัตถุประสงค์: *เพื่อประเมินความตรง และความเที่ยงของแบบสอบถาม Thai Mini AQLQ ในคลินิกโรคหืดแบบง่าย ๆ โรงพยาบาลศรีนครินทร์*

วัสดุและวิธีการ: *เป็นการศึกษาแบบตัดขวาง ใช้การสัมภาษณ์ผู้ป่วยก่อนพบแพทย์โดยผู้สัมภาษณ์ที่ได้รับการฝึกฝน 2 คน วิเคราะห์ข้อมูลเปรียบเทียบคะแนนคุณภาพชีวิตในมิติต่าง ๆ ระหว่างกลุ่มผู้ป่วยที่ควบคุมโรคหืดได้ และควบคุมโรคหืดไม่ได้ โดย Thai Mini AQLQ มีข้อคำถาม 15 ข้อ แยกย่อยเป็นด้านอาการ ด้านการจำกัดในกิจกรรม ด้านการแสดงอารมณ์ และด้านสิ่งเร้าในสภาพแวดล้อม คะแนนคุณภาพชีวิตอยู่ในช่วง 0 ถึง 7 โดยคะแนนที่สูงจะบ่งบอกถึงคุณภาพชีวิตที่ดีกว่าค่า Cronbach's alpha เป็นค่าที่บ่งบอกถึงความเที่ยงภายใน ความตรงของแบบสอบถามวิเคราะห์โดยใช้ t-test และใช้การวิเคราะห์การถดถอยพหุคูณโดยปรับค่าตัวแปรอายุ เพศ และการศึกษา*

ผลการศึกษา: *ผู้ป่วยที่ได้รับคัดเลือกเข้าการศึกษา 168 คน เป็นผู้ป่วยที่ควบคุมโรคหืดได้ 113 คน และผู้ป่วยที่ควบคุมโรคหืดไม่ได้ 55 ราย มีอายุเฉลี่ย 53 $\pm$ 13 ปี ผู้ป่วยที่ควบคุมโรคหืดได้มีคุณภาพชีวิตที่ดีกว่าผู้ป่วยที่ควบคุมโรคหืดไม่ได้ในทุกมิติอย่างมีนัยสำคัญทางสถิติ (ด้านอาการ 6.6 $\pm$ 0.54 vs. 4.7 $\pm$ 1.14, $p < 0.001$; ด้านการจำกัดในกิจกรรม 6.7 $\pm$ 0.57 vs. 5.0 $\pm$ 1.36, $p < 0.001$; ด้านการแสดงอารมณ์ 6.4 $\pm$ 0.91 vs. 4.6 $\pm$ 1.67, $p < 0.001$; ด้านสิ่งเร้าในสภาพแวดล้อม 5.3 $\pm$ 1.10 vs. 4.1 $\pm$ 1.24, $p < 0.001$ และรวมทุกด้าน 6.3 $\pm$ 0.51 vs. 4.6 $\pm$ 0.96, $p < 0.001$) และเมื่อปรับตัวแปรอายุ เพศ และการศึกษา พบว่าผู้ป่วยที่ควบคุมโรคหืดได้ มีคะแนนคุณภาพชีวิตสูงกว่าผู้ป่วยที่ควบคุมโรคหืดไม่ได้ในทุกมิติอย่างมีนัยสำคัญทางสถิติ สำหรับความเที่ยงภายในของแบบสอบถามค่า Cronbach's alpha พบว่าอยู่ในช่วงที่ยอมรับทุกมิติยกเว้นด้านสิ่งเร้า ในสภาพแวดล้อม (รวมทุกด้าน 0.910; ด้านอาการ 0.855; ด้านการจำกัดในกิจกรรม 0.886; ด้านการแสดงอารมณ์ 0.765 และด้านสิ่งเร้าในสภาพแวดล้อม 0.616)*

สรุป: *แบบสอบถาม Thai Mini AQLQ มีความตรงและความเที่ยงสำหรับใช้วัดคุณภาพชีวิตของผู้ป่วยโรคหืด และควรมีการศึกษาเพิ่มเติมในส่วนของ test-retest reliability และ responsiveness*