

## ORIGINAL ARTICLE

# Malay Version of Asthma Knowledge Questionnaire: A Validation and Reliability Study

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## ABSTRACT

**Introduction:** The Asthma Knowledge Questionnaire developed by C. Rodriguez Martinez in 2005 was proved to be a valid instrument for asthma knowledge assessment for parents of children with asthma. 17 items were included in the questionnaire including their myths and beliefs, knowledge, and associated aspects. The objective of this study is to analyse the validity and reliability of the Malay version of the questionnaire. **Methods:** Forward-Backward translation method was used by language experts to obtain the Malay version of the questionnaire. The questionnaire was then given to twenty respondents at the Paediatric Institute Hospital Kuala Lumpur to ensure the clarity and relevance of the questionnaire as a pilot study. Subsequently, 60 respondents who fulfilled the inclusion and exclusion criteria were selected to proceed with the reliability test of the Malay version questionnaire. The results were analysed with SPSS version 26.0. The reliability and internal consistency were confirmed by intra-class correlation and Cronbach's alpha coefficient. **Results:** There were 60 respondents to the questionnaire consisting of parents and caretaker who has child with asthma at the Institute of Paediatric Hospital Kuala Lumpur. The mean age of respondents was  $34 \pm 7.5$  year old. 91.7% of the respondents were female. The overall Cronbach's alpha coefficient of the questionnaire was 0.84. **Conclusion:** The Malay version of the Asthma Knowledge Questionnaire has a good degree of validity, reliability and is culturally acceptable equivalent to the original version.

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## INTRODUCTION

WHO (World Health Organization) stated in the key facts (May 2021) that asthma is one of the most common chronic illnesses in children. The healthcare resources and total cost for this disease carry a huge economic burden all over the world. The direct and indirect cost incurred due to asthma varies from country to country. For example, the estimated mean cost per patient per year in America was USD 3,100 (1). In 2008, Singapore spent almost USD 49.3 million on this disease (2). Due to this impact, various measures were taken to optimize asthma care including the strengthening of education and awareness of childhood asthma.

Knowledge and awareness of childhood asthma among

the public especially parents of asthmatic children are crucial to ensure the children receive appropriate asthma treatment and optimum care (2, 3). The Ministry of Health Malaysia and Non-profit Organizations have been actively involved in this strategy including empowering the use of electronic media and education websites for asthma patients. An asthma mortality study done in 2009 highlighted many preventable factors that could be targeted by education (4).

There are limited available validated questionnaires to assess knowledge and awareness of childhood asthma (5,6). The Asthma Knowledge Questionnaire done by Martinez in 2005 has been proven to be a valid instrument for the asthma knowledge assessment of patients and their parents (7). This questionnaire contains 17 items and three main assessment domains were based on myths and beliefs regarding asthma, knowledge about the disease and knowledge of associated aspects of asthma (7). In view of its significant validation value, this questionnaire has been used by many countries and has

been validated in other languages including the Arabic language (8,9,10,11).

There are a number of adult asthma knowledge assessment tools available, however as of today, there is no validated questionnaire available yet specific to childhood asthma in Malaysia. As our native language is Malay, it is very important to obtain a Malay version of the questionnaire to gain a real status of understanding and awareness of the disease. This can help the healthcare department to plan appropriate strategic plan management to improve the disease outcome and effectiveness of asthma education. The objective of this study is to obtain a Malay version of the questionnaire and to test its validity and reliability.

## MATERIALS AND METHODS

This is a prospective observational study done at the Paediatric Institute Kuala Lumpur from January to December 2019. The ethics committee approval was obtained (NMRR -18-3095- 43368) prior to the initiation of this study and informed written consent was obtained from all respondents who agreed to participate. The inclusion criteria for this study were parents or guardians of children diagnosed with asthma admitted to the ward or the attending clinic in the Paediatric Institute Kuala Lumpur. Foreigners and parents with poor understanding of the Malay language were excluded in this study.

The original English questionnaire developed by Martinez has been validated and tested for reliability with Cronbach alpha of 0.76. These 17 questions in the English language were subjected for validation and reliability with permission of the author. This study consists of two phases: a translation phase and a reliability test phase. The translation phase began with the process of translating the questionnaire from the original language (English) into Malay language by two linguistic experts. Next, the face and content validity of the Malay questionnaire was done by a group of experts consisting of three Paediatric Respiratory Specialists, two General Paediatricians and three Respiratory nurses. Two other translators with bilingual experts who were blinded to the original English version then performed the back translation to English. Subsequently, the comparison was made between the original English version questionnaire and the back translation by our expert panel and translator to identify any discrepancies and discussed until a consensus was reached. The resulting Malay version questionnaire was subsequently analyzed by our expert panel to assess the clarity, comprehensiveness and relevance of the questions. Twenty random subjects voluntarily participated in a pilot test to complete the questionnaire and commented on any aspect that was difficult to understand. The estimated time to complete the questionnaire was 10 -15 minutes. The second phase of the study was the assessment of the reliability of the Malay version

questionnaire. The calculated required sample size was 70, based on ratio of at least five cases for each variable (Pallant,2010). In this study, 60 respondents who fulfilled the inclusion criteria answered the Malay version questionnaire to assess the reliability. Stratified random sampling method was used in which the participants were randomly selected equally from ward admission and clinic attendance.

The demographic data collected in this study included household income. Based on the household income and basic amenities survey 2019 from the Department of Statistics Malaysia (12), total family income was categorized into three categories which are B40 (<RM 4850/month), M40 (RM 4851-10,970/month) and T20 (>RM 10,971/month).

To ensure validity and reliability, this Malay version of the questionnaire was assessed through two steps which are the intraclass correlation and Cronbach Alpha score. A score of more than 0.7 is considered significant for Cronbach alpha. The data was analyzed using SPSS version 26 (13). The demographic data of the respondents were analyzed using simple descriptive analysis. A scoring system was applied for each category of the questionnaire and was totaled into a final score for the full questionnaire. The Malay version questionnaire score range was 17-85 with each question holding a score of 1-5.

## RESULTS

There were 60 respondents with a mean age of  $34 \pm 7.5$  year old. About 91.7% of the respondents were female. 43% of the respondents have an education background at the tertiary level and the other 45% were at the secondary school education level. Majority of the respondents were non-asthmatic and only three percent of them were diagnosed with asthma. 58% of the respondents were from B40 and 3.3% were from the T20 category. The remaining respondents fall into the middle-income category which was M40 (Table I).

A reliability analysis was carried out on 17 items of the questionnaire. Cronbach's alpha for each item ranged from 0.81 to 0.84. Overall, the questionnaire achieves the acceptable reliability,  $\alpha = 0.84$  (Table II). Most items result in a decrease in the alpha if deleted. The mean inter-item Correlation was 0.206. The majority of the items have a Corrected Item-Total Correlation range between 0.2 -0.7.

## DISCUSSION

Knowledge is a vital component in the management of childhood asthma (11). Despite various education interventions being done, no direct measurement can be used to assess the success rate of the intervention in

**Table I: Respondent Characteristic**

Variable	No. Of Respondents, %
Age	Mean age 34 Std 7.5
Gender	
Female	55 (91.7)
Male	5 (8.3)
Background	
with asthma disease	2 (3.3)
Without asthma disease	58 (96.7)
Educational level	
Secondary school	27 (45)
College/University	26 (43.3)
Income	
B40	35 (58.3)
M40	16 (26.7)
T20	2 (3.3)

terms of knowledge and understanding of the patients and their caretakers on asthma (14,15,16).

The questionnaire developed by Martínez et al (7) proved valid as an instrument for measuring the level of asthma knowledge. Each item's content was assessed systematically by a number of professional experts on the disease (7,17). The items in the questionnaire explore multiple dimensions of asthma knowledge. This study found three main domains, similar to the original paper and Factor one explores myths and beliefs particularly in the treatment of asthma. Long-established beliefs may influence people and rile negative effects on compliance with asthma treatment (18). Knowing Malaysia is a multiracial country, this factor is the most challenging part to be addressed. The possibility of

**Table II: Reliability analysis**

Items	Corrected item- Total Correlation	Cronbach's Alpha if item Deleted
Q1. Penggunaan ubat inhaler boleh menyebabkan kebergantungan dan ketagihan kepada ubat.	0.209	0.841
Q2. Ubat inhaler boleh mengganggu dan merosakkan jantung.	0.447	0.832
Q3. Penggunaan ubat inhaler dalam jangkamasa Panjang adalah tidak baik untuk kanak-kanak.	0.641	0.821
Q4. Selepas serangan asma dan batuk telah reda, penggunaan ubat inhaler dan ubat-ubatan yang lain boleh diberhentikan.	0.740	0.812
Q5. Kanak-kanak yang menghidap asma hanya perlu menggunakan ubat-ubatan sekiranya mereka mengalami simptom seperti batuk, sakit dada dan bunyi berdehit.	0.679	0.816
Q6. Penggunaan ubat inhaler tanpa menggunakan corong adalah lebih baik supaya ubat-ubatan dapat terus sampai ke paru-paru.	0.864	0.803
Q7. Asma disebabkan oleh keradangan paru-paru.	0.450	0.845
Q8. Ibubapa perlu meminta doctor untuk memberitahu pihak sekolah bahawa kanak-kanak yang menghidap asma tidak boleh menyertai aktiviti fizikal di sekolah.	0.001	0.843
Q9. Kanak-kanak yang menghidap asma tidak boleh menyertai sukan yang memerlukan larian yang berlebihan.	0.658	0.824
Q10. Kanak-kanak yang mendapat serangan yang ringan perlu mendapatkan rawatan di unit kecemasan.	0.023	0.843
Q11. Serangan asma boleh dielakkan jika ubat-ubatan diambil walaupun tiada simptom asma	0.370	0.840
Q12. Demam selsema merupakan pencetus utama serangan asma.	0.679	0.816
Q13. Adalah lebih baik untuk tidak merokok atau tidak membenarkan perokok yang lain merokok berdekatan dengan kanak-kanak yang menghidap asma.	0.003	0.843
Q14. Jika ibubapa kanak-kanak yang menghidap asma merokok di luar rumah, ia tidak akan memudaratkan kanak-kanak tersebut.	0.180	0.843
Q15. Jika kanak-kanak yang menghidap asma mengalami demam selsema, ubat inhaler hendaklah digunakan walaupun tiada simptom batuk dan bunyi berdehit.	0.658	0.824
Q16. Kanak-kanak yang menghidap asma, boleh mendapat serangan yang teruk hingga memerlukan rawatan intensif dan boleh membawa maut.	0.113	0.843
Q17. Terdapat ubat-ubatan asma yang tidak berkesan kecuali digunakan setiap hari	0.475	0.831
	Cronbach's Alpha	Cronbach's Alpha Based on Standardized items
	0.840	0.815
		N of items
		17

raising sensitive issues like culture and various beliefs limits the exploration of the multiple dimensions of asthma knowledge during the intervention.

Factor two explores the basic knowledge of asthma management particularly the medications. This knowledge information is usually explained or first heard during or when treatment is initiated by trained medical personnel. Nowadays, multiple resources are available to gain asthma knowledge especially with the rampant growth of social media (19). However, not all resources are reliable and provide true information. Therefore, strengthening the knowledge of childhood asthma among medical personnel is also an important strategy in educating the public.

Factor three covers on associated factors in asthma. Hans Bisgaard et al found that major cause of morbidity in preschool children were recurrent days with cough, wheeze, or breathlessness (20). Although one of the main objectives of asthma management is to achieve excellent control of symptoms and the ability to achieve and maintain normal daily activity level (21), knowledge and attitude on childhood asthma symptoms are not well documented (6,22,23).

Factor three also covers triggering factors and prevention of asthma exacerbation. Exclusion of asthmatic children from social and sports activities may cause social issues at school due to a lack of this part of asthma knowledge (17,24). A more sedentary lifestyle and obesity in asthmatic patients are related to physical inactivity (24). On further observation, Praena-Crespo et al found that asthmatic children who participated in an educational program on Asthma, Sports and Health in elementary schools also improved their quality of life, self-esteem, emotional aspects, and integration in school activities (17). All this information potentially helps to change the appropriate strategies to increase public awareness and knowledge of childhood asthma.

As the number of validated tools to assess the knowledge on childhood asthma is very limited, this study is very important to help us to understand the obstacles in the management of childhood asthma. The reliability and validity of the questionnaires in Malay language shall open the gates for further study using the same questionnaires, to gain the real picture of knowledge on childhood asthma in the population. This can help the healthcare department to plan strategic management with the aim to improve the outcome of childhood asthma. Intervention strategic plan shall be more fruitful with an ideal level of knowledge among the population on this disease. Additionally, the sample size became the limitation of this study. From the calculation, a minimum of 70 respondents are required, however this study only managed to include 60 respondents after excluding approximately 20 respondents due to incomplete answers given in the questionnaire. This limitation shall

not affected the overall statistical analysis of this study.

## CONCLUSION

The Malay version of the Asthma Knowledge Questionnaires is very important to assess childhood asthma knowledge among Malaysians. This study showed the Malay version of the Asthma Knowledge Questionnaire is culturally equivalent to the original version with good consistency, validity and reliability.

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## REFERENCES

1. Ferrante G, La Grutta S. The burden of pediatric asthma. *Frontiers in pediatrics*. 2018 Jun 22;6: 186. doi: 10.3389/fped.2018.00186
2. Asher MI, Montefort S, Björkstén B, Lai CK, Strachan DP, Weiland SK, Williams H, ISAAC Phase Three Study Group. Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. *The Lancet*. 2006 Aug 26;368(9537):733-43. doi: 10.1016/S0140-6736(06)69283-0.
3. Zaman M, Ashraf S, Javaid M. Reliability of diagnosis and asthma knowledge, attitudes and perception (KAP) in rural population of NWFP, Pakistan. *Pakistan Journal of Chest Medicine*. 2015 Jun 18;12(4).
4. Poniaman D, Wisnivesky JP, Leventhal H, Musumeci-Szaby TJ, Halm EA. Impact of positive and negative beliefs about inhaled corticosteroids on adherence in inner-city asthmatic patients. *Annals of Allergy, Asthma & Immunology*. 2009 Jul 1;103(1):38-42. doi: 10.1016/S1081-1206(10)60141-X.
5. Luckie K, Pang TC, Kritikos V, Saini B, Moles RJ. Development and validation of an asthma first aid knowledge questionnaire. *Research in Social and Administrative Pharmacy*. 2018;14(5):459-63. doi: 10.1016/j.sapharm.2017.05.014.
6. Norzila MZ, Haifa AL, Deng CT, Azizi BH. Prevalence of childhood asthma and allergy in an inner-city Malaysian community: intra-observer reliability of two translated international questionnaires. *The Medical journal of Malaysia*. 2000;55(1):33-9.
7. Martínez CR, Sossa MP. Validation of an asthma knowledge questionnaire for use with parents or guardians of children with asthma. *Archivos*

- de Bronconeumologia (English Edition). 2005 Aug 1;41(8):419-24. doi: 10.1016/S1579-2129(06)60256-5
8. ALOtaibi E, AlAteeq M. Knowledge and practice of parents and guardians about childhood asthma at King Abdulaziz Medical City for National Guard, Riyadh, Saudi Arabia. Risk management and healthcare policy. 2018; 11:67-75. doi: 10.2147/RMHP.S143829
  9. Espinosa L, AM SS. The Spanish version of the Newcastle Asthma Knowledge Questionnaire for parents of children with asthma (NAKQ). Transcultural adaptation and reliability analysis. Anales De Pediatria (Barcelona, Spain: 2003) 2009;70(3):20917.doi:10.1016/j.anpedi.2008.10.013
  10. Hallit S, Raheison C, Waked M, Salameh P. Validation of asthma control questionnaire and risk factors affecting uncontrolled asthma among the Lebanese children's population. Respiratory medicine. 2017; 122:51-7. doi: 10.1016/j.rmed.2016.11.018.
  11. Simba J, Marete I, Waihenya R, Kombe Y, Mwangi A, Mburugu P, Ogaro F. Knowledge and perceptions on childhood asthma among care-takers of children with asthma at a National Referral Hospital in Western Kenya: a descriptive study. African health sciences. 2018;18(4):965-71. doi: 10.4314/ahs.v18i4.16.
  12. Household Income & Basic Amenities Survey Report 2019. Available from <https://www.dosm.gov.my/v1>.
  13. Pallant, Julie. 2010. SPSS survival manual – A step by step guide to data analysis using SPSS, 4th ed. Allen & Unwin
  14. Szeffler SJ, Chmiel JF, Fitzpatrick AM, Giacoia G, Green TP, Jackson DJ, Nielsen HC, Phipatanakul W, Raissy HH. Asthma across the ages: knowledge gaps in childhood asthma. Journal of Allergy and Clinical Immunology. 2014;133(1):3-13.doi: 10.1016/j.jaci.2013.10.018.
  15. The Third National Health and Morbidity Survey (NHMS III) 2006. Institute for Public Health (IPH). Malaysia: Ministry of Health; 2008. Available from <https://iku.moh.gov.my/images/IKU/Document/REPORT/2006/ExecutiveSummary.pdf>
  16. World Health Organization [Internet]. Asthma; 2021 [cited 2021 May]. Available from: <https://www.who.int/news-room/fact-sheets/deatil/asthma>
  17. Praena-Crespo M, Aquino-Llinares N, Fernandez-Truan JC, Castro-Gomez L, Segovia-Ferrera C. Asthma education taught by physical education teachers at grade schools: a randomised cluster trial. Allergologia et immunopathologia. 2017; 45(4):375-86. doi: 10.1016/j.aller.2016.10.022.
  18. Urrutia-Pereira M, Mocellin LP, de Oliveira RB, Simon L, Lessa L, Soli D. Knowledge on asthma, food allergies, and anaphylaxis: Assessment of elementary school teachers, parents/caregivers of asthmatic children, and university students in Uruguiana, in the state of Rio Grande do Sul, Brazil. Allergologia et immunopathologia. 2018; 46(5):421-30. doi: 10.1016/j.aller.2017.09.018.
  19. Lawson JA, Brozek G, Shpakou A, Fedortsiv O, Vlaski E, Beridze V, Rennie DC, Afanasieva A, Beridze S, Zejda J. An international comparison of asthma, wheeze, and breathing medication use among children. Respiratory medicine. 2017;133:22-8.doi: 10.1016/j.rmed.2017.11.001.
  20. Bisgaard H, Szeffler S. Prevalence of asthma-like symptoms in young children. Pediatric pulmonology. 2007;42(8):723-8. doi: 10.1002/ppul.20644.
  21. 2021 GINA Report, Global Strategy for Asthma Management and Prevention. Available at <https://ginasthma.org/gina-reports/>
  22. Omar AH. Respiratory symptoms and asthma in primary school children in Kuala Lumpur. Pediatrics International. 1990;32(2):183-7. doi: 10.1111/j.1442-200x.1990.tb00807.x.
  23. International Study of Asthma and Allergies in Childhood (ISAAC) Steering Committee. Worldwide variations in the prevalence of asthma symptoms: the International Study of Asthma and Allergies in Childhood (ISAAC). Eur Respir J. 1998;12(2):315-35. doi: 10.1183/09031936.98.12020315.
  24. Glazebrook C, McPherson AC, Macdonald IA, Swift JA, Ramsay C, Newbould R, Smyth A. Asthma as a barrier to children's physical activity: implications for body mass index and mental health. Pediatrics. 2006;118(6):2443-9. doi: 10.1542/peds.2006-1846.