Compliance to national guidelines on the management of chronic obstructive pulmonary disease in Malaysia: a single centre experience

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ABSTRACT

Introduction: Malaysia has a high rate of smoking prevalence and the figure is increasing. Although there has been many local and regional studies on the prevalence and symptomatology of chronic obstructive pulmonary disease patients, data is lacking on the degree of compliance to national management guidelines in the treatment of chronic obstructive pulmonary disease.

Methods: 86 patients who attended the respiratory outpatient clinic of the Hospital Universiti Kebangsaan Malaysia were enrolled into a prospective, observational study.

Results: 88 percent of the patients were male and the majority was ethnically Chinese (65 percent). The majority of patients were in the moderate to very severe categories, with a mean FEV_1 of 0.97 +/− 0.56 L/sec and predicted mean FEV_1 percentage of 43.1 +/− 21.3 percent. 58 percent of the patients were on long-acting beta-agonist, 65 percent were on inhaled steroids, and only 16 percent were on scheduled pulmonary rehabilitation.

Conclusion: The low uptake rate for long-acting beta-agonist and pulmonary rehabilitation could be attributed to several factors. Financial cost, the need for strict compliance to a structured rehabilitation regime, lack of significant social support and clear up-to-date guidelines are possible reasons.

Keywords: chronic obstructive pulmonary disease, lung disease, management guidelines, patient compliance, pulmonary rehabilitation

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a growing problem worldwide. It is a progressive illness with considerable morbidity and mortality. Most COPD patients are current or ex-smokers, and countries with a higher prevalence of smokers in their adult population also register a higher prevalence of COPD.[1] In Malaysia, the overall smoking prevalence is 49.2% in the adult male population, and 3.5% in the adult female population.[2] Indications point toward an increasing trend in the prevalence of smoking with a veritable doubling of the prevalence of adult female smokers to 8% since the last National Health and Morbidity Survey by the Ministry of Health Malaysia in 1996.[3]

COPD is the sixth leading cause of death worldwide and the fourth leading cause of hospital admissions in Malaysia.[4] With the rise in smoking prevalence, there will be an inevitable rise in COPD incidence and hence result in a greater strain on the already stretched resources, especially in developing countries with limited health expenditures, like Malaysia. Furthermore, most patients with COPD present to doctors with moderate to severe disease, thereby limiting the efficacy of intervention and increasing the cost of symptom control in these patients.[2] Treatment efficacy may also be influenced by the degree of compliance with the various management guidelines and patient compliance to treatment.

Although there has been many local and regional studies on the prevalence and symptomatology of COPD among the Malaysian population, no study has actually looked at the degree of compliance to management guidelines be it local or international.[1,2,5,6] This study is aimed at assessing the severity of COPD cases presented to a local tertiary referral centre and the degree of compliance to existing national guidelines on the management of COPD in these patients.

METHODS

Consecutive COPD patients, who attended the Respiratory Outpatient Clinic at the Hospital Universiti Kebangsaan Malaysia (HUKM) from October 2005 to January 2006, were recruited into the study. A review of the case records and medications was undertaken for each patient. The study protocol was approved by the medical research and ethics committee of the institution, and written informed

Table I. Summary of measurements.

Variables	Mean (± SD)
Age (years)	67.7 (± 8.6)
6MWD (m)	321 (± 87)
FEV_1 (L)	
Total (n = 86)	0.97 (± 0.56)
Stage I (n = 5)	2.18 (± 0.29)
Stage II (n = 22)	1.48 (± 0.42)
Stage III (n = 29)	0.86 (± 0.23)
Stage IV (n = 30)	0.50 (± 0.14)
FEV_1%Pred (%)	43.1 (± 21.3)
SGRQ scores	
Symptom	50.2 (± 23.2)
Impact	35.2 (± 23.8)
Activity	55.1 (± 27.9)
Total	43.7 (± 23.6)

6MWD: 6-minute walking distance; FEV_1: forced expiratory volume in 1 second; SGRQ: St George's Respiratory Questionnaire

consents were obtained from the subjects.

Inclusion criteria consisted of:

(1) Patients aged 45–95 years, of an ethnicity satisfying the definition of COPD according to global initiative for chronic obstructive lung disease (GOLD) guidelines.[7]

(2) Forced expiratory volume in one second (FEV_1) to forced vital capacity ratio (FVC) ratio < 70%, and increase in FEV_1 30 minutes after inhalation of a β_2-agonist (salbutamol) < 15% or 200 ml.

(3) Patients must be able to complete the six-minute walk test without assistance.

(4) Patients must be able to comprehend instructions and questions in English and Malay.

Exclusion criteria were:

(1) Patients with multiple comorbidities limiting independent ambulation, such as congestive cardiac failure with New York Heart Association (NYHA) class ≥ 1, ischaemic heart disease with angina and a Canadian Cardiac Society (CCS) classification for angina class ≥ 1.

(2) Patients who require assistance with ambulation other than a walking aid.

(3) Other concurrent pulmonary diseases, such as localised bronchiectasis, pulmonary fibrosis and asthma.

(4) Patients with terminal disease.

The St. George's Respiratory Questionnaire (SGRQ) is designed to measure health impairment in patients with asthma and COPD. The SGRQ is a self-reported questionnaire that can be completed in approximately ten minutes. The questionnaire consists of 16 questions divided into two parts. Part I (Questions 1 to 8) yields the Symptom score; this surveys the patients' recollection of their symptoms over a stipulated period. Part II (Questions 9 to 16) yields the Activity and Impact scores that survey the disturbance to the patients' daily physical activity and psychosocial dysfunction, respectively. A total score is also produced and it incorporates scores from each component of the SGRQ.[8] Specific questions carry varying weights, with lower scores on the SGRQ indicating wellness, and higher scores indicating greater disability. The SGRQ has been validated in many studies and its use in many different languages.[9] This study used the SGRQ in both the English and Malay languages (Appendices 1 and 2). Written permission was obtained for the use of the questionnaires. Patients were required to complete the SGRQ while awaiting consultation, following which they then performed the simple spirometry and six-minute walk test.

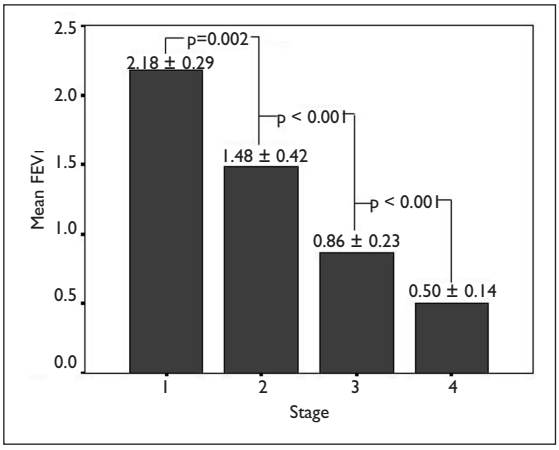

Fig. 1 Bar chart shows the mean FEV_1 at each stage of COPD.

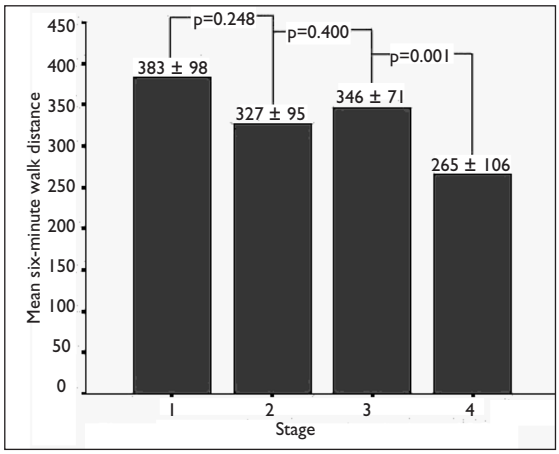

Fig. 2 Bar chart shows the mean 6MWD at each stage of COPD.

Simple spirometry was carried out after the administration of the SGRQ. The post-bronchodilator (30 minutes after inhaled salbutamol), FEV_1, FVC and the peak expiratory flow rate were recorded using the Spiroanalyser ST-95. Postbronchodilator FEV_1 and the calculated FEV_1 percentage predicted (FEV_1%Pred) (calculated Asian values based on the Fukuda Sangyo Manual) were used

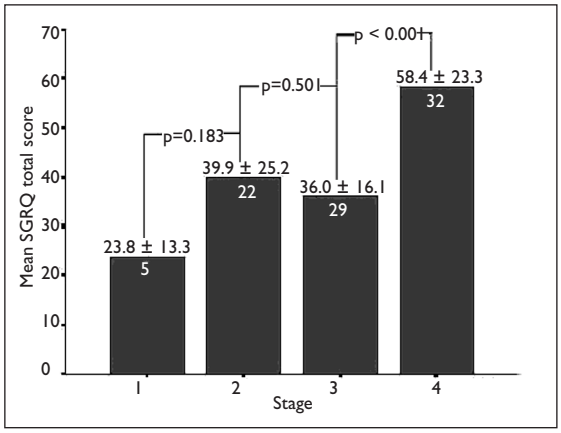

Fig. 3 Bar chart shows the mean SGRQ total score at each stage of COPD.

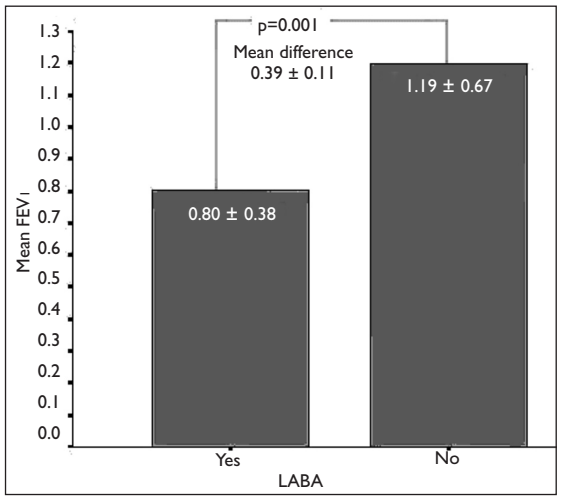

Fig. 4 Bar chart shows the mean FEV_1 in patients with/without LABA.

for the classification of severity of COPD according to the GOLD guidelines:[7]

Stage I: Mild COPD	$FEV_1 \geq 80\%$ predicted
Stage II: Moderate COPD	$50\% \leq FEV_1 < 80\%$ predicted
Stage III: Severe COPD	$30\% \leq FEV_1 < 50\%$ predicted
Stage IV: Very severe COPD	$FEV_1 < 30\%$ predicted or $FEV_1 < 50\%$ predicted plus chronic respiratory failure

The six-minute walk test is an index of functional capacity, and patients were required to walk as far as possible in six minutes at their own pace. This was adopted to better reflect the patients' daily activities.[10,11] The test was performed along a continuous hospital corridor adjacent to the respiratory function laboratory. Patients underwent two six-minute walk tests at least 30 minutes apart. The distance in metres was then recorded.

Data for continuous, closely symmetrical variables were analysed using standard descriptive methods to estimate mean ± standard deviation (SD). To compare the relative performance of quality of life (QOL) measures

Table II. Pearson product moment correlation coefficient of all variables.

	Pearson's correlation, r	p-value
FEV_1 vs. SGRQ score	−0.464	< 0.001
FEV_1 vs. 6MWD	0.351	0.001
FEV_1%Pred vs. 6MWD	0.186	0.086
FEV_1%Pred vs. SGRQ score	−0.293	0.006
6MWD vs. total score	−0.483	< 0.001

6MWD: 6-minute walking distance; FEV_1: forced expiratory volume in 1 second; SGRQ: St George's Respiratory Questionnaire

in relation to the physiological measures, we utilised the two-tailed Pearson product moment correlation coefficient with the level of statistical significance set at $p < 0.05$. Comparison of means between patients with or without specific treatment modalities was also tested by utilising the independent sample *t*-test. The statistical software package, Statistical Package for Social Sciences version 11.5 (SPSS Inc, Chicago, IL, USA), was used to perform the analysis.

RESULTS

A total of 86 patients with COPD were recruited into the study from October 2005 to January 2006, of which 88% (76) were male. 65% (56/86) of the patients were Chinese, 29% (25/86) Malay and 6% (5/86) Indian. The majority of the subjects were Chinese, in contrast to the normal population ratio. This could be attributed to the location of the hospital in the southeast region of Kuala Lumpur, which is predominantly inhabited by the Chinese. The mean age was 67.7 ± 8.6 years and the mean FEV_1 was 0.97 ± 0.56 L/sec (Table I). Majority of the patients who attended the respiratory outpatient clinic had moderate to severe disease with a mean FEV_1%Pred of 43.1% ± 21.3%. The COPD was mild in five patients, moderate in 22 patients, severe in 29 patients, and very severe in 30 patients. The mean six-minute walk distance was 321 ± 87 metres.

The most reproducible, discriminatory and useful physiological measurements of airflow limitation are FEV_1, FVC and their ratio. Fig. 1 shows the mean values of FEV_1 for each stage of the disease as defined by the FEV_1%Pred according to the GOLD staging system.[7] There were only five patients with mild COPD.

Objective estimates of the functional capacity can be provided by exercise tests, such as the six-minute walk. In our study, there was a significant difference in exercise capacity between stages 3 and 4 (Fig. 2). There was no significant difference in the exercise capacity between patients with mild, moderate and severe COPD. COPD does not only involve the lungs, but it has other systemic effects, which could also contribute to the symptoms,

Table III. Comparison of total SGRQ score and 6MWD between those with and without treatment.

	With treatment	Without treatment	p-value	Mean difference
LABA				
Total SGRQ score	52	34	0.001	17.3 ± 4.8
6MWD (m)	307.69	340.38	0.086	32.68 ± 18.8
Steroid				
Total SGRQ score	50	34	0.003	15.5 ± 5.0
6MWD (m)	316.22	331.58	0.437	15.3 ± 19.7
Pulmonary rehabilitation				
Total SGRQ score	38	45	0.417	5.8 ± 7.1
6MWD (m)	344.01	317.81	0.322	26.2 ± 26.3

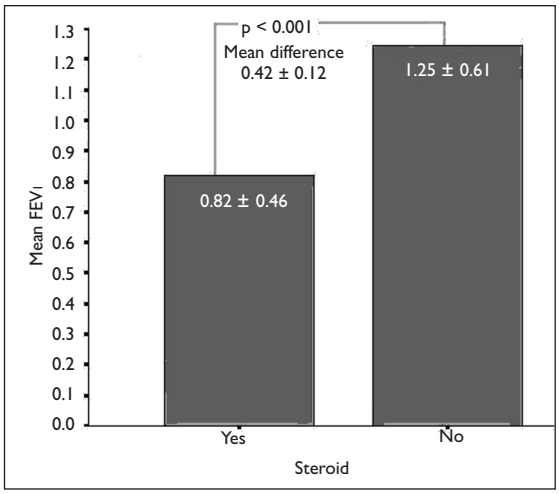

Fig. 5 Bar chart shows the mean FEV_1 in patients with/without steroids.

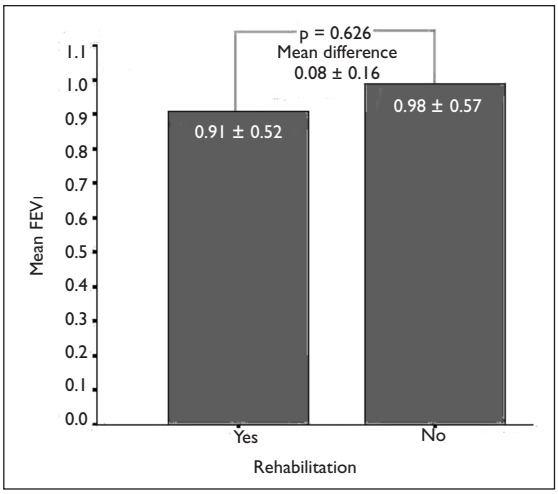

Fig. 6 Bar chart shows the mean FEV_1 in patients with/without rehabilitation.

morbidity and mortality. Spirometry alone could not explain the extrapulmonary effects of COPD. Health-related QOL outcomes were clinically more relevant to patients and provide comprehensive assessment of all aspects of COPD. Again, there was only a significant difference in SGRQ scores between stages 3 and 4 (Fig. 3), but not between mild and moderate COPD.

However, when the Pearson product moment correlation coefficient was employed to test the correlation between these variables, they were all found to be mildly to moderately significant, albeit at varying degrees. This is clearly shown in Table II. Finally, we analysed the ongoing treatment received by the patients at the time of attendance and looked at whether there was any association between the treatment and the variables measured.

The analysis on medications showed that 58% patients were on long-acting β_2-agonist (LABA), 65% were on inhaled steroids and only 16% were on pulmonary rehabilitation. Patients who were on LABA had a higher SGRQ total score (greater debility) with a mean difference of 17.27 ± 4.81 (p = 0.001). Accordingly, they also fared worse in the six-minute walk test compared to those who were not on LABA, with a mean difference of 32.68 ± 18.8 m (p = 0.086) (Table III). This pattern suggested that patients who had worse symptoms and exercise tolerance were more likely to be on LABA. This was also reflected in their FEV_1 values (Fig. 4).

Patients who were on steroids also showed a similar pattern with those who were on scoring worse (higher) on the SGRQ score (mean difference 15.5 ± 5.0, p = 0.003) and the six-minute walk (mean difference of 15.3 ± 19.7, p = 0.437). In both instances, the difference in the six-minute walk distances between those who were with/without LABA and steroids did not reach statistical significance (Fig. 5). Interestingly, although not many patients were on pulmonary rehabilitation, those who were, displayed a trend towards better SGRQ scores (lower) and greater exercise tolerance, though this was statistically not significant. The FEV_1 score also did not show any significant difference (Fig. 6).This again is in keeping with findings of other studies.

DISCUSSION

Before discussing the findings of the study, it is worth pointing out that the majority of patients enrolled in this study had moderate to severe airflow limitation, with a mean FEV_1 and FEV_1%Pred of 0.97 ± 0.56 L/sec and 43.1% ± 21.3%, respectively. Only five of those included

in the study were in stage 1 of the disease (GOLD, COPD stage)[7] or had an FEV_1%Pred of more than 80%. This over-representation in the more severe spectrum of COPD is reflective of the institution's role as a tertiary referral centre and the fact that most patients present at an already late stage of their disease.[2] Furthermore, the over-representation of ethnic Chinese minority in the study also reflects the geographical location of the institution and the area from which a majority of the patients are pooled from. It does not in any way suggest that most smokers in Malaysia are of Chinese ethnicity and that they have a moderate to severe airflow limitation. They do, however, influence the interpretation of any analysis made or any conclusions inferred from the data, and as such represent biases that will need to be accounted for should similar studies be contemplated in future.

The Malaysia Thoracic Society management guidelines for COPD outlined a simple stepwise management plan consisting of three steps. Step I involves patients with mild to moderate continuing symptoms and the recommended pharmacological intervention is combined inhaled $ß_2$-agonist and anticholinergics. The compliance rate at this stage is 100% as all patients who attended the respiratory outpatient clinic at HUKM were on combivent (salbutamol with ipratropium bromide) metred-dose inhalers. Step 2 involves the addition of methylxanthines in sustained release preparations. The use of LABAs was listed as optional, as at the time of its publication in 1999 the data on LABA was thought to be inconclusive.[6] This is in contrast to the GOLD 2006 guidelines for the management of COPD recommendation, that LABA be added at Stage II (moderate) of the disease, citing it as having a Level A evidence.[7] This discrepancy in the national and international guidelines on COPD management may explain the low take-up rate of only 58% for LABA, despite the fact that 94% of the patients studied were eligible for it. Step 3 involves the addition of oral steroids in a tapering dose and its subsequent replacement with inhaled steroids. GOLD 2006 guidelines proposed the use of inhaled steroids in patients with Stage III (severe) disease. 68% of patients studied were within this stage and the take-up rate for inhaled steroids reflects the agreement between the national and international guidelines, as 65% of them were on inhaled steroids. Interestingly, those who were on LABA and inhaled steroids scored significantly worse in their SGRQ scores and six-minute walking distance compared to those who were not. This is inconsistent with findings from other studies.[12-15]

This is an example of the weakness of cross-sectional observation studies in detecting the benefit or advantage from an intervention that is better observed in a longitudinal study. It most likely reflects the fact that most patients who were on either LABA or inhaled steroids, were on it due to the severity of their symptoms. The results in the observation revealed that their SGRQ scores and six-minute walk distances were worse compared to those who were not on this treatment, although the difference did not reach statistical significance. Another interesting observation made is the poor take-up of pulmonary rehabilitation of only 16% among the study cohort. This is again contrary to current international guidelines and literature. One reason may be found in the national guideline statement in 1999 that "there are no prospective randomised controlled studies that provide conclusive evidence of survival benefits".[6]

We do believe, however, that the major hindrance to its uptake is the significant investment in time and effort that is required of patients in order to successfully implement pulmonary rehabilitation. Compliance to such a structured programme is also suspect, considering the severe symptoms among our patient cohort and the lack of any significant social support programmes for COPD in general. Even under the best of circumstances in Western centres, the refusal rate can be as high as 30%.[16] Studies in pulmonary rehabilitation as early as 1990, have shown improvement in both the QOL scores and exercise tolerance following rehabilitation.[17,18] The resultant lack of any statistical difference in the SGRQ score and six-minute walk distance between those who were with/without pulmonary rehabilitation is not surprising considering the low take-up rate for pulmonary rehabilitation.

Although not statistically significant, the results did show a trend towards better SGRQ scores and six-minute walk distances. However, only 16% of patients were on pulmonary rehabilitation, despite it being proven in many studies to improve both the six-minute walk distance and the QOL scores.[19,20] It should be noted as well that although studies in pulmonary rehabilitation noted improvement in these measures pre- and post-rehabilitation in the same patients, pre-rehabilitation measurements between different patients usually showed no statistically significant difference.[21,22]

In conclusion, the majority of patients presenting to our institution had moderate to very severe stages of COPD. Although almost all of them were adequately treated with inhaled bronchodilators and steroids, the uptake rates of LABAs and pulmonary rehabilitation are poor. Our National Guidelines has been in existence for nearly a decade and needs a review in light of the many new recommendations available internationally. Compliance to our National Guidelines is unknown, but

our data suggests that some aspects of practice do fall short of the current recommendations as stipulated by the GOLD 2006 Guidelines.

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Appendix 1: St. George's Respiratory Questionnaire (Original English Version)[9]

This questionnaire is designed to help us learn much more about how your breathing is troubling you and how it affects your life. We are using it to find out which aspects of your illness cause you most problems, rather than what the doctors and nurses think your problems are. Please read the instructions carefully and ask if you do not understand anything. Do not spend too long deciding about your answers.

Before completing the rest of the questionnaire:
Please tick in one box to show how you describe your current health: Very good ☐ Good ☐ Fair ☐ Poor ☐ Very poor ☐

PART 1

Questions about how much chest trouble you have had over the past four weeks. Please tick (✓) one box for each question:

		Most days a week	Several days a week	A few days a month	Only with chest infections	Not at all
1.	Over the past 4 weeks, I have coughed:	☐	☐	☐	☐	☐
2.	Over the past 4 weeks, I have brought up phlegm (sputum):	☐	☐	☐	☐	☐
3.	Over the past 4 weeks, I have had shortness of breath:	☐	☐	☐	☐	☐
4.	Over the past 4 weeks, I have had attacks of wheezing:	☐	☐	☐	☐	☐

5. During the past 4 weeks, how many severe or very unpleasant attacks of chest trouble have you had?
   ☐ > 3 attacks ☐ 3 attacks ☐ 2 attacks ☐ 1 attack ☐ No attacks
6. How long did the worst attack of chest trouble last? *(Go to question 7 if you had no severe attacks)*
   ☐ ≥ 1 week ☐ ≥ 3 days ☐ 1–2 days ☐ < 1 day
7. Over the past 4 weeks, in an average week, how many good days (with little chest trouble) have you had?
   ☐ No good days ☐ 1–2 good days ☐ 3–4 good days ☐ Nearly every day is good ☐ Every day is good
8. If you have a wheeze, is it worse in the morning? ☐ No ☐ Yes

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PART 2:

Section 1

How would you describe your chest condition?

The most important problem I have	☐
Causes me quite a lot of problems	☐
Causes me a few problems	☐
Causes no problem	☐

If you have ever had paid employment.

My chest trouble made me stop work altogether	☐
My chest trouble interferes with my work or made me change my work	☐
My chest trouble does not affect my work	☐

Section 2: Questions about what activities usually make you feel breathless these days.
Please tick (✓) in each box that applies to you these days:

	True	False
Sitting or lying still	☐	☐
Getting washed or dressed	☐	☐
Walking around the home	☐	☐
Walking outside on the level	☐	☐
Walking up a flight of stairs	☐	☐
Walking up hills	☐	☐
Playing sports or games	☐	☐

Section 3: Some more questions about your cough and breathlessness these days.
Please tick (✓) in each box that applies to you these days:

	True	False
My cough hurts	☐	☐
My cough makes me tired	☐	☐
I am breathless when I talk	☐	☐
I am breathless when I bend over	☐	☐
My cough or breathing disturbs my sleep	☐	☐
I get exhausted easily	☐	☐

Section 4: Questions about other effects that your chest trouble may have on you these days.
Please tick (✓) in each box that applies to you these days:

	True	False
My cough or breathing is embarrassing in public	☐	☐
My chest trouble is a nuisance to my family, friends or neighbours	☐	☐
I get afraid or panic when I cannot get my breath	☐	☐
I feel that I am not in control of my chest problem	☐	☐
I do not expect my chest to get any better	☐	☐
I have become frail or an invalid because of my chest	☐	☐
Exercise is not safe for me	☐	☐
Everything seems too much of an effort	☐	☐

Section 5: Questions about your medication. If you are receiving no medication, go straight to Section 6.
Please tick (✓) in each box that applies to you these days:

	True	False
My medication does not help me very much	☐	☐
I get embarrassed using my medication in public	☐	☐
I have unpleasant side effects from my medication	☐	☐
My medication interferes with my life a lot	☐	☐

Section 6: These are questions about how your activities might be affected by your breathing.
Please tick (✓) in each box that applies to you because of your breathing:

	True	False
I take a long time to get washed or dressed	☐	☐
I cannot take a bath or shower, or I take a long time	☐	☐
I walk slower than other people, or I stop for rests	☐	☐
Jobs such as housework take a long time, or I have to stop for rests	☐	☐
If I walk up one flight of stairs, I have to go slowly or stop	☐	☐
If I hurry or walk fast, I have to stop or slow down	☐	☐
My breathing makes it difficult to do things such as walk up hills, carrying things upstairs, light gardening such as weeding, dance, play bowls or play golf	☐	☐
My breathing makes it difficult to do things such as carry heavy loads, dig the garden or shovel snow, jog or walk at 5 miles per hour, play tennis or swim	☐	☐
My breathing makes it difficult to do things such as very heavy manual work, run, cycle, swim fast or play competitive sports	☐	☐

Section 7: We would like to know how your chest usually affects your daily life.
Please tick (✓) in each box that applies to you because of your chest trouble:

	True	False
I cannot play sports or games	☐	☐
I cannot go out for entertainment or recreation	☐	☐
I cannot go out of the house to do the shopping	☐	☐
I cannot do housework	☐	☐
I cannot move far from my bed or chair	☐	☐

Here is a list of other activities that your chest trouble may prevent you doing. (You do not have to tick these, they are just to remind you of ways in which your breathlessness may affect you):

- Going for walks or walking the dog
- Doing things at home or in the garden
- Sexual intercourse
- Going out to church, pub, club or place of entertainment
- Going out in bad weather or into smoky rooms
- Visiting family or friends or playing with children
- Please write in any other important activities that your chest trouble may stop you doing:

_____

_____

_____

Now would you tick in the box (one only) which you think best describes how your chest affects you:

It does not stop me doing anything I would like to do	☐
It stops me doing one or two things I would like to do	☐
It stops me doing most of the things I would like to do	☐
It stops me doing everything I would like to do	☐

Thank you for filling in this questionnaire. Before you finish would you please check to see that you have answered all the questions.

Appendix 2: St. George's Respiratory Questionnaire (translated to the Malay Language)

Soal Selidik Masalah Pernafasan Hospital St. George (SGRQ)

Soal selidik ini direkabentuk untuk membantu kami memperoleh lebih banyak maklumat tentang bagaimana masalah pernafasan mengganggu diri anda dan bagaimana masalah ini mempengaruhi kehidupan anda. Kami akan menggunakan maklumat daripada soal selidik ini untuk mengetahui sebarang perkara tentang penyakit anda yang menimbulkan paling banyak masalah kepada anda. Kami tidak ingin tahu masalah anda mengikut pendapat doktor dan jururawat.

Sila baca arahan dengan teliti dan bertanyalah jika ada perkara yang anda tidak faham.

Jangan mengambil masa terlalu lama untuk memikirkan jawapan anda.

Sebelum melengkapkan soalan-soalan yang lain:

Sila tandakan (✓) pada satu kotak sahaja bagaimana anda menjelaskan keadaan kesihatan anda pada masa ini :	Amat baik	Baik	Sederhana	Teruk	Amat teruk
	☐	☐	☐	☐	☐

BAHAGIAN 1
Soalan-soalan tentang berapa banyak masalah pernafasan yang telah anda alami sejak 4 minggu yang lalu.
Sila tandakan (✓) pada satu kotak sahaja bagi setiap soalan:

	Kebanyakan hari dalam seminggu	Beberapa hari dalam seminggu	Beberapa hari dalam sebulan	Hanya jika ada jangkitan paru-paru	Tiada langsung
1. Sejak 4 minggu lalu, saya batuk:	☐	☐	☐	☐	☐
2. Sejak 4 minggu lalu, saya batuk berkahak:	☐	☐	☐	☐	☐
3. Sejak 4 minggu lalu, saya mengalami sesak nafas:	☐	☐	☐	☐	☐
4. Sejak 4 minggu lalu, saya mengalami serangan nafas berbunyi apabila bernafas:	☐	☐	☐	☐	☐

5. Dalam tempoh 4 minggu lalu, berapa kerapkah anda mengalami serangan masalah pernafasan yang teruk atau sangat tidak menyenangkan?

   Lebih daripada 3 kali ☐ 3 kali ☐ 2 kali ☐ 1 kali ☐ Tiada ☐

6. Berapa lamakah tempoh masalah pernafasan yang sangat teruk itu?
   (teruskan menjawab soalan 7, jika anda tidak mengalami masalah pernafasan yang teruk)

   Satu minggu atau lebih ☐ 3 hari atau lebih ☐ 1 atau 2 hari ☐ Kurang daripada 1 hari ☐

7. Sejak 4 minggu lalu, dalam satu minggu yang biasa, berapa harikah yang anda bebas daripada masalah (atau mengalami sedikit masalah pernafasan)?

   Tiada hari yang tidak bermasalah atau dengan sedikit masalah ☐
   1 atau 2 hari tiada masalah atau sedikit masalah ☐
   3 atau 4 hari tiada masalah atau dengan sedikit masalah ☐
   Hampir setiap hari tiada masalah atau dengan sedikit masalah ☐
   Setiap hari tiada masalah atau dengan sedikit masalah ☐

8. Jika anda mengalami masalah nafas berbunyi, adakah masalah ini menjadi lebih teruk pada waktu pagi apabila bangun dari tidur?

   Tidak ☐ Ya ☐

BAHAGIAN 2:
Seksyen 1
Bagaimana anda menjelaskan keadaan pernafasan anda?

Masalah paling utama yang saya hadapi ☐
Menimbulkan masalah yang agak banyak kepada saya ☐
Menimbulkan sedikit masalah kepada saya ☐
Tidak menimbulkan masalah kepada saya ☐

Sekiranya anda pernah bekerja.

Masalah pernafasan yang saya alami menyebabkan saya berhenti kerja ☐
Masalah pernafasan yang saya alami mengganggu kerja saya atau menyebabkan saya bertukar kerja ☐
Masalah pernafasan yang saya alami tidak menjejaskan kerja saya ☐

Seksyen 2: Soalan-soalan tentang jenis kegiatan yang biasanya menyebabkan anda mengalami sesak nafas sejak akhir-akhir ini.
Untuk setiap butiran, sila tandakan (✓) pada kotak jika berkaitan dengan diri anda sejak akhir-akhir ini:

	Ya	Tidak
Duduk atau baring dengan tenang	☐	☐
Mandi atau berpakaian	☐	☐
Berjalan-jalan di sekitar rumah	☐	☐
Bersiar-siar di luar rumah di atas permukaan rata	☐	☐
Menaiki satu tingkat anak tangga	☐	☐
Berjalan menaiki bukit	☐	☐
Bersukan atau bermain	☐	☐

Seksyen 3: Beberapa soalan lagi tentang batuk atau kesesakan bernafas yang anda alami sejak akhir-akhir ini.
Untuk setiap butiran, sila tandakan (✓) pada kotak jika berkaitan dengan diri anda sejak akhir-akhir ini:

	Ya	Tidak
Saya berasa sakit apabila batuk	☐	☐
Saya berasa letih apabila batuk	☐	☐
Saya sesak nafas apabila bercakap	☐	☐
Saya sesak nafas apabila membongkok	☐	☐
Batuk atau pernafasan mengganggu tidur saya	☐	☐
Saya cepat terasa teramat letih	☐	☐

Seksyen 4: Soalan-soalan tentang kesan lain yang mungkin disebabkan oleh masalah pernafasan yang anda alami sejak akhir-akhir ini.
Untuk setiap butiran, sila tandakan (✓) pada kotak jika berkaitan dengan diri anda sejak akhir-akhir ini:

	Ya	Tidak
Masalah batuk atau pernafasan yang saya alami menyebabkan saya berasa malu apabila berada di khalayak ramai	☐	☐
Masalah pernafasan saya menyusahkan keluarga, kawan-kawan atau jiran	☐	☐
Saya menjadi takut atau panik jika saya sesak nafas	☐	☐
Saya berasa saya tidak dapat mengawal masalah pernafasan saya	☐	☐
Saya tidak menjangka masalah pernafasan saya akan bertambah baik	☐	☐
Saya menjadi lemah atau tidak berdaya akibat masalah pernafasan saya	☐	☐
Senaman tidak selamat bagi saya	☐	☐
Semua perkara memerlukan usaha yang banyak	☐	☐

Seksyen 5: Soalan-soalan tentang rawatan (ubat-ubatan) yang diterima. Jika anda tidak menerima sebarang rawatan, teruskan menjawab soalan pada seksyen 6.
Untuk setiap butiran, sila tandakan (✓) pada kotak jika berkaitan dengan anda sejak akhir-akhir ini:

	Ya	Tidak
Ubat-ubatan yang diambil tidak banyak membantu saya	☐	☐
Saya berasa malu apabila menggunakan ubat-ubatan di khalayak ramai	☐	☐
Saya mengalami kesan buruk yang tidak menyenangkan akibat daripada ubat-ubatan saya	☐	☐
Ubat-ubatan yang diambil amat mengganggu kehidupan saya	☐	☐

Seksyen 6: Berikut adalah soalan-soalan tentang jenis kegiatan yang anda lakukan yang mungkin terjejas akibat masalah pernafasan anda.
Untuk setiap butiran, sila tandakan (✓)pada kotak jika berkaitan dengan masalah pernafasan anda:

	Ya	Tidak
Saya mengambil masa yang lama untuk mandi atau berpakaian	☐	☐
Saya tidak boleh berendam atau mandi, atau saya mengambil masa yang terlalu lama untuk berbuat demikian	☐	☐
Saya berjalan agak lambat jika dibandingkan dengan orang lain, atau saya perlu berhenti untuk berehat	☐	☐
Kerja seperti mengemas rumah memakan masa yang terlalu lama, atau saya terpaksa berhenti untuk berehat	☐	☐
Jika saya menaiki satu tingkat anak tangga, saya perlu berjalan perlahan-lahan atau berhenti	☐	☐
Jika saya berjalan cepat atau tergesa-gesa, saya harus berhenti atau memperlahankan langkah saya	☐	☐
Masalah pernafasan menyukarkan saya melakukan kegiatan seperti mendaki bukit, membawa barangan sambil menaiki tangga, kerja ringan di kebun seperti merumput, menari, bermain boling atau bermain golf	☐	☐
Masalah pernafasan menyukarkan saya melakukan kegiatan seperti mengangkat beban yang berat, mencangkul di kebun, berlari anak atau berjalan cepat (8 km/jam), bermain tenis atau berenang	☐	☐
Masalah pernafasan saya menyukarkan saya melakukan kegiatan seperti melakukan kerja berat, berlari, berbasikal, berenang deras atau menyertai sukan yang memerlukan stamina yang tinggi	☐	☐

Seksyen 7: Kami ingin tahu bagaimana masalah pernafasan yang anda alami biasanya memberi kesan terhadap kehidupan harian anda.
Untuk setiap butiran, sila tandakan (✓) pada kotak jika berkaitan dengan masalah pernafasan anda :

	Ya	Tidak
Saya tidak boleh bersukan atau bermain	☐	☐
Saya tidak boleh keluar untuk berhibur atau berekreasi	☐	☐
Saya tidak boleh keluar rumah untuk membeli-belah	☐	☐
Saya tidak boleh membuat kerja rumah	☐	☐
Saya tidak boleh bergerak jauh daripada katil atau kerusi saya	☐	☐

Berikut disenaraikan beberapa kegiatan lain yang mungkin anda tidak dapat lakukan disebabkan oleh masalah pernafasan anda. (Anda tidak perlu tandakan kegiatan tersebut. Senarai kegiatan ini hanya untuk makluman anda bagaimana kesesakan nafas boleh mempengaruhi anda):

- Bersiar-siar
- Melakukan perkara di dalam rumah atau kebun
- Melakukan perhubungan seks
- Pergi ke tempat ibadat atau pergi ke tempat hiburan
- Keluar semasa keadaan cuaca buruk (hujan, berjerebu dsb.) atau masuk ke dalam bilik yang dipenuhi asap rokok
- Menziarahi keluarga atau rakan atau bermain bersama kanak-kanak
- Sila tuliskan kegiatan lain yang penting yang anda tidak dapat lakukan disebabkan oleh masalah pernafasan anda:

_____

_____

_____

Akhir sekali, tandakan (✓) pada satu kotak sahaja, yang pada pendapat anda benar-benar menunjukkan bagaimana masalah pernafasan mempengaruhi anda:

Masalah ini tidak menghalang saya daripada melakukan sebarang kegiatan yang saya suka lakukan ☐
Masalah ini menghalang saya daripada melakukan satu atau dua kegiatan yang saya suka lakukan ☐
Masalah ini menghalang saya daripada melakukan banyak kegiatan yang saya suka lakukan ☐
Masalah ini menghalang saya daripada melakukan kesemua kegiatan yang saya suka lakukan ☐

Terima kasih kerana menjawab soal selidik ini. Sebelum menamatkan soal selidik ini, sila pastikan anda sudah menjawab semua soalan.