

DRAFT

**Chronic Obstructive Pulmonary Disease (COPD):
Consistent Estimates of Incidence, Prevalence,
and Mortality by WHO Region**

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1. Introduction

Despite the fact that COPD is now prevalent in both developed and developing countries as the result of tobacco epidemic, precise figures on its prevalence is surprisingly scanty in many parts of the world (Chen and Mannino 1999; Barnes 2000; Hurd 2000) There is now a consensus that COPD is characterised by airway obstruction with lung function levels of $FEV_1/FVC < 70\%$ and presence of a post-bronchodilator $FEV_1 < 80\%$ of the predicted value that is not fully reversible (Petty 1998; Pauwels et al 2001). However, population-based estimates of COPD prevalence by region has been problematic since the disease is progressive, measurement tools and definitions still vary among studies, and implementation of spirometry is often not feasible in developing regions (Rennard 1998).

In such circumstances, the observed incidence and prevalence become highly dependent on factors other than the true occurrence of disease (Table 1). For example, prevalence based on self-reported symptoms (chronic cough, sputum, etc.) most likely overestimates true COPD prevalence due to misclassification of other possible respiratory diseases. In fact, it is suggested that only half of patients with symptoms of chronic bronchitis have actual COPD. On the other hand, physician-diagnosis usually underestimates true COPD prevalence. In the United States, for instance, approximately 60-70% of those with lower FEV1 have never had diagnosis of COPD (Mannino et al. 2000). Furthermore, there is a considerable variation among studies in terms of case definition, study design, sample size, and data analysis, which makes the comparison among studies more difficult (see Appendix 1).

**Table 1 Difference in COPD prevalence by definition
(age groups 30 years and over)**

| Region | Symptoms | Physician-diagnosis | Spirometry |
|---------|----------|---------------------|------------|
| AFRO D | 1-3% | - | - |
| AFRO E | - | - | - |
| AMRO A | 5-15% | 1-3% | 2-5% |
| AMRO B | 5-13% | - | - |
| AMRO D | - | - | - |
| EMRO B | 2-10% | - | 1-2% |
| EMRO D | - | - | - |
| EURO A | 10-20% | 2-5% | 3-7% |
| EURO B | 10-20% | - | - |
| SEARO B | - | - | - |
| SEARO D | 2-7% | - | - |
| WPRO A | 10-15% | - | 2-5% |
| WPRO B1 | 2-8% | - | 1-3% |

(Source: Compilation of selected studies in Appendix 1)

Since precise prevalence figures are not available in many developing regions, the alternative approach is to infer the disease occurrence from mortality figures with the help of the mathematical constraints imposed on the consistent epidemiological relationships among prevalence/incidence, remission and mortality rates (Barendregt et al. 2000). Therefore, the

purpose of the present study is to derive consistent estimates of incidence, prevalence, and mortality of COPD from available data on mortality and to assess the plausibility of this approach by comparing the estimates with data from recent national burden of disease studies and other published data.

2. Methods

(1) DISMOD II

DISMOD II developed by the World Health Organization was used to back calculate the consistent estimates of COPD incidence/prevalence (Mathers et al. 2001). The main advantage of DIMOD is that incidence, prevalence and mortality figures are linked through the causal chain of a disease process and this chain limits the possible combinations of incidence, prevalence and mortality rates (Barendregt et al. 2001). Limits can be imposed since any prevalent case must have become incident at younger age, and any person died with a disease must have become incident previously and have been prevalent. Thus jointly estimated these rates are internally consistent (Murray and Lopez 1996).

Let m_d , m_1 , and m_0 denote COPD-related death and total mortality rates of those with and without COPD. Using relative risk of death from COPD (R), the relationship between m_1 and m_0 is:

$$m_1 = m_0 R.$$

Then average population mortality m can be expressed as:

$$m = m_1 p + m_0 (1 - p)$$

where p is prevalence of COPD. Thus, COPD-related mortality rate in this population is:

$$M_d = p(m_1 - m_0) = \frac{p(R-1)m}{pR + 1 - p}.$$

Suppose we have data on m_d , m , and R . We can now solve for prevalence p of the form:

$$p = \frac{m_d}{(R-1)(m - m_d)}.$$

Incidence rate can be easily derived from the above equation of the form:

$$i_t = \frac{p_{t+1}(1 - m_d) - p_t + m_d}{1 - p_t}$$

where p_t and p_{t+1} are prevalence rates between age t and age $(t+1)$ (Barendregt et al. 2000)

Three variables, most often incidence/prevalence, remission, and age-specific mortality, are required, but when incidence/prevalence are not given, remission, age-specific mortality and case-fatality/relative risk of death can be used with DISMOD II to obtain consistent epidemiological parameters for each sequel. We obtained age- and sex- specific COPD mortality by WHO region from the latest Global Burden of Disease (GBD) data set (Figure 1). Since we already have two of the necessary inputs for COPD (age- and sex-specific mortality and zero remission), we need to estimate case-fatality rate or relative risk (RR) of COPD-related death by age and sex.

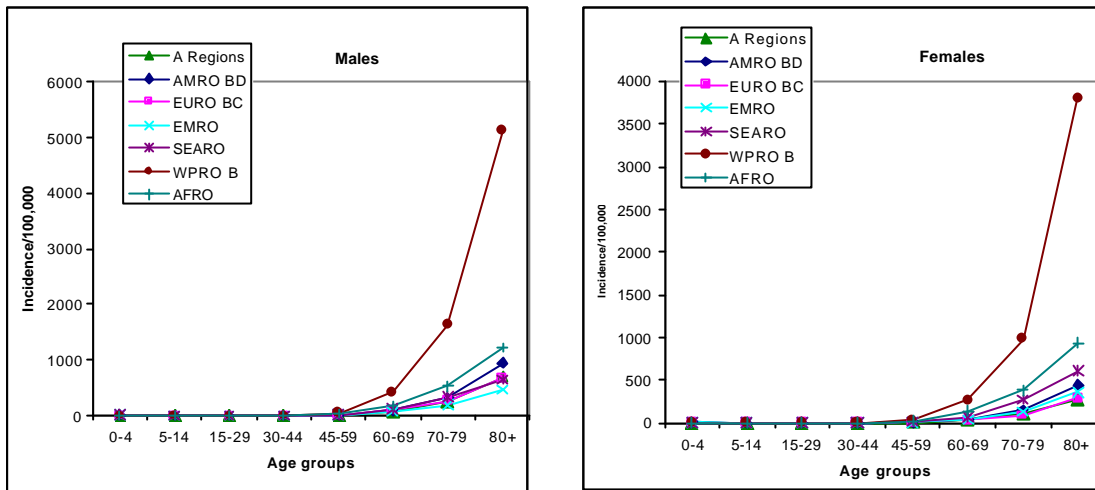


Figure 1

Age-standardised COPD mortality rate by WHO region

(2) Relative risk estimation

Two possible methods can be proposed. One is to trace the natural history of typical COPD patients, and to estimate case-fatality rate directly or to derive relative risk of death by comparing survival curves between groups of COPD patients and a healthy population (i.e.,

$$RR = \frac{DR_{COPD}}{DR_{NoCOPD}}$$

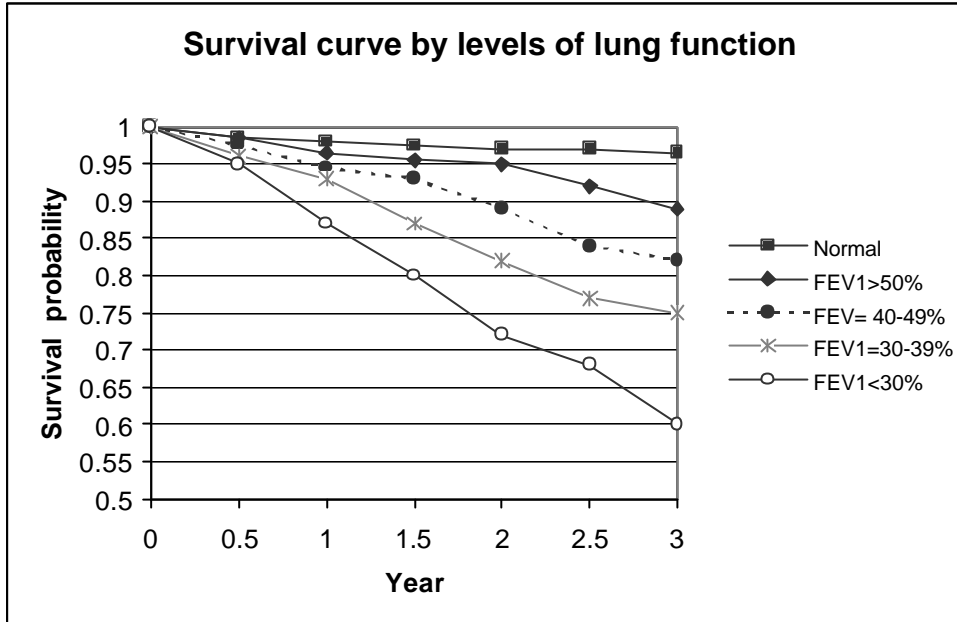
where DR_{COPD} and DR_{NoCOPD} are death rates among populations with and without COPD).

In GBD 1990 mortality relative risk was estimated by comparing survival probability between severe COPD cases and a healthy population in the United States. This assumption is, however, implausible since survival probability varies depending on severity of disease, which in turn depends on the distribution of risk factors (Anthonisen et al. 1986; Burrows et al. 1987; Hodgkin 1990) (Figure 2).

Furthermore, some developing regions have higher background mortality levels among non-smokers. For example, in China, risk of death from COPD among non-smokers is much higher and thus relative risk of death from smoking is only one-tenth of that in the Established Market Economies (EME) Region in GBD 1990 (Liu et al 1998; Murray and Lopez 1996). There is also a considerable discrepancy in the pattern of age-specific relative risks of COPD death in the recent United States Burden of Disease Study (based on actual mortality survey) and GBD 1990 (estimated from survival curve) in both sexes. Therefore, the use of survival schedule from only severe COPD and application of a uniform relative

risks across all regions in 1990 GBD exercise may have biased the results particularly in the regions where distribution of risk factors is considerably different from that in the United States.

Figure 2



(Source: Anthonisen et al., 1986, Hodgkin, 1990)

The alternative approach to approximating relative risk of COPD mortality by that of risk factors associated with COPD (i.e., $RR = \frac{DR_1}{DR_0}$ where DR_1 and DR_0 are death rates in exposed and unexposed groups). We modelled COPD mortality as a function of risk factors and other possible determinants along with regional fixed-effects of the form:

$$r_{ij} = \frac{M_{ij}}{PY_{ij}} = \exp[\mathbf{a} + \sum_i \mathbf{b}_i X_i + \mathbf{f}_j REGION_j + \mathbf{e}_{ij}]$$

where

- r_{ij} = age- and sex- specific COPD mortality rate,
- M_{ij} = number of death in each age group,
- PY_{ij} = person-years at risk approximated by mid-year population by age and sex
- X_i = risk factor variables
- $REGION_j$ = regional fixed-effect.

Goodness-of-fit and deviation of errors were assessed to choose the best fit regression model. By modelling in this way, relative risk of death from COPD for each region can be approximated by relative risk of COPD risk factors:

$$RR = \frac{DR_1}{DR_0} = \exp\left[\sum_i b_i (X_{i1} - X_{i0})\right].$$

Only three risk factors are identified that cause COPD on their own: 1) cigarette smoking; 2) heavy exposure to occupational and indoor air pollution; and 3) alpha-1 antitrypsin deficiency (Sherrill et al. 1990; Petty 1998; Chen and Mannino 1999; Pauwels et al 2001). While cigarette smoking accounts for 80-90 per cent of COPD risks in developed countries (Chen and Mannino, 1999), smoking behaviour alone is not sufficient to explain the geographical difference in prevalence rate of symptoms (Lambat and Reid, 1970). Prevalence rate for symptoms were found to increase with increasing levels of air pollution independently of cigarette smoking consumption, indicating that outdoor and indoor air pollution may account for the geographical differences. Several studies in developing countries have shown a significant relationship between female COPD prevalence and the biofuel use (Behera and Jindal 1991; Dennis et al. 1996; Perez-Paddila et al. 1996).

Although excess mortality was noted during the period of outdoor air pollution in both developed and developing countries (Saldiva et al 1995), to date the role of outdoor air pollution in the etiology of COPD remains unclear (Chen and Mannino, 1999). WHO's Comparative Risk Assessment database provides information on exposure to both smoking and indoor air pollution by region. Although data on occupational dust exposure is not yet available and will be included in the future analysis, its role may be much smaller compared to that of cigarette smoking and indoor air pollution (Hnizdo 1992). Finally, severe alpha-1 antitrypsin deficiency is a recessive trait common in individual of Northern Europe origin and virtually absent from other populations. Prevalence is far less than 1 per cent of general population in the region and thus excluded from the model.

Other potential factors related to COPD prevalence include: age, sex, race/ethnicity, and socio-economic status (Pauwels et al 2001). Increasing prevalence with advancing age may reflect either cumulative exposure to smoking and other risk factors or loss of elasticity of lung tissue or both. To take into account the latter factor, model incorporates age as an independent variable.

In general, COPD is more prevalent in males, but this may reflect differential exposure to risk factors. In fact, higher COPD prevalence was observed among women in SEARO Region than men due to indoor air pollution (Pandy 1984; Behera and Jindal 1991). On the other hand, some researchers suggest that women are more susceptible to tobacco while others suggest no gender difference in susceptibility to risk factors (Xu et al., 1994; Prescott et al., 1997). In the present study, however, sex variables was included in the model to adjust for the sex differential in risk exposure and possible susceptibility since the data on biofuel use is only available as a proportion of population exposed to fuel. It is also suggested that high COPD prevalence is observed among certain races and ethnic groups, but this is most likely due to confounding by differences in exposure to risk factors, access to health care, etc. In the same token, socio-economic status may reflect such confounding factors and thus excluded from the model.

The final regression model used in the present study was as the following:

$$r_{ijk} = \frac{M_{ijk}}{PY_{ijk}} = \exp(a + \beta_1 SIR_{ijk} + \beta_2 AIR_{ijk} + \gamma_i SEX_i + d_j AGE_j + f_k REGION_k + e_{ijk})$$

where SIR is the smoking impact ratio which approximates cumulative past exposure to smoking (Peto et al, 1994), AIR is a proportion of household using biofuel, and SEX and AGE are dummy variables for gender and age, respectively.

From this regression mode, relatives risks of COPD-related mortality can be approximated by:

$$RR = \frac{DR_1}{DR_0} = \exp[\mathbf{b}_1(SIR_1 - SIR_0) + \mathbf{b}_2(AIR_1 - AIR_0)]$$

where SIR_0 and AIR_0 were set to zero in unexposed groups.

(3) Model validation

For the purpose of validating our model, we have compared the estimated relative risks for AMOR A and WPRO A with two recent burden of disease analyses in the United States and Australia, respectively. Population-based COPD prevalence measured by spirometry and mortality rates as well as corresponding DISMOD outputs are available in both studies.

Furthermore, DISMOD estimates of internally consistent prevalence rates were compared to published prevalence data based on spirometry measurement in each region where available (Table 2). When spirometry data are not available, prevalence based on symptoms was used as an upper bound of true COPD prevalence. If there is a discrepancy between DISMOD estimates and published literature, the inputs for DISMOD was calibrated after the careful review of the regional epidemiological pattern and the distribution of risk factors.

Table 2 Validation of model estimates

Comparison with published prevalence measured by spirometry where available and symptom-based prevalence as an upper-bound

| Region | Males | Females |
|---------|-------|---------|
| AFRO D | <1% | - |
| AMRO A | 3-5% | 2-4% |
| AMRO B | - | 2-4% |
| EMRO B | 1-2% | 1% |
| EMRO D | - | - |
| EURO A | 3-7% | 2-6% |
| EURO B | 2-8% | 2-5% |
| SEARO D | <2% | <1% |
| WPRO A | 2-4% | 2-3% |
| WPRO B1 | >3% | <3% |

(Source: Compilation of selected studies in Appendix 1)

(4) Disability weights

Internal consistent estimates of COPD incidence by region were used to estimate years lived with disability (YLDs) by region. Together with mortality estimates converted into years of

life lost (YLLs), overall COPD burden was measured by disability-adjusted life years (DALYs), which are the sum of YLDs and YLLs due to COPD.

The traditional approach of caring COPD patients has been to rely on pulmonary function test to quantify severity and to assess response to therapy. However, patients with COPD seek medical care because of symptoms, in particular dyspnea and inability to function, which clearly impact on an individual's HRQOL. Accordingly instruments have been developed to provide a standardized method to measure health status and levels of disability. One of the major reasons for measuring HRQOL is to detect how much HRQOL has changed in response to therapy (Mahler 2000).

It is suggested that when the FEV₁ falls to about 50% of that predicted for a healthy population, the individual typically first experiences some activity limitation because of dyspnoea. When FEV₁ reaches a level of 30-40% of predicted, there would be significant exercise limitations, which can be disabling (Fletcher and Peto 1977; Wise 1997).

For GBD estimation, we employ disability weights rather than disease-specific HRQOL scores. WHO is now undergoing a major revision of disability weights of each sequelae and the results of the population-based sampling survey on health status preferences are soon available. The original disability weights for untreated and treated COPD in GBD 1990 were 0.428 and 0.388, respectively (Murray and Lopez 1996). The recent national burden of disease studies in Australia and the United States employed an aggregated disability weight based on those from the Dutch disability weight exercise in which mild/moderate and severe COPD were assigned the weights of 0.17 and 0.53, respectively (Dutch exercise and Aus BOD).

In the present study, we decided that disability weights from these national burden of disease studies were employed in the major analysis and the future revision will be made when the final disability weights for GBD 2000 are available. For the purpose of comparison, YLDs based on current incidence estimates and GBD 1990 disability weights were calculated as well.

It has been suggested that treatments could improve quality of life among COPD patients but only smoking cessation can alter the prognosis and progression as confirmed in the large Lung Health Study (Anthonisen et al. 1994; Barnes 2000). Hence majority of current treatments for COPD are conservative and some improvement in QOL score has been observed (see, for example, Jones and Bosh 1997 for a bronchodilator; Lacasse et al 1996, Camp et al. 2000, and Finnety et al 2000 for lung rehabilitation; Jans et al. 2001 for treatment guidelines; Geddes et al 2000 for lung-volume-reduction surgery). Change in a generic HRQOL instrument (SF-36) score ranged from 14 per cent (rehabilitation) to 22 per cent (volume reduction surgery). For the assessment of treatment effect, we employed a conservative 14 per cent reduction in disability weight as a treatment effect, which is slightly larger than that in GBD 1990.

3. Results

(1) Risk factor analysis of COPD mortality by region

Table 3 shows the regression result of COPD mortality by region. Risk factor variables (i.e., smoking impact ratio and biofuel use), age, sex, and regional effects were all statistically significant. The final model achieved a considerably high goodness-of-fit with no systematic deviation among residuals. Predicted mortality was consistent with the GBD 2000 mortality data, except for females in EURO B3 and males in SEARO D where GBD 2000 estimates were lower than predicted values (Figure 4).

We used this model to estimate age- and sex- specific relative risks (RRs) of COPD-related mortality by region (Table 4). For the purpose of comparison, relative risks used in GBD 1990, current estimates, and the recent US national burden of disease study (unpublished) are graphically displayed in Figure 5. The patterns of age- and sex- specific RRs were consistent among studies except the GBD 1990 estimates.

Table 3
Poisson regression results of COPD mortality by region

| Variable | Coefficient | SE | p-value | 95% Conf. Interval | |
|----------------|-------------|-------|---------|--------------------|--------|
| constant | -5.445 | 0.012 | 0.000 | -5.468 | -5.421 |
| Age30-44 | 1.664 | 0.012 | 0.000 | 1.641 | 1.687 |
| Age45-59 | 3.694 | 0.011 | 0.000 | 3.672 | 3.715 |
| Age60-69 | 5.662 | 0.011 | 0.000 | 5.640 | 5.683 |
| Age70-79 | 6.922 | 0.011 | 0.000 | 6.901 | 6.943 |
| Age80+ | 8.068 | 0.011 | 0.000 | 8.047 | 8.089 |
| Sex (female=1) | -0.853 | 0.004 | 0.000 | -0.861 | -0.844 |
| SIR | 1.111 | 0.009 | 0.000 | 1.094 | 1.129 |
| Bio-fuel use | 2.108 | 0.016 | 0.000 | 2.077 | 2.138 |
| AFRO E | -0.059 | 0.006 | 0.000 | -0.071 | -0.048 |
| AMRO A | -0.073 | 0.012 | 0.000 | 0.049 | 0.097 |
| AMRO B | -0.060 | 0.008 | 0.000 | -0.075 | -0.044 |
| AMRO D | -0.705 | 0.014 | 0.000 | -0.732 | -0.678 |
| EMRO B | 0.093 | 0.013 | 0.000 | 0.068 | 0.117 |
| EMRO D | -0.734 | 0.011 | 0.000 | -0.755 | -0.713 |
| EURO A | -0.161 | 0.010 | 0.000 | -0.181 | -0.140 |
| EURO B1 | -0.796 | 0.007 | 0.000 | -0.810 | -0.781 |
| EURO B2 | -0.026 | 0.009 | 0.004 | -0.044 | -0.008 |
| SEARO B | -0.542 | 0.006 | 0.000 | -0.553 | -0.530 |
| SEARO D | -0.663 | 0.005 | 0.000 | -0.673 | -0.654 |
| WPRO A | -0.998 | 0.013 | 0.000 | -1.023 | -0.973 |
| WPRO B2/B3 | -1.795 | 0.005 | 0.000 | -1.805 | -1.784 |
| WPRO B1 | 1.017 | 0.004 | 0.000 | 1.009 | 1.025 |
| R ² | 0.942 | | | | |
| Log-likelihood | -47779 | | | | |

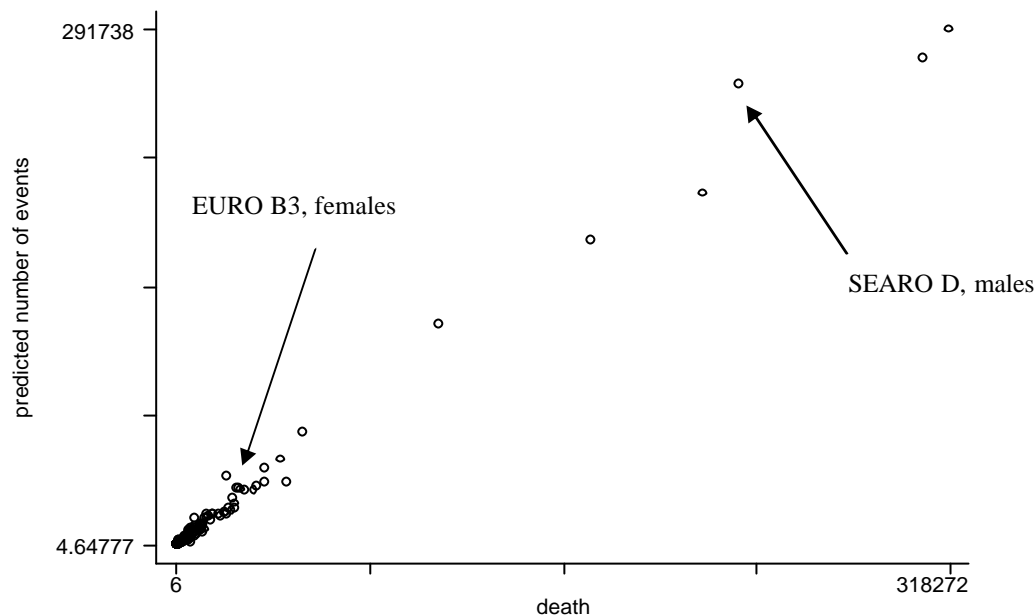


Figure 4

Original COPD mortality vs. predicated mortality

Table 4

Estimated relative risks of COPD-related death by age and sex

(1) Males

| Region | Age 15-29 | Age 30-44 | Age 45-59 | Age 60-69 | Age 70-79 | Age 80+ |
|---------|-----------|-----------|-----------|-----------|-----------|---------|
| AFRO D | 2.34 | 2.49 | 2.56 | 2.55 | 2.53 | 2.53 |
| AFRO E | 2.65 | 3.19 | 3.13 | 3.05 | 2.98 | 2.97 |
| AMRO A | 1.02 | 1.85 | 1.89 | 2.06 | 1.94 | 1.88 |
| AMRO B | 1.33 | 2.02 | 1.85 | 1.78 | 1.71 | 1.72 |
| AMRO D | 1.85 | 1.88 | 1.96 | 1.97 | 1.95 | 1.94 |
| EMRO B | 1.07 | 1.46 | 1.44 | 1.46 | 1.41 | 1.43 |
| EMRO D | 1.87 | 2.30 | 2.31 | 2.29 | 2.23 | 2.24 |
| EURO A | 1.01 | 2.30 | 2.15 | 1.98 | 1.79 | 1.64 |
| EURO B1 | 1.62 | 4.89 | 4.61 | 3.46 | 2.57 | 2.16 |
| EURO B2 | 1.62 | 2.79 | 2.47 | 2.17 | 1.90 | 1.74 |
| EURO B3 | 1.30 | 4.99 | 4.63 | 3.69 | 2.46 | 1.75 |
| SEARO B | 2.16 | 4.26 | 3.40 | 3.16 | 2.99 | 2.99 |
| SEARO D | 2.64 | 4.09 | 3.66 | 3.49 | 3.35 | 3.33 |
| WPRO A | 1.01 | 1.37 | 1.29 | 1.44 | 1.59 | 1.87 |
| WPRB1 | 2.48 | 3.21 | 2.79 | 2.71 | 2.66 | 2.63 |
| WPRB2 | 2.48 | 4.96 | 3.93 | 3.65 | 3.31 | 2.99 |

| | | | | | | |
|-------|------|------|------|------|------|------|
| WPRB3 | 2.48 | 3.57 | 3.27 | 3.15 | 2.95 | 2.75 |
|-------|------|------|------|------|------|------|

(2) Females

| Region | Age 15-29 | Age 30-44 | Age 45-59 | Age 60-69 | Age 70-79 | Age 80+ |
|---------|-----------|-----------|-----------|-----------|-----------|---------|
| AFRO D | 3.76 | 3.81 | 3.83 | 3.81 | 3.80 | 3.79 |
| AFRO E | 4.57 | 4.92 | 4.88 | 4.82 | 4.74 | 4.76 |
| AMRO A | 1.03 | 1.56 | 1.81 | 2.25 | 2.34 | 2.00 |
| AMRO B | 1.56 | 1.82 | 1.81 | 1.77 | 1.70 | 1.67 |
| AMRO D | 2.61 | 2.61 | 2.67 | 2.68 | 2.63 | 2.62 |
| EMRO B | 1.12 | 1.42 | 1.21 | 1.18 | 1.15 | 1.12 |
| EMRO D | 2.64 | 2.96 | 2.79 | 2.75 | 2.69 | 2.64 |
| EURO A | 1.01 | 1.32 | 1.23 | 1.24 | 1.26 | 1.22 |
| EURO B1 | 2.12 | 2.77 | 2.53 | 2.40 | 2.43 | 2.44 |
| EURO B2 | 2.12 | 2.44 | 2.22 | 2.19 | 2.15 | 2.12 |
| EURO B3 | 1.51 | 1.82 | 1.73 | 1.70 | 1.70 | 1.59 |
| SEARO B | 3.34 | 3.34 | 3.49 | 3.46 | 3.37 | 3.33 |
| SEARO D | 4.53 | 4.58 | 4.78 | 4.75 | 4.61 | 4.56 |
| WPRO A | 1.01 | 1.05 | 1.09 | 1.12 | 1.23 | 1.50 |
| WPRB1 | 4.11 | 4.25 | 4.19 | 4.24 | 4.25 | 4.19 |
| WPRB2 | 4.11 | 4.46 | 4.59 | 4.65 | 4.53 | 4.29 |
| WPRB3 | 4.11 | 5.16 | 4.97 | 4.92 | 4.88 | 4.60 |

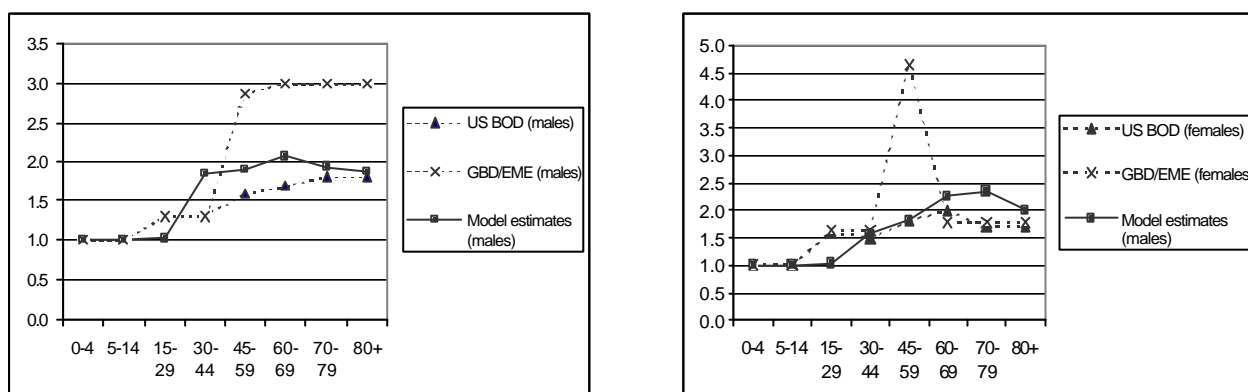


Figure 5

Comparison of relative risks of COPD-related mortality by age and sex

(2) Model validation

We compared the current estimates of COPD prevalence by region with both previous estimates based on GBD 1990 data and published prevalence figures during a past decade (Table 3). In general, the current model estimates were more consistent with the results of the published literature. In particular, the previous estimates highly underestimated COPD prevalence in AMRO A, EURO A and WPRO A in which prevalence of smoking was higher than in other regions. On the other hand, the current estimates yielded lower prevalence rates in AFRO D, AFRO E, and WPRO B1.

Table 5**Comparison of COPD prevalence (for age 30 years and over) by region**

| Region | Current estimates (%) | | Preliminary estimates based on GBD 1990 data (%) | | Published prevalence (%) | |
|---------|-----------------------|---------|--|---------|--------------------------|---------|
| | Males | Females | Males | Females | Males | Females |
| AFRO D | 1.0 | 0.5 | 2.4 | 1.4 | <1.0 | - |
| AFRO E | 0.6 | 0.3 | 2.1 | 1.3 | - | - |
| AMRO A | 3.6 | 2.8 | 1.4 | 0.7 | 3.0-5.0 | 2.0-4.0 |
| AMRO B | 3.0 | 2.9 | 1.5 | 0.8 | - | 2.0-4.0 |
| AMRO D | 0.8 | 0.4 | 1.4 | 0.7 | - | - |
| EMRO B | 1.9 | 0.8 | 0.9 | 0.9 | 1.0-2.0 | 1.0 |
| EMRO D | 0.8 | 0.5 | 0.9 | 0.9 | - | - |
| EURO A | 2.8 | 2.8 | 1.7 | 0.9 | 3.0-7.0 | 2.0-6.0 |
| EURO B1 | 1.3 | 1.2 | 1.7 | 0.9 | 3.0-8.0 | 2.0-5.0 |
| EURO B2 | 1.9 | 1.9 | 1.0 | 1.1 | 2.0-8.0 | 2.0-5.0 |
| EURO B3 | 2.0 | 1.9 | 1.5 | 1.1 | - | - |
| SEARO B | 1.3 | 0.9 | 1.2 | 0.6 | - | - |
| SEARO D | 0.7 | 0.6 | 1.7 | 1.3 | <2.0 | <1.0 |
| WPRO A | 2.5 | 2.3 | 1.9 | 1.0 | 2.0-4.0 | 2.0-3.0 |
| WPRO B1 | 3.5* | 1.5* | 4.8* | 4.5* | >3.0 * | <3.0 * |
| WPRO B2 | 2.4 | 2.2 | 1.2 | 0.5 | - | - |
| WPRO B3 | 1.2 | 0.4 | 1.0 | 0.4 | - | - |

* Age 15 years and over

(3) Version 1 estimation of COPD burden by region

Consistent estimates of incidence from DISMOD outputs were used to calculate years lived with disability (YLDs). Combined with years of life lost (YLLs) derived from mortality estimates, disability-adjusted life years (DALYs) due to COPD were also estimated for each region. Table 6 represents the preliminary estimates of total YLDs, YLLs, and DALYs due to COPD by region in 2000. Detailed estimates of age- and sex- specific incidence, prevalence and mortality by region are shown in Appendix 2.

Among the estimated global total of COPD burden, WPRO B1 (including China) and SEARO D (including India) accounted for 52 per cent and 11 per cent of the global total in 2000, respectively. Despite a smaller prevalence in these regions than in other regions where risk factors are more prevalent, a large population in both regions contributed a larger total number of morbidity from COPD. They were followed by smoking-prevalent regions such as EURO A (5.8 per cent) and AMRO A (4.8 per cent). Male-to-female ratios of total YLDs and YLLs were 1.6 and 1.4, respectively. The ratios tended to be higher in AFRO, EMRO, and WPRO B regions where smoking prevalence among females is still small.

Overall, YLDs accounted for 44 per cent of total COPD burden, but YLDs exceeded YLLs in regions such as AMRO A, EURO A, and WPRO A. Based on a preliminary result of global burden of disease in 2000 (Mathers et al. 2001), the present study suggests that approximately 2.1 per cent of total global burden were due to COPD. If disability weights in GBD 1990 were employed to estimate YLDs by using current estimates of incidence, overall COPD burden from disabling states increased by 63 per cent and total COPD burden accounted for 2.7 per cent of global total disease burden (Table 7).

Table 6
Version 1 estimates of YLDs, YLLs, and DALYs due to COPD by region, 2000

| | Incidence | | Incidence | | YLL/100,000 | YLL/100,000 | Total YLD (<i>'000</i>) | Total YLL (<i>'000</i>) | Total DALYs (<i>'000</i>) |
|--------------|--------------|--------------|--------------|--------------|---------------|---------------|------------------------------|------------------------------|--------------------------------|
| | YLD/100,000 | YLD/100,000 | YLL/100,000 | YLL/100,000 | | | | | |
| | Males | Females | Males | Females | | | | | |
| R01 AFRO D | 47.1 | 21.9 | 174.4 | 153.6 | 115 | 547 | 662 | | |
| R02 AFRO E | 41.9 | 14.1 | 187.2 | 146.5 | 94 | 563 | 657 | | |
| R03 AMRO A | 317.9 | 230.7 | 223.9 | 183.2 | 847 | 629 | 1,476 | | |
| R04 AMRO B | 183.9 | 211.4 | 151.0 | 90.5 | 875 | 533 | 1,408 | | |
| R05 AMRO D | 43.8 | 26.4 | 361.1 | 335.3 | 25 | 248 | 273 | | |
| R06 EMRO B | 97.6 | 42.9 | 78.0 | 66.4 | 99 | 101 | 200 | | |
| R07 EMRO D | 57.4 | 34.6 | 185.6 | 171.9 | 64 | 247 | 311 | | |
| R08 EURO A | 270.6 | 274.2 | 220.9 | 100.6 | 1,119 | 655 | 1,775 | | |
| R09 EURO B1 | 179.3 | 159.3 | 224.4 | 90.3 | 240 | 260 | 500 | | |
| R10 EURO B2 | 231.3 | 215.6 | 172.3 | 114.6 | 119 | 73 | 192 | | |
| R11 EURO B3 | 285.1 | 274.4 | 425.2 | 132.4 | 571 | 663 | 1,234 | | |
| R12 SEARO B | 148.3 | 115.5 | 172.1 | 98.3 | 520 | 533 | 1,053 | | |
| R13 SEARO D | 69.0 | 57.3 | 194.7 | 165.3 | 854 | 2,433 | 3,288 | | |
| R14 WPRO A | 205.4 | 182.7 | 88.5 | 34.9 | 290 | 92 | 381 | | |
| R15 WPRO B1 | 726.7 | 299.8 | 719.1 | 579.6 | 7,050 | 8,844 | 15,895 | | |
| R16 WPRO B2 | 316.3 | 216.4 | 547.7 | 478.0 | 449 | 728 | 1,177 | | |
| R17 WPRO B3 | 139.6 | 52.2 | 225.5 | 138.6 | 7 | 13 | 19 | | |
| Total | 272.8 | 167.7 | 325.9 | 241.3 | 13,339 | 17,162 | 30,502 | | |

Table 7
COPD burden by region when GBD 1990 disability weights were employed

| | Incidence | | Incidence | | YLL/100,000 | YLL/100,000 | Total YLD (<i>'000</i>) | Total YLL (<i>'000</i>) | Total DALYs (<i>'000</i>) |
|--------------|--------------|--------------|--------------|--------------|---------------|---------------|------------------------------|------------------------------|--------------------------------|
| | YLD/100,000 | YLD/100,000 | YLL/100,000 | YLL/100,000 | | | | | |
| | Males | Females | Males | Females | | | | | |
| R01 AFRO D | 119.9 | 55.7 | 174.4 | 153.6 | 293 | 547 | 840 | | |
| R02 AFRO E | 84.5 | 28.5 | 187.2 | 146.5 | 190 | 563 | 753 | | |
| R03 AMRO A | 622.1 | 449.5 | 223.9 | 183.2 | 1,655 | 629 | 2,284 | | |
| R04 AMRO B | 436.4 | 494.5 | 151.0 | 90.5 | 2,060 | 533 | 2,593 | | |
| R05 AMRO D | 99.6 | 60.1 | 361.1 | 335.3 | 57 | 248 | 305 | | |
| R06 EMRO B | 248.5 | 109.3 | 78.0 | 66.4 | 253 | 101 | 354 | | |
| R07 EMRO D | 131.8 | 79.4 | 185.6 | 171.9 | 146 | 247 | 393 | | |
| R08 EURO A | 461.9 | 440.9 | 220.9 | 100.6 | 1,854 | 655 | 2,509 | | |
| R09 EURO B1 | 188.6 | 215.8 | 224.4 | 90.3 | 336 | 260 | 596 | | |
| R10 EURO B2 | 308.9 | 311.8 | 172.3 | 114.6 | 158 | 73 | 231 | | |
| R11 EURO B3 | 242.9 | 411.1 | 425.2 | 132.4 | 816 | 663 | 1,479 | | |
| R12 SEARO B | 213.2 | 163.3 | 172.1 | 98.3 | 743 | 533 | 1,276 | | |
| R13 SEARO D | 127.9 | 106.5 | 194.7 | 165.3 | 1,585 | 2,433 | 4,018 | | |
| R14 WPRO A | 404.2 | 360.2 | 88.5 | 34.9 | 571 | 92 | 662 | | |
| R15 WPRO B1 | 1083.8 | 447.1 | 719.1 | 579.6 | 10,514 | 8,844 | 19,359 | | |
| R16 WPRO B2 | 393.3 | 392.4 | 547.7 | 478.0 | 558 | 728 | 1,286 | | |
| R17 WPRO B3 | 173.4 | 64.5 | 225.5 | 138.6 | 8 | 13 | 21 | | |
| Total | 441.7 | 278.3 | 325.9 | 241.3 | 21,796 | 17,162 | 38,959 | | |

Figure 6 shows the comparison of YLDs per 100,000 populations by region in GBD 1990 and GBD 2000 version 1 estimates. Total burden of COPD was larger in the GBD 1990 estimate than the present estimate partly because GBD 1990 tended to underestimate the COPD incidence in smoking prevalent regions such as AMRO A, EURO A and WPRO A and underestimate in AFRO and WPRO B1 regions, and partly because GBD 1990 employed higher severity weights across the regions. It should be noted, however, that actual

epidemiological parameters such as mortality and prevalence rates increased considerably in 2000.

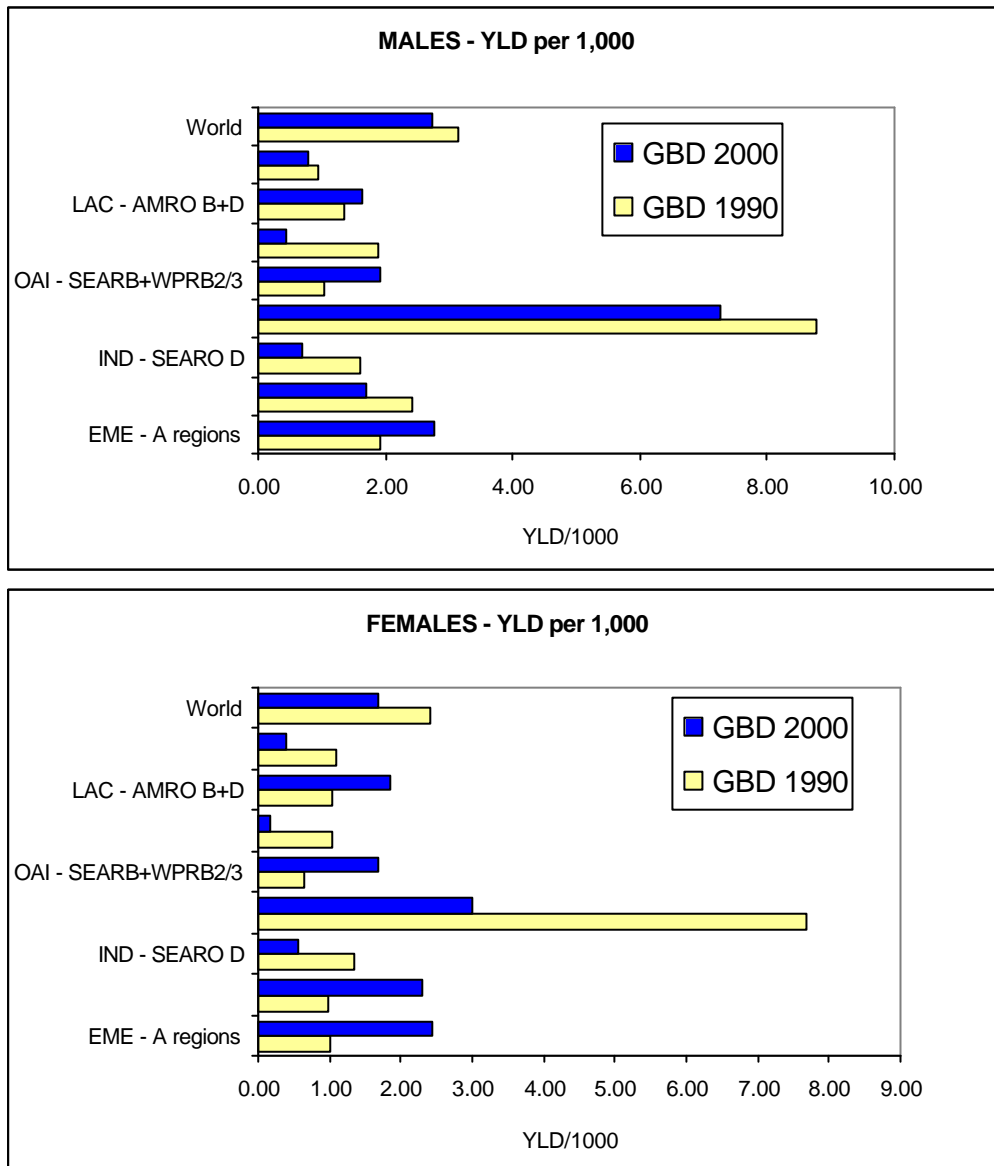


Figure 6
Comparison of YLDs per 100,000 in GBD 1990 and GBD 2000 version 1 estimates

4. Discussion

The present study has proposed an alternative approach to estimating COPD incidence, which was used for estimating years lived with disability (YLDs) in 2000. Compared to the previous

estimates in GBD 1990 (Murray and Lopez 1996), which employed uniform relative risks across the regions, the present method has an advantage of including regional variations in relative risks of COPD-related mortality. Several limitations should be noted, however.

First, estimated relative risks are not the true relative risks of COPD-related mortality, rather they are approximated by the two major risk factors of COPD: i.e., relative risks of joint effects of smoking and air pollution. On the other hand, since the goodness-of-fit of the regression model was considerably high, COPD-related mortality would be well represented by the risk factor analysis. Estimated prevalence rates were comparable to those published in the literature ensuring the validity of the present approach.

Second, COPD mortality estimated for GBD 2000 may be still underestimated. A recent study in Canada suggests that COPD mortality was much lower than that estimated by Mannino and colleagues from the US multiple causes of death data (Lacasse et al. 1999). In fact, a study by Mannino and colleagues suggested that mortality from COPD was highly underestimated when using vital statistics rather than multiple causes of death data (Mannino et al. 1997). If asthma was excluded as a cause of COPD death and cause of death was restricted to the primary cause, however, actual mortality figures in Canada and US were comparable since COPD often coexists with lung cancer and COPD may be often the secondary cause of death rather than the primary cause (Petty 1997). Therefore if the data on cause of death is restricted to the primary cause classified by ICD 9th or 10th revision as in GBD exercise, COPD mortality is at least comparable across the regions. Possibility of miscoding in COPD would be still smaller than other causes of death. Nevertheless the current estimate of COPD burden should be considered as a lower bound of true COPD burden.

Third, another problem of underestimated mortality would be overestimation of prevalence, particularly in SERAO D and EURO B3. Since a patient with a disease is selectively being removed from the population, its prevalence is lower than it would have been if the disease ran no excess mortality risk (Barendregt et al. 2000).

Finally, the main results from this study are estimates of COPD incidence rates, which are consistent with a corresponding set of prevalence and mortality rates and more importantly can be comparable to those in national burden of disease studies and published literature than the previous estimates. Although further population-based prevalence studies will be required to understand the true burden of COPD in the world and the proposed approach is not the solution to fill the gap between available data and true COPD burden, it can be used at least to assess the plausibility of current and future GBD estimates for COPD burden.

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Appendix 1. Review of recent studies on COPD prevalence by WHO region

| AFRO D | | | | | | | | | | | | | | | | | | | | | |
|--|------|--------------|--|--------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------|
| Region | Year | Country | Definition | Source | sex | unit | Total | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A8500 | Notes |
| AFRO D | 1975 | Nigeria | Symptom-based (MRC Questionnaire, 1544 subjects aged 31-70) | Sofowora, 1977 | M | % | 0.27 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| AFRO D | 1975 | Nigeria | Symptom-based (MRC Questionnaire, 1544 subjects aged 31-70) | Sofowora, 1977 | F | % | 0.24 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| AFRO D | 1976 | Zimbabwe | Symptom-based (MRC Questionnaire, 4494 subjects aged 20 and over) | Cookson and Mataka, 1978 | M | % | 1.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| AFRO D | 1976 | Zimbabwe | Symptom-based (MRC Questionnaire, 4494 subjects aged 20 and over) | Cookson and Mataka, 1978 | F | % | 2.8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| AFRO D | 1991 | Nigeria | Symptom-based (MRC Questionnaire, random sample of 804 male soldiers aged 15-60) | Harris-Eze, 1993 | M | % | 2.24 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | % smokers was 34% |
| Limited population groups (mostly occupational exposures) | | | | | | | | | | | | | | | | | | | | | |
| AFRO D | 198? | Morocco | Questionnaire for 1829 industrial workers (aged 20-60) | El Meziane 1984 | both | % | 6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| AFRO D | 198? | South Africa | Questionnaire among 582 exposed and 153 non-exposed workers. | Yach 1985 | both | % | 25 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | exposed group |
| AFRO D | 198? | South Africa | Questionnaire among 582 exposed and 153 non-exposed workers. | Yach 1985 | both | % | 11 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | unexposed group |
| Summary crude prevalence by definition: Spirometry = NA, Physician-diagnosis = NA, Symptom-based = 1-3% | | | | | | | | | | | | | | | | | | | | | |

| AMRO A | | | | | | | | | | | | | | | | | | | | | | |
|---------------|---------|---------|---------------------------------|-------------------|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Region | Year | Country | Definition | Source | sex | Unit | Total | A2024 | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A8500 | Notes |
| AMRO A | 1994-95 | Canada | Symptom-based (questionnaire of | Chen et al., 2000 | M | % | | | | | 1.8 | 1.8 | 1.5 | 1.5 | 5 | 5 | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------|-----|--|--|---|----------|------|-----|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|---------------------------------|---------------|
| AMRO A | 1983 | USA | Symptom-based (questionnaire survey of 1874 Hispanic populations aged 12-74) | Bang et al., 1990 | F | % | | 1.5 | 1.5 | 1.5 | 2.7 | 2.7 | 2.7 | 2.7 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | Cubans |
| AMRO A | 1984 | USA | Symptom-based (questionnaire survey of 2748 Hispanic populations aged 12-74) | Bang et al., 1990 | M | % | | 1.1 | 1.1 | 1.1 | 2 | 2 | 2 | 2 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | Puerto Ricans |
| AMRO A | 1984 | USA | Symptom-based (questionnaire survey of 2748 Hispanic populations aged 12-74) | Bang et al., 1990 | F | % | | 2.7 | 2.7 | 2.7 | 5 | 5 | 5 | 5 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | Puerto Ricans |
| AMRO A | 1985-87 | USA | Physician-diagnosis (HMO data) of those aged 65 and over | Osborne and Buist, 1998 | M | % | 9.9 | | | | | | | | | | | | | | | Only older age groups (over 65) | |
| AMRO A | 1985-87 | USA | Physician-diagnosis (HMO data) of those aged 65 and over | Osborne and Buist, 1998 | F | % | 4.2 | | | | | | | | | | | | | | | Only older age groups (over 65) | |
| AMRO A | 1988-94 | USA | Physician-diagnosis excl. asthma (20050 subjects in NHANES III) | Mannino for US BOD, and Petty and Master, 2000 | M | per 1000 | 28.5 | 3.1 | 13.4 | 13.4 | 24.0 | 24.0 | 39.7 | 39.7 | 75.1 | 75.1 | 106.8 | 106.8 | 87.6 | 87.6 | 87.6 | | |
| AMRO A | 1988-94 | USA | Physician-diagnosis excl. asthma (20050 subjects in NHANES III) | Mannino for US BOD, and Petty and Master, 2000 | F | per 1000 | 33.9 | 8.7 | 22.2 | 22.2 | 24.0 | 32.3 | 44.6 | 44.6 | 63.9 | 63.9 | 77.2 | 77.2 | 82.5 | 82.5 | 82.5 | | |
| AMRO A | 1988-94 | USA | Spirometry (20050 subjects in NHANES III) | Mannino for US BOD and Mannino et al., 2001 | M | per 1000 | 23.7 | 0.4 | 10.2 | 10.2 | 10.2 | 10.2 | 42.7 | 42.7 | 42.7 | 42.7 | 92.7 | 92.7 | 109.8 | 109.8 | 109.8 | | |
| AMRO A | 1988-94 | USA | Spirometry (20050 subjects in NHANES III) | Mannino for US BOD and Mannino et al., 2001 | F | per 1000 | 22.3 | 0.4 | 9.4 | 9.4 | 9.4 | 9.4 | 42.0 | 42.0 | 42.0 | 42.0 | 67.3 | 67.3 | 68.3 | 68.3 | 68.3 | | |
| Summary crude prevalence by definition: Spirometry = 2-5%, Physician-diagnosis = 1-3%, Symptom-based = 5-15% | | | | | | | | | | | | | | | | | | | | | | | |

| AMRO B | | | | | | | | | | | | | | | | | | | | | | |
|---|------|----------------|--|----------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| Region | Year | Country | Definition | Source | sex | Unit | Total | A2024 | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A8500 | Notes |
| Only indoor air pollution studies in rural areas | | | | | | | | | | | | | | | | | | | | | | |
| AMRO B | 199? | rural Bolivia | Symptom-based (MRC Questionnaire. Population-based cross-sectional study of 102 indoor and 139 outdoor cooking women.) | Albalak et al., 1999 | F | % | | 10 | 10 | 10 | 10 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | | | | High chronic bronchitis prevalence among indoor cooking women, 10% in age 20-40 and 33% in age over 40 |
| AMRO B | 1990 | Petros, Brazil | Symptom-based (ATS Questionnaire. Population-based cross-sectional study of 1053 individuals aged 40-75) | Menezes et al., 1994 | both | % | 12.7 | | | | | | | | | | | | | | | Lack of significance of some COPD risk factors may be due to high degree of multicollinearity. |
| Summary crude prevalence by definition: Spirometry = NA, Physician-diagnosis = NA, Symptom-based = 5-13% among high risk groups only | | | | | | | | | | | | | | | | | | | | | | |

| EURO A | | | | | | | | | | | | | | | | | | | | | | |
|--------|---------|---------|--|--------------------|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| Region | Year | Country | Definition | Source | sex | Unit | Total | A2024 | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A8500 | Notes |
| EURO A | 1988-91 | Italy | Symptom-based (ERS Questionnaire, 2841 subjects aged 8-73) | Viegi et al., 2000 | M | % | 10.8 | | 10.8 | 10.8 | 10.8 | 10.8 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | 14.5 | | | | Comparison of 3 different measures of COPD |
| EURO A | 1988-91 | Italy | Spirometry (2841 subjects aged 8-73) | Viegi et al., 2000 | M | % | 13.3 | | 13.3 | 13.3 | 13.3 | 13.3 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 | 33.1 | | | | ERS has higher specificity and predictive value positive than ATS criterion. |
| EURO A | 1988-91 | Italy | Symptom-based (ATS Questionnaire, 2841 subjects aged 8-73) | Viegi et al., 2000 | M | % | 32 | | 32 | 32 | 32 | 32 | 60.7 | 60.7 | 60.7 | 60.7 | 60.7 | 60.7 | | | | |
| EURO A | 1988-91 | Italy | Symptom-based (ERS Questionnaire, 2841 subjects aged 8-73) | Viegi et al., 2000 | F | % | 11.7 | | 11.7 | 11.7 | 11.7 | 11.7 | 12 | 12 | 12 | 12 | 12 | 12 | | | | |
| EURO A | 1988-91 | Italy | Spirometry (2841 subjects aged 8-73) | Viegi et al., 2000 | F | % | 6.5 | | 6.5 | 6.5 | 6.5 | 6.5 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | 22.2 | | | | |
| EURO A | 1988-91 | Italy | Symptom-based (ATS Questionnaire, 2841 subjects aged 8-73) | Viegi et al., 2000 | F | % | 22.2 | | 22.2 | 22.2 | 22.2 | 22.2 | 53.4 | 53.4 | 53.4 | 53.4 | 53.4 | 53.4 | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---------|-------------------|---|----------------------------|------|---|------|------------------------|----|----|----|----|----|----|-----|-----|-----|------|------|------|------|------|--|--|
| EURO A | 1993 | Iceland | Symptom-based (MRC Questionnaire, 1175 individuals aged 50 years and over) | Magnusson et al., 1998 | both | % | | | | | | | | | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 7.1 | 16.7 | 16.7 | Chronic bronchitis only and thus underestimated. | |
| EURO A | 1988 | South-West France | Symptom-based (Questionnaire, 3777 subjects over 65 years) | Nejjari et al., 1996 | M | % | 20 | 65 years and over only | | | | | | | | | | | 8 | 17 | 19 | 29 | 21 | Chronic bronchitis only. Only aged 65 years and over. |
| EURO A | 1988 | South-West France | Symptom-based (Questionnaire, 3777 subjects over 65 years) | Nejjari et al., 1996 | F | % | 8 | 65 years and over only | | | | | | | | | | | 6 | 8 | 10 | 10 | 7 | Chronic bronchitis only. Only aged 65 years and over. |
| EURO A | 1997 | UK | Physician-diagnosis | Soriano et al., 2000 | M | % | 1.7 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Only registered COPD patients and thus underestimated. |
| EURO A | 1997 | UK | Physician-diagnosis | Soriano et al., 2000 | F | % | 1.3 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Only registered COPD patients and thus underestimated. |
| EURO A | 1995 | Sweden | Symptom-based (Questionnaire of 7104 individuals aged 20-69) | Lindstrom et al., 2001 | both | % | 11 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| EURO A | 1995 | Sweden | Physician-diagnosis (Questionnaire of 7104 individuals aged 20-69) | Lindstrom et al., 2001 | both | % | 3.1 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| EURO A | 1995 | Finland | Symptom-based (Questionnaire of 6633 individuals aged 20-69) | Lindstrom et al., 2001 | both | % | 7 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| EURO A | 1995 | Finland | Physician-diagnosis (Questionnaire of 6633 individuals aged 20-69) | Lindstrom et al., 2001 | both | % | 3.8 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| EURO A | 1992-94 | UK | Questionnaire and confirmation with spirometry for chronic airways obstructions | Renwick and Connolly, 1996 | both | % | 15.4 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Not representative sample, includes asthma patients, and thus highly biased. |
| EURO A | 198? | UK | Symptom-based (Questionnaire, 1803 subjects aged 65 and over) | Horsely et al., 1991 | both | % | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | Only for older age groups (65 and over) |
| EURO A | 198? | UK | Spirometry (selected 296 patients) | Dow et al., 1992 | both | % | 15.6 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Selected patients and not representative |

| | | | | | | | | | | | | | | | | | | | | | | sample | |
|--------|---------|---------|---|--------------------------|------|---|------|-------------------|--|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|--------|---|
| EURO A | 1992 | Sweden | Symptom-based (MRC Questionnaire of 12071 subjects aged 20-59 years) | Montnemery et al., 1998 | both | % | 4.6 | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Only younger age groups (20-59) |
| EURO A | 1990-91 | Finland | Spirometry (Questionnaire and spirometry for confirmation, 488 males and 708 females aged over 65) | Isoaho et al., 1994 | M | % | 12.5 | 65 years and over | | NA | NA | NA | NA | NA | NA | NA | 14 | 14 | 9.6 | 9.6 | 9.6 | | Older age groups only |
| EURO A | 1990-91 | Finland | Spirometry (Questionnaire and spirometry for confirmation, 488 males and 708 females aged over 65) | Isoaho et al., 1994 | F | % | 3 | 65 years and over | | NA | NA | NA | NA | NA | NA | NA | 3.6 | 3.6 | 2.1 | 2.1 | 2.1 | | Older age groups only |
| EURO A | 1996-97 | Spain | Spirometry (Questionnaire, exclusion of asthma, and confirmation with spirometry, 4035 subjects aged 40-69) | Sobradillo et al., 2000 | M | % | 14.3 | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | COPD definition of FEV1/FVC<88%, less strict than the Gold definition of <70%, and thus overestimated prevalence figure. |
| EURO A | 1996-97 | Spain | Spirometry (Questionnaire, exclusion of asthma, and confirmation with spirometry, 4035 subjects aged 40-69) | Sobradillo et al., 2000 | F | % | 3.9 | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| EURO A | 1985-86 | Denmark | Spirometry (hospital-based study: 1342 males and 1398 females aged 16 and over) | Hansen and Schmidt, 1991 | M | % | 7 | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Hospital-based study of patients who attended the clinic with respiratory symptoms and thus overestimated prevalence figures. |
| EURO A | 1985-86 | Denmark | Spirometry (hospital-based study: 1342 males and 1398 females aged 16 and over) | Hansen and Schmidt, 1991 | F | % | 2 | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Hospital-based study of patients who attended the clinic with respiratory symptoms and thus overestimated prevalence figures. |
| EURO A | 1995 | Sweden | Symptom-based (Two-stage design of questionnaire followed by spirometry. 5949 | Hasselgren et al., 2001 | both | % | 4.3 | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | chronic bronchitis with normal lung function? |

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|--------|-------------------------|----------------|--|-------------------------|------|---|-----|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| | | | respondents out of 184572 people aged 18-70.) | | | | | | | | | | | | | | | | | | | | |
| EURO A | 1995 | Sweden | Spirometry (Only for selected patients screened by questionnaire.) | Hasselgren et al., 2001 | both | % | 2.1 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | COPD defined as FEV1/FVC<70% |
| EURO A | cohort study until 1992 | Denmark | Hospital admission rate (Cohort study of 13897 subjects for 6-17 years) | Prescott et al., 1997 | both | % | 2.4 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | COPD hospitalization rate rather than actual prevalence (underestimated) |
| EURO A | 198? | Sweden | Symptom-based (Questionnaire, 6610 adults aged 35-66) | Lundback et al., 1994 | both | % | 12 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Chronic bronchitis only |
| EURO A | 198? | Sweden | Symptoms and spirometry (Questionnaire, 6610 adults aged 35-66 were interviewed and 1243 took spirometry.) | Lundback et al., 1993 | M | % | 7.4 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | FEV1< 80% predicted was used to define airway obstruction. No data on FEV1/FVC and thus includes asthma. |
| EURO A | 198? | Sweden | Symptoms and spirometry (Questionnaire, 6610 adults aged 35-66 were interviewed and 1243 took spirometry.) | Lundback et al., 1993 | F | % | 4.3 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | FEV1< 80% predicted was used to define airway obstruction. No data on FEV1/FVC and thus includes asthma. |
| EURO A | 198? | Northern Italy | Symptom-based (Questionnaire, 2382 subjects aged 20-64) | Viegi et al., 1994 | M | % | 23 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Includes asthma and thus overestimated prevalence |
| EURO A | 198? | Northern Italy | Symptom-based (Questionnaire, 2382 subjects aged 20-64) | Viegi et al., 1994 | F | % | 8 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Includes asthma and thus overestimated prevalence |
| EURO A | 198? | Northern Italy | Spirometry (Questionnaire, 2382 subjects aged 20-64) | Viegi et al., 1994 | M | % | 38 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Definition is different, includes asthma, and thus overestimated prevalence |
| EURO A | 198? | Northern Italy | Spirometry (Questionnaire, 2382 subjects aged 20-64) | Viegi et al., 1994 | F | % | 20 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Definition is different, includes asthma, and thus overestimated prevalence |

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|--------|----------|----------------|--|----------------------------|------|---|------|-----|-----|-----|-----|------|------|------|------|------|----|----|----|----|----|----|---|
| EURO A | 1990-92 | Northern Italy | Symptom-based (1497 subjects aged 40-59 who participated in interview and spirometry at a university hospital) | Donato et al., 2000 | M | % | 16.1 | | | | | | 10.6 | 10.6 | 20.2 | 20.5 | NA | NA | NA | NA | NA | NA | Primarily symptom-based and no information on FEV1/FVC with spirometry. |
| EURO A | 1990-92 | Northern Italy | Symptom-based (1497 subjects aged 40-59 who participated in interview and spirometry at a university hospital) | Donato et al., 2000 | F | % | 4.4 | | | | | | 4.5 | 5.3 | 2.6 | 4.7 | NA | NA | NA | NA | NA | NA | Primarily symptom-based and no information on FEV1/FVC with spirometry. |
| EURO A | overview | Europe | Overview of past prevalence studies in Europe during 1960s-1990s | Gulsvik, 1999 | both | % | 4-6 | | | | | | | | | | | | | | | | two-thirds had mild lung function decline only |
| EURO A | 1975 | Netherlands | Symptom-based (MRC questionnaire followed by spirometry for those aged 15-64) | Van der Lende et al., 1986 | both | % | NA | 8.5 | 8.5 | 8.5 | 8.5 | 14.9 | 14.9 | 14.9 | 14.9 | 14.9 | NA | NA | NA | NA | NA | NA | Definition of airway obstruction with spirometry is somewhat different and may include asthma as well. Overestimated. |
| EURO A | 1996-97 | Spain | Symptom-based (Multicenter questionnaire survey of 4035 individuals aged 40-69 followed by spirometry) | Sobradillo et al., 1999 | M | % | 8.3 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Chronic bronchitis only |
| EURO A | 1996-97 | Spain | Symptom-based (Multicenter questionnaire survey of 4035 individuals aged 40-69 followed by spirometry) | Sobradillo et al., 1999 | F | % | 1.4 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Chronic bronchitis only |
| EURO A | 1996-97 | Spain | Symptom-based (Multicenter questionnaire survey of 4035 individuals aged 40-69 followed by spirometry) | Sobradillo et al., 1999 | both | % | 4.8 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Chronic bronchitis only |
| EURO A | 1996-97 | Spain | Spirometry | Sobradillo et al., 1999 | M | % | 15.8 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Airway obstruction defined as FEV1/FVC<88% and thus highly overestimated |
| EURO A | 1996-97 | Spain | Spirometry | Sobradillo et al., 1999 | F | % | 5.5 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Airway obstruction defined as FEV1/FVC<88% and |

| | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---------|-----------------|--|----------------------------|------|---|------|---------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|----|--|--|
| | | | 69) | | | | | | | | | | | | | | | | | | | | |
| EURO A | 1996 | Finland | Symptom-based (FinEsS Questionnaire, random sample of 6062 individuals aged 20-69) | Pallasaho et al., 1999 | F | % | | 3 | 3 | 3 | 3 | 3 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | | | | | | |
| EURO A | 1996 | Finland | Symptom-based (FinEsS Questionnaire, random sample of 6062 individuals aged 20-69) | Pallasaho et al., 1999 | both | % | 4.8 | | | S | | | | | | | | | | | | | |
| EURO A | 1996 | Finland | Physician-diagnosis (FinEsS Questionnaire, random sample of 6062 individuals aged 20-69) | Pallasaho et al., 1999 | M | % | | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 | | | | | | |
| EURO A | 1996 | Finland | Physician-diagnosis (FinEsS Questionnaire, random sample of 6062 individuals aged 20-69) | Pallasaho et al., 1999 | F | % | | 2 | 2 | 2 | 2 | 2 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | | | | | | |
| EURO A | 1996 | Finland | Physician-diagnosis (FinEsS Questionnaire, random sample of 6062 individuals aged 20-69) | Pallasaho et al., 1999 | both | % | 3.7 | | | | | | | | | | | | | | | | |
| EURO A | 1992 | UK | Symptom-based (Questionnaire of 723 individuals registered to GPs aged over 45) | Renwick and Connolly, 1996 | both | % | NA | | | | | | 22.9 | 22.9 | 22.9 | 22.9 | 29.7 | 29.7 | 29.7 | 29.7 | | 247 underwent spirometry, but overestimated since non-representative sample of registered patients | |
| EURO A | 1992 | UK | Symptom-based (Questionnaire of 723 individuals registered to GPs aged over 45) | Renwick and Connolly, 1996 | both | % | 15.4 | symptom-based | | | | | | | | | | | | | | | |
| EURO A | 1985-86 | Northern Sweden | Physician-diagnosis (MRC Questionnaire of 5698 subjects aged 35-66) | Lundback et al., 1991 | M | % | 4.7 | | | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| EURO A | 1985-86 | Northern Sweden | Physician-diagnosis (MRC Questionnaire of 5698 subjects aged 35-66) | Lundback et al., 1991 | F | % | 4 | | | | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| EURO A | 1993 | Spain | Questionnaire and confirmation with spirometry of 2047 unemployed young adults aged 20-44. | Kogevinas et al., 1998 | both | % | 2.7 | NA | NA | NA | NA | NA | | | | | | | | | | Age-distribution of the sample was younger | |

| EURO B | | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|---------|---|--------------------------|-----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| Region | Year | Country | Definition | Source | sex | Unit | Total | A2024 | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A8500 | Notes |
| EURO B1 | 1968-81 | Poland | Spirometry FEV1<65% predicted (thus included asthma as well), cohort study of 731 males and 1038 females surveyed in 1968 | Krzyzanowski et al. 1986 | M | % | 8.5 | | | 2.4 | 2.4 | 6.1 | 6.1 | 6.1 | 11.7 | 11.7 | 17.3 | 17.3 | 8.8 | 8.8 | 8.8 | Highly overestimated COPD prevalence since the figure includes asthma. Only 1864 out of 3047 persons were followed. |
| EURO B1 | 1968-81 | Poland | Spirometry FEV1<65% predicted (thus included asthma as well), cohort study of 731 males and 1038 females surveyed in 1968 | Krzyzanowski et al. 1986 | F | % | 4.9 | | | 0.7 | 0.7 | 3.9 | 3.9 | 3.9 | 6.8 | 6.8 | 7.6 | 7.6 | 14.8 | 14.8 | 14.8 | Highly overestimated COPD prevalence since the figure includes asthma. Only 1864 out of 3047 persons were followed. |
| EURO B1 | 1968-81 | Poland | Spirometry FEV1<65% predicted (thus included asthma as well), cohort study of 731 males and 1038 females surveyed in 1968 | Krzyzanowski et al. 1986 | M (Smokers) | % | 9.3 | | | 2.2 | 2.2 | 7.6 | 7.6 | 7.6 | 16 | 16 | 21.2 | 21.2 | 0 | 0 | 0 | Highly overestimated COPD prevalence since the figure includes asthma. Only 1864 out of 3047 persons were followed. |
| EURO B1 | 1968-81 | Poland | Spirometry FEV1<65% predicted (thus included asthma as well), cohort study of 731 males and 1038 females surveyed in 1968 | Krzyzanowski et al. 1986 | F (Smokers) | % | 6.6 | | | 0 | 0 | 3.3 | 3.3 | 3.3 | 16.3 | 16.3 | 16.7 | 16.7 | 0 | 0 | 0 | Highly overestimated COPD prevalence since the figure includes asthma. Only 1864 out of 3047 persons were followed. |
| EURO B1 | 1968-81 | Poland | Spirometry FEV1<65% predicted (thus included asthma as well), cohort study of 731 males and 1038 females surveyed in 1968 | Krzyzanowski et al. 1986 | M (Non-smokers) | % | 3.6 | | | 0 | 0 | 2.3 | 2.3 | 2.3 | 8.7 | 8.7 | 7.7 | 7.7 | 0 | 0 | 0 | Highly overestimated COPD prevalence since the figure includes asthma. Only 1864 out of 3047 persons were followed. |
| EURO B1 | 1968-81 | Poland | Spirometry FEV1<65% predicted (thus included asthma as well), cohort study of 731 males and 1038 females surveyed in 1968 | Krzyzanowski et al. 1986 | F (Non-smokers) | % | 4.8 | | | 0.7 | 0.7 | 3.8 | 3.8 | 3.8 | 4.5 | 4.5 | 5.9 | 5.9 | 17.6 | 17.6 | 17.6 | Highly overestimated COPD prevalence since the figure includes asthma. Only 1864 out of 3047 persons were followed. |
| EURO B1 | 199? | Poland | Spirometry of self-selected smokers over 39 years (mean 52 years) (subject to selection bias) | Zielinski et al. 2000 | Both (smokers) | | | | | 8.99 | 8.99 | 26.56 | 26.56 | 26.56 | 26.56 | 26.56 | 26.56 | 26.56 | 26.56 | 26.56 | 26.56 | FEV1/FVE<85% (too high compared to conventional definition of 70% and thus |

| | | | | | | | | | | | | | | | | | | | | | | |
|---------|-------|-----------|--|--------------------------------|--------------------|---|------|--|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|
| | | | | | | | | | | | | | | | | | | | | | prevalence figures are highly overestimated) | |
| EURO B1 | 199? | Poland | 8386 smokers and 1768 non-smokers, 60% were males | Zielinski et al. 2000 | Both (non-smokers) | | | | 6.16 | 6.16 | 16.23 | 16.23 | 16.23 | 16.23 | 16.23 | 16.23 | 16.23 | 16.23 | 16.23 | 16.23 | 16.23 | Questionable definitions of COPD since 30-50% of subjects show remission of their symptoms (Wojtyniak et al, 1989) |
| EURO B1 | 198? | USSR | Symptom-based (Questionnaire on chronic cough, 1768 residents) | Davydova et al., 1991 | Both | | | | | | 12.5 | 10.9 | 13.7 | 15.8 | | | | | | | | |
| EURO B1 | 1990? | Poland | Symptom-based (MRC Questionnaire, 917 men exposed to occupational hazard) | Niepsuj et al., 1993 | Male smokers | % | 27.3 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Occupational exposure group only |
| EURO B1 | 1990? | Poland | Symptom-based (MRC Questionnaire, 917 men exposed to occupational hazard) | Niepsuj et al., 1993 | Male non-smokers | % | 11 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Occupational exposure group only |
| EURO B1 | 198? | Latvia | Symptom-based (Questionnaire survey of 10200 individuals aged 20-70) | Utkin and Tepanov, 1986 | both | % | 11.6 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Chronic bronchitis only |
| EURO B1 | 198? | Lithuania | Symptom-based (Questionnaire survey of 679 males and 733 females aged 25-59) | Shinipas and Lesatskaite, 1983 | M | | | | 4.7 | | 11.3 | | | 20.3 | | | | | | | | Younger age groups only |
| EURO B1 | 198? | Lithuania | Symptom-based (Questionnaire survey of 679 males and 733 females aged 25-59) | Shinipas and Lesatskaite, 1983 | F | | | | 3.8 | | 6.1 | | | 12.3 | | | | | | | | |
| EURO B1 | 197? | Estonia | Symptom-based (Questionnaire survey of 3141 and 5831 individuals aged 35-54) | Yannus et al., 1977 | both | % | 7.1 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Younger age groups only |
| EURO B1 | 197? | Estonia | Symptom-based (Questionnaire survey of 3141 and 5831 individuals aged 35- | Yannus et al., 1977 | both | % | 8 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |

| 54) | | | | | | | | | | | | | | | | | | | | | |
|---------|------|--------|--|------------------------|------|---|------|--|------|------|------|------|------|------|------|------|------|------|------|------|--|
| EURO B1 | 1996 | Turkey | Symptom-based (ERC Questionnaire of 1023 subjects aged 20-83) | Cetinkaya et al., 2000 | M | % | 17.8 | | 15.3 | 15.3 | 15.3 | 18.4 | 18.4 | 18.4 | 18.4 | 20.3 | 20.3 | 20.3 | 20.3 | 20.3 | Chronic bronchitis only |
| EURO B1 | 1996 | Turkey | Symptom-based (ERC Questionnaire of 1023 subjects aged 20-83) | Cetinkaya et al., 2000 | F | % | 10 | | 6.7 | 6.7 | 6.7 | 12.2 | 12.2 | 12.2 | 12.2 | 14.3 | 14.3 | 14.3 | 14.3 | 14.3 | Chronic bronchitis only |
| EURO B1 | 1996 | Turkey | Symptom-based (ERC Questionnaire of 1023 subjects aged 20-83) | Cetinkaya et al., 2000 | both | % | 12.5 | | 10.1 | 10.1 | 10.1 | 14.9 | 14.9 | 14.9 | 14.9 | 17.8 | 17.8 | 17.8 | 17.8 | 17.8 | Chronic bronchitis only |
| EURO B | 1976 | Poland | Symptom-based (Questionnaire of 1190 subjects living in air polluted area aged 40-64 followed by spirometry) | Plonska, 1984 | both | % | 43.1 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | symptoms only, no clear definition of chronic bronchitis nor distinction from asthma |

Summary crude prevalence by definition: Spirometry = NA, Physician-diagnosis = NA, Symptom-based = 10-20%, questionable definitions and samples

| WPRO A | | | | | | | | | | | | | | | | | | | | | | |
|--------|---------|----------------------------|---|--------------------|-----|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|--|
| Region | Year | Country | Definition | Source | sex | Unit | Total | A2024 | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A850 | Notes |
| WPRO A | 1984 | New South Wales, Australia | Symptom-based (MRC Questionnaire and spirometry for confirmation, 12357 male mine workers aged 30-60) | Leigh et al., 1986 | M | % | 13.2 | 6.4 | 6.4 | 9.7 | 9.7 | 15.6 | 15.6 | 20.3 | 20.3 | | | | | | | Includes asthma, etc. and overestimated. |
| WPRO A | 1984 | New South Wales, Australia | Spirometry (MRC Questionnaire and spirometry for confirmation, 12357 male mine workers aged 30-60) | Leigh et al., 1986 | M | % | 3.5 | 0.1 | 0.1 | 0.9 | 0.9 | 3.7 | 3.7 | 9.0 | 9.0 | | | | | | | Younger age composition. Workers exposed to occupational dusts only. |
| WPRO A | 1994-95 | Busselton, Australia | Spirometry (defined as FEV1/FVC<70%) | AUS BOD | M | per 1000 | | | | 7.4 | 12.5 | 12.5 | 21.1 | 21.1 | 51.8 | 51.8 | 81.8 | 81.8 | 98.5 | 98.5 | 98.5 | |
| WPRO A | 1994-95 | Busselton, Australia | Spirometry (defined as FEV1/FVC<70%) | AUS BOD | F | per 1000 | | | | 2.4 | 7.8 | 7.8 | 14.3 | 14.3 | 27.2 | 27.2 | 43.5 | 43.5 | 68.3 | 68.3 | 68.3 | |

Summary crude prevalence by definition: Spirometry = 2-5%, Physician-diagnosis = NA, Symptom-based = 10-15%

| WPRO B | | | | | | | | | | | | | | | | | | | | | | |
|--|---------|------------------|---|-----------------------|---------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| Region | Year | Country | Definition | Source | sex | unit | Total | A2024 | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A8500 | Notes |
| WPRO B | 1972-79 | China | Symptom-based (Questionnaire, sample size varied from 1160 to 1884175) | Compiled by Yan, 1989 | both (chronic bronchitis) | % | 4.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Chronic bronchitis only |
| WPRO B | 1972-79 | China | Symptom-based (Questionnaire, sample size varied from 1160 to 1884175) | Compiled by Yan, 1989 | both (emphysema) | % | 1.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Emphysema only |
| WPRO B | 1991-92 | Hong Kong, China | Symptom-based (Questionnaire survey of 999 males and 1033 female HK residents aged 70 years and over) | Lai et al., 1995 | both (chronic bronchitis) | % | 7 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 7 | 7 | 7 | 7 | Chronic bronchitis only. Only for very older groups (70 and over). Asthma prevalence was 5% |
| WPRO B | 1991-92 | Hong Kong, China | Symptom-based (Questionnaire survey of 999 males and 1033 female HK residents aged 70 years and over) | Lai et al., 1995 | both (emphysema) | % | 2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 2 | 2 | 2 | 2 | Emphysema only. Only for very older groups (70 and over). |
| WPRO B | 1992 | China | Spirometry (Questionnaire followed by spirometry, population-based study of 6536 people aged 15 and over) | Cheng and Zhang 1998 | both (overall) | % | 3.0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | COPD was defines as FEV1/FVC<70% c/w Gold definition, but probably overestimated |
| WPRO B | 1992 | China | Spirometry (Questionnaire followed by spirometry, population-based study of 6536 people aged 15 and over) | Cheng and Zhang 1998 | both (smokers) | % | 24.6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Smoking accounted for approximately 72% of COPD cases |
| Summary crude prevalence by definition: Spirometry = 1-3%, Physician-diagnosis = NA, Symptom-based = 2-8% | | | | | | | | | | | | | | | | | | | | | | |

| SEARO D | | | | | | | | | | | | | | | | | | | | | | |
|---------|------|---------|------------|--------|-----|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Region | Year | Country | Definition | Source | sex | unit | Total | A2024 | A2529 | A3034 | A3539 | A4044 | A4549 | A5054 | A5559 | A6064 | A6569 | A7074 | A7579 | A8084 | A8500 | Notes |

| | | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|----------------------|--|------------------------|------------------|----------|------|----------|--------|------|------|------|------|------|------|------|------|------|------|----|----|--|
| SEARO D | 199? | rural Kashmir, India | Symptom-based (Questionnaire, 560 sample aged 25-55) | Qureshi, 1994 | M | % | 7.6 | | 4.8 | 3.9 | 3.9 | 16.2 | 16.2 | 19.6 | NA | NA | NA | NA | NA | NA | NA | Significant relationship between exposure to domestic pollution and COPD (no adjustment for confounding) |
| SEARO D | 199? | rural Kashmir, India | Symptom-based (Questionnaire, 560 sample aged 25-55) | Qureshi, 1994 | F | % | 7.8 | | 4.0 | 12.3 | 12.3 | 13.3 | 13.3 | 35.7 | NA | NA | NA | NA | NA | NA | NA | Exposure to domestic pollution was higher among females. |
| SEARO D | 199? | rural Kashmir, India | Spirometry for only 35 patients | Qureshi, 1994 | both | Normal | mild | moderate | severe | | | | | | | | | | | | | |
| | | | | | | | 11 | 43.0 | 29 | 17 | | | | | | | | | | | | |
| SEARO D | 198? | Chnadigarh, India | Symptom-based (Questionnaire, 2180 females aged 20 and over) | Malik, 1985 | F | % | 3.0 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1981-86 | Tamil Nadu, India | Symptom-based (Questionnaire, 24,950 residents aged 30 and over) | Ray et al., 1995 | M (smokers only) | per 1000 | 40.8 | | NA | 20.6 | 20.6 | 33.1 | 33.1 | 59.4 | 59.4 | 71.6 | 71.6 | 62.3 | 62.3 | NA | NA | Perhaps most reliable data |
| SEARO D | 1981-86 | Tamil Nadu, India | Symptom-based (Questionnaire, 24,950 residents aged 30 and over) | Ray et al., 1995 | F | per 1000 | 25.5 | | NA | 19.1 | 19.1 | 23.5 | 23.5 | 44.2 | 44.2 | 28.9 | 28.9 | 10.7 | 10.7 | NA | NA | 80-90% of cases were smokers. |
| SEARO D | 1981-86 | Tamil Nadu, India | Symptom-based (Questionnaire, 24,950 residents aged 30 and over) | Ray et al., 1995 | both | per 1000 | 33.0 | | NA | 19.8 | 19.8 | 28.4 | 28.4 | 51.8 | 51.8 | 49.6 | 49.6 | 34.5 | 34.5 | NA | NA | |
| SEARO D | 199? | urban Kashmir, India | Symptom-based (Questionnaire, 1140 sample aged 35 and over) | Akhtar and Latif, 1999 | M | % | 6.7 | | NA | NA | 2.8 | 5.2 | 5.2 | 6.9 | 6.9 | 9.9 | 9.9 | 17.3 | NA | NA | NA | |
| SEARO D | 199? | urban Kashmir, India | Symptom-based (Questionnaire, 1140 sample aged 35 and over) | Akhtar and Latif, 1999 | F | % | 4.5 | | NA | NA | 2.2 | 2.8 | 2.8 | 6.9 | 6.9 | 7.6 | 7.6 | 9.9 | NA | NA | NA | |
| SEARO D | 199? | urban Kashmir, India | Symptom-based (Questionnaire, 1140 sample aged 35 and over) | Akhtar and Latif, 1999 | both | % | 5.7 | | NA | NA | 2.5 | 3.8 | 3.8 | 6.9 | 6.9 | 9.7 | 9.7 | 14.1 | NA | NA | NA | |
| SEARO D | 199? | urban Kashmir, India | Spirometry for suspected 35 COPD patients | Akhtar and Latif, 1999 | both | Normal | mild | moderate | severe | | | | | | | | | | | | | |
| | | | | | | | 8.5 | 46.0 | 34 | 11 | | | | | | | | | | | | |
| SEARO D | 1990 | Chnadigarh, India | Symptom-based (Questionnaire in a follow-up) | Jindal, 1992 | M | % | 5.0 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |

| | | | | | | | | | | | | | | | | | | | | | | |
|---------|----------|--------------------------------|--|----------------------------|---|---|-----|--|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| | | | study of 1475 subjects (originally 4381) aged 15-70) | | | | | | | | | | | | | | | | | | | |
| SEARO D | 1990 | Chnadigra h, India | Symptom-based (Questionnaire in a follow-up study of 1475 subjects (originally 4381) aged 15-70) | Jindal, 1992 | F | % | 2.8 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | Multiple | India | Symptom-based (Compilation of prevalence studies from 1970s) | Jindal et al, 2000 | M | % | 5.0 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | Multiple | India | Each prevalence study varied in terms of definitions, design and sample size. | Jindal et al, 2000 | F | % | 2.7 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1975 | Delhi (rural and urban), India | Symptom-based (Questionnaire survey of 629 males and 511 females aged 30-70) | Bhattacharya et al., 1977 | M | % | 6.7 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1975 | Delhi (rural and urban), India | Symptom-based (Questionnaire survey of 629 males and 511 females aged 30-70) | Bhattacharya et al., 1977 | F | % | 4.5 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1977 | Madras, India | Symptom-based (Questionnaire survey of 408 males and 409 females aged 5-60) | Thiruvengadam et al., 1977 | M | % | 1.9 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1977 | Madras, India | Symptom-based (Questionnaire survey of 408 males and 409 females aged 5-60) | Thiruvengadam et al., 1977 | F | % | 1.2 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1977 | Rural Punjab, India | Symptom-based (Questionnaire survey of 3894 males and 3238 females aged 16-73) | Charan, 1977 | M | % | 2.3 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1977 | Rural Punjab, India | Symptom-based (Questionnaire survey of 3894 males and 3238 females aged 16-73) | Charan, 1977 | F | % | 1.6 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| SEARO D | 1977 | North India (rural and urban) | Symptom-based (Questionnaire survey of 1087 males and 1011 | Radha et al., 1977 | M | % | 8.1 | | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|---------|---|------------------------|------|---|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | 5005 subjects aged 20-60) | | | | | | | | | | | | | | | | | | | |
| EMRO B | 198? | Tunisia | Symptom-based (Questionnaire for 4331 workers at various sites aged 20-60) | Malej 1984 and 1986 | both | % | 2.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Summary crude prevalence by definition: Spirometry = 1-2%, Physician-diagnosis = NA, Symptom-based = 2-10% | | | | | | | | | | | | | | | | | | | | | | |

Appendix 2. DISMOD outputs of consistent estimates of incidence and prevalence by WHO region

| AFRO D | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0 | 0 | 0 | 2.46 | 27,658 | 0 | 1.0% |
| 5-14 | 0 | 0 | 31.84 | 14.25 | 44,801 | 0 | |
| 15-29 | 0.02 | 0.02 | 22.69 | 29.22 | 46,186 | 924 | |
| 30-44 | 0.31 | 2.33 | 19.37 | 36.49 | 26,290 | 61,257 | |
| 45-59 | 1.2 | 12.96 | 13.52 | 49.01 | 13,663 | 177,073 | |
| 60-69 | 4.13 | 27.34 | 6.93 | 64.61 | 4,895 | 133,833 | |
| 70-79 | 4.94 | 47.02 | 4.42 | 72.82 | 2,163 | 101,722 | |
| 80+ | 9 | 33.18 | 1.85 | 84.24 | 497 | 16,506 | |
| Total | 0.37 | 2.96 | 9.80 | 58.99 | 166,154 | 491,313 | |
| Female | | | | | | | |
| 0-4 | 0 | 0 | 0 | 2.44 | 27,157 | 0 | 0.5% |
| 5-14 | 0 | 0 | 24.31 | 14.25 | 44,261 | 0 | |
| 15-29 | 0.01 | 0.01 | 17.03 | 29.17 | 46,089 | 461 | |
| 30-44 | 0.15 | 0.92 | 14.85 | 37.39 | 26,792 | 24,649 | |
| 45-59 | 0.7 | 6.34 | 10.86 | 49.27 | 14,548 | 92,231 | |
| 60-69 | 2.08 | 12.35 | 5.03 | 63.61 | 5,589 | 69,025 | |
| 70-79 | 3.4 | 12.41 | 2.35 | 74.37 | 2,630 | 32,642 | |
| 80+ | 8.76 | 13.2 | 1.16 | 84.39 | 668 | 8,813 | |
| Total | 0.24 | 1.36 | 6.44 | 62.40 | 167,734 | 227,821 | |
| AFOR E | | | | | | | |
| | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.46 | 28,798 | 0 | 0.6% |
| 5-14 | 0.02 | 0.01 | 22.24 | 14.25 | 46,760 | 566 | |
| 15-29 | 0.08 | 0.98 | 19.97 | 17.24 | 46,561 | 45,653 | |
| 30-44 | 0.11 | 0.93 | 10.06 | 42.89 | 25,954 | 24,013 | |
| 45-59 | 1.09 | 7.27 | 8.76 | 50.56 | 12,913 | 93,849 | |
| 60-69 | 4.14 | 24.14 | 5.49 | 63.28 | 4,393 | 106,043 | |
| 70-79 | 5.69 | 26.40 | 2.80 | 74.28 | 1,936 | 51,114 | |
| 80+ | 12.73 | 28.76 | 1.55 | 83.94 | 417 | 12,004 | |
| Total | 0.33 | 1.99 | 6.87 | 59.31 | 167,733 | 333,241 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.57 | 28,397 | 0 | 0.3% |
| 5-14 | 0.00 | 0.00 | 16.65 | 14.25 | 46,568 | 56 | |
| 15-29 | 0.01 | 0.06 | 12.03 | 21.69 | 46,559 | 2,565 | |
| 30-44 | 0.06 | 0.28 | 8.03 | 36.93 | 26,116 | 7,404 | |
| 45-59 | 0.50 | 2.77 | 7.43 | 50.43 | 13,766 | 38,145 | |
| 60-69 | 1.98 | 9.40 | 4.35 | 62.82 | 5,174 | 48,629 | |
| 70-79 | 4.06 | 9.71 | 1.88 | 74.06 | 2,533 | 24,604 | |
| 80+ | 8.30 | 9.27 | 0.89 | 84.36 | 700 | 6,492 | |
| Total | 0.21 | 0.75 | 3.91 | 65.66 | 169,814 | 127,894 | |

| AMRO A | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0 | 0 | 0 | 1.46 | 10,688 | 0 | 3.6% |
| 5-14 | 0 | 0 | 55.25 | 14.25 | 22,924 | 0 | |
| 15-29 | 0.05 | 0.04 | 41.18 | 29.11 | 31,637 | 1,265 | |
| 30-44 | 0.5 | 7.95 | 38.76 | 31.75 | 36,946 | 293,720 | |
| 45-59 | 3.15 | 38.45 | 24.48 | 48.05 | 28,413 | 1,092,461 | |
| 60-69 | 3.64 | 67.62 | 13.51 | 62.55 | 10,793 | 729,817 | |
| 70-79 | 5.64 | 96 | 8.4 | 72.09 | 7,819 | 750,636 | |
| 80+ | 4.97 | 84.73 | 4.39 | 82.86 | 3,371 | 285,609 | |
| Total | 1.37 | 20.67 | 18.82 | 57.02 | 152,590 | 3,153,509 | |
| Female | | | | | | | |
| 0-4 | 0 | 0 | 71 | 3.54 | 10,181 | 0 | 2.8% |
| 5-14 | 0 | 0 | 61.73 | 12.96 | 21,877 | 0 | |
| 15-29 | 0.05 | 0.13 | 47.64 | 27.39 | 30,557 | 3,972 | |
| 30-44 | 0.43 | 3.55 | 36.88 | 38.73 | 36,300 | 128,863 | |
| 45-59 | 2.5 | 20.52 | 23.59 | 53.62 | 29,070 | 596,515 | |
| 60-69 | 3.41 | 60.66 | 15.34 | 64.52 | 11,948 | 724,738 | |
| 70-79 | 1.9 | 73.99 | 9.43 | 74.68 | 10,292 | 761,491 | |
| 80+ | 2.21 | 64.91 | 5.27 | 84.95 | 6,690 | 434,227 | |
| Total | 1.05 | 16.89 | 19.71 | 59.97 | 156,914 | 2,649,806 | |

| AMRO B | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 4.25 | 23,215 | 0 | 3.0% |
| 5-14 | 0.00 | 0.00 | 50.10 | 14.25 | 45,921 | 138 | |
| 15-29 | 0.04 | 0.13 | 38.56 | 27.43 | 62,171 | 8,169 | |
| 30-44 | 0.44 | 5.58 | 34.99 | 31.76 | 45,580 | 254,472 | |
| 45-59 | 2.96 | 31.17 | 22.26 | 48.52 | 26,106 | 813,768 | |
| 60-69 | 6.39 | 79.09 | 13.20 | 62.18 | 9,457 | 747,966 | |
| 70-79 | 6.81 | 114.04 | 8.20 | 72.31 | 5,057 | 576,722 | |
| 80+ | 9.93 | 129.77 | 4.73 | 82.04 | 1,579 | 204,953 | |
| Total | 0.96 | 11.90 | 17.46 | 56.99 | 219,085 | 2,606,188 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.87 | 22,317 | 0 | 2.9% |
| 5-14 | 0.00 | 0.00 | 57.77 | 13.75 | 44,303 | 13 | |
| 15-29 | 0.15 | 0.20 | 43.69 | 28.68 | 61,660 | 12,443 | |
| 30-44 | 1.15 | 12.33 | 37.72 | 35.24 | 47,282 | 583,128 | |
| 45-59 | 1.81 | 33.44 | 25.53 | 49.35 | 27,931 | 933,890 | |
| 60-69 | 2.70 | 53.29 | 14.79 | 64.00 | 10,867 | 579,089 | |
| 70-79 | 3.36 | 71.71 | 9.25 | 73.92 | 6,505 | 466,493 | |
| 80+ | 3.67 | 77.14 | 5.49 | 82.94 | 2,463 | 189,989 | |
| Total | 0.78 | 12.38 | 25.44 | 51.10 | 223,328 | 2,765,046 | |

| AMRO D | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.45 | 4,780 | 0 | 0.8% |
| 5-14 | 0.00 | 0.00 | 46.14 | 14.25 | 8,763 | 0 | |
| 15-29 | 0.04 | 0.03 | 33.57 | 29.18 | 10,305 | 315 | |
| 30-44 | 0.33 | 3.83 | 30.55 | 32.93 | 6,166 | 23,602 | |
| 45-59 | 0.29 | 6.72 | 17.68 | 49.80 | 3,399 | 22,839 | |
| 60-69 | 1.58 | 12.86 | 8.64 | 65.33 | 1,289 | 16,576 | |
| 70-79 | 2.39 | 26.58 | 5.56 | 73.17 | 640 | 17,019 | |
| 80+ | 10.96 | 50.77 | 3.23 | 83.23 | 181 | 9,166 | |
| Total | 0.25 | 2.52 | 13.92 | 60.09 | 35,523 | 89,517 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.15 | 4,601 | 0 | 0.4% |
| 5-14 | 0.00 | 0.01 | 47.27 | 13.05 | 8,483 | 49 | |
| 15-29 | 0.06 | 0.14 | 34.18 | 28.10 | 10,206 | 1,380 | |
| 30-44 | 0.14 | 2.16 | 28.75 | 34.80 | 6,465 | 13,979 | |
| 45-59 | 0.21 | 4.32 | 17.15 | 49.68 | 3,616 | 15,609 | |
| 60-69 | 0.47 | 6.67 | 8.75 | 63.04 | 1,415 | 9,438 | |
| 70-79 | 1.20 | 7.27 | 3.80 | 76.23 | 759 | 5,519 | |
| 80+ | 6.35 | 20.69 | 2.34 | 84.12 | 251 | 5,193 | |
| Total | 0.15 | 1.43 | 13.48 | 60.82 | 35,795 | 51,166 | |

| EMRO B | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.47 | 8,392 | 0 | 1.9% |
| 5-14 | 0.00 | 0.01 | 55.27 | 12.65 | 18,052 | 135 | |
| 15-29 | 0.04 | 0.13 | 40.82 | 27.73 | 20,945 | 2,635 | |
| 30-44 | 0.37 | 4.09 | 33.95 | 35.07 | 13,483 | 55,202 | |
| 45-59 | 2.43 | 20.85 | 19.12 | 51.71 | 7,263 | 151,404 | |
| 60-69 | 3.42 | 56.54 | 10.06 | 64.31 | 2,520 | 142,475 | |
| 70-79 | 4.44 | 73.02 | 4.61 | 76.42 | 1,285 | 93,827 | |
| 80+ | 7.30 | 104.87 | 2.99 | 82.97 | 333 | 34,886 | |
| Total | 0.56 | 6.65 | 16.54 | 57.12 | 72,274 | 480,564 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 56.89 | 3.99 | 8,029 | 0 | 0.8% |
| 5-14 | 0.00 | 0.00 | 49.05 | 12.45 | 17,264 | 79 | |
| 15-29 | 0.04 | 0.16 | 36.48 | 26.28 | 20,059 | 3,217 | |
| 30-44 | 0.34 | 2.63 | 25.94 | 38.66 | 11,846 | 31,177 | |
| 45-59 | 0.93 | 10.83 | 15.05 | 52.41 | 6,042 | 65,412 | |
| 60-69 | 1.06 | 19.98 | 7.67 | 64.49 | 2,340 | 46,753 | |
| 70-79 | 0.91 | 17.80 | 3.84 | 74.08 | 1,297 | 23,092 | |
| 80+ | 0.61 | 6.40 | 1.64 | 83.73 | 380 | 2,429 | |
| Total | 0.21 | 2.56 | 17.02 | 51.31 | 67,258 | 172,159 | |

| EMRO D | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|-----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.48 | 9,465 | 0 | 0.8% |
| 5-14 | 0.00 | 0.00 | 48.75 | 13.00 | 16,952 | 32 | |
| 15-29 | 0.11 | 0.27 | 35.45 | 27.48 | 20,092 | 5,523 | |
| 30-44 | 0.28 | 4.49 | 29.92 | 33.78 | 13,009 | 58,439 | |
| 45-59 | 0.97 | 10.99 | 15.04 | 51.90 | 6,663 | 73,243 | |
| 60-69 | 0.67 | 17.74 | 6.91 | 65.61 | 2,273 | 40,321 | |
| 70-79 | 1.20 | 15.56 | 3.64 | 75.11 | 1,078 | 16,771 | |
| 80+ | 2.67 | 12.28 | 1.76 | 84.56 | 268 | 3,286 | |
| Total | 0.23 | 2.83 | 19.03 | 48.97 | 69,799 | 197,616 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 56.10 | 3.99 | 9,052 | 0 | 0.5% |
| 5-14 | 0.00 | 0.00 | 48.02 | 12.71 | 16,261 | 59 | |
| 15-29 | 0.08 | 0.24 | 35.15 | 26.86 | 18,986 | 4,462 | |
| 30-44 | 0.17 | 2.85 | 29.13 | 33.82 | 12,502 | 35,637 | |
| 45-59 | 0.50 | 6.20 | 14.33 | 51.94 | 7,052 | 43,738 | |
| 60-69 | 0.63 | 8.42 | 5.83 | 66.27 | 2,676 | 22,523 | |
| 70-79 | 0.80 | 6.56 | 3.10 | 74.70 | 1,361 | 8,932 | |
| 80+ | 2.05 | 5.06 | 1.33 | 85.27 | 359 | 1,817 | |
| Total | 0.15 | 1.72 | 16.71 | 51.86 | 68,249 | 117,167 | |

| EURO A | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|-----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.87 | 11,061 | 0 | 2.8% |
| 5-14 | 0.02 | 0.03 | 55.26 | 13.75 | 24,478 | 742 | |
| 15-29 | 0.12 | 1.28 | 47.59 | 21.69 | 41,047 | 52,676 | |
| 30-44 | 0.42 | 4.42 | 31.75 | 39.04 | 47,868 | 211,744 | |
| 45-59 | 1.65 | 22.69 | 22.59 | 50.00 | 39,026 | 885,399 | |
| 60-69 | 3.52 | 44.95 | 12.23 | 64.56 | 19,811 | 890,531 | |
| 70-79 | 6.67 | 80.14 | 7.51 | 73.98 | 13,049 | 1,045,708 | |
| 80+ | 7.35 | 100.89 | 4.28 | 83.13 | 4,714 | 475,590 | |
| Total | 1.40 | 17.72 | 14.25 | 63.76 | 201,054 | 3,562,390 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.99 | 10,475 | 0 | 2.8% |
| 5-14 | 0.00 | 0.00 | 65.02 | 12.84 | 23,198 | 32 | |
| 15-29 | 0.16 | 0.27 | 49.80 | 28.32 | 39,092 | 10,621 | |
| 30-44 | 0.89 | 11.30 | 43.82 | 34.50 | 46,739 | 528,142 | |
| 45-59 | 1.12 | 23.00 | 27.16 | 52.34 | 39,273 | 903,465 | |
| 60-69 | 1.42 | 38.50 | 17.32 | 64.09 | 21,947 | 845,005 | |
| 70-79 | 1.81 | 43.98 | 8.44 | 77.81 | 18,563 | 816,420 | |
| 80+ | 3.52 | 68.72 | 6.17 | 82.98 | 10,512 | 722,417 | |
| Total | 0.92 | 18.24 | 22.60 | 59.92 | 209,798 | 3,826,102 | |

| EURO B1 | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.50 | 6,171 | 0 | 1.3% |
| 5-14 | 0.00 | 0.00 | 41.68 | 14.25 | 13,295 | 32 | |
| 15-29 | 0.04 | 0.11 | 28.85 | 28.04 | 22,235 | 2,452 | |
| 30-44 | 0.45 | 6.02 | 25.65 | 31.76 | 17,863 | 107,544 | |
| 45-59 | 0.43 | 7.91 | 13.22 | 50.41 | 12,885 | 101,862 | |
| 60-69 | 2.71 | 21.46 | 8.45 | 62.48 | 5,840 | 125,310 | |
| 70-79 | 4.33 | 33.72 | 5.53 | 72.28 | 3,256 | 109,775 | |
| 80+ | 7.11 | 38.49 | 2.89 | 83.34 | 728 | 28,037 | |
| Total | 0.60 | 5.77 | 10.75 | 60.46 | 82,272 | 475,012 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 0.00 | 5,913 | 0 | 1.2% |
| 5-14 | 0.00 | 0.00 | 53.94 | 14.06 | 12,713 | 0 | |
| 15-29 | 0.07 | 0.05 | 40.27 | 29.19 | 21,261 | 1,137 | |
| 30-44 | 0.50 | 6.19 | 36.15 | 34.03 | 17,492 | 108,224 | |
| 45-59 | 0.64 | 13.78 | 24.66 | 47.85 | 13,304 | 183,369 | |
| 60-69 | 1.09 | 18.64 | 11.84 | 65.35 | 6,873 | 128,116 | |
| 70-79 | 1.12 | 26.96 | 8.22 | 71.46 | 4,733 | 127,627 | |
| 80+ | 1.23 | 15.23 | 2.22 | 87.21 | 1,451 | 22,089 | |
| Total | 0.40 | 6.81 | 21.61 | 53.27 | 83,739 | 570,562 | |

| EURO B2 | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.99 | 2,983 | 0 | 1.9% |
| 5-14 | 0.01 | 0.02 | 48.01 | 12.63 | 6,170 | 125 | |
| 15-29 | 0.16 | 0.39 | 33.95 | 27.94 | 6,986 | 2,735 | |
| 30-44 | 1.10 | 13.26 | 28.64 | 34.29 | 5,088 | 67,464 | |
| 45-59 | 0.33 | 17.30 | 13.57 | 55.78 | 2,221 | 38,427 | |
| 60-69 | 3.27 | 32.43 | 9.60 | 63.98 | 1,107 | 35,899 | |
| 70-79 | 3.41 | 42.81 | 5.85 | 75.38 | 507 | 21,714 | |
| 80+ | 5.35 | 60.24 | 3.74 | 84.92 | 109 | 6,553 | |
| Total | 0.53 | 6.87 | 19.17 | 50.37 | 25,171 | 172,917 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 62.18 | 4.50 | 2,879 | 0 | 1.9% |
| 5-14 | 0.01 | 0.03 | 54.58 | 12.50 | 5,970 | 175 | |
| 15-29 | 0.13 | 0.41 | 40.73 | 27.61 | 6,837 | 2,784 | |
| 30-44 | 0.74 | 8.91 | 34.09 | 35.36 | 5,306 | 47,271 | |
| 45-59 | 1.48 | 24.32 | 24.22 | 47.34 | 2,375 | 57,763 | |
| 60-69 | 1.58 | 30.99 | 11.54 | 65.25 | 1,312 | 40,673 | |
| 70-79 | 1.87 | 43.83 | 8.34 | 71.39 | 784 | 34,372 | |
| 80+ | 1.11 | 23.68 | 2.24 | 90.03 | 282 | 6,672 | |
| Total | 0.48 | 7.37 | 24.15 | 48.87 | 25,747 | 189,710 | |

| EURO B3 | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.67 | 6,381 | 0 | 2.0% |
| 5-14 | 0.00 | 0.00 | 36.38 | 14.25 | 17,164 | 2 | |
| 15-29 | 0.02 | 0.01 | 23.07 | 29.08 | 28,095 | 357 | |
| 30-44 | 0.21 | 3.12 | 17.87 | 37.23 | 27,411 | 85,525 | |
| 45-59 | 1.13 | 10.02 | 11.45 | 49.46 | 19,974 | 200,232 | |
| 60-69 | 4.39 | 29.54 | 6.85 | 63.61 | 10,113 | 298,763 | |
| 70-79 | 7.79 | 51.13 | 4.99 | 73.61 | 5,059 | 258,636 | |
| 80+ | 12.75 | 88.96 | 3.44 | 83.33 | 1,029 | 91,517 | |
| Total | 1.09 | 8.11 | 7.30 | 64.94 | 115,226 | 935,032 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.67 | 6,095 | 0 | 1.9% |
| 5-14 | 0.02 | 0.04 | 56.39 | 14.25 | 16,484 | 681 | |
| 15-29 | 0.13 | 0.47 | 42.40 | 29.21 | 27,522 | 13,026 | |
| 30-44 | 0.48 | 10.18 | 38.30 | 33.69 | 27,997 | 285,096 | |
| 45-59 | 0.67 | 15.12 | 25.48 | 48.32 | 22,930 | 346,740 | |
| 60-69 | 1.87 | 27.88 | 13.48 | 64.36 | 14,605 | 407,202 | |
| 70-79 | 1.12 | 33.26 | 9.09 | 71.59 | 10,974 | 364,949 | |
| 80+ | 2.51 | 37.00 | 3.92 | 83.97 | 3,855 | 142,647 | |
| Total | 0.63 | 11.96 | 19.41 | 58.04 | 130,462 | 1,560,341 | |

| SEARO B | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.50 | 21,018 | 0 | 1.3% |
| 5-14 | 0.00 | 0.00 | 42.02 | 14.25 | 41,032 | 0 | |
| 15-29 | 0.03 | 0.03 | 30.30 | 29.18 | 56,985 | 1,578 | |
| 30-44 | 0.36 | 3.09 | 25.78 | 36.10 | 42,012 | 129,623 | |
| 45-59 | 1.21 | 14.16 | 17.55 | 49.07 | 22,837 | 323,278 | |
| 60-69 | 4.44 | 31.96 | 9.28 | 64.68 | 8,498 | 271,588 | |
| 70-79 | 5.19 | 62.49 | 6.40 | 72.34 | 3,946 | 246,595 | |
| 80+ | 5.14 | 41.90 | 2.55 | 85.00 | 1,011 | 42,369 | |
| Total | 0.55 | 5.14 | 13.21 | 58.49 | 197,339 | 1,015,032 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.44 | 20,168 | 0 | 0.9% |
| 5-14 | 0.00 | 0.00 | 45.81 | 14.25 | 39,441 | 0 | |
| 15-29 | 0.06 | 0.05 | 33.83 | 29.23 | 55,762 | 2,509 | |
| 30-44 | 0.44 | 5.35 | 30.84 | 32.95 | 42,172 | 225,760 | |
| 45-59 | 0.38 | 8.80 | 17.93 | 49.70 | 23,813 | 209,570 | |
| 60-69 | 1.75 | 14.86 | 9.31 | 64.84 | 9,550 | 141,881 | |
| 70-79 | 2.07 | 25.96 | 6.24 | 72.30 | 4,761 | 123,593 | |
| 80+ | 3.43 | 17.78 | 2.33 | 84.88 | 1,433 | 25,486 | |
| Total | 0.32 | 3.70 | 17.21 | 54.06 | 197,099 | 728,800 | |

| SEARO D | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.43 | 83,439 | 0 | 0.7% |
| 5-14 | 0.00 | 0.00 | 38.28 | 14.25 | 158,454 | 0 | |
| 15-29 | 0.06 | 0.05 | 25.81 | 29.22 | 193,336 | 8,951 | |
| 30-44 | 0.45 | 5.55 | 23.55 | 32.34 | 136,548 | 757,662 | |
| 45-59 | 0.27 | 6.21 | 10.15 | 53.70 | 77,761 | 483,014 | |
| 60-69 | 2.26 | 14.71 | 5.92 | 63.32 | 28,680 | 421,746 | |
| 70-79 | 3.14 | 16.16 | 3.08 | 74.26 | 13,415 | 216,734 | |
| 80+ | 5.89 | 15.55 | 1.69 | 84.31 | 3,433 | 53,379 | |
| Total | 0.32 | 2.79 | 11.36 | 55.98 | 695,066 | 1,941,487 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.43 | 78,716 | 0 | 0.6% |
| 5-14 | 0.00 | 0.00 | 36.48 | 14.25 | 148,561 | 0 | |
| 15-29 | 0.04 | 0.03 | 26.51 | 29.17 | 178,171 | 6,093 | |
| 30-44 | 0.35 | 3.87 | 23.41 | 33.66 | 125,344 | 484,794 | |
| 45-59 | 0.45 | 7.65 | 13.21 | 48.47 | 73,855 | 565,079 | |
| 60-69 | 1.11 | 8.35 | 5.03 | 64.82 | 29,706 | 248,158 | |
| 70-79 | 3.17 | 11.44 | 2.63 | 74.29 | 14,788 | 169,172 | |
| 80+ | 6.75 | 12.17 | 1.33 | 84.49 | 4,153 | 50,557 | |
| Total | 0.29 | 2.33 | 10.35 | 58.69 | 653,295 | 1,523,853 | |

| WPRO A | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0 | 0 | 0 | 2.52 | 3,993 | 0 | 2.5% |
| 5-14 | 0.03 | 0.07 | 62.85 | 12.65 | 8,074 | 565 | |
| 15-29 | 0.09 | 0.71 | 50.02 | 25.87 | 15,691 | 11,141 | |
| 30-44 | 0.44 | 5.64 | 40.99 | 35.31 | 15,046 | 84,858 | |
| 45-59 | 1.03 | 14.28 | 24.36 | 53.6 | 16,123 | 230,237 | |
| 60-69 | 3.36 | 41.05 | 15.98 | 64.16 | 7,895 | 324,083 | |
| 70-79 | 4.03 | 63.7 | 8.47 | 76.38 | 4,829 | 307,584 | |
| 80+ | 6.23 | 113.31 | 5.77 | 82.77 | 1,725 | 195,455 | |
| Total | 1.11 | 15.73 | 17.31 | 64.22 | 73,376 | 1,153,922 | |
| Female | | | | | | | |
| 0-4 | 0 | 0 | 0 | 3.87 | 3,786 | 0 | 2.3% |
| 5-14 | 0 | 0 | 68.26 | 13.75 | 7,684 | 0 | |
| 15-29 | 0.12 | 0.25 | 54.1 | 28.13 | 15,047 | 3,762 | |
| 30-44 | 0.66 | 7.62 | 47.02 | 35.38 | 14,820 | 112,931 | |
| 45-59 | 0.81 | 20.04 | 33.85 | 49.23 | 16,241 | 325,474 | |
| 60-69 | 0.92 | 27.44 | 19.95 | 65.01 | 8,555 | 234,745 | |
| 70-79 | 2.14 | 41.47 | 13.01 | 74.13 | 6,404 | 265,566 | |
| 80+ | 2.3 | 58.84 | 7.79 | 82.96 | 3,548 | 208,772 | |
| Total | 0.72 | 15.13 | 25.73 | 59.64 | 76,086 | 1,151,250 | |

| WPRO B1 | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 1.75 | 54,355 | 0 | 3.5% |
| 5-14 | 0.00 | 0.00 | 47.42 | 14.25 | 122,442 | 0 | |
| 15-29 | 0.21 | 0.16 | 34.28 | 29.24 | 176,054 | 28,309 | |
| 30-44 | 1.80 | 16.34 | 29.01 | 35.56 | 173,001 | 2,826,238 | |
| 45-59 | 5.35 | 69.69 | 18.79 | 48.29 | 106,927 | 7,452,174 | |
| 60-69 | 8.49 | 121.20 | 9.07 | 62.54 | 41,137 | 4,985,736 | |
| 70-79 | 14.68 | 128.08 | 4.22 | 74.07 | 19,577 | 2,507,427 | |
| 80+ | 46.01 | 156.66 | 2.15 | 83.64 | 4,267 | 668,497 | |
| Total | 2.51 | 26.47 | 14.74 | 56.66 | 697,760 | 18,468,382 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 3.99 | 48,849 | 0 | 1.5% |
| 5-14 | 0.00 | 0.01 | 47.14 | 13.02 | 110,437 | 795 | |
| 15-29 | 0.42 | 1.06 | 34.21 | 27.63 | 165,015 | 174,866 | |
| 30-44 | 0.82 | 12.93 | 29.40 | 33.43 | 163,927 | 2,120,330 | |
| 45-59 | 0.81 | 18.59 | 14.42 | 52.41 | 100,002 | 1,858,694 | |
| 60-69 | 4.87 | 32.55 | 6.41 | 66.29 | 40,330 | 1,312,883 | |
| 70-79 | 10.54 | 60.47 | 3.64 | 74.48 | 23,678 | 1,431,757 | |
| 80+ | 23.99 | 54.45 | 1.48 | 86.10 | 8,031 | 437,276 | |
| Total | 1.40 | 11.11 | 10.78 | 63.71 | 660,269 | 7,336,601 | |

| WPRO B2 | Incidence per 1000 | Prevalence per 1000 | Average duration (yrs) | Average age at onset | Population ('000) | Prevalence | Validity Check Aged 30 and over |
|---------------|-----------------------|------------------------|---------------------------|-------------------------|----------------------|------------|---------------------------------------|
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 1.73 | 7,648 | 0 | 2.4% |
| 5-14 | 0.00 | 0.00 | 38.54 | 14.25 | 15,935 | 2 | |
| 15-29 | 0.10 | 0.08 | 25.93 | 29.20 | 21,154 | 1,766 | |
| 30-44 | 1.02 | 9.36 | 22.04 | 34.88 | 14,684 | 137,439 | |
| 45-59 | 2.76 | 31.33 | 13.21 | 48.86 | 6,527 | 204,463 | |
| 60-69 | 7.53 | 55.67 | 5.85 | 64.03 | 2,709 | 150,839 | |
| 70-79 | 14.88 | 72.11 | 3.17 | 74.27 | 1,318 | 95,061 | |
| 80+ | 36.22 | 97.53 | 1.80 | 84.22 | 311 | 30,318 | |
| Total | 1.23 | 8.82 | 9.57 | 59.87 | 70,287 | 619,887 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.21 | 7,327 | 0 | 2.2% |
| 5-14 | 0.01 | 0.01 | 39.52 | 14.25 | 15,278 | 142 | |
| 15-29 | 0.10 | 0.38 | 29.81 | 27.00 | 20,415 | 7,760 | |
| 30-44 | 1.09 | 13.48 | 26.34 | 31.71 | 15,430 | 207,961 | |
| 45-59 | 1.72 | 24.93 | 13.96 | 48.45 | 7,483 | 186,520 | |
| 60-69 | 3.63 | 34.27 | 5.90 | 62.97 | 3,337 | 114,358 | |
| 70-79 | 11.96 | 43.03 | 2.70 | 73.80 | 1,866 | 80,282 | |
| 80+ | 32.81 | 55.47 | 1.26 | 84.74 | 622 | 34,477 | |
| Total | 1.21 | 8.80 | 9.76 | 61.74 | 71,757 | 631,499 | |

| WPRO B3 | Incidence | Prevalence | Average | Average age | Population | Prevalence | Validity Check |
|---------------|-----------|------------|----------------|-------------|------------|------------|------------------|
| | per 1000 | per 1000 | duration (yrs) | at onset | ('000) | | Aged 30 and over |
| Male | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.48 | 486 | 0 | 1.2% |
| 5-14 | 0.00 | 0.00 | 36.71 | 14.25 | 857 | 1 | |
| 15-29 | 0.03 | 0.06 | 25.66 | 28.46 | 1,010 | 60 | |
| 30-44 | 0.43 | 4.76 | 23.30 | 31.75 | 656 | 3,125 | |
| 45-59 | 1.63 | 17.14 | 12.53 | 48.30 | 344 | 5,897 | |
| 60-69 | 3.13 | 26.76 | 5.73 | 62.33 | 117 | 3,132 | |
| 70-79 | 6.01 | 28.75 | 3.13 | 73.03 | 50 | 1,441 | |
| 80+ | 8.42 | 24.60 | 1.73 | 83.39 | 9 | 230 | |
| Total | 0.46 | 3.93 | 10.86 | 54.50 | 3,531 | 13,886 | |
| Female | | | | | | | |
| 0-4 | 0.00 | 0.00 | 0.00 | 2.48 | 457 | 0 | 0.4% |
| 5-14 | 0.00 | 0.00 | 35.60 | 12.99 | 812 | 1 | |
| 15-29 | 0.08 | 0.21 | 24.05 | 27.47 | 947 | 194 | |
| 30-44 | 0.21 | 3.02 | 19.94 | 33.51 | 586 | 1,770 | |
| 45-59 | 0.27 | 3.92 | 8.22 | 52.41 | 341 | 1,335 | |
| 60-69 | 1.00 | 4.59 | 3.38 | 65.88 | 123 | 563 | |
| 70-79 | 2.24 | 6.19 | 1.90 | 74.62 | 58 | 360 | |
| 80+ | 3.76 | 5.46 | 1.04 | 84.33 | 12 | 64 | |
| Total | 0.18 | 1.29 | 9.82 | 55.28 | 3,336 | 4,288 | |