

Quality of Life - How Do Malaysian Asthmatics Fare?

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Summary

Asthma can place considerable restrictions on the physical, emotional and social aspects of the lives of patients. The assessment of quality of life aims to provide a means of measuring the impact of this disease on patients' lives, from the patients' perspective. A cross sectional multi-centre study was conducted in six government hospitals throughout the country. Self-administered SF-36 was used, and clinical information obtained through interviews and examination. 1612 asthmatics responded. Females constituted 63% of the respondents; mean age was 40.9 years; Malays were the majority ethnic group, while 70.8% had secondary level education and 53.7% were employed. Half had suffered from asthma for at least 13 years, while 46.8% and 23.6% have moderate and severe disease respectively. Quality of life was affected by severity of disease. Asthmatics, had a significantly poorer quality of life than the general US population. Severe asthma disease was associated with a compromised quality of life, similar to that of COPD.

Key Words: Quality of life, Health-related quality of life, Asthma, Severity, SF-36

Introduction

Asthma, a major chronic airway disorder¹ that can be severe and sometimes fatal, poses serious public health problems in many countries throughout the world. It forms a significant burden not only in terms of health care costs but also of lost productivity² and can place considerable restrictions on the physical, emotional and social aspects of the lives of patients. The underlying disorder by itself may cause distress especially when its natural history

is unpredictable, and inappropriate medical care can increase these difficulties³.

The prevalence of adult asthma in Malaysia is 4.1%⁴ and globally, there is a rising trend in prevalence, ranging from 50% to 150%. This has great social and economic impact in relation to the social disabilities in asthmatics. Although asthma cannot be cured, its burden can be alleviated through appropriate prevention and management strategies. In Malaysia, consensus guidelines on the management of asthma had been developed to improve the management of asthma in the nation⁶. Like most chronic diseases, asthma has lifelong consequences in terms of disability-adjusted life years.

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Health-related quality of life (QoL) has been proven useful for assessing the degree of morbidity caused by asthma. The assessment of quality of life through questionnaires provides a formal means, from the patient's perspective, of the impact of the disease on patient's lives and the outcome of health care⁷. It is the gap between an individual's expectations and reality, and it is both subjective, from the individual's perspective, and multidimensional, covering many aspects in a person's life⁷, including the context of culture and value systems in which a person lives.

Hence, this study was undertaken to determine the impact of asthma on the daily life of asthmatics in Malaysia, and to understand and determine the influence of severity of disease on their quality of life.

Materials and Methods

The study was conducted in six government hospitals throughout Malaysia, with each centre selected to represent a particular region of the country. All outpatient asthmatics registered at the outpatient department and specialist clinics in the chosen hospitals who came for follow-up visits were included if they were Malaysian, aged 18 years and above, and have been diagnosed with asthma for at least a year. An individual is considered asthmatic when medically certified by a physician. Severity of the disease is verified at the point of inclusion into the study by respiratory consultants at the respective centres.

Information was retrieved from both patients and their respective medical records. Patients, before seeing the medical doctor, were required to answer the self-administered bilingual SF-36 questionnaire. Nurses recorded the socio-demographic data based on patient's records and through interviews. The examining doctor interviewed and examined the patient for clinical symptoms and signs, and filled sections on treatment modality, diagnosis and peak flow meter investigation, using outpatient case records when necessary. The consultant physician verified the severity status (mild,

moderate or severe disease) at the particular follow-up visit. Classification of severity was based on history, clinical symptoms, clinical findings, peak flow readings and treatment, as outlined by the Guidelines on Management of Adult Asthma⁶, a consensus guideline used nationally by respiratory physicians and medical practitioners. Training sessions were held for the nurses and examining doctors, and consensus reached for classification of severity by the consultant physicians.

Excluded were institutionalised patients, outpatients for admission on day of survey and physically and/or mentally disabled patients (e.g. deaf, dumb, dementia, stroke). Patients in residential homes are likely to have a significantly different QoL compared to those staying in the community and depression may not be due to their asthma condition but because of isolation and separation from other family members. In such circumstances, it would be difficult to differentiate the cause of poor life satisfaction or well being. This was similarly so for patients with asthmatic attacks severe enough to warrant admission and those with disability.

Outcome Measure

This study uses SF-36*, a generic measure based on 36-items that represent eight health concepts: physical (PF), social (SF) and role functioning, which consist of role emotional (REE) and role-physical (REP), mental health (MH), energy fatigue/vitality (VT), bodily pain (BP) and general health (GH)⁸. Most items correlate well with severity of asthma, have been used in the measure of outcome of care in asthma⁹ and have been found to be sensitive enough to detect changes in quality of life with changes in severity of asthma¹⁰. A bilingual questionnaire, containing the original English Language version and a translated developmental Bahasa Malaysia version# was used.

* Acronym of 36 items, Short form (SF)

A research team in USM, under the aegis of International Quality of Life Assessment (IQOLA) Project, had developed a translated Bahasa Malaysia version and reported satisfactory internal consistency.

A summated score using specified formulae was computed for each scale, yielding a profile of the eight multi-item scales⁸. Scores on each scale range from a minimum of zero to a maximum of 100, with higher scores indicative of better health. All eight domains of quality of life were analysed to explore the effects of differing severity of disease.

Results

A total of 1,634 asthmatic patients were eligible for inclusion in the study. Of this, 1,612 (98.7%) responded. Only 22 (1.3%) refused, citing "being in a hurry" or "forgot to bring their reading glasses".

There were more females (63%) than males, mean age was 40.9 (12.1) years, median was 41, and ages ranged from 18 to 79 years. Malays (72%) were the majority ethnic group, 70.8% had secondary/college level education, 53.7% were employed and most were married. Half have suffered from asthma for at least 156 months (13 years), with a mean duration of 16.0 (11.9) years, and a maximum of 63 years. In the one-year duration before the study, only 15.0% of respondents have had one or more episodes of hospitalisation due to asthma. A quarter (23.2%) have one or more disease, the commonest being hypertension and diabetes mellitus.

Characteristics of the respondents differed from that of the population of asthmatics in Malaysia⁴ in terms of gender, age, ethnicity, education levels, employment, marital status and severity of disease (Table I).

For all domains, QoL was found to worsen with increasing severity of disease, even after adjusting for the effects of gender, age, ethnicity, education, marital state, education, employment, duration of having suffered from asthma and comorbidity (Table II). Domains with the highest scores were SF and MH, whilst REP, REE and GH had the lowest. This pattern persisted for all three grades of severity of disease.

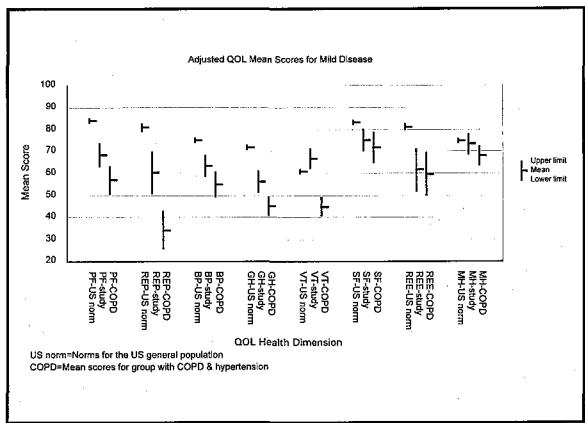


Fig. 1: Adjusted quality of life scores for mild asthmatics, compared to US population.

Compared to the norms for the United States (US) general population⁸, mild asthmatics were significantly different from the US general population for all domains except MH, where the confidence limits overlap. In contrast, significantly higher VT scores were seen for mild asthmatics compared to the US general population (Fig 1).

For moderate and severe asthmatics, all domains scored significantly lower than those of the general US population, with the exception of VT for moderate asthmatics (Fig 2 & 3). For these two grades, their mean scores for all domains were similar to that of the US sample with COPD and hypertension#, except for the domain of VT, in which the asthmatic patients had significantly higher means.

95% confidence intervals were calculated for the mean scores for US general population and those with COPD and hypertension based on the means, sample sizes and standard deviations provided^b.

S.d. = Standard deviation

Table I
Comparison of Characteristics of Respondents with Malaysia's Asthmatic Population

Characteristics	Respondents		Asthmatic Population* %	Test of Proportions p value
	Number	%		
Sex (n=1612)				
Male	589	36.5	40.9	0.017
Female	1023	63.5	59.1	0.002
Age group (n=1611)				
18 - 29 years	301	18.7	25.5	0.004
30 - 39 years	413	25.6	23.1	0.126
40 - 49 years	537	33.3	20.4	<0.001
50 - 59 years	250	15.5	12.5	0.090
60 & ABOVE	110	6.8	18.5	0.001
Ethnic Group (n=1612)				
Malay	1160	72.0	52.8	<0.001
Chinese	127	7.9	14.5	<0.001
Indian	224	13.9	9.5	0.017
Other	101	6.3	23.2	<0.001
Formal Education Level (n=1608)				
None	9	0.6	21.7	0.230
Primary	323	20.1	28.6	<0.001
Secondary	1138	70.8	42.1	<0.001
Tertiary/University	138	8.6	7.7	0.406
Employment status (n=1610)				
Unemployed**	620	38.5	43.9	0.004
Retired	126	7.8	2.6	<0.001
Employed	864	53.7	53.5	0.467
Marital status (n=1611)				
Single	264	16.4	17.3	0.380
Married	1291	80.1	71.3	<0.001
Widowed	40	2.5	10.4	0.084
Divorced	16	1.0	1.0	0.895
Severity of Asthma (n=1612)				
Mild	478	29.7	85.2	<0.001
Moderate	754	46.8	11.0	<0.001
Severe	380	23.6	3.8	<0.001

Note: * = asthmatic population, aged 18 years and above, as described in a nationwide community survey conducted in 1996 with a total of 59,903 respondents⁴.

** = Includes house spouses

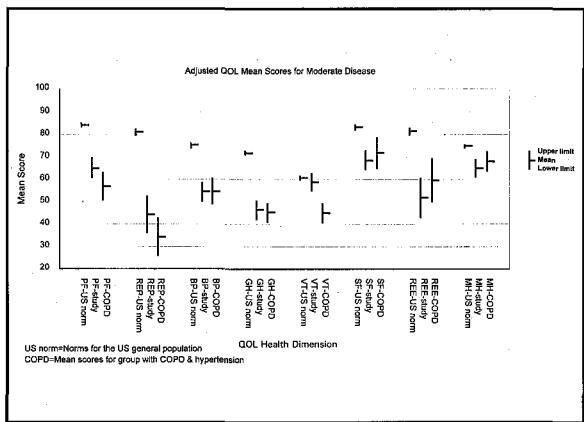


Fig. 2: Adjusted quality of life scores for moderate asthmatics, compared to US population.

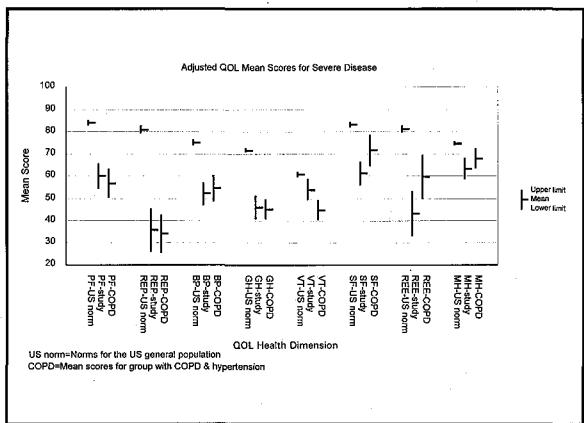


Fig. 3: Adjusted quality of life scores for Severe asthmatics, compared to US population.

Discussion

Our study has shown that increasing severity of asthma is associated with poorer quality of life. Following adjustments for the effects of gender, age, ethnicity, education, marital state, education, employment, duration of having suffered from asthma and comorbidity, most domains of quality of life remain compromised. This observed negative effect of asthma on functioning and subjective well being has been documented by others^{11,12}.

Asthma has been shown to affect each domain differently. It was observed that when compared to the other dimensions of quality of life as measured by the SF-36, there were greater limitations to the patients' role-physical capabilities and general health status amongst severe asthmatics, even after adjustments. Because of their asthmatic condition, patients' in this study had perceived their personal health as being poor, which include current health state, health outlook and resistance to illness. In addition, these patients do perceive that their physical health has interfered to some extent with work and other activities. In the overall management of patients, this finding of perceived interference to daily activities attributed to asthma would not have been detected if clinicians were to base management decisions solely on conventional objective measures such as symptoms and other objective lung function parameters. Thus, being clinically "certified" to be free from asthmatic episodes for long periods may be a satisfactory outcome from the clinical viewpoint of the doctor, but not so from the patient's perspective if the individual is restricted in carrying out physical activities. In studies of evaluation of care for asthma, increasing attention has been paid to measuring "patients' perceived health status" in addition to physical examinations and other conventional measures^{11,13,14,15,16}.

An interesting finding observed among our local asthmatics in this study was their capacity to retain satisfactory physical functioning as reflected by the relatively high scores for physical

Table II
Adjusted Quality of Life Scores by Severity of Disease

Domain	Mild Disease Confidence limits¹			Moderate Disease Confidence limits¹			Severe Disease Confidence limits¹		
	Mean	Lower	Upper	Mean	Lower	Upper	Mean	Lower	Upper
Physical Functioning (PF)	(n=478)			(n=753)			(n=380)		
Adj. ²	68.6	63.5	73.7	65.1	60.6	69.5	60.2	54.8	65.5
Unadj. ³	67.0	65.1	69.0	64.1	62.6	65.7	60.2	57.8	62.6
Role Physical (REP)	(n=478)			(n=754)			(n=380)		
Adj.	60.3	51.0	69.6	44.3	36.3	52.2	35.8	26.3	45.3
Unadj.	50.7	47.2	54.1	47.9	45.2	50.7	43.7	39.6	47.8
Bodily Pain (BP)	(n=478)			(n=754)			(n=380)		
Adj.	63.3	58.7	68.0	54.5	50.5	58.5	52.2	47.3	57.0
Unadj.	60.2	58.4	61.9	59.2	57.8	60.6	56.8	54.6	59.0
General Health (GH)	(n=478)			(n=753)			(n=380)		
Adj.	56.3	51.6	61.0	46.5	42.4	50.5	46.3	41.4	51.2
Unadj.	53.1	51.3	54.9	52.4	50.9	53.8	50.6	48.5	52.7
Vitality (VT)	(n=478)			(n=752)			(n=380)		
Adj.	66.7	62.4	71.0	58.8	55.1	62.5	54.1	50.0	58.6
Unadj.	63.7	62.1	65.4	62.1	60.8	63.4	59.4	57.5	61.4
Social Functioning (SF)	(n=478)			(n=754)			(n=380)		
Adj.	75.3	70.4	80.1	68.6	64.5	72.8	61.3	56.3	66.4
Unadj.	70.4	68.5	72.2	69.9	68.4	71.3	67.6	65.5	69.7
Role Emotional (REE)	(n=477)			(n=752)			(n=380)		
Adj.	61.5	51.8	71.2	51.9	43.4	60.4	43.3	33.2	53.4
Unadj.	56.0	52.4	59.7	57.8	54.8	60.7	53.1	48.8	57.4
Mental Health (MH)	(n=478)			(n=754)			(n=380)		
Adj.	73.4	69.0	77.8	64.9	61.1	68.7	63.5	58.9	68.0
Unadj.	69.9	68.3	71.5	70.1	68.8	71.5	69.1	67.1	71.2

Note: 1 = The lower and upper limits, at 95% confidence intervals, are shown

2 = Adjusted mean scores, adjusted for gender, age, ethnicity, education, marital state, education, employment, duration of having suffered from asthma and interaction between severity of disease with gender, ethnicity, education, marital state, education, employment and comorbidity. Evaluated at age 41.06 years, duration of having asthma=191.7 months (16 years).

3 = Unadjusted, i.e. observed mean scores

functioning and vitality. That is, these patients did not feel drained out and their health does not generally restrict their ability to perform most types of physical activities (no severe limitations on PF). Nevertheless, this is true only for mild asthmatics. Those with moderate and severe disease had poor physical functioning, though vitality or emotional energy/fatigue was affected only for severe asthmatics.

Many studies abroad had found that physical functioning and vitality as the common dimensions generally most impaired by asthma^{17,18,19,20}. The physical impairments could be due to acute exacerbations and long-term consequences of chronic asthma resulting in patients feeling chronically tired and lethargic because of low oxygen saturation or nocturnal awakenings. A high prevalence of fatigue does occur in individuals with asthma and other obstructive airway diseases²¹. The effect of socio-cultural differences between the Westerners and Asians as stated by Chelvam²² does not seem to matter concerning physical functioning in asthmatics.

Another positive finding that could be interpreted from this study was the general positive affect as recorded from the relatively high mental status. That is, despite their diseased condition, these patients are not depressed, emotionally in control and do not seem to be unhappy. Again, this applies only for mild asthmatics. Mental state was affected for higher grades of severity while bodily pain was poorer for all asthmatics. Osman *et al.*²³ who noted that mental health status and pain were affected by asthma supported these findings. However, other studies^{12,17,18} have noted that these same domains were not affected in asthma. The differences noted between studies may be possibly explained by the fact that these are differences in perceptions from the individuals themselves.

Overall, the asthmatic patients in our study have attained relatively satisfactory quality of life,

though severity of asthma disease was associated with a compromised quality of life for asthmatics. Their quality of life was similar to that of people with COPD, a chronic irreversible lung disease. However, Ungar *et al.*¹² had noted more domains to be poor as well, namely vitality, a finding not seen in this study for mild and moderate asthmatics. A possible explanation could be the different coping mechanisms employed to sustain a positive outlook on life, whereby affective and cognitive meaning of information that initially was experienced as threatening may be changed to make the present situation more acceptable²⁴. Thus patients may adjust their expectations for their health or activities downward to the level at which they can function. Cultural influences within the society may also have a significant influence to the expected roles of the individuals. In Australia, the mean score for the general population in the Australian Capital Territory for vitality²⁵ was similar to that of the mild asthmatics group, and significantly higher than the US population norm. Given this, comparison with US general population norms might be inadequate in reflecting deficits in quality of life of asthmatics, as the Malaysian general population picture might well be very different.

The similarities and differences when compared to studies on the health-related quality of life of asthmatics elsewhere can be attributed to many factors including differences in the utilization of study instrument (QoL measures), selection, definition and size of (asthmatics) sample, and/or the inherent cultural differences that exist between countries. Furthermore, QoL is also influenced by demographic and socio-economic factors^{24,26,27,28,29}, some of which were not controlled for in this study, with the exception of the effect of gender, ethnicity, education, marital state, education, employment, age, comorbidity and duration of suffering from asthma. In addition, current symptoms may influence QoL of patients, whilst these same symptoms reflect the current level of asthma control rather than the severity of the disease³⁰.

This study has its limitations. For one, it was restricted to the outcomes of Malaysian asthmatic patients managed as outpatients in government facilities, who were literate in either English language or the Malay language, Bahasa Malaysia, as the SF-36 was used as a bilingual self-administered questionnaire. Asthmatics with disability, handicap or those with disease severe enough to warrant admission were excluded, hence excluding those with a possibility of having a worse quality of life. Another selection bias was the exclusion of asthmatics that had not sought care in government facilities, but instead had preferred private providers. These might be a very different set of population with different health seeking behaviour and perceptions, and probably different quality of life as well. In addition, inter-rater reliability, especially of consultant physicians for the diagnosis of disease severity, was not evaluated. This could affect the results seen here, even though effort had been made to standardize this through the use of guidelines⁶ and consensus

on criteria for diagnosis before fielding the study. In conclusion, the impact of asthma on quality of life, as seen in studies elsewhere, is also significant for our local patients, impinging mostly on the domains of physical functioning, bodily pain, role functioning, general health of patients and social functioning, and to a lesser extent on mental health. Overall, asthmatic patients in this study have attained relatively satisfactory quality of life, though severity of asthma disease was associated with a compromised quality of life.

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References

- Montvale. What is asthma? *Business and Health* 1995; 13 (7): 10-16.
- Ungar WJ, Coyte PC. Measuring Productivity loss days in asthma patient. The Productivity medication monitoring Programme and Advisory Board. *Health Econ* 2000; 9(1): 37-46.
- ACI News. The National Consensus of Asthma to the Global Strategy for Asthma Management and Prevention. NHLBI/WHO Workshop Report Jul/Aug 1995; 7(4).
- Rugayah B, Nora'i MS, Mohan J, et al. National Health and Morbidity Survey 1996: Volume 11. Asthma. Kuala Lumpur: Institute of Public Health, Ministry of Health Malaysia, 1999.
- Palatine, Sly M. Changing Prevalence of allergic Rhinitis and Asthma. *Annals of Allergy, Asthma and Immunology* 1999; 82(3): 233-65.
- Malaysian Thoracic Society. Guidelines on Management of Adult Asthma - A Consensus Statement of the Malaysian Thoracic Society. Malaysia: Malaysian Thoracic Society, 1996.
- Martin AJ, Stockler M. Quality of life Assessment in Health care Research and Practice. Evaluation and the Health Professions 1998; 21(2): 141-56.
- Ware JE Jr, Kristin KS, Kosinski M, et al. SF-36 Health Survey manual and Interpretation Guide. Boston, Massachusetts: Nimrod Press, 1993.
- Shiely JC, Boyliss MS, Keller SD, et al. SF-36 Health Survey Annotated Bibliography: First Edition (1988 -1995). Boston, Massachusetts: The Health Institute, New England Medical Centre, 1996.

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10. Ware JE Jr, Kemp JP, Buchner DA, *et al.* The responsiveness of disease-specific and generic health measures to changes in the severity of asthma among adults. *Quality of Life Research* 1998; 7(3): 235-44.
11. Stewart AL, Greenfield S, Hays RD, *et al.* Functional status and well-being of patients with chronic conditions: Results from the Medical Outcomes study. *JAMA* 1989; 262: 907-13.
12. Ungar W, Coyte PC, Willison DJ, *et al.* SF-36 quality-of-life measurement in asthma patients. Annual meet Int Soc Technol Assess Health Care 1997; 13: 82.
13. O'Connor GT, Weiss ST. Clinical and symptom measures. *Am J Res Crit Care Med.* 1994; 149(2): S21-8.
14. Ringsberg KC, Wiklund I, Wilhelmsen L. Education of adult patients at an "asthmatic school": Effects on quality of life, knowledge, and need for nursing. *Euro Respir J.* 1990; 3: 33-37.
15. Van Schayck CP, Dompeling E, Rutten MPMH, *et al.* The influence of an inhaled steroid on QOL in patients with asthma or COPD. *Chest* 1995; 107: 1199-205.
16. Lahdensuo A, Haahtela T, Herrala J, *et al.* Randomised comparison of guided self-management and traditional treatment of asthma over one year. *BMJ* 1996; 312: 748-52.
17. Bousquet J, Knani J, Dhivert H, *et al.* QOL in asthma: I. Internal consistency and validity of the SF-36 questionnaire. *Am J Resp Crit Care Med* 1994; 149: 371-75.
18. Mahler DA, Mackowiak JI. Evaluation of SF-36 questionnaire to measure HRQOL in patients with COPD. *Chest* 1995; 107: 1585-589.
19. Reid LD, Nau DP, Grainger-Rousseau TJ. Evaluation of patient's HRQOL using a modified and shortened version of the Living with Asthma Questionnaire and the Short-Form 36. *Quality of Life Research* 1999; 8: 491-99.
20. Marielle PJ, Francois GS, Jacques TM. The NHP: score distribution, internal consistency and validity in asthma and COPD patients. *Quality of Life research* 1999; 8: 501-07.
21. Small SP, Lamb M. Measurement of fatigue in chronic obstructive pulmonary airway disease and in asthma. *Int J Nursing Stud.* 2000; 37(2): 127-33.
22. Chelvam P. Quality of Life - Asian perspective: A personal view. *Scand J Gastroenterology* 1993; 28: 16-17.
23. Osman LM, Calder C, Robertson R, *et al.* Symptoms, quality of Life and health service contact among adults with mild asthma. *Am J Respir Crit Care Med* 2000; 161(2 Pt 1): 498-503.
24. Kempen G, J Ormel J, Brilman E, *et al.* Adaptive responses among Dutch elderly: the impact of eight chronic medical conditions on health-related quality of life. *AMJ Public Health* 1984; 87: 3844.
25. Gannon D, Gordon C, Elgoff B, Shadbolt B. Health Related Quality of Life in the ACT: 1994-1995. The Baseline. ACT, Australia: Epidemiology Unit, Population Health Group, ACT Department of Health and Community Care, 1997.
26. Ross CE, Willigen MV. Education and the subjective QoL. *J Health and Social Behav.* 1997; 38(3): 275-97.
27. Xuan J, Kirchdoerfer LJ, Boyer JG, *et al.* Effects of co morbidity on QoL scores: analysis of clinical trial data. *Clin Ther* 1992; 21(2): 383-403.
28. Apter AJ, Reisine ST, Affleck G, *et al.* The influence of demographic and socio-economic factors on health-related quality of life in asthma. *Journal of Allergy and Clinical Immunology* 1999; 103(1): 72-78.
29. Diener E. Subjective well being. *Psychological Bulletin* 1984; 95: 542-75.
30. Osborne ML, Vollmer WM, Pedula KL, *et al.* Lack of correlation of symptoms with specialist-assessed long-term asthma severity. *Chest* 1999; 115(1): 85-91.