Chronic Obstructive Pulmonary Diseases in Thailand : Incidence, Prevalence, Present Status and Future Trends†

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Abstract

Material and Method : Data on cases of COPD in 1999 were collected.

Results :

	Phitsanulok	Khon Kaen	Buri Ram	Chon Buri	Chanthaburi	Songkhla	Average
Prevalence (per 100,000)	2,381	1,979	1,128	2,244	2,120	2,597	2,075
Incidence (per 100,000)	615	236	-	545	295	324	403

The mortality rate was 0.6-3.4 per cent in OPD cases and 11-17 per cent in IPD cases. The hospital stay was 2-90 days (mean 14 days). The cost per day in the ICU of government hospitals was Bht 7,000 and in private hospitals Bht 10,000.

Key word : Chronic Obstructive Pulmonary Disease, Incidence, Prevalence, Present Status and Future Trends

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Chronic obstructive pulmonary disease (COPD, is still one of the leading causes of intensive care admission and high mortality in Thailand and worldwide. In order to evaluate the present health status of patients with COPD, the authors collected data from hospitals in different parts of Thailand.

MATERIAL AND METHOD

The authors searched and developed the prevalence rate and incidence rate from their own Thai data.

The prevalence rate was calculated using the formula :

Number of all individuals who had COPD x 10^6 divided by the population at risk of having the disease at this point in time.

The incidence rate was calculated using the formula :

The number of new cases in a specified period x 10^6 was divided by the number of persons exposed to risk during this period.

The number of COPD patients and new cases in 1998 from January 1 to December 31 were requested from the medical records in different hospitals from each part of Thailand.

Phitsanulok Hospital provided data representing the northern part, Khon Kaen Hospital, Khon Kaen University Hospital and Buri Ram Hospital representing the north-east, Chon Buri Hospital and Chanthaburi Hospital representing the central part. Songkhla Hospital and University Hospital represented the southern part.

The population at risk was calculated from number of population aged 40 years or older x the percentage of smokers in that part of the country. To our knowledge, it will take a smoker 30 years to develop COPD. So, those who start smoking at 10 years of age may develop COPD at 40 years old.

From the National Statistics Office, the percentage of smokers aged more than 10 years old and the annual change rate among smokers are shown in Table 1 and 2.

Table 1. Percentage of smokers in different parts of Thailand in 1998.

	%
Bangkok	15.93
Central (except Bangkok)	22.4
North	25.88
North-East	25.09
South	24.79
Overall	23.4

Table 2. Percentage and annual change rate among smokers.

	1986	1996	Annual rate change
% Smokers	26.4	23.4	0.3/yr
% male smokers	48.8	44.6	0.42/yr
% female smokers	4.1	2.5	0.16/yr

Table 3. Prevalence and incidence of COPD patients in 1998.

	Prevalence (per 100,000)	Incidence (per 100,000)
North		
Phitsanulok	2,381	615
North-east		
Khon Kaen	1,979	236
Buri Ram	1,128	NA
Central		
Chon Buri	2,244	545
Chanthaburi	2,120	295
South		
Songkhla	2,597	324
Average	2,075	403
Bangkok	2,386	463

NA = Not available
Khon Kaen included Khon Kaen Hospital and University Hospital
Songkhla included Hat Yai Hospital and University Hospital
Population at risk = those aged more than 40 years x % smokers
Prevalence in Bangkok = average prevalence x 1.15 (factors from air pollution)

RESULTS

The prevalence and incidence rate were calculated and shown in Table 3.

The data from Khon Kaen University Hospital from 1994 to 1998 (Table 4), the authors demonstrated that male patients aged between 40-50 suffered from acute exacerbation 1.6 times per person per year, admission rate was 0.6 per person per year and the mortality rate was 0.5 per cent.

Table 4. Disabilities and mortality in different age groups.

Age	Khon Kaen Hospital, 1994-1998 OPD (per person) per year Male	OPD Female	IPD (per person) per year Male	IPD Female	MR (%) Male	MR (%) Female
40-50	1.6	1.4	0.6	0.4	1	0
51-60	2.3	1.5	1.3	0.4	0.5	1.4
61-70	2.6	1.8	1.2	0.8	0.8	0.6
70+ up	3	2.7	1.3	1.1	4.4	3.4

OPD = patients with acute exacerbation being treated at the OPD
IPD = being admitted in the hospital

The morbidity and mortality rate increased slightly when patients were aged 61-70 years. The morbidity and mortality rate was much higher when patients were more than 70 years, the acute attack rate was 3 times per year and admission rate was 1.3 times per year while the mortality rate was very high at 4.4 per cent.

Among female patients, the disabilities were slightly lower than for male patients. But one factor was common to both, i.e. : increased age resulted in increased morbidity and mortality rate. Data for the whole country revealed that, the mortality rate was 0.6-3.4 per cent in OPD cases and 11-17 per cent in IPD cases.

The cost per day for patients with COPD who were put in the intensive care unit and on a respirator was 7,000 Baht in a government hospital and 10,000 Baht in a private hospital. This updated cost was quoted on Jan 24, 2000. The average hospital stay was 14 days, range 2-90 days.

Future trend of COPD attributable to cigarette smoking and air pollution

The authors predicted the future trend *via* sources which were the same as that for the prevalence rate.

From data collected by the authors from each part of Thailand.

1. The future population from the National Statistic office for the next 10 years (2001-2010).

2. The smoking rate and annual rate change (Table 2).

3. Using the present prevalence rate, the authors then calculated the prevalence rate for the next 10 years as follows. (Table 5).

$$\text{Predicted prevalence rate at year t} = \frac{\text{Number of COPD patients at year t-1}}{\text{Number of the population at year t and age} \geq 40 \text{ y x \% of smoking at year t}}$$

$$P(t) = \frac{P(1)}{(1+g)(1+\Delta Psm)}$$

P(t) = prevalence, this year
P(l) = prevalence, last year
PBKK = P(t) x 1.15 = Prevalence in Bangkok

1997 Psm = 23.4%
ΔPsm - 0.3/23.4% per year = - 0.128
P 1998 = 1642/100,000 population at risk

Table 5. Projection of prevalence of COPD patients for the next 10 years.

Year	Prevalence rate
2001	2,268
2002	2,866
2003	2,583
2004	2,814.27
2005	3,154.20
2006	3,592.71
2007	4,152.53
2008	4,888
2009	5,820.62
2010	7,035.33

DISCUSSION

The deteriorating lung functions of patients with COPD have an unavoidable prognosis. Usually, those who continue to smoke would have an annual loss of 50 ml in FEV1, those who have already stopped smoking would have an annual loss of 30 ml in FEV1 while nonsmokers would have an annual loss of only 20 ml in FEV1. Acute exacerbation is expected and patients would be admitted to the hospital when they grow older because of precipitating factors such as upper respiratory tract infection, bronchitis, pneumothorax, congestive heart failure, arrhythmia, upper gastrointestinal bleeding, or receiving sedative drugs.

In recent years, a better prognosis has been obtained among patients who received long-term oxygen therapy (LTOT). One retrospective study of 124 patients (76 males and 48 females, with a mean age of 68 years) using LTOT was presented[1]. Survival during LTOT was similar in patients with and without severe hypoxemia at the same level of loss of lung function[1]. Another one interesting finding was that females lived significantly longer than males ((P<0.005), RR = 0.341). The 2 and 5 year survival rates were 73 per cent and 50 per cent, respectively among patients with PaO2 > 7.4 kPa.

Factors to determine prognosis were also reported to be, stopped smoking, steroid treatment and followed in a specialized unit of respiratory medicine, and pollution control[2-5]. Sixty-five per cent of the studied patients had recently stopped smoking. This may be one of the main contributors to the lower mortality among patients using LTOT. Compliance is a critical issue in respect to abstinence from smoking. Long-term daily corticosteroid treatment, either by inhalation or systemic administration, also tends to reduce the decline in lung function[6].

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โรคหลอดลมอุดกั้นเรื้อรังในประเทศไทย: อุบัติการณ์, ความชุก, ปัจจุบันและแนวโน้มในอนาคต†

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คณะผู้ศึกษาได้รวบรวมข้อมูลผู้ป่วยโรคหลอดลมอุดกั้นเรื้อรังนี้ พ.ศ.2542 พบว่า

	พิษณุโลก	ขอนแก่น	บุรีรัมย์	ชลบุรี	จันทบุรี	สงขลา	รวมเฉลี่ย
ความชุก (ต่อ 100,000)	2,381	1,979	1,128	2,244	2,120	2,597	2,075
อุบัติการณ์ (ต่อ 100,000)	615	236	-	545	295	324	403

อัตราตาย – 11–17% ในผู้ป่วยที่รับไว้ในโรงพยาบาล
– 0.6–3.4% ในผู้ป่วยนอก
ระยะเวลาในการครองเตียง 2 – 90 วัน (เฉลี่ย 14 วัน)
ค่าใช้จ่ายต่อวันในผู้ป่วยที่ใส่เครื่องช่วยหายใจในหอผู้ป่วยหนัก
– ในโรงพยาบาลรัฐบาลเท่ากับ 7,000 บาท
– ในโรงพยาบาลเอกชนเท่ากับ 10,000 บาท

คำสำคัญ : โรคหลอดลมอุดกั้นเรื้อรัง, อุบัติการณ์, ความชุก, ปัจจุบันและแนวโน้มในอนาคต

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