Burden of Obstructive Lung Diseases in Bangladesh (BOLD-BD)

Report on National COPD Study, 2007

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01. Abstract

Background

COPD is the major cause of chronic morbidity & mortality worldwide. It is projected to be the fourth leading cause of disability in 2020. Physicians of Bangladesh encounter COPD among elder age group regularly. At present, no epidemiological data is on record in Bangladesh. BOLD-BD is a cross-sectional prevalence study to measure the magnitude of the problem of COPD in our country.

Methodology

Total 3028 subjects of >40 years of age were studied. There were 3 major strata – metropolitan, urban & rural. The whole country was geographically divided into 5 zones – North, South, East, West and Central. 20 villages (rural stratum) and 40 municipal blocks (20 from metropolitan stratum and 20 from urban stratum) from 10 districts (2 from each zone) were surveyed. In all stages, stratified random sampling method was followed. A pretested questionnaire was filled-up with face-to-face interview with the respondent. Spirometry with reversibility test was done in all subjects. A Fixed Ratio of FEV1/FVC <70%, not reversed after bronchodilation with 200 mcg of salbutamol inhalation was taken as diagnostic criterion for COPD.

Results

Prevalence of COPD in >40 years population was 21.24% (95% CI 20.77 – 21.78). The total number of COPD patients in Bangladesh is assumed to be 5947200. The over all prevalence of COPD in total population of Bangladesh is estimated to be 4.32%.

The prevalence of COPD was found to be highest for rural population 23.15% (OR 1.187, 95% CI 0.987 – 1.429), followed by urban 22.62% (OR 1.130, 95% CI 0.937 – 1.362) and was lowest for metropolitan population 17.77% (OR 0.728, 95% CI 0.596 – 0.887). Majority (45.41%) of the patients were suffering from moderate- COPD, the prevalence of which in rural areas (48.55%) was higher than that of urban and metropolitan areas (44.30% and 42.53% respectively). In general, males suffer more than females (62.83% vs. 37.17%).

From our findings it is obvious that COPD is a disease of low-income population, >80% of COPD patients belong to this group and prevalence among this group is 22.86% [OR 1.523, 95% CI 1.221 – 1.909]. The productive age group (40-50 years) is the main victim (42.06%). The prevalence decreases with the increase of age while the odds ratio is on increase; for the age group 51 – 60 years it was 26.64% [OR 1.405, 95% CI 1.142 – 1.1.724]; for the age group 61 – 70 years it was 20.72% [OR 2.069, 95% CI 1.631 – 2.615]; for the age group 71 – 80 years it was 08.10% [OR 2.075, 95% CI 1.434 – 2.975] and for the age group 81 years and above it was low again 02.49% [OR 1.765, 95% CI 0.903 – 3.309] respectively. About 50% patients are illiterate. In contrast to age as expected the prevalence decreases with increase of years of education along with odds ratio; prevalence of COPD in illiterate, primary & below, secondary & below, higher secondary & below and above higher secondary population was respectively 49.77% (OR 1.279, 95% CI 1.070 – 1.529), 22.24% (OR 1.051, 95% CI 0.846 – 1.302), 17.42% (OR 0.728, 95% CI 0.575 – 0.915), 04.82% (OR 0.893, 95% CI 0.577 – 1.347) and 05.75% (OR 0.796, 95% CI 0.536 – 1.156).

When looked for the effect of passive smoking by smoker present or absent in the family, it was found as expected that the prevalence of COPD in the family where smoker present is higher than the prevalence of COPD when smoker is not present in the family – 59.10% (OR 1.235, 95% CI 1.031 – 1.479) vs. 40.90% (OR 0.810, 95% CI 0.676 – 0.970) Majority (62.23%) COPD patients are active smokers.

This phenomenon is extremely high in male COPD patients– 87.44% are smokers, whereas only 19.58% of female COPD patients are smokers. Interestingly the prevalence of COPD among smoker male and female showed very little difference 67.80% vs. 65.69%. We found a strong positive relation between gradual raise in odds ratio with increased pack-years of cigarette consumption. The prevalence of COPD among those who smoked less than ten pack-year was 29.32% (OR 1.251, 95% CI 0.986 – 1.581), among those who smoked 10 – 20 pack-year was 26.82% (OR 1.682, 95% CI 1.303 – 2.161), among those who smoked 20 – 30 pack-year was 16.79% (OR 2.578, 95% CI 1.840 – 3.590) and among those who smoked more than 30 pack-year was 27.07% (OR 4.136, 95% CI 3.088 – 5.531). Our study showed that smokers need only around 10 pack-years of smoking to develop the disease.

Again from our findings it was obvious that exposure to bio-mass gas (open stove/wood burn) appears to be a significant risk factor in developing COPD, >80.00% (82.21%) COPD patients are exposed to it. The figure is even higher among female COPD patients, >85.00% (86.53%). When we looked for the prevalence of COPD among those who were bio-mass-gas exposed by their smoking behavior, it was found that respondents who were non-smoker 16.75% were male and 83.25% were female. Where as these figures for those who were smoker 86.75% were male and 13.25% were female.

Conclusion

We found that in Bangladesh, total prevalence of COPD (among all age) is 4.32%. In India, prevalence of COPD in male is 5% & in female is 2.7%. They surveyed among >30 years and above aged persons, whereas our lowest age limit was 40 years. We can say that our prevalence rate is consistent with that of neighboring India.

Almost half of the patients suffer from moderate COPD (45.13%). COPD is more prevalent among the productive age group, among the poor and among the illiterates.

Males suffer more than females, but the ratio is narrow in rural areas, indicating more COPD among rural females. This may be attributed to high exposure to bio-mass gas in rural females.

Majority of COPD patients are active smokers, which supports the notion that smoking is the major risk factor in developing the disease. About 80% of smokers need to smoke only around 10 pack years to catch the disease. This finding is more alarming than the international findings, where 20 pack-years are set as a benchmark in developing COPD.

Recommendations

- Meticulous analysis of the findings are warranted
- More preventive measures in low income and illiterate group should be employed
- Anti-smoking campaign must be strengthened
- Steps should be taken to limit bio mass gas emission

02. Introduction

Chronic Obstructive Pulmonary Disease (COPD) is one of the most common respiratory ailments encountered by the physicians. It is a major cause of chronic morbidity and mortality worldwide1. This disease is a burden for both developed and developing countries. Although there is no adequate information about the prevalence of the disease in our country, the problem is increasing here day by day, like other parts of the world. This upsurge is thought to be due to urbanization, industrialization and change of profession of people from 'agriculture and fresh air' based rural communities to 'industry and smoking' based urban settings.

COPD is the fourth leading cause of death in USA2. Increasing habit of cigarette smoking is contributing greatly in the up rise of the disease. It is projected to be the fourth leading cause of disability in 20203.

COPD results in an economic and social burden that is both substantial and increasing. COPD prevalence, morbidity, and mortality vary appreciably across countries and across different groups within countries, but in general are directly related to the prevalence of tobacco smoking. Most epidemiological studies have found that COPD prevalence, morbidity, and mortality have increased over time and are greater in men than in women. Very few studies have quantified the economic and social burden of COPD. In developed countries, the direct medical costs of COPD are substantial because the disease is both chronic and highly prevalent. In developing countries, the indirect cost of COPD from loss of work and productivity may be more important than the direct costs of medical care.

Most of the information available on COPD prevalence, morbidity, and mortality comes from developed countries. Even in these countries; accurate epidemiological data on COPD are difficult and expensive to collect.

Prevalence and morbidity data greatly underestimate the total burden of COPD because usually the disease is not diagnosed until it is clinically apparent and moderately advanced. The imprecise and variable definitions of COPD have made it hard to quantify the morbidity and mortality of this disease in developed4 and developing countries. Mortality data also underestimate COPD as a cause of death because the disease is more likely to be cited as a contributory than as an underlying cause of death, or may not be cited at all5.

Available estimates of COPD prevalence have been developed by determining either the proportion of the population that reports having respiratory symptoms and/or airflow limitation, or the proportion that reports having been diagnosed with COPD, chronic bronchitis, emphysema by a physician. Each of these approaches will yield a different estimate, and may be useful for different purposes. For example, studies that ask about the full range of COPD symptoms from early to advanced disease are useful to estimate the total societal burden of the disease. Data on doctor diagnoses of COPD are useful to estimate the prevalence of clinically significant disease that is of sufficient severity to require health services, and therefore is likely to incur significant costs.

The population surveys necessary to develop accurate estimates of COPD prevalence are costly to do and therefore have not been conducted in many countries. Obtaining reliable prevalence data for COPD in each country should be a priority in order to alert those responsible for planning prevention services and health care delivery to the high prevalence and cost of the disease. The prevalence of COPD is likely to vary appreciably depending on the prevalence of risk factor exposure, age distribution, and prevalence of susceptibility genes in different countries. Virtually all population-based studies in developed countries showed a markedly greater prevalence and mortality of COPD among men compared to women6-9. Gender-related differences in exposure to risk factors, mostly cigarette smoking, probably explain this pattern. In developing countries, some studies report a slightly higher prevalence of COPD in women than men. This likely reflects exposure to indoor air pollution from cooking and heating fuels (greater among women) as well as exposure to tobacco smoke (greater among men)10-18. Recent large population-based studies in the US

show a different pattern emerging, with the prevalence of COPD almost equal in men and women19, 20. This likely reflects the changing pattern of exposure to the most important risk factor, tobacco smoke.

There is considerable discussion about the best diagnostic criteria for this disease. Although there is agreement that Spirometry is the main diagnostic key, there is no consensus as to the best spirometric criterion. A fixed ratio of forced expiratory volume in first second (FEV1)/forced vital capacity (FVC) below 70.0%, not reversed after bronchodilation with 200 mcg of inhaled salbutamol21 can be considered a good indicator for the disease, since it is easy and does not require reference values for each population. We used this as the diagnostic tool in our study.

The aim of the study was to see the prevalence of COPD in the elderly (>40 years of age) of Bangladesh. The socio-demographic and environmental factors related to COPD were looked into along with smoking status as well as the help seeking behavior of these patients.

The result of the study appears to be definitely helpful for better understanding of the risk factors of COPD in different settings of rural and urban areas of Bangladesh. It will support in future course of action in relation to COPD campaign, supply of logistics, improving management strategies and human resource development. Formulation of an effective intervention program for prevention of COPD can also be facilitated in light of the findings.

03. Objectives

03.01 General Objective

The general objective of this study is to estimate the prevalence as well as to identify the risk factors of COPD in Bangladesh. This study was also aimed to identify the smoking status and help seeking behavior of COPD patients of Bangladesh.

03.02 Specific Objectives

a) Estimating the prevalence of COPD in urban and rural areas of Bangladesh
b) Identifying the socio-demographic and environmental factors related to COPD in Bangladesh
c) Finding out the severity of COPD in different setting
d) Evaluating the smoking status of the COPD patients of Bangladesh

04. Methodology

04.01 Type of Study
It was a cross sectional comparative study. The study compared various group of population who are suffering from COPD and who are not.

04.02 Study period
July 2006 to December 2007. Total 18 months.

Figure 1: Time scale of study period

Description of works	Manths → 01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
Staff Recruitment	▓																	
Orientation		▓	▓															
Field Preparetion				▓	▓													
Data Collection							▓	▓	▓	▓	▓	▓	▓	▓				
Data Input & Analysis												▓	▓	▓	▓	▓	▓	
Report Preparation																		▓

04.03 Population
People of Bangladesh aging 40 years and above were the total population for this study.

04.04 Sampling
04.04.01 Sample size:
Total population was 3000. Sample size was calculated using the following formula

$n = z^2 [p(1-p)]/d^2$

$z = 1.96$ (95% confidence interval)
$p = .08$ (Prevalence of COPD- 8%, assumed)
$d = .01$ (Precision)
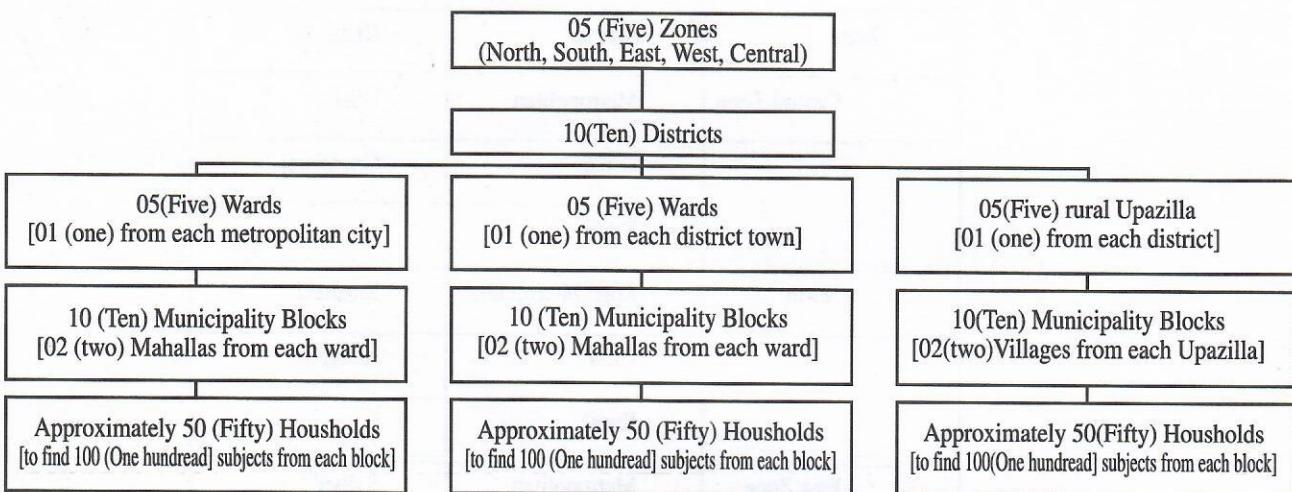
The calculated sample size is 2827. For the survey, 3000 sample size has been taken considering non-response. Ultimately total 3028 subjects were studied.

Sampling technique

Multistage cluster sampling design was followed. The following sampling technique was used.

1. The whole country was stratified into three groups – metropolitan areas, urban areas and rural areas.
2. In the rural areas the primary sampling unit was village, while in urban and metropolitan areas it was mahalla (municipality block).
3. Then the whole country was geographically divided into 5 zones – North, South, East, West and Central. From each zone 1 metropolitan city and 1 district were selected randomly (total 10 districts from 5 zones). Selection of primary sampling unit then followed.

Figure 2: Multistage random sampling method

```
                    05 (Five) Zones
         (North, South, East, West, Central)

                    10(Ten) Districts

  ┌──────────────────┬──────────────────┬──────────────────┐

  05(Five) Wards        05 (Five) Wards        05(Five) rural Upazilla
  [01 (one) from each   [01 (one) from each    [01 (one) from each district]
  metropolitan city]    district town]

  10 (Ten) Municipality 10 (Ten) Municipality  10(Ten) Municipality
  Blocks                Blocks                 Blocks
  [02 (two) Mahallas    [02 (two) Mahallas     [02(two)Villages from
  from each ward]       from each ward]        each Upazilla]

  Approximately 50      Approximately 50       Approximately 50(Fifty)
  (Fifty) Housholds     (Fifty) Housholds      Housholds
  [to find 100 (One     [to find 100 (One      [to find 100(One hundred]
  hundread] subjects    hundread] subjects     subjects from each block]
  from each block]      from each block]
```

In all stage selection was done on random basis. At the primary sampling unit level households were selected randomly. Considering two 40 years or above members in each household, numbers of households were determined. Households were identified using GR sheet at village level, and house-list from municipality office at metropolitan and urban areas. Where selected number of households did not cover the required size of population in respective block, the adjacent households were taken to fulfill the required sample size.
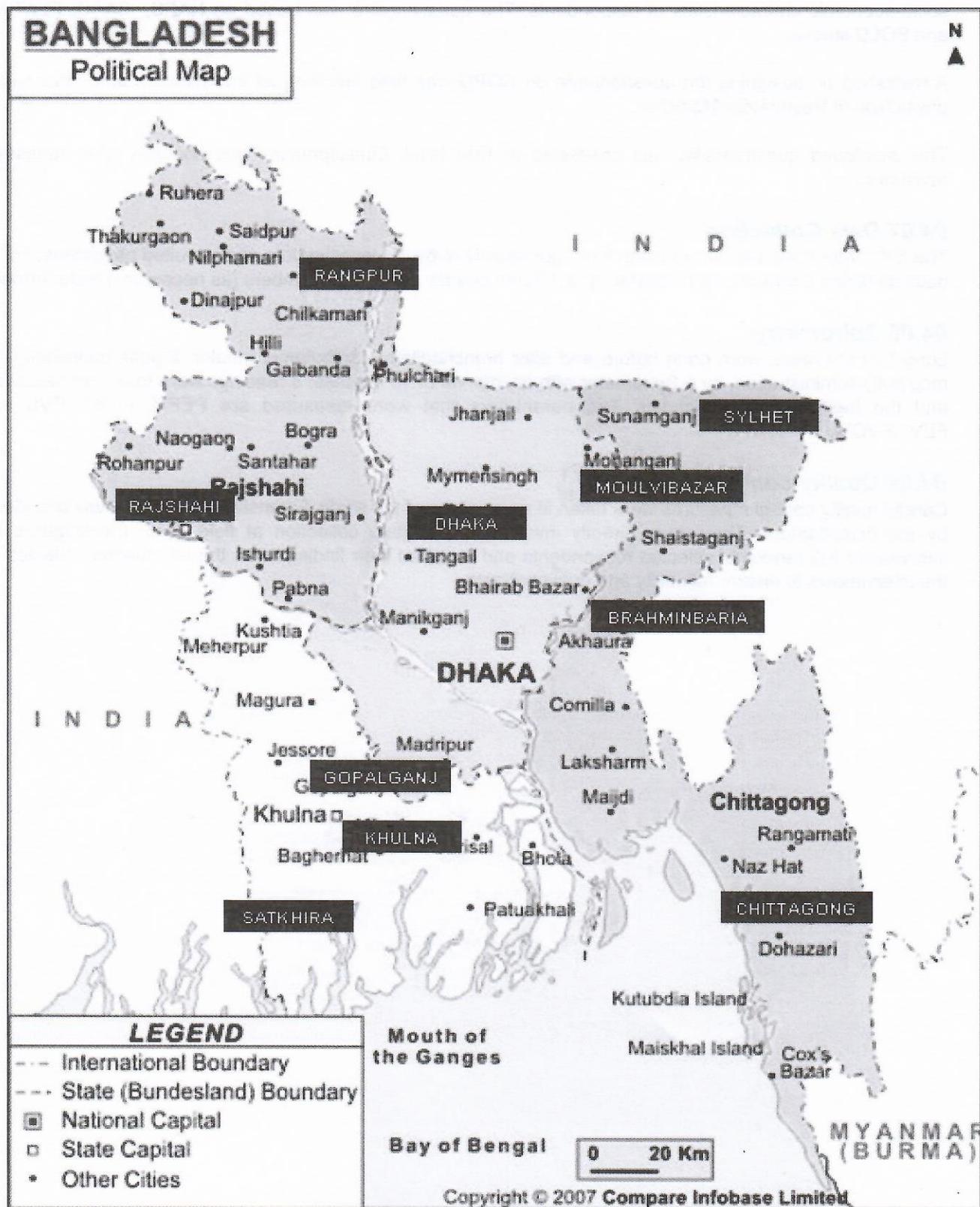
Study areas

All study areas were selected randomly according to the above mentioned plan. The districts those were Atudica are shown in Table 1.

Table 1: Study Areas

Zone	Strata	District
Central Zone	Metropolitan	Dhaka
	Urban	Gopalganj
	Rural	
North	Zone Metropolitan	Rajshahi
	Urban	Rangpur
	Rural	
East Zone	Metropolitan	Sylhet
	Urban	Moulvibazar
	Rural	
South Zone	Metropolitan	Chittagong
	Urban	Brahmin Baria
	Rural	
West Zone	Metropolitan	Khulna
	Urban	Satkhira
	Rural	

Figure 3: Map of Bangladesh showing districts studied in BOLD-BD

04.06 Development of data collection instrument

A structured questionnaire was developed at National Asthma Centre covering detailed diagnostic criteria and socio-economic characteristics of respondents. The questionnaire was based on NAPS, ISAAC, PLATINO and BOLD studies.

A workshop on designing the questionnaire on COPD was held involving all investigators and other senior physicians of Respiratory Medicine.

The developed questionnaire was pre-tested at field level. Questionnaire was finalized after necessary revisions.

04.07 Data Collection

The data were collected through structured questionnaire by the investigators and recruited physicians. For data collection 9 groups, each consisting of 1 Team Leader and 1 to 3 Members (as necessary) were formed.

04.08 Spirometry

Lung function tests, were done before and after bronchodilator (Salbutamol Inhaler, 2 puffs containing 200 mcg/puff) administration, by a Spirometer with an interval of 15 minutes. 3 readings were taken consecutively and the best one was recoded. The parameters that were measured are PEFR, FEV1, FVC and FEV1/FVC%.
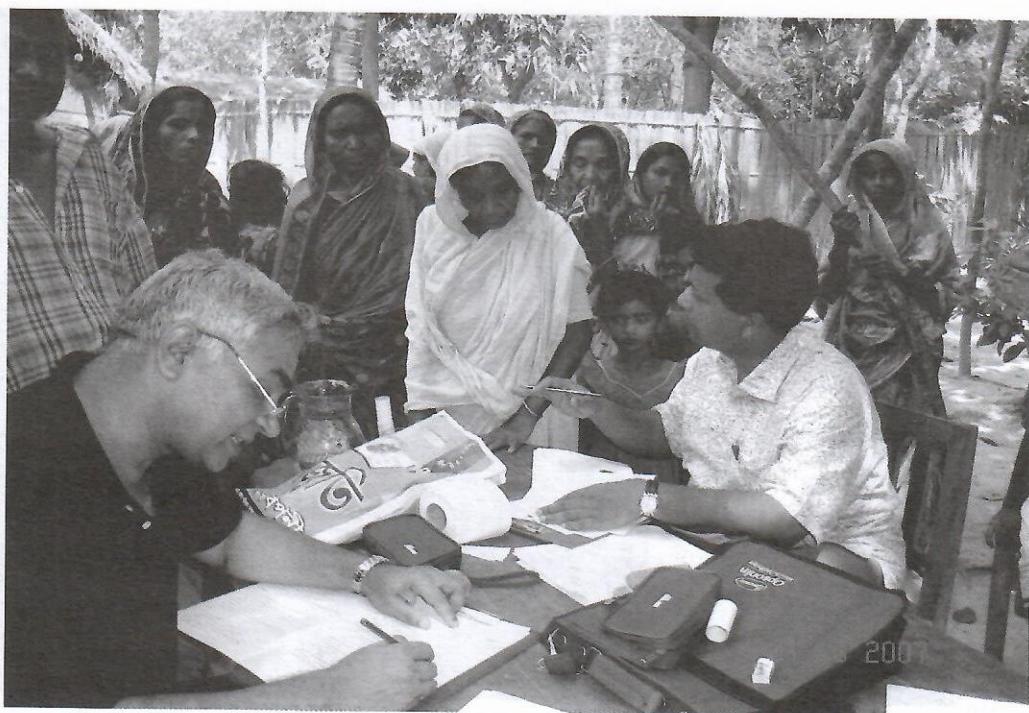
04.09 Quality control

Careful quality control measures were taken in every stage of the study. Extensive supervision was provided by the investigators. They were directly involved in the data collection at field level. Investigators re-interviewed 5% randomly selected respondents and matched their findings with the information collected by the interviewers to ensure reliability and quality of data.
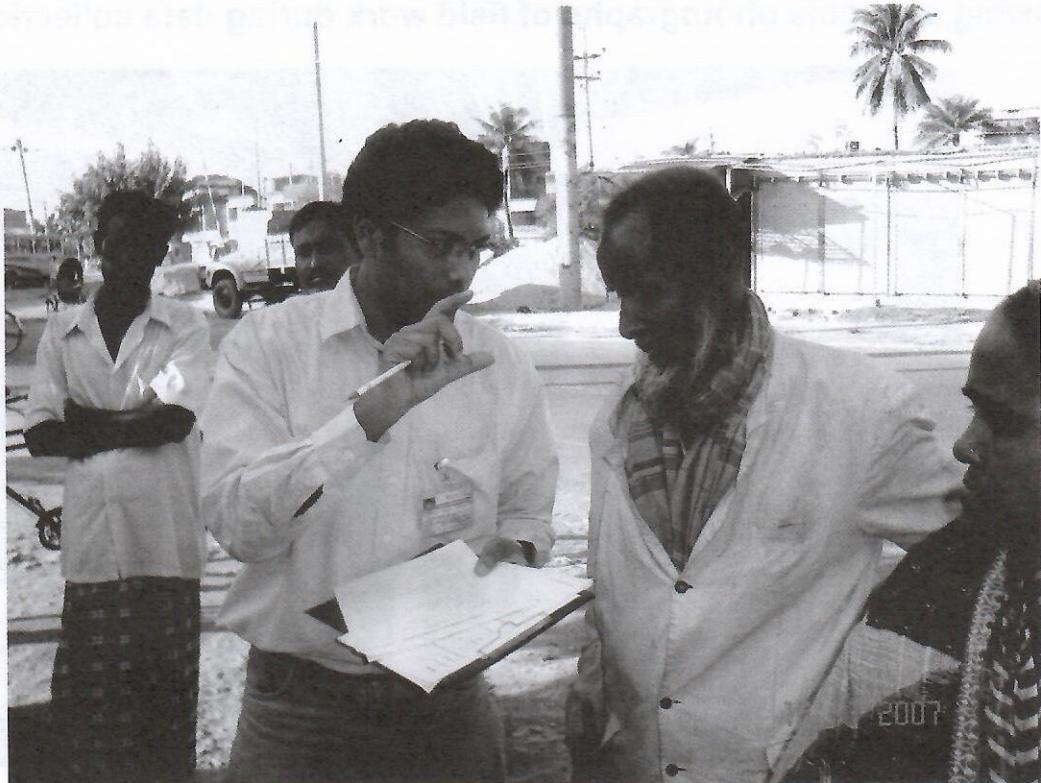
Following are some photographs of field work during data collection activity:
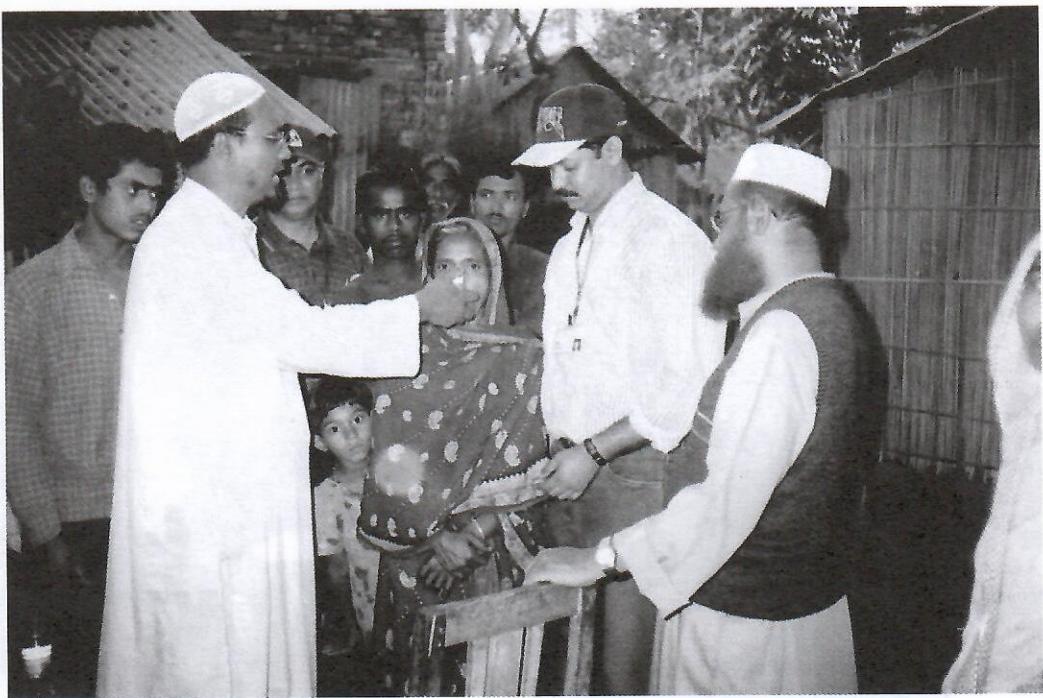
Data collection in a rural area

Filling up the questionnaire
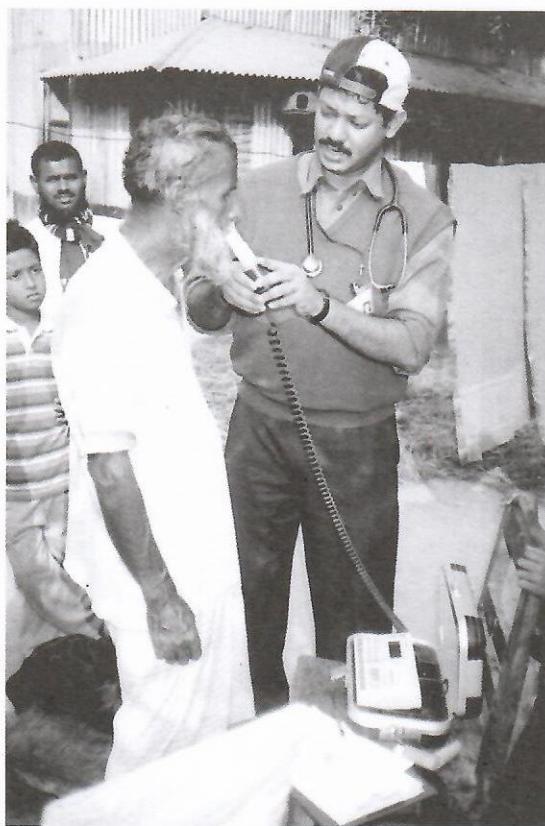
Data Collection in an urban area

Demonstrating the use of MDI

Demonstrating the Spirometer

Performing Spirometry

04.10 Data Analysis

Data were initially edited manually at field level. SPSS version 12.0 / STATA version 10.0 for windows software was used for data entry and analysis. Mainly frequency distribution and cross tabulation along with calculation of odds ratio were done during analysis.

04.11 Utilization of Results

a) The results are expected to help the Health Services of Government of Bangladesh for implementation and modification of prevention and control program strategies of COPD in Bangladesh.
b) It may help the Physician to diagnose, treat and rehabilitate the COPD patients according to their individual socio-demographic condition, morbidity and complications.

04.12 Facilities

Trained physicians of National Asthma Center acted as Data-collectors to collect data from household levels, who are experienced in performing lung function tests.

Some basic medical equipment, such as Stethoscope, Blood pressure machine etc, were used from personal source.

The physicians provided free medical advices to the respondents wherever necessary.
2 (Two) Spirometers were used to perform lung function tests.
Bronchodilator Inhalers (Salbutamol) were purchased from local market.

05. Results

05.01 Socio-demography

A total of 1927 households were studied covering 3028 persons (only members aged 40 years and above). Of them 1545 (51%) were male and rest 1483 (49%) were female. Male female ratio of the total population was 104:100 (national figure 105:100). Regarding economic status of the households most were from low-income group (75.3%), only 02.6% were solvent and rests (22.2%) were from middle income group. Study on education level revealed 44.9% were illiterate or having zero years of schooling, 21.6% had primary & below, 21.4% had secondary & below, 05.3% had higher secondary & below and 06.8% had above higher secondary level education.

Table 02: Population Characteristics

	Number	Percentage (%)
Total households surveyed	1927	
Total population studied	3028	
Male population	1545	
Female population	1483	
Male - Female ratio 1	05:100	
Economic status of households	**Number**	**Percentage (%)**
Low Income	2279	75.3
Middle Income	671	22.2
Solvent	78	02.6
Education level		
Illiterate (0 years of schooling)	1361	44.9
Primary & below	653	21.6
Secondary & below	648	21.4
Higher secondary & below	159	05.3
Above higher secondary	207	06.8

05.02 Magnitude of the Problem

The prevalence of COPD in population age 40 years and above was 21.24% (95% CI 20.77 – 21.78). Among COPDs, moderate-COPD (FEV1/FVC <0.70; FEV1 <80% - <50% of predicted) was the commonest category, amounting 45.41% (95% CI 45.32 – 45.52). Occurrence of other categories showed mild-COPD (FEV1/FVC <0.70; FEV1 >80% of predicted) 14.00% (95% CI 13.98 – 14.04), followed by severe-COPD (FEV1/FVC <0.70; FEV1 <50% - <30% of predicted) 28.30% (95% CI 28.25 – 28.37) and very severe-COPD (FEV1/FVC <0.70; FEV1 <30% of predictedh 12.29% (95% CI 12.27 – 12.32). The distribution of different stages of COPD is shown in Figure – 4.

Prevalence of COPD in >40 years population was 21.24% (95% CI 20.77 – 21.78). According to National Census 2001, >40 years population in Bangladesh is 28000000. So the total number of COPD patients in Bangladesh is assumed to be 5947200. The over all prevalence of COPD in total population of Bangladesh is estimated to be 4.32%.

**Figure 4 : Prevalence of non-COPD and COPD (n=3028)**

non-COPD
78.76%

COPD
21.24%

mild-COPD
02.97%

moderate-COPD
09.64%

severe-COPD
06.01%

very severe-COPD
02.61%
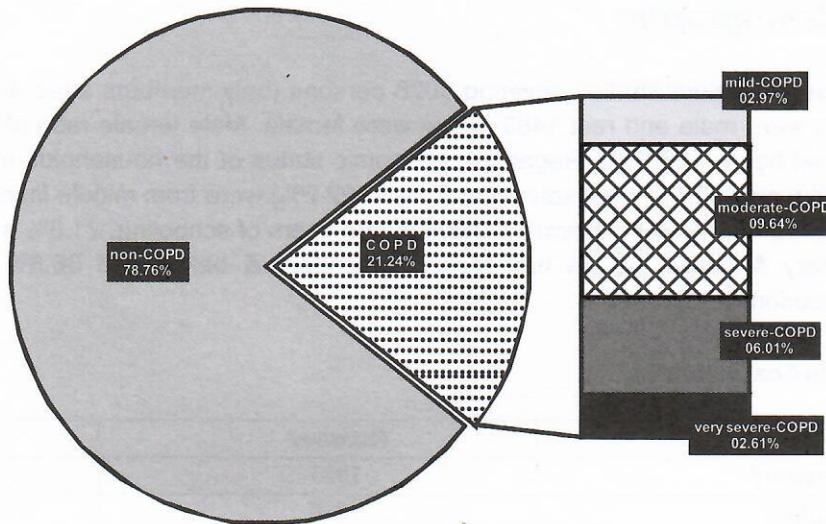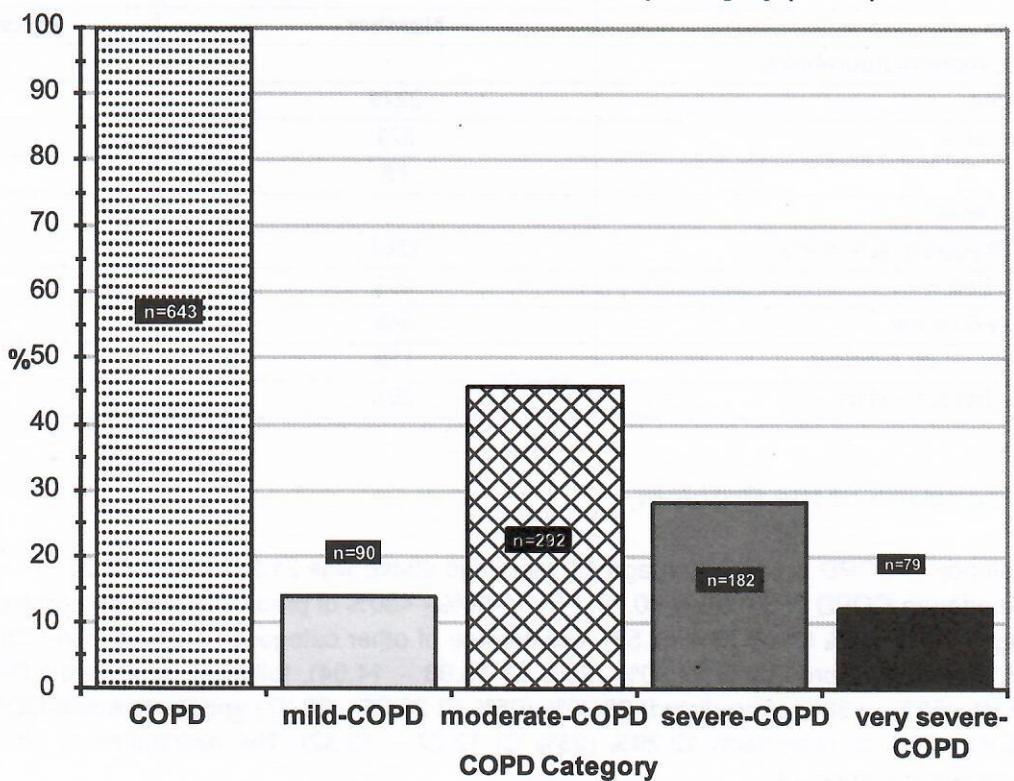
Figure 5 : Prevalence of COPD by category (n=643)

%

n=643

n=90

n=292

n=182

n=79

COPD   mild-COPD   moderate-COPD   severe-COPD   very severe-COPD

COPD Category

Prevalence of COPD in >40 years population was 21.24% (95% CI 20.77 – 21.78). According to National Census 2001, >40 years population in Bangladesh is 28000000. So the total number of COPD patients in Bangladesh is assumed to be 5947200. The over all prevalence of COPD in total population of Bangladesh is estimated to be 4.32%.

05.03 Geographical distribution

The prevalence of COPD in metropolitan, urban and rural population was respectively 17.77% (OR 0.728, 95% CI 0.596 – 0.887), 22.62% (OR 1.130, 95% CI 0.937 – 1.362), and 23.15% (OR 1.187, 95% CI 0.987 – 1.429). Among metropolitan COPDs, moderate-COPD was the commonest category 42.53%, occurrence of other categories showed severe-COPD 35.06%, followed by very severe-COPD 13.22%, and mild-COPD 09.20%. Among urban COPDs, moderate-COPD was the commonest category 44.30%, followed by severe-COPD 30.70%, mild-COPD 13.60%, and very severe-COPD 11.40%. Among COPDs found in rural population, moderate- COPD was the commonest 48.55%, followed by severe-COPD 21.16%, mild-COPD 17.84%, and severe- COPD 12.45%. The distribution of different categories of COPD is depicted in the following Figures.

Figure 6 : Prevalence of non-COPD and COPD by Geographical Distribution (n=3028)
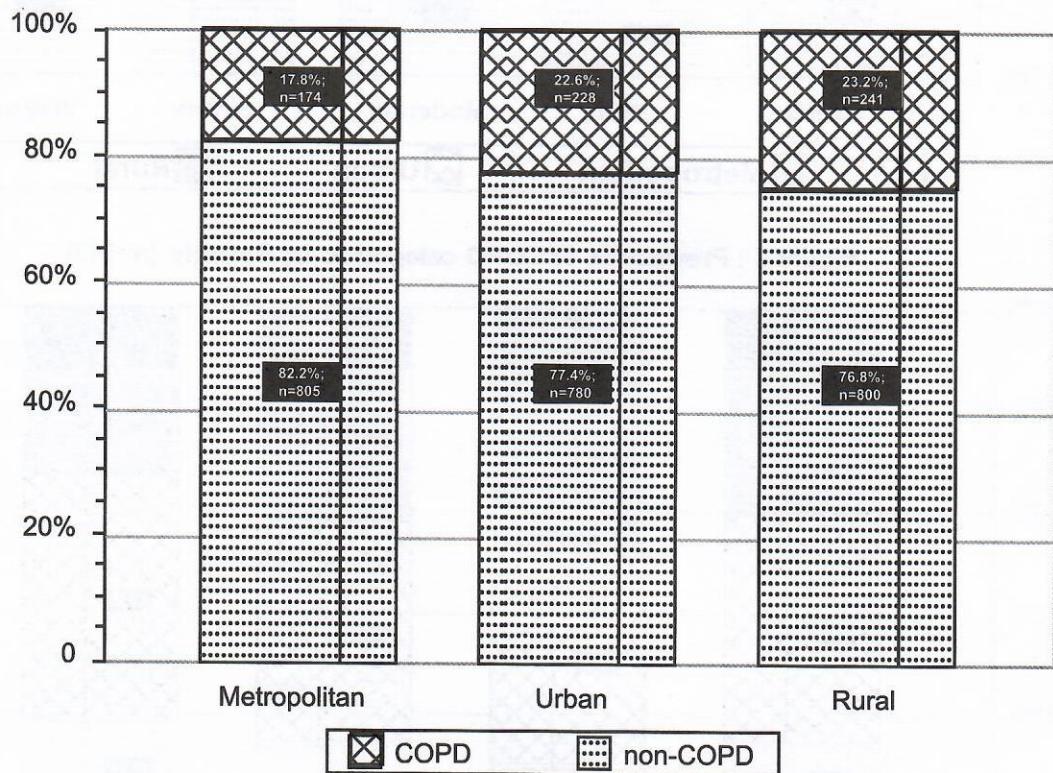
Figure 7 and 8 show prevalence of COPD by categories and by geographical distribution.

Figure 7 : Prevalence of COPD by Geographical Distribution [n=643]

Figure 7 : Prevalence of COPD by Geographical Distribution [n=643]

Figure 8 : Prevalence of COPD categories by Severity (n=643)
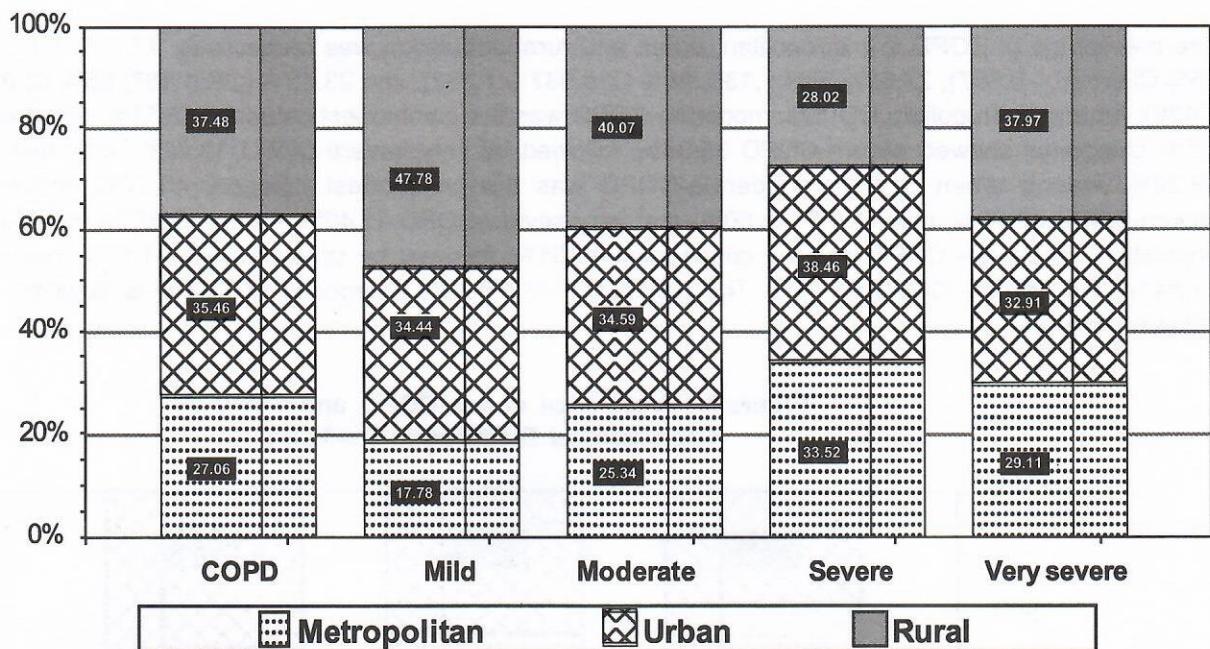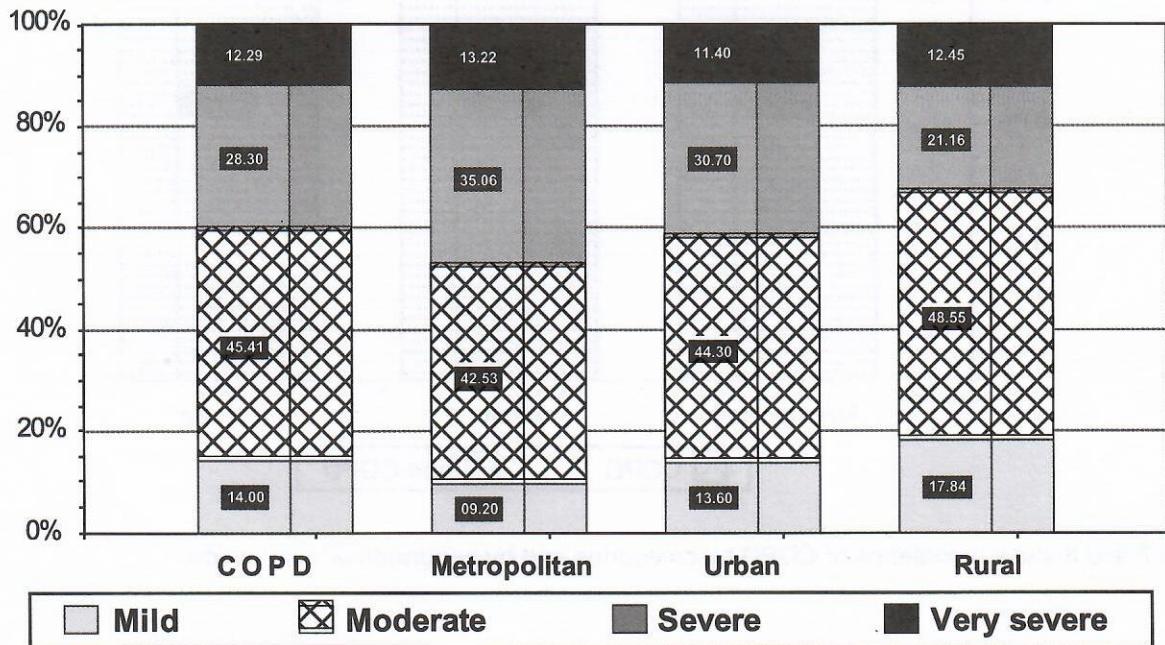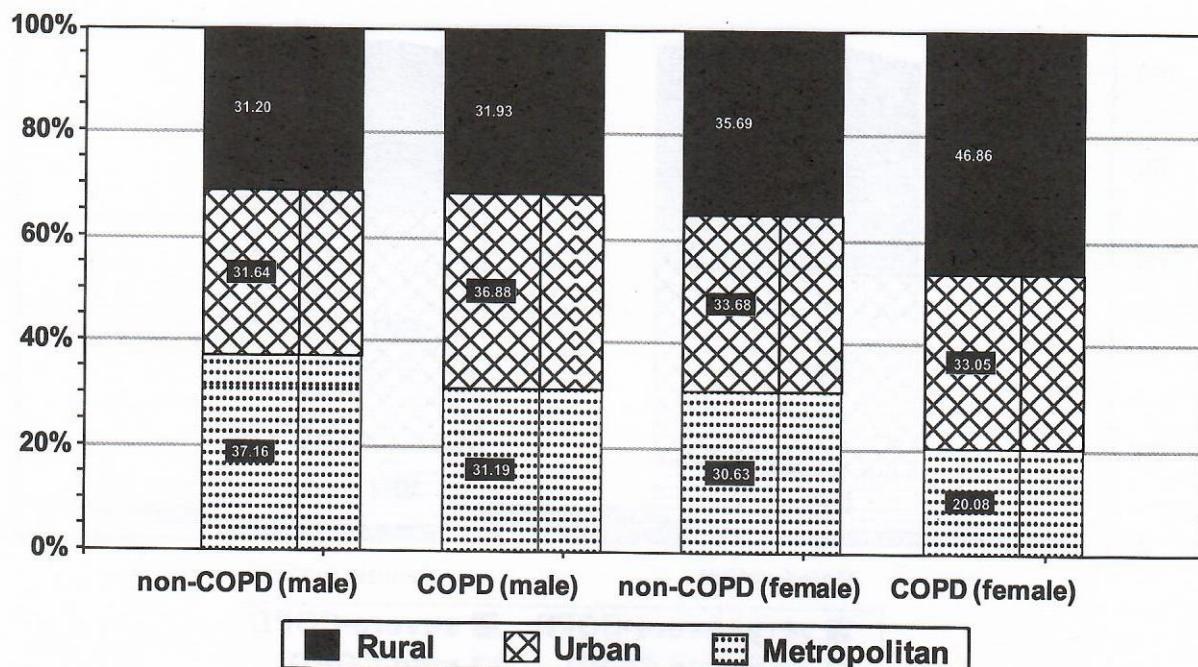
Figure 8 : Prevalence of COPD categories by Severity (n=643)

When looking for prevalence of COPD in metropolitan, urban and rural population by sex, it was found the prevalence of COPD in male vs. female metropolitan population was 31.19% vs. 20.08% [OR 0.766, 95% CI 0.596 - 0.982 vs. OR 0.569, 95% CI 0.397 – 0.805], for urban population 36.88% vs. 33.05% [OR 1.263, 95% CI 0.938 – 1.611 vs. OR 0.972, 95% CI 0.715 – 1.316] and for rural population 31.93% vs. 46.86 [OR 1.034, 95% CI 0.803 – 1.328 vs. OR 1.589, 95% CI 1.189 – 2.121] respectively. Distribution of different categories of COPD in male and female population is depicted in the following Figures.

Figure 9 : Prevalence of non-COPD and COPD by Geographical Distribution [n=3028]

In metropolitan area population surveyed 17.77% (male 12.87% and female 04.90%) are suffering from COPDs, this figure for urban was 22.62% (male 14.78% and female 07.84%), and for rural area this figure was 23.15% (male 12.39% and female10.76%). Figure 10 depicts the prevalence of non-COPD and COPD by geographical distribution.

Figure 10 : Prvalence of non-COPD and COPD by Area [n=3028]
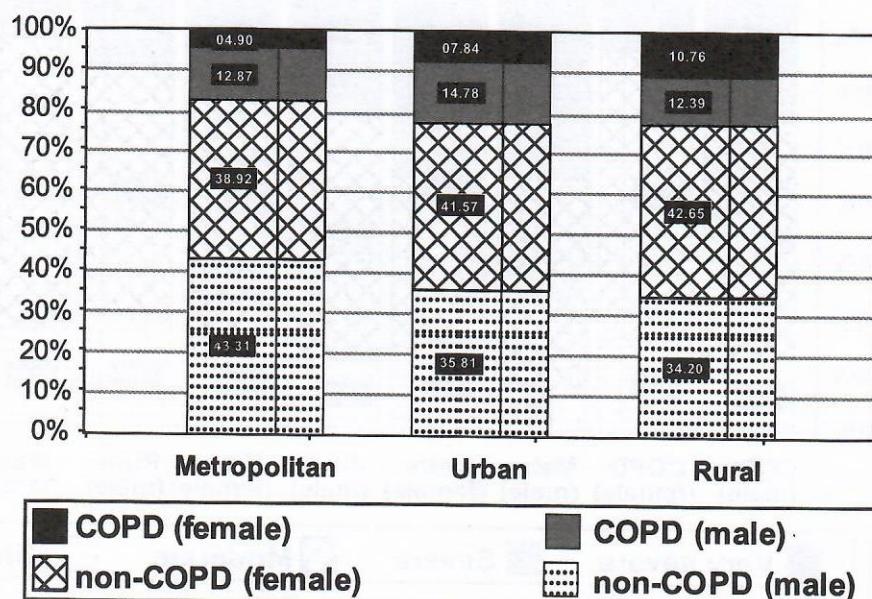
Figure 11 : Prevalence of four categories of COPD by Sex (n=643)

Male (n=404)   Female (n=239)

- ■ very severe-COPD
- ■ severe-COPD
- ⊠ moderate-COPD
- ⊞ mild-COPD
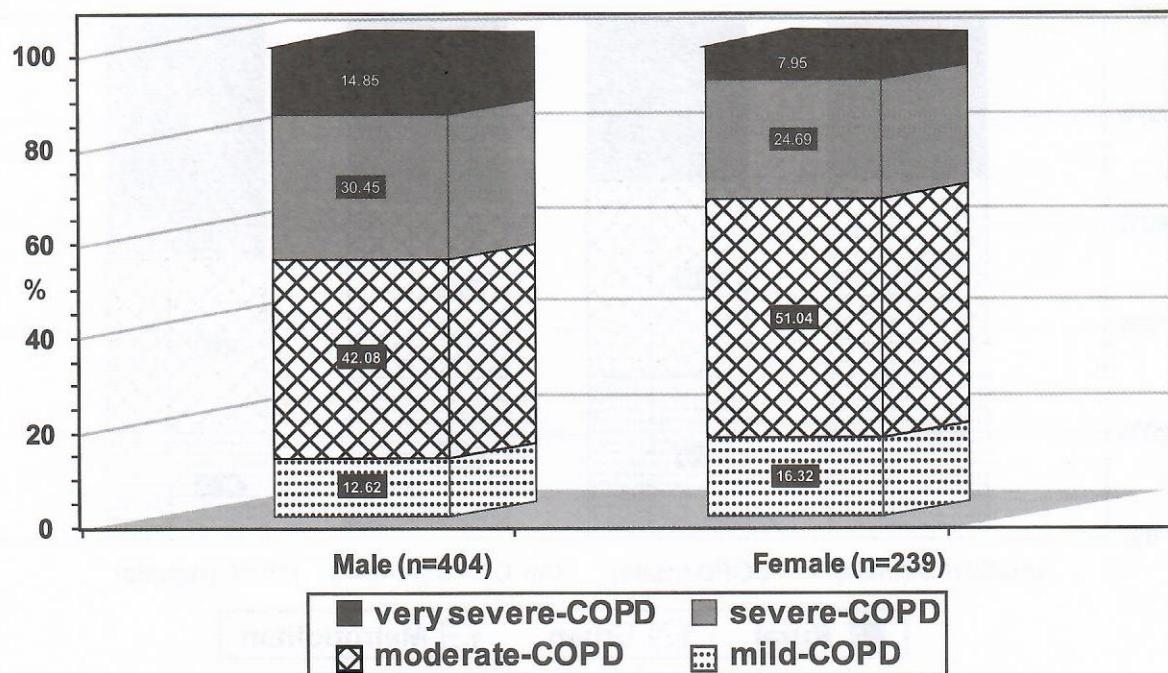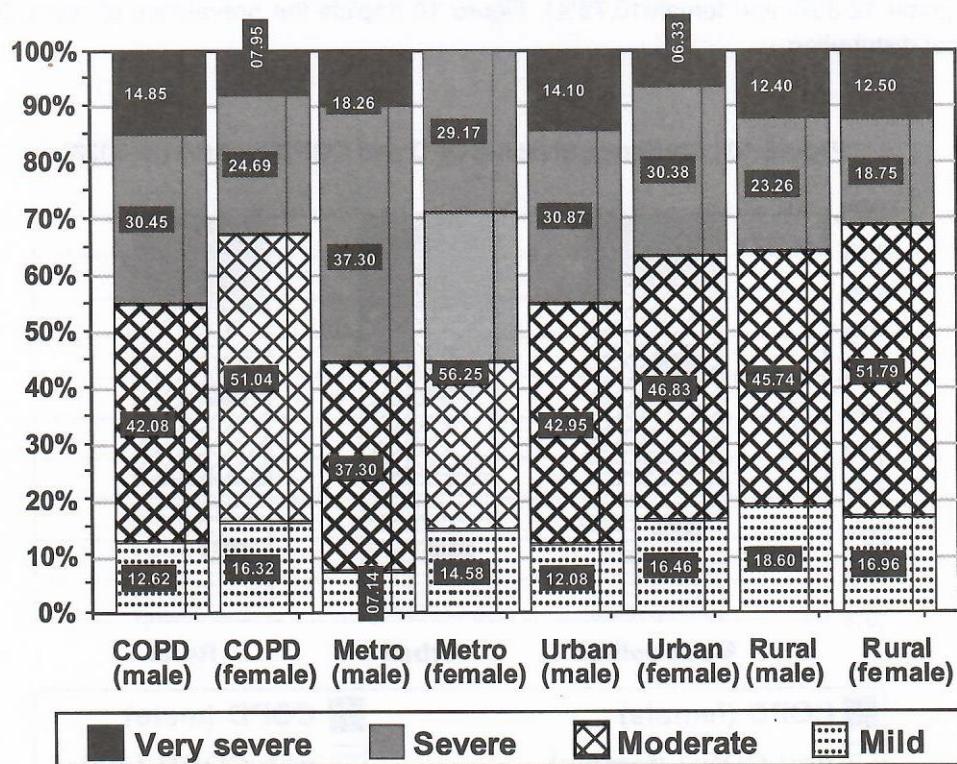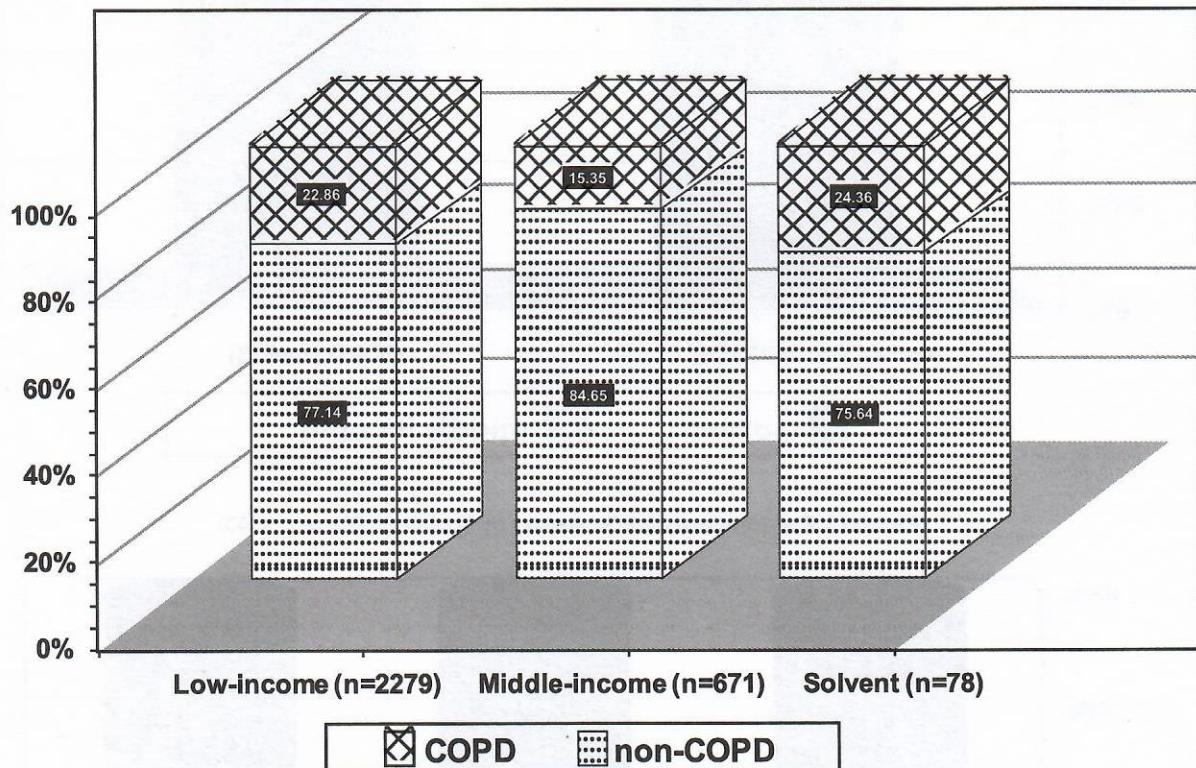
Figure 12 : Prevalence of COPD categories by Region by Sex [n=643]

COPD (male) COPD (female) Metro (male) Metro (female) Urban (male) Urban (female) Rural (male) Rural (female)

- ■ Very severe
- ■ Severe
- ⊠ Moderate
- ⊞ Mild

05.04 Relation with economic status

Looking for prevalence of non-COPD and COPD by economic status i.e. by low-middle-high income, it was found the prevalence of COPD in low income population was 22.86% [OR 1.523, 95% CI 1.221 – 1.909], for middle income population it was 15.35% [OR 0.610, 95% CI 0.480 – 0.772] and for high income population it was 24.36% [OR 1.200, 95% CI 0.671 – 2.060] respectively. Prevalence of non-COPD and COPD by economic status found in the survey is depicted in the Figure 13.

Figure13: Prevalence of non-COPD and COPD by Economic Status (n=3028)

When looked among COPDs it were found that 81.03% belonged to low-income group, 16.02% belonged to middle- income group and only 02.95% were found to be belonged to solvent group. These figures for non-COPDs were 73.71%, 23.82% and 02.47% respectively. Figure 14 shows the prevalence among non-COPDs and COPDs by economic status.

Figure 14 : Prevalence of non-COPD and COPD by Economic Status (n=3028)

| | solvent | | middle income |
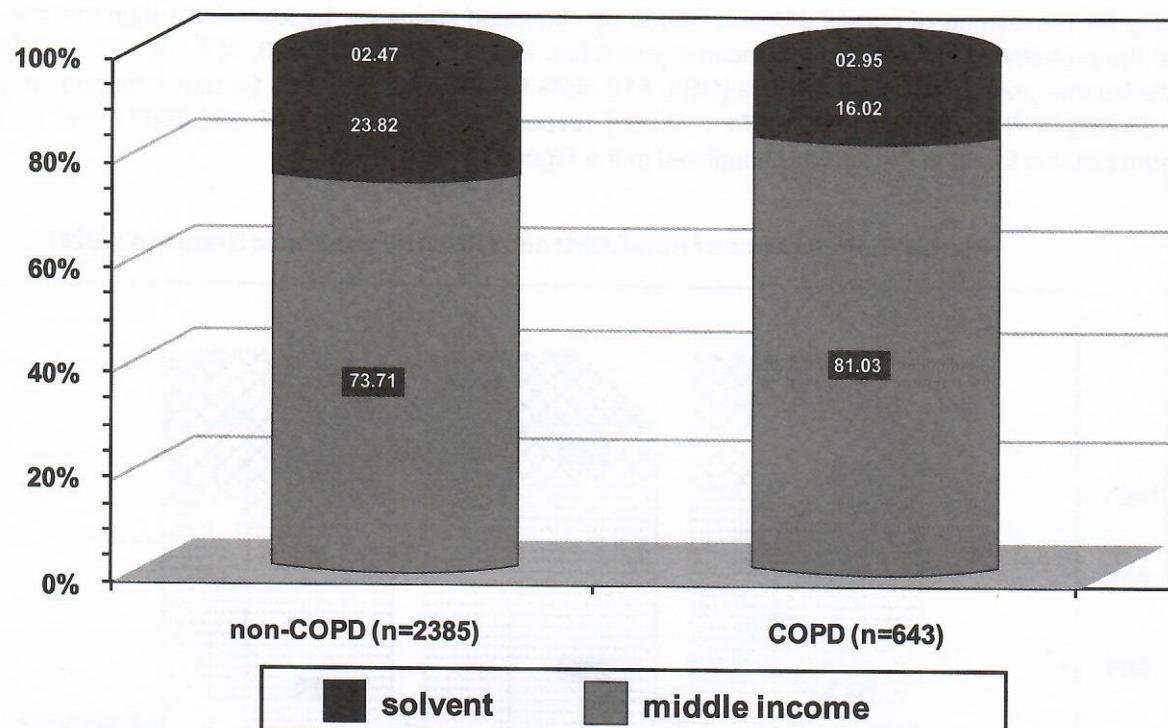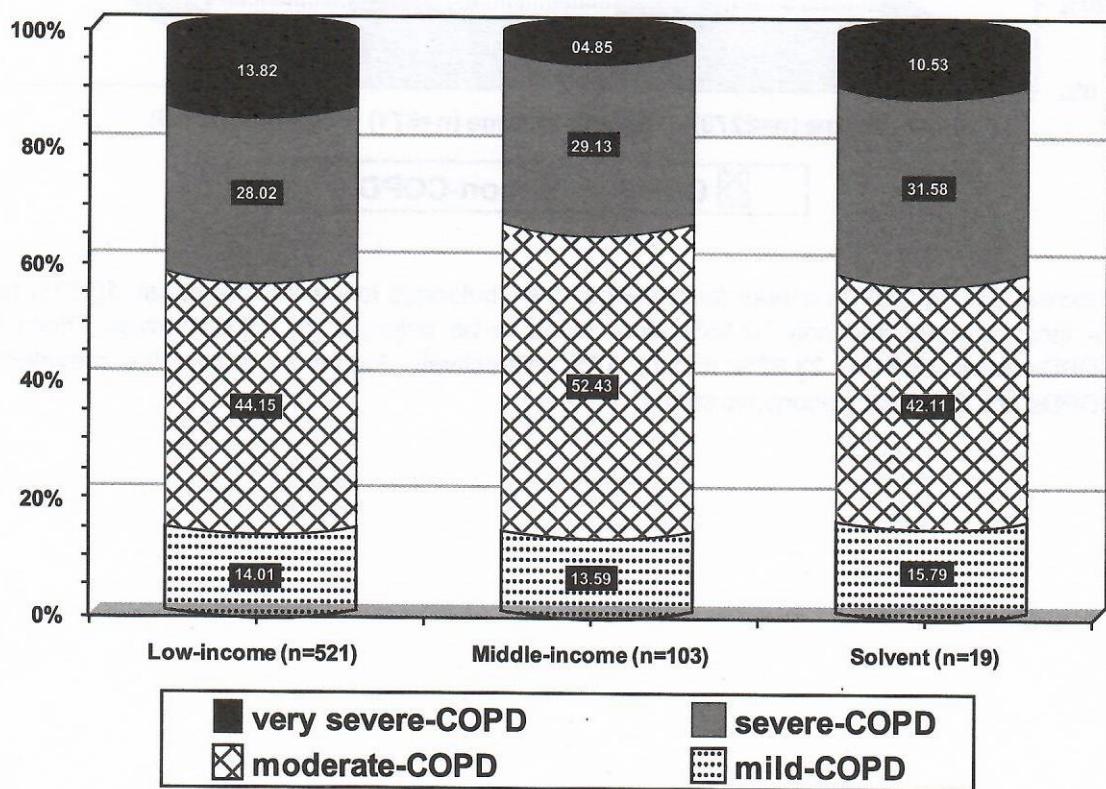
Figure15: Prevalence of COPD-category by Economic Status (n=643)

very severe-COPD · severe-COPD · moderate-COPD · mild-COPD

05.05 Relation with sex

When looking for prevalence of non-COPD and COPD by sex i.e. by male and female, it was found the prevalence of COPD in male vs. female population was 26.15% vs. 16.12% [OR 1.843 vs. 0.543, 95% CI 1.535 – 2.213 vs. 0.452 – 0.652]. Prevalence of non-COPD and COPD by sex found is shown in the following Figure 16.

Figure 16 : Prevalence of non-COPD and COPD by Sex (n=3028)
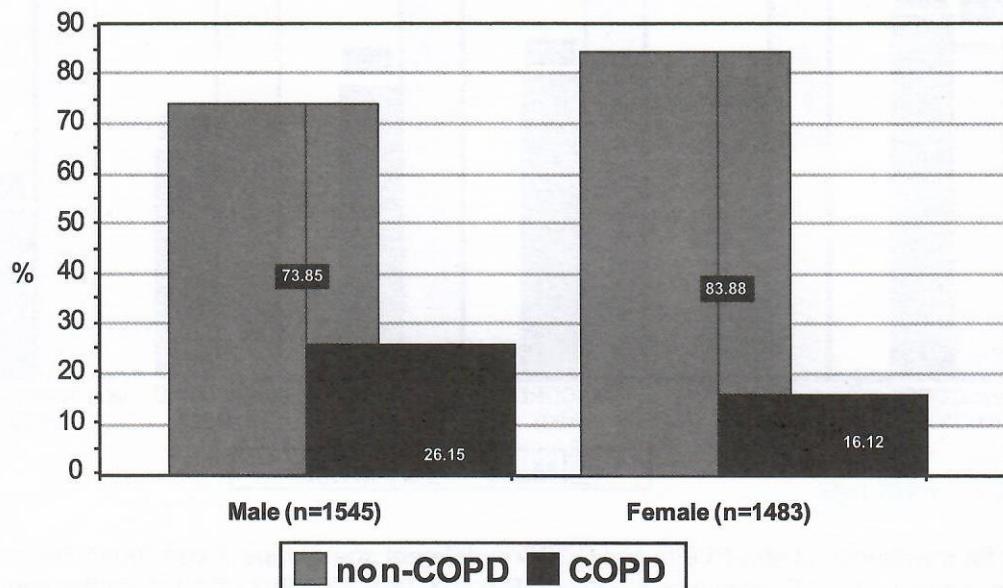
Figure 17 : Prevalence of COPD-severity by Sex (n=643)
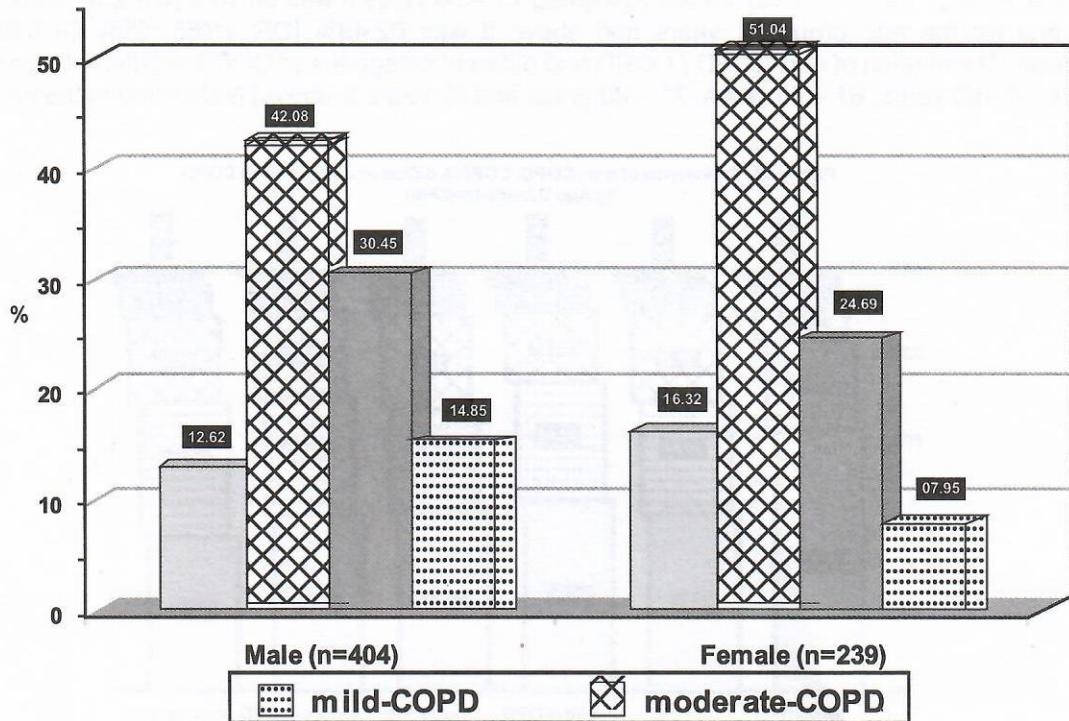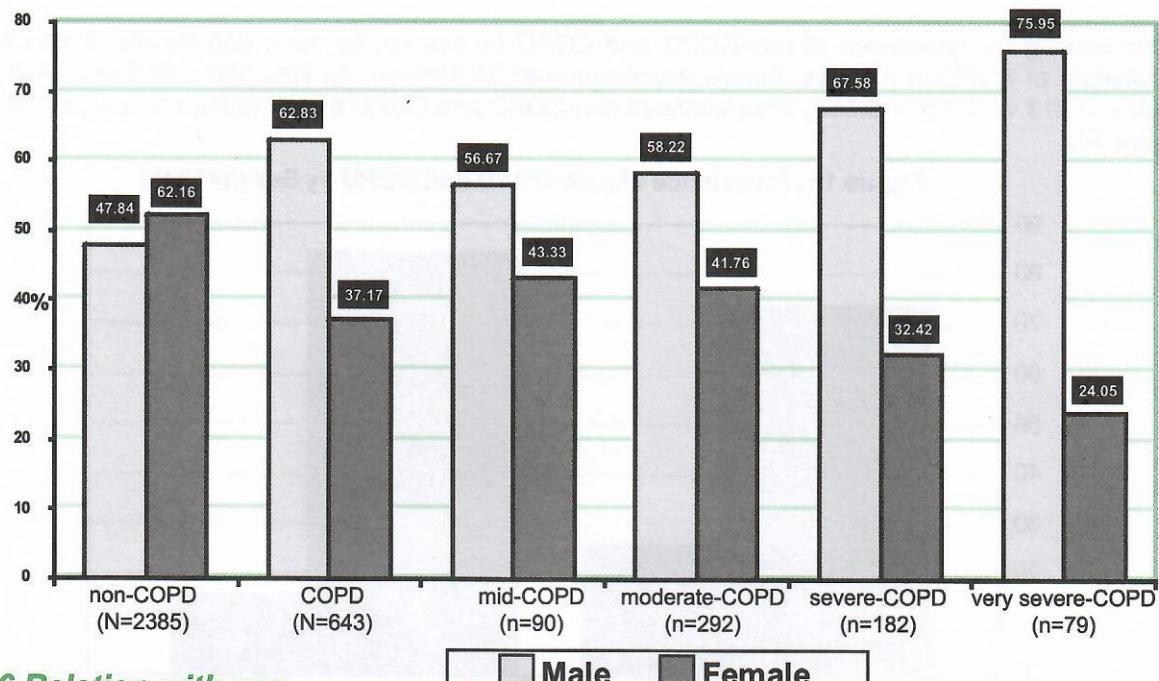
Figure 18 despicts the prevalence among non-COPDs, COPDs and COPD categories by sex.
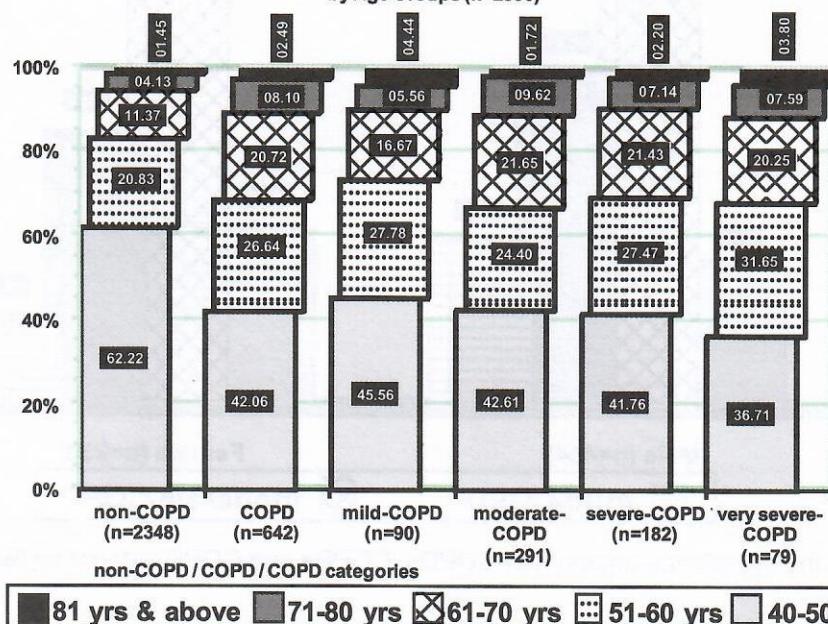
Figure 18 : Prevalence of non-COPD/COPD and COPD severity by Sex (n=3028)

05.06 Relation with age
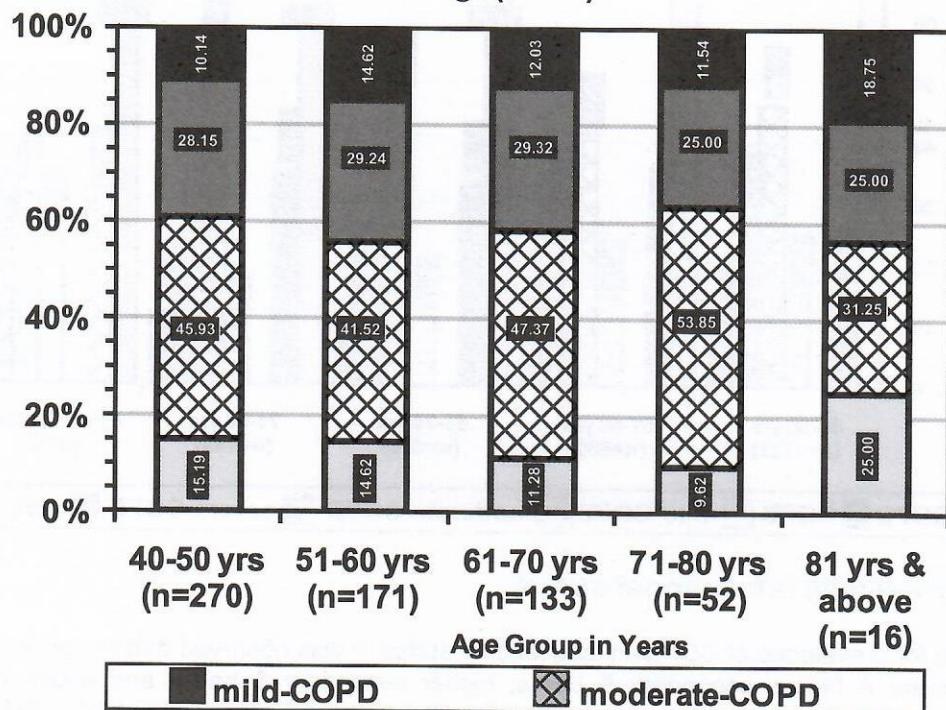
When looking for prevalence of non-COPD and COPD in different age groups, it was found the prevalence of COPD in the age group 40 – 50 years was 42.06% [OR 0.458, 95% CI 0.382 - 0.549]; for the age group 51 – 60 years it was 26.64% [OR 1.405, 95% CI 1.142 – 1.1.724]; for the age group 61 – 70 years it was 20.72% [OR 2.069, 95% CI 1.631 – 2.615]; for the age group 71 – 80 years it was 08.10% [OR 2.075, 95% CI 1.434 – 2.975] and for the age group 81 years and above it was 02.49% [OR 1.765, 95% CI 0.903 – 3.309] respectively. Distribution of non-COPD / COPD and different categories of COPD in different age groups [40 – 50 years, 51– 60 years, 61 – 70 years, 71 – 80 years and 80 years & above] is depicted in the Figure 19.

Figure 19 : Prevalence of non-COPD, COPD & different categories of COPD by Age Groups (n=2990)

Prevalence of four categories of COPD i.e. mild-COPD, moderate-COPD, severe-COPD, very-severe-COPD in 40-50 years age group were 15.19%, 45.93%, 28.15% and 10.74% respectively. These figures for 1-60 years age group were 14.62%, 41.52%, 29.24% and 14.62% respectively. For age group 61-70 years it were 11.28%, 47.37%, 29.32% and 12.03% respectively. For 71-80 years it were 09.62%,53.85%, 25.00% and 11.54%, and for age group 81 years and above this figures were 25.00%, 31.25%, 25.00% and 18.75% respectively.Figure 20 depicts the prevalence of four categories of COPD among respondents by age group.

Figure 20 : Prevalence of different categories of COPD by Age (n=642)

When looked for prevalence of non-COPD and COPD among different age groups it were 84.40% and 15.60% for the age group 40 – 50 years, 74.09% and 25.91% for the age group 51 – 60 years, 66.75% and 33.25% for the age group 61 – 70 years, 65.10% and 34.90% for the age group 71 – 80 years & 68.00% and 32.00% for the age group 81 years and above. Figure 21 depicts this finding at a glance.

**Figure 21 : Prevalence of non-COPD and COPD by Age (n=2990)**
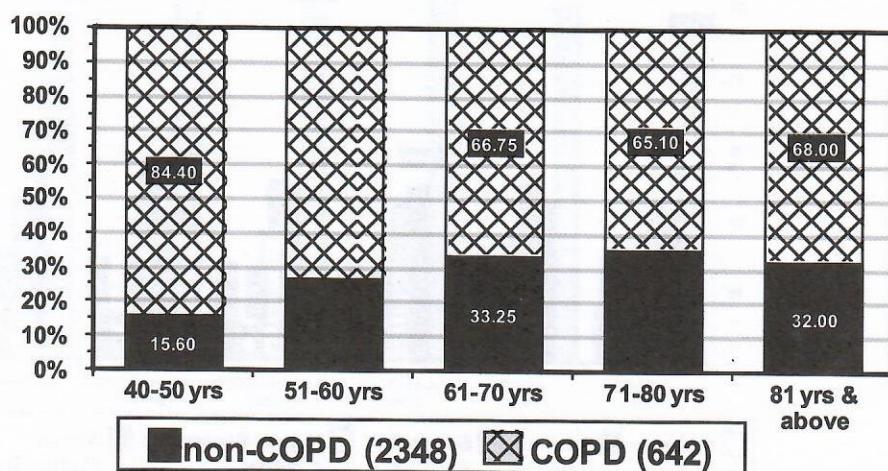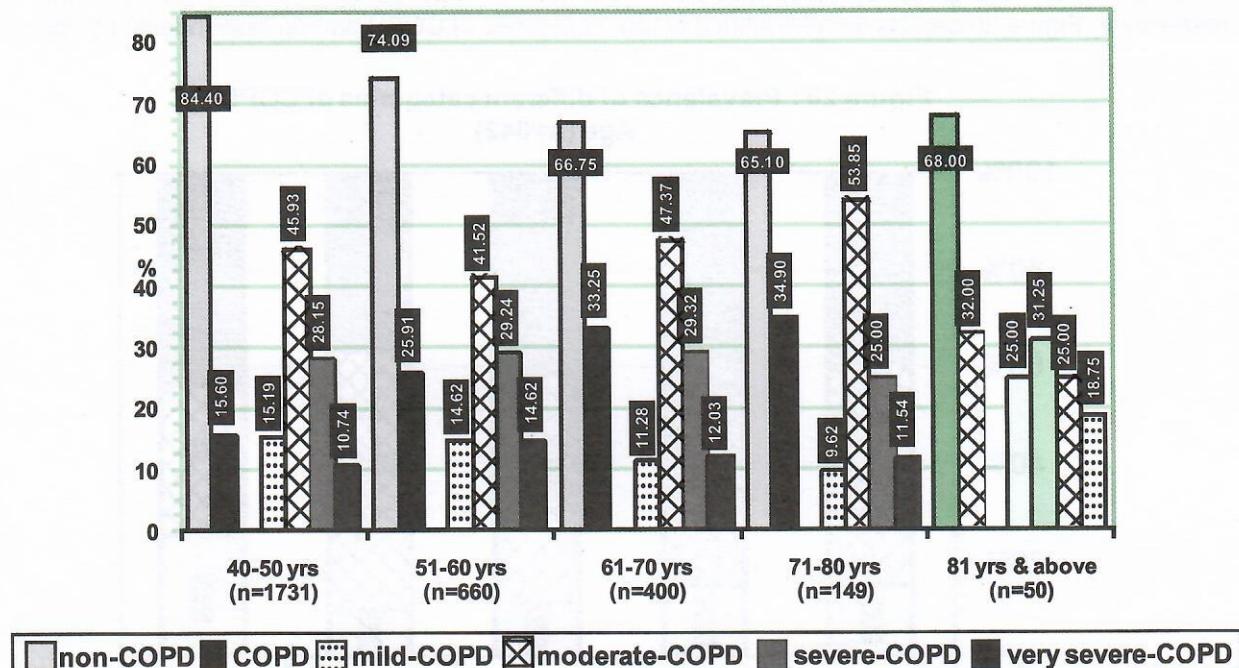
Figure 22 shows the prevalence of non-COPD, COPD along with the categories by age group.
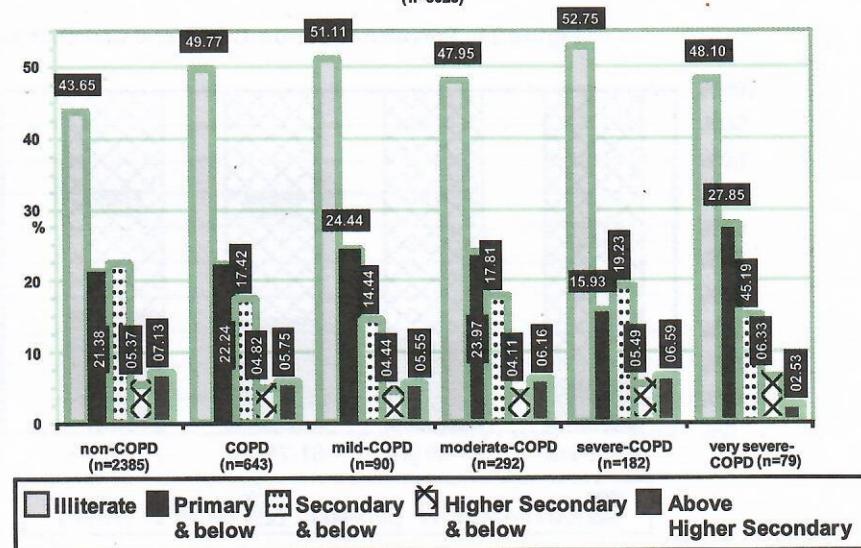
Figure 22 : Prevalence of non-copd/copd/different categories of copd by Age Groups (n=2990)

05.07 Relation with educational status

When looked for prevalence of COPD by educational status, it was observed that the prevalence of COPD in illiterate, primary & below, secondary & below, higher secondary & below and above higher secondary population was respectively 49.77% (OR 1.279, 95% CI 1.070 – 1.529), 22.24% (OR 1.051, 95% CI 0.846 – 1.302), 17.42% (OR 0.728, 95% CI 0.575 – 0.915), 04.82% (OR 0.893, 95% CI 0.577 – 1.347) and 05.75% (OR 0.796, 95% CI 0.536 – 1.156). The distribution of non-COPD and COPD along with the four categories is depicted in the following Figure 23.

Figure 23 : Prevalence of non-COPD, COPD & different categories of COPD by Education (n=3028)

When looked for four categories of COPD among respondents by their educational status it was found among illiterate mild, moderate, severe and very-severe respectively were 14.38%, 43.75%, 30.00% and 11.88% Among respondents who were grouped as primary and below these figures were 15.39%, 48.95%, 20.28% and 15.38%. For group secondary and below it were 11.61%, 46.43%, 31.25% and 10.71%. For higher secondary and below it were 12.90%, 38.71%, 32.26% and 16.13%; for above higher secondary these figures were 13.51%, 48.65%, 32.43% and 05.41% respectively. Figure 24 shows the prevalence of different categories of COPD among respondents by educational status.

Figure 24 : Prevalence of different categories of COPD by Education (n=643)
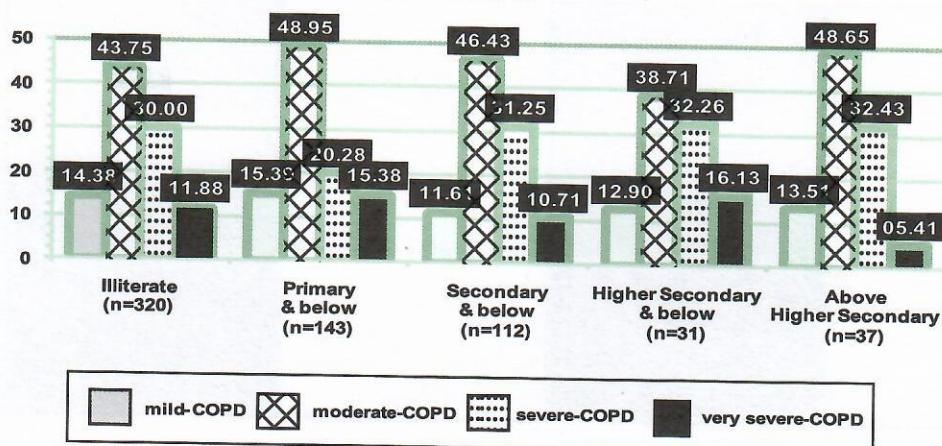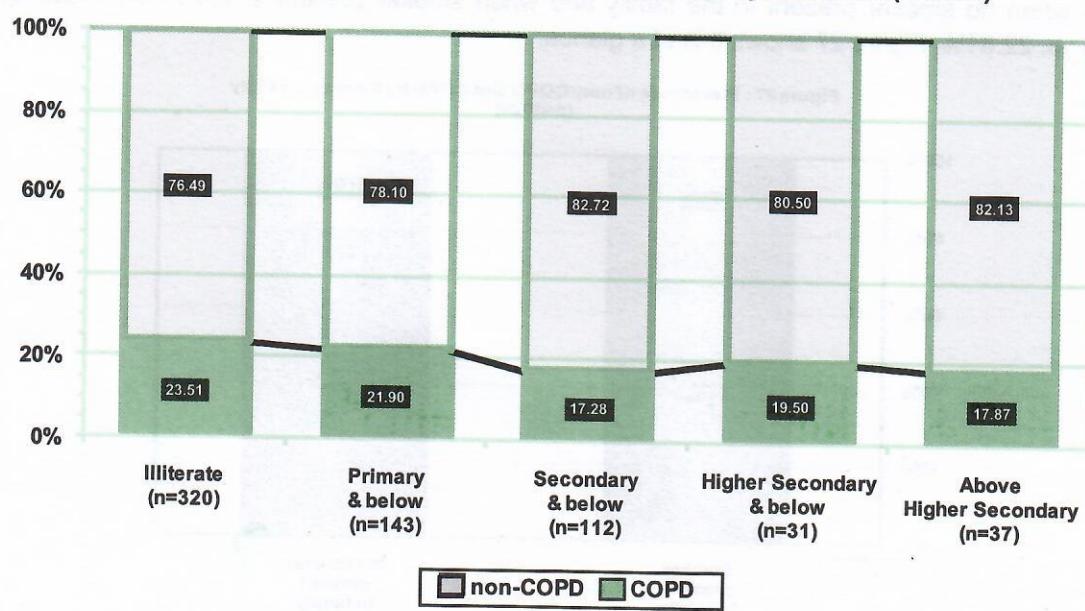

Figure 25 shows prevalence of non-COPD and COPD among different educational groups.
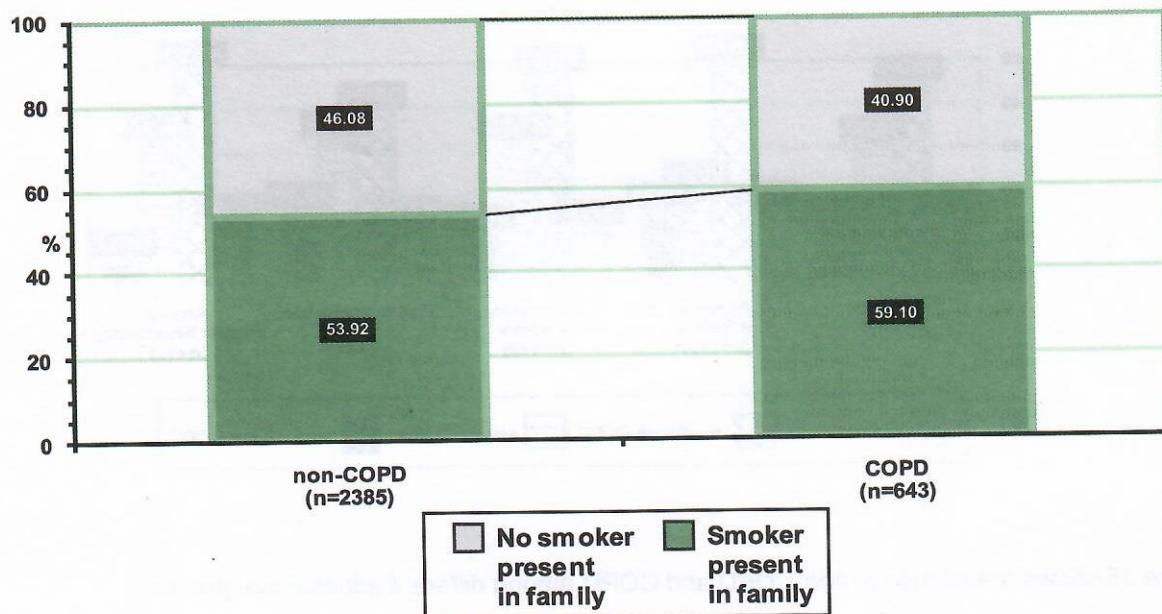
Figure 25 : Prevalence of non-COPD and COPD by Education (n=3028)

05.08 Analysis of Smoking behaviour
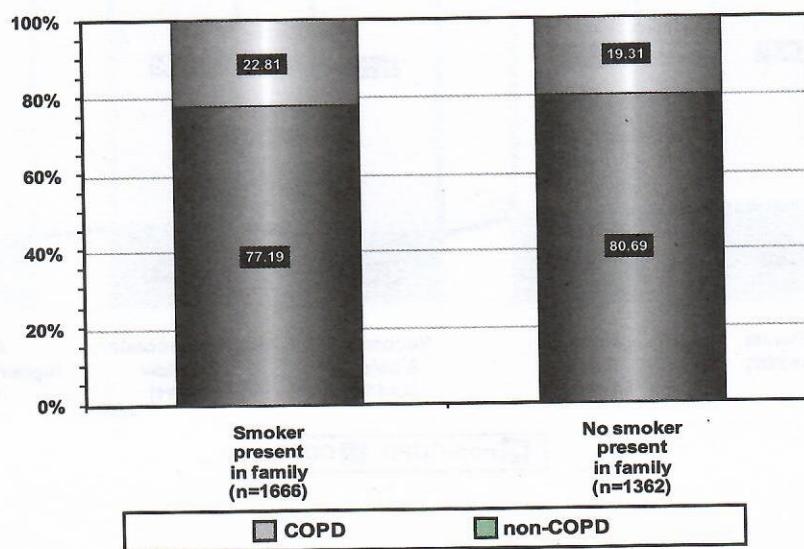
When tried of looking for prevalence of COPD by smoker present or absent in the family, i.e. looked for the effect of passive smoking it was found as expected that the prevalence of COPD in the family where smoker present in the family vs. prevalence of COPD when smoker is not present in the family was 59.10% (OR 1.235, 95% CI 1.031 – 1.479) vs. 40.90% (OR 0.810, 95% CI 0.676 – 0.970). The distribution of non-COPD, COPD and different categories of COPD by smoker present or absent in the family is depicted in the following Figures.

Figure 26 : Prevalence of non-COPD and COPD by Smoker in family (n=3028)

When looked for prevalence of non-COPD and COPD by smoker present in the family it were 80.69% vs. 19.39% when no smoker present in the family and when smoker present in the family these figures were 77.19% vs. 22.81%. Figure 27 shows this at a glance.

Figure 27 : Prevalence of non-COPD and COPD by Smoker in family (n=3028)

When looked for four different categories of COPD by whether smoker present in the family it shows a definite pattern. For mild-COPD when no smoker present in the family it was 44.44% and when smoker present in the family it was 55.56%. These figures for moderate-COPD were 38.70% and 61.30%. For severe-COPD it were 45.05% and 54.95%; these figures for very-severe-COPD were 35.44% and 64.56%. Figure 28 shows the prevalence of four categories of COPD by presence and absence of smoker in the family.

Figure 28 : Prevalence of non-COPD, COPD & different categories of COPD by Smoker in family (n=3028)

|	No smoker present in family (n=1362)	Smoker present in family (n=1666)
non-COPD	46.08	53.92
COPD	40.90	59.10
mild-COPD	44.44	55.56
moderate-COPD	38.70	61.30
severe-COPD	45.05	54.95
very severe-COPD	35.44	64.56
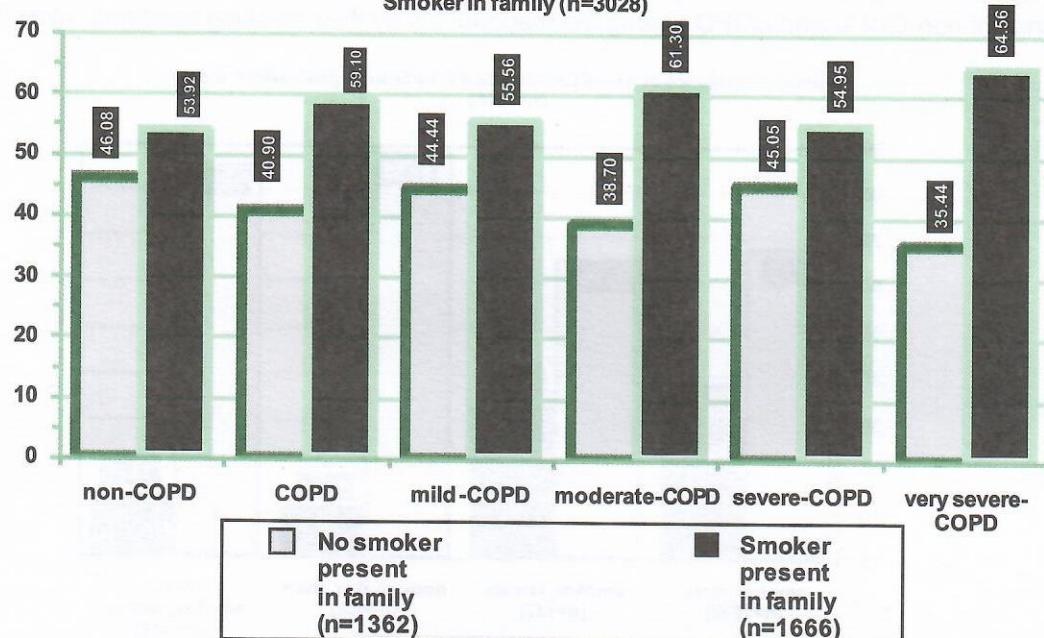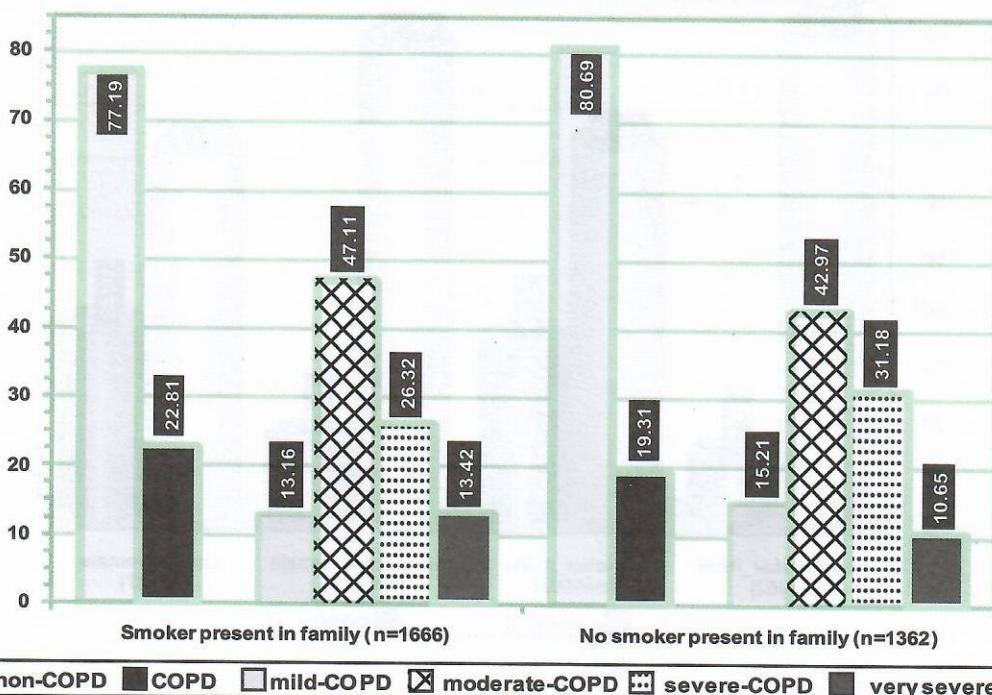
Figure 29 depicts the prevalence of non-COPD, COPD along with its categories by smoker present or absent in the family.
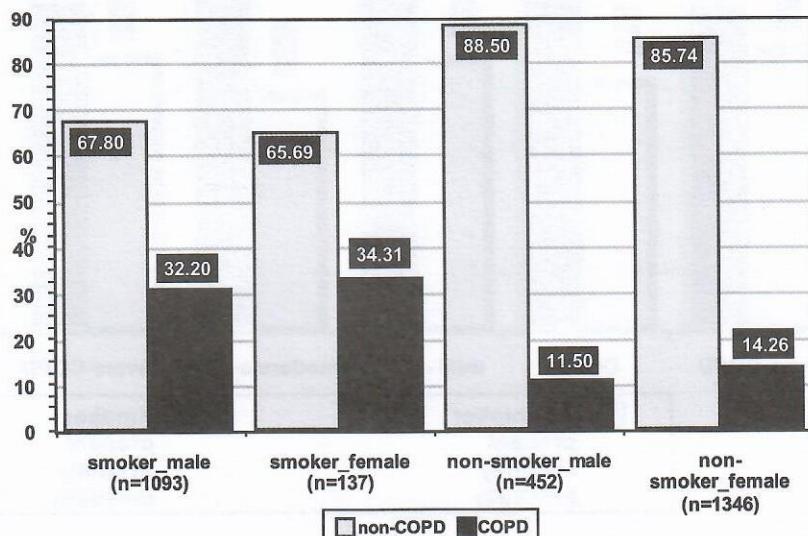
Figure 29 : Prevalence of non-COPD, COPD & different categories of COPD by Smoker in family (n=3028)

Legend: non-COPD, COPD, mild-COPD, moderate-COPD, severe-COPD, very severe-COPD

Smoker present in family (n=1666): 77.19, 22.81, 13.16, 47.11, 26.32, 13.42
No smoker present in family (n=1362): 80.69, 19.31, 15.21, 42.97, 31.18, 10.65

05.09 Analysis of Smoking behaviour along with Sex

When looked for prevalence of non-COPD and COPD among the male respondents by smoking behaviour it were found that among non-smoker males it were 88.50% and 11.50% respectively, where as among somker males it were 67.80% and 32.20%. Again when looked for prevalence of non-COPD and COPD among the female respondents by smoking behaviour it were found that among non-smoker females it were 85.74% and 14.26%, where as among somker females it were 65.69% and 34.31% respectively. Following Figures depict the prevalence of non-COPD and COPD among the respondents by their smoking behaviour along with sex.

Figure30: Prevalence of non-COPD and COPD by Smoking behaviour and Sex (n=3028)

Figure# 31: Prevalence of non-COPD amd COPD by Smoking behaviour and Sex (n=3028)
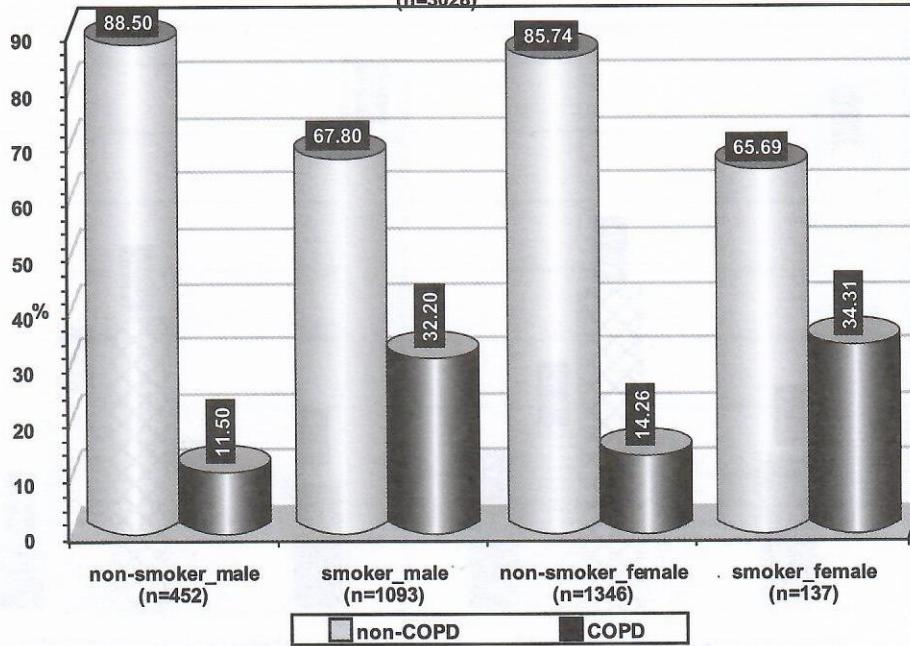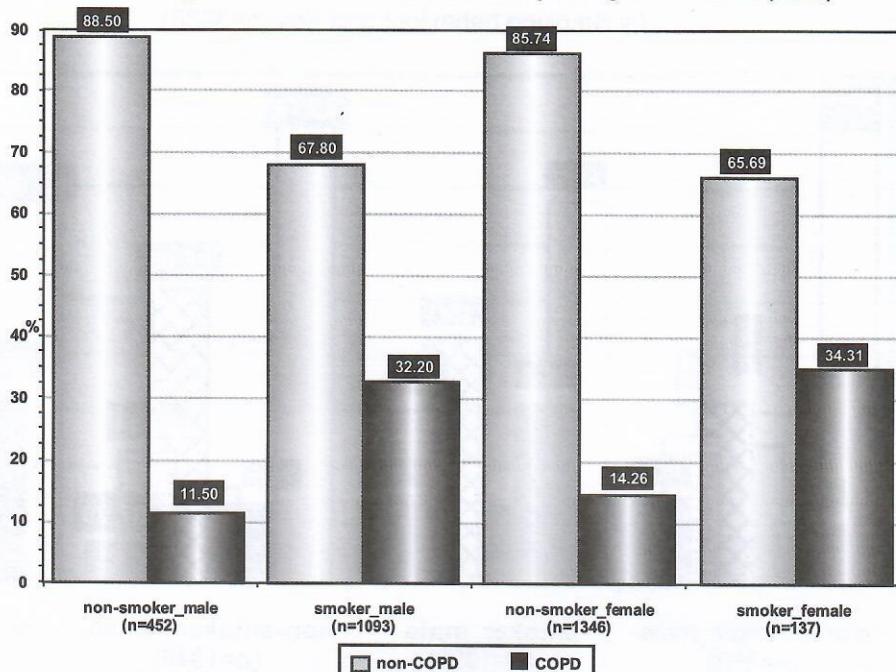
Figure 32 : Prevalence of non-COPD and COPD by Smoking behaviour and Sex (n=3028)

When again looked for prevalence of four different categories of COPDs (mild, moderate, severe and very-severe) among the male respondents by smoking behaviour it were found that among non-smoker males the

prevalence of mild-COPD, moderate-COPD, severe-COPD and very-severe-COPDs were respectively 25.00%, 32.69%, 26.92% and 15.38%, where as among somker males it were 10.80%, 43.47%, 30.97% and 14.77% respectively. In contrary when looked for prevalence of four different categories of COPDs among the female respondents by smoking behaviour it were found that among non-smoker females the prevalence of mild-COPD, moderate-COPD, severe-COPD and very-severe-COPDs were respectively 17.19%, 52.08%, 23.44% and 07.29%, where as among smoker females it were 12.77%, 46.81%, 29.79%% and 10.64% respectively. Following Figures depict the prevalence of non-COPD, COPD along with four different categories of COPDs among the respondents by their smoking behaviour along with sex.

Figure 33 : Prevalence of different categories of COPD by Smoking behaviour and Sex (n=643)
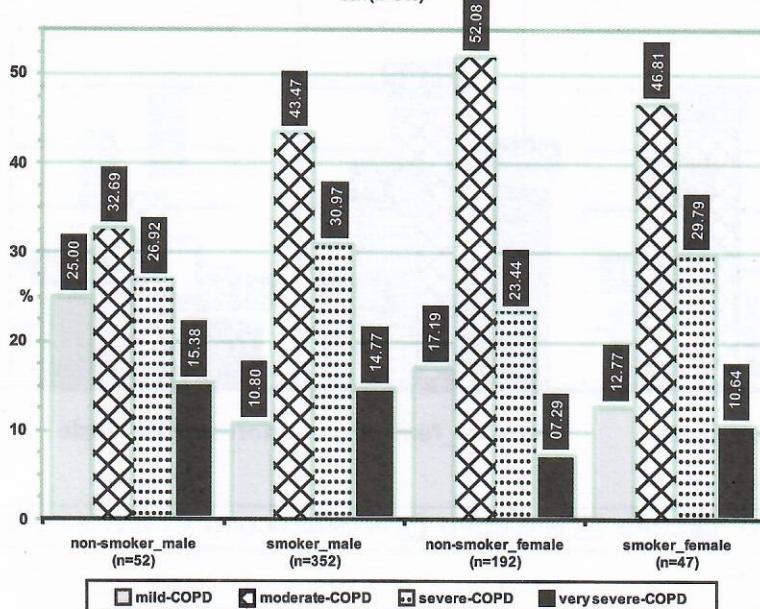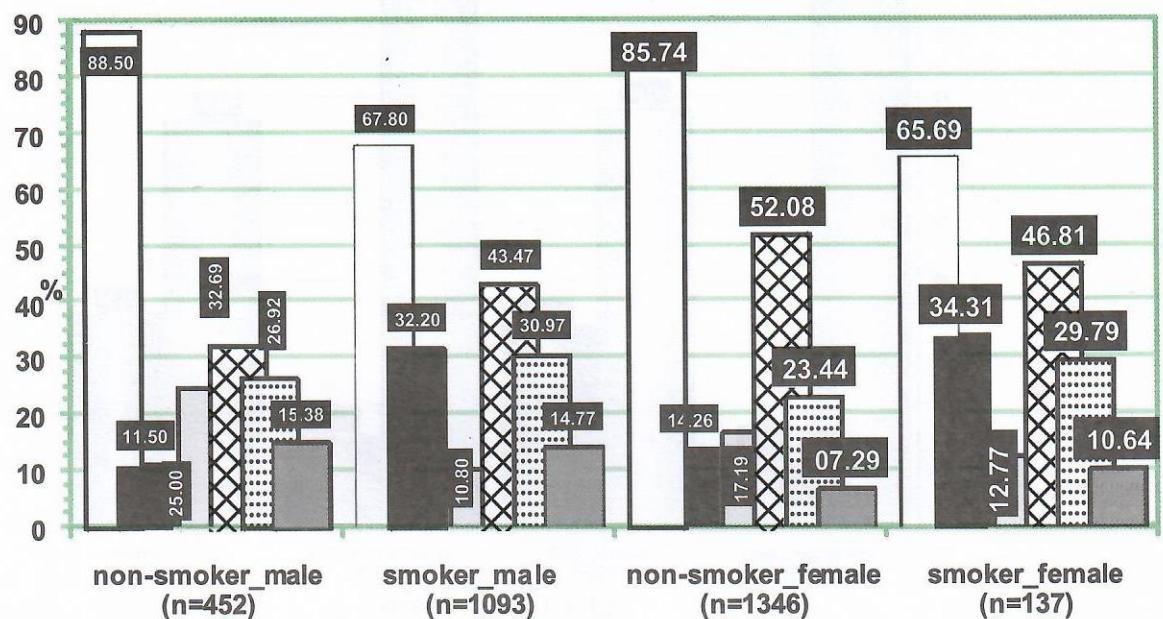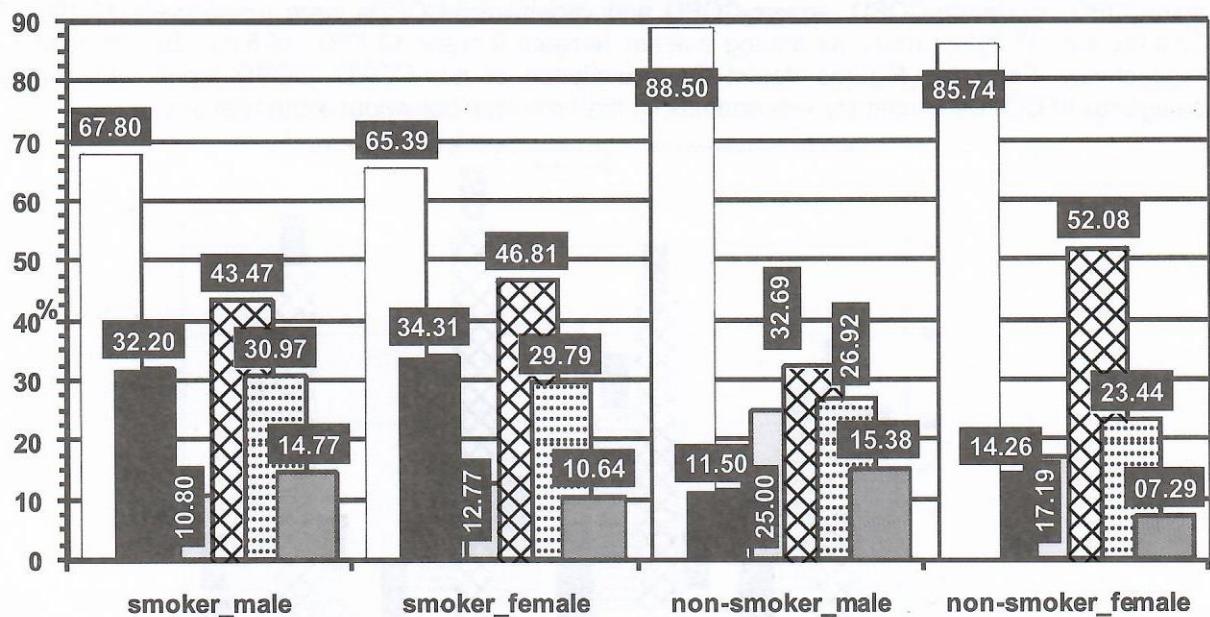
Figure 34 : Prevalence of non-COPD, COPD & categories of COPD
by Smoking behaviour and Sex (n=3028)

non-smoker_male
(n=452)

smoker_male
(n=1093)

non-smoker_female
(n=1346)

smoker_female
(n=137)
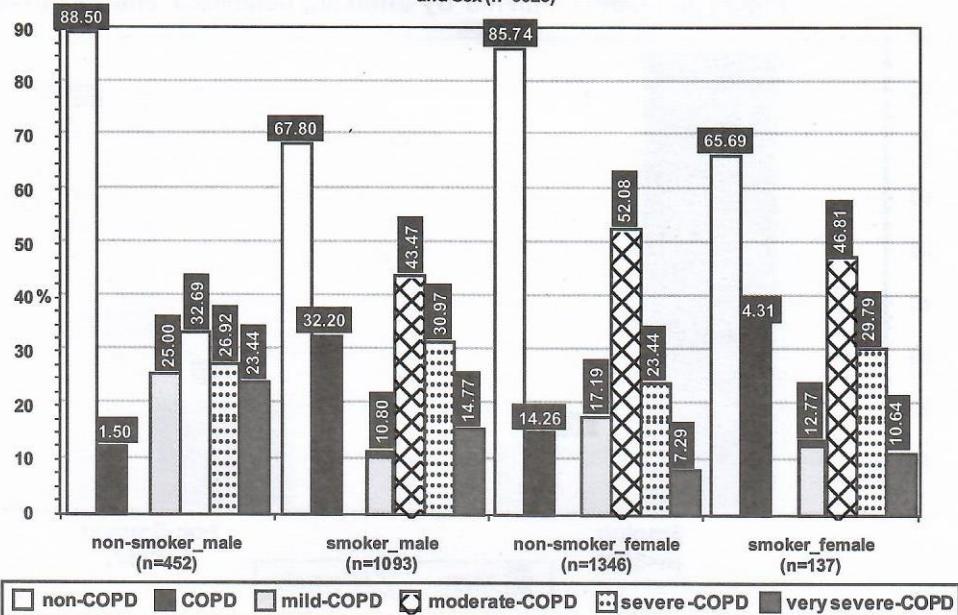
☐non-COPD ■COPD ☐mild-COPD ⊠moderate-COPD ⦂⦂severe-COPD ▦ very severe-COPD

Figure 35 : Prevalence of non-COPD, COPD & categories of COPD by Smoking
behaviour and Sex (n=3028)

smoker_male

smoker_female

non-smoker_male

non-smoker_female

☐ non-COPD ■COPD ☐ mild-COPD ⊠ moderate-COPD ⦂⦂ severe-COPD ▦very severe-COPD

Figure 36 : Prevalence of non-COPD, COPD & categories of COPD by Smoking behaviour and Sex (n=3028)

The proportion of male smoker is on increase as COPD severity increases 42.22%, 52.40%, 59.19% and 65.02% respectively for mild, moderate, severe and very-severe COPDs, where as proportion of female smoker decreases with the increase in COPD severity 36.67%, 35.25%, 24.73% and 17.72% respectively for mild, moderate, severe and very-severe COPDs.

Figure 37 : Prevalence of non-COPD, COPD & categories of COPD by Smoking behaviour and Sex (n=3028)
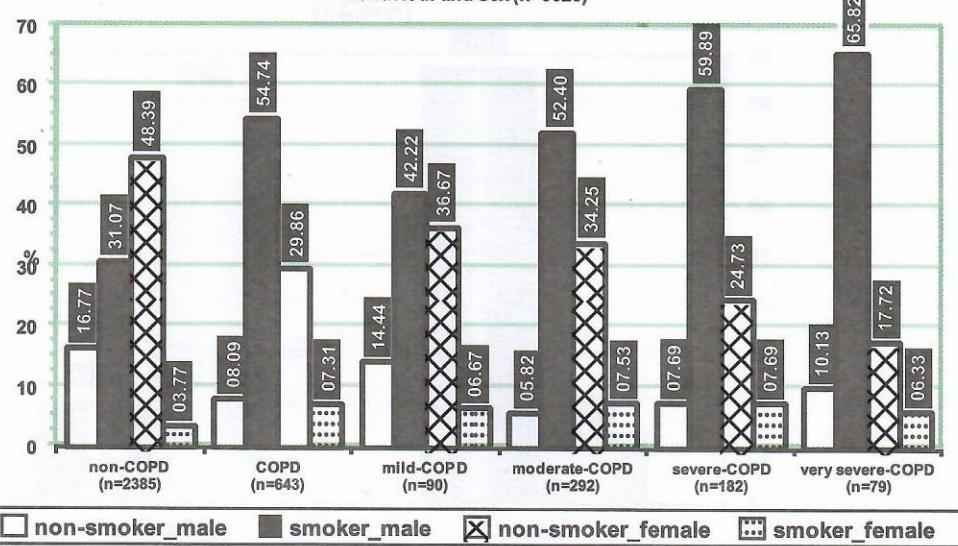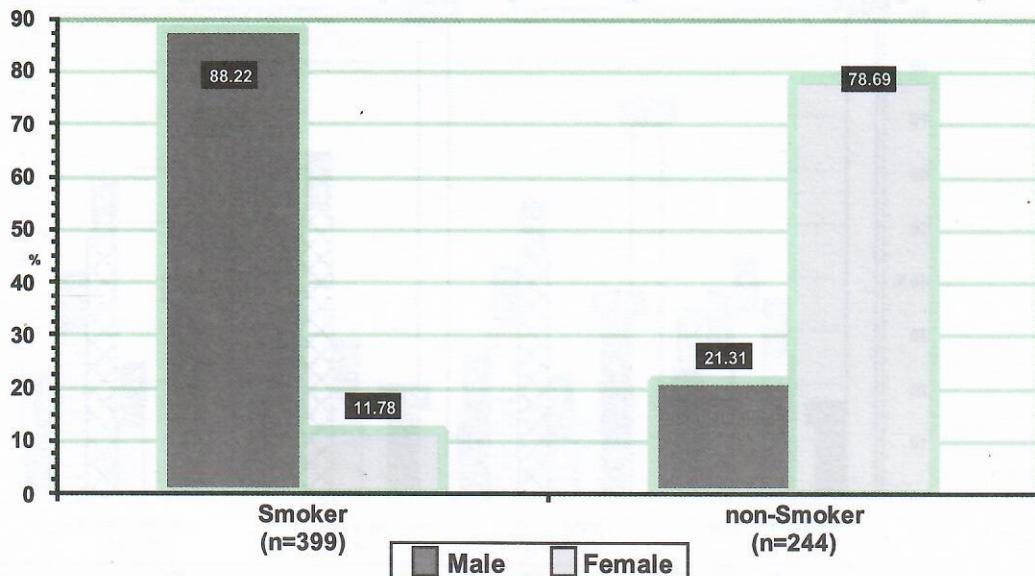
Figure 37 above shows the proportion of non-smoker and smoker males and females among non-COPDs, COPDs and four categories of COPDs.
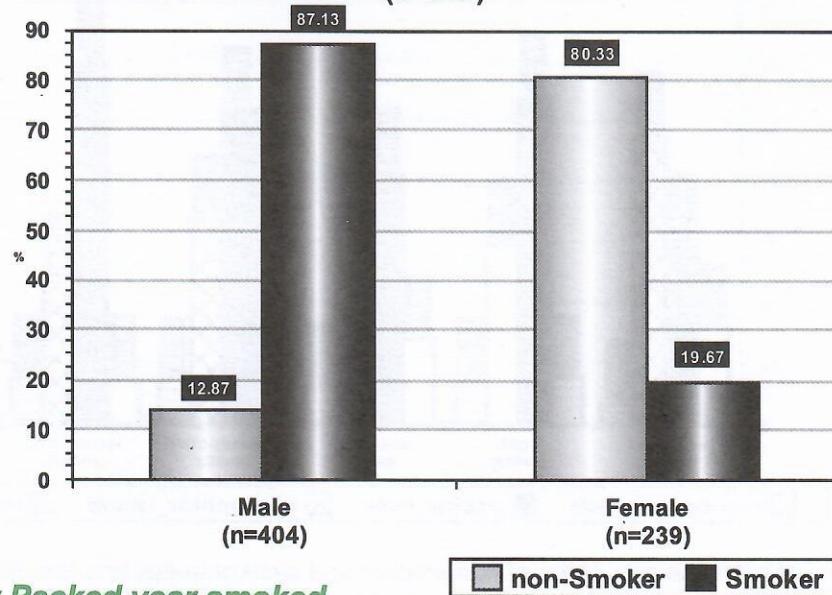
Again when looked for prevalence of COPD among the non-smokers and smokers by sex it were found that among COPD-patients who were non-smokers 21.31% (OR 0.437, 95% CI 0.316 – 0.594) were male and rest 78.69% (OR 0.454, 95% CI 0.375 – 0.550) were female. On the contrary it was found that among COPDpatients who were smokers 88.22% (OR 2.684, 95% CI 2.237 – 3.220) were male and rest 11.78% (OR 2.011, 95% CI 1.366 – 2.929) were female. Figure 38 depicts the prevalence of COPD among the respondents by their smoking behaviour along with sex.

Figure 38 : COPD patients by Smoking behaviour and Sex (n=643)

When looked for prevalence of COPD among the male and female respondents by smoking behaviour it were found that among male COPD-patients 12.87% were non-smoker and rest 87.13% were smoker. In the contrary it was found that among female COPD-patients 80.33% were non-smoker and rest 19.67% were smoker. Figure 39 depicts the prevalence of COPD among the respondents by their smoking behaviour along with sex.
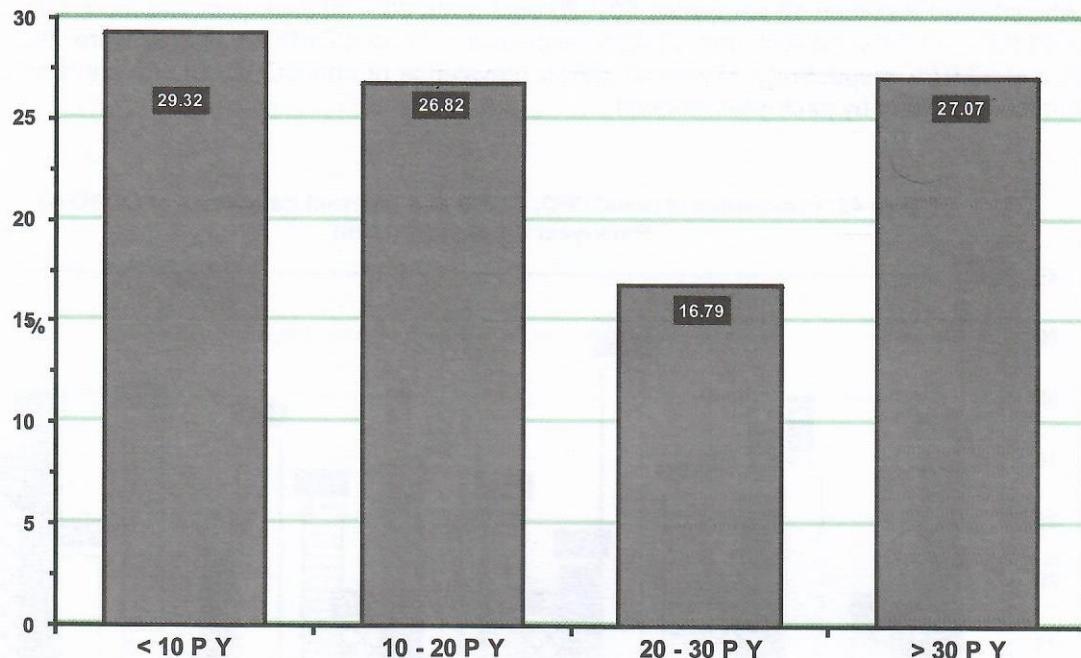
Figure 39 : COPD patients by Smoking behaviour and Sex (n=643)

05.10 Analysis by Packed year smoked
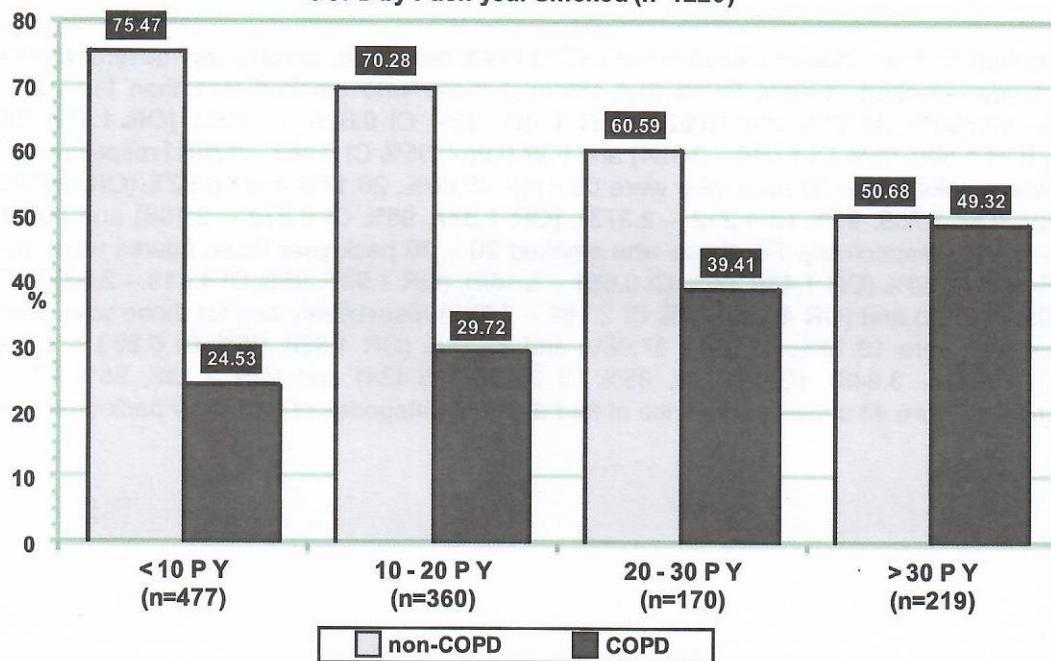
When looked for prevalence of COPD among smokers by pack-year smoked it was found that prevalence COPD among those who smoked less than ten pack-year was 29.32% (OR 1.251, 95% CI 0.986 – 1.581), among those who smoked 10 – 20 pack-year was 26.82% (OR 1.682, 95% CI 1.303 – 2.161), among those who smoked 20 – 30 pack-year was 16.79% (OR 2.578, 95% CI 1.840 – 3.590) and among those who smoked more than 30 pack-year was 27.07% (OR 4.136, 95% CI 3.088 – 5.531). Figure 40 shows prevalence of COPD among smokers by pack-year smoked.

Figure 40 : Prevalence of COPD patients by Pack-year Smoked (n=399)
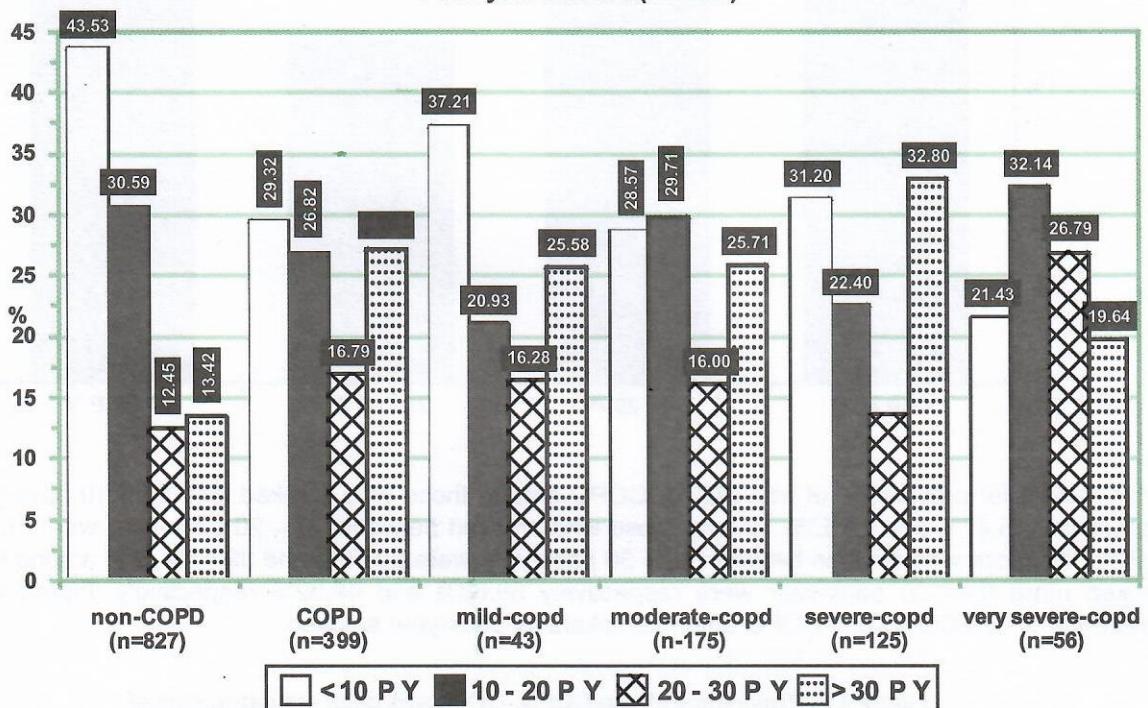
When looked for prevalence of non-COPD, COPD among those who smoked less than 10 pack-year were respectively 75.47% and 24.53%, among those who smoked between 10 – 20 pack-year were 70.28% and 29.72%, for those who smoked between 20 – 30 pack-year were 60.59% and 39.41%, and among those who smoked more than 30 pack-year were respectively 50.68% and 49.32% respectively. Figure 41 shows prevalence of non-COPD and COPD among smokers by pack-year smoked.

Figure 41 : Prevalence of non-COPD, COPD and different categories of COPD by Pack-year Smoked (n=1226)

When looked for prevalence of non-COPD among respondents by pack-year smoked it were found among those who smoked less than 10 pack-year, 10 – 20 pack-year, 20 – 30 pack-year and more than 30 pack-year it were 45.53%, 30.59%, 12.45% and 13.42% respectively, for of COPD the figures were 29.32%, 28.62%, 16.79% and 27.07% respectively. Figure 42 shows prevalence of non-COPD, COPD and four categories of COPD among smokers by pack-year smoked.

Figure 42: Prevalence of non-COPD, COPD and different categories of COPD by Pack-year Smoked (n=1226)

When looked for four different categories of COPD (mild, moderate, severe, very-severe) among the smokers by pack-year smoked, it were found that amongst those who smoked less than ten pack years it were 13.68%, 42.732%, 33.33% and 10.62% (OR 1.161, 95% CI 0.626 – 2.036), (OR 1.117, 95% CI 0.793 – 1.550), (OR 1.500, 95% CI 1.010 – 2.154) and (OR 0.957, 95% CI 0.467 – 1.801) respectively. The figures for those who smoked 10 – 20 pack-year were 08.41%, 48.60%, 26.17% and 16.82% (OR 0.819, 95% CI 0.358 – 1.652), (OR 1.708, 95% CI 1.212 – 2.373), (OR 1.377, 95% CI 0.872 – 2.108) and (OR 2.250, 95% CI 1.236 – 3.911) respectively. For those who smoked 20 – 30 pack-year those figures were 10.45%, 41.79%, 25.37% and 22.39% (OR 1.436, 95% CI 0.551 – 3.160), (OR 1.937, 95% CI 1.219 – 2.987), (OR 1.813, 95% CI 1.005 – 3.090) and (OR 4.225, 95% CI 2.182 – 7.703) respectively and for those who smoked more than 30 pack-year were 10.19%, 41.67%, 37.96% and 10.18% (OR 1.828, 95% CI 0.863 – 3.519), (OR 2.682, 95% CI 1.840 – 3.848), (OR 4.358, 95% CI 2.902 – 6.434) and (OR 2.132, 95% CI 1.000 – 4.138) respectively. Figure 43 shows prevalence of four different categories of COPD by pack-year smoked.

**Figure 43 : Prevalence of different categories of COPD by Pack-year Smoked (n=399)**
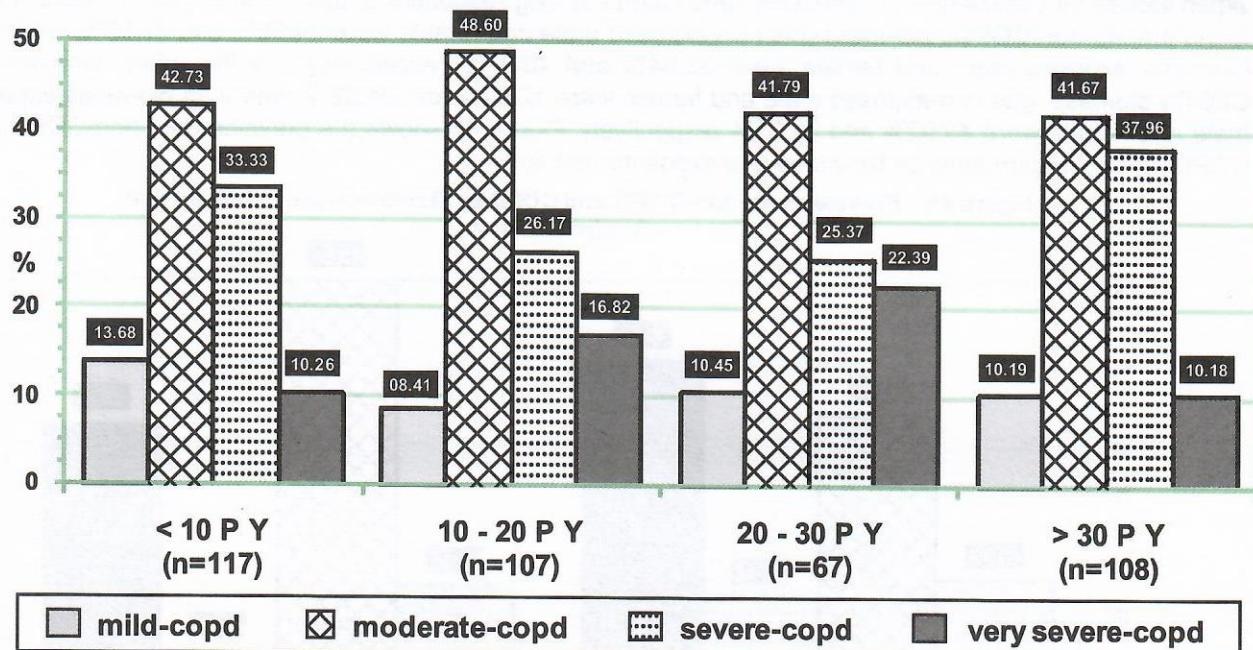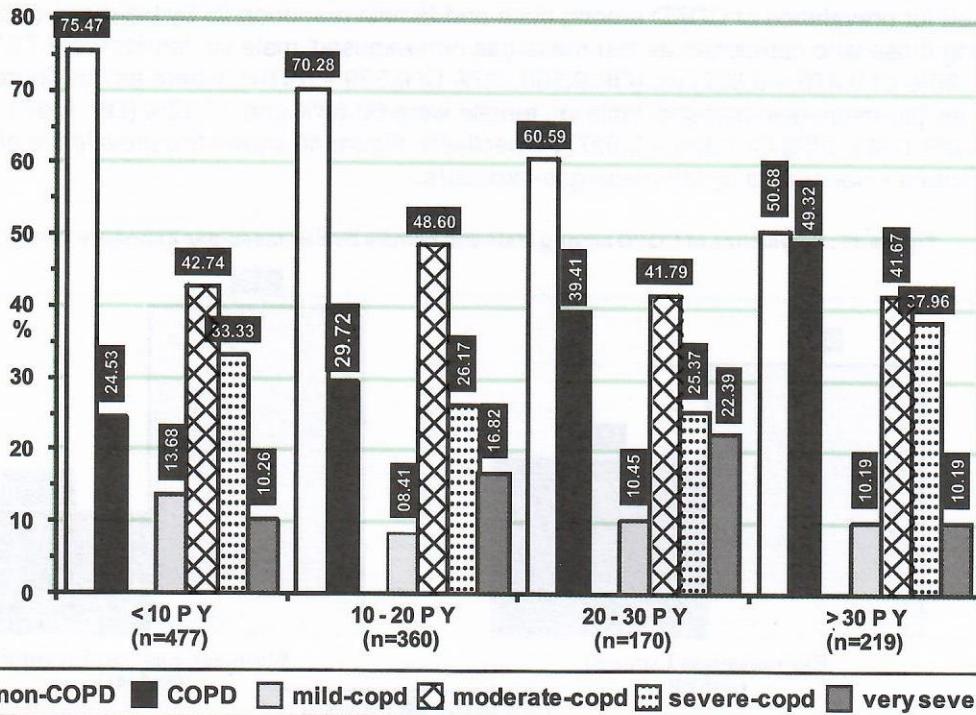
Figure 44 depicts the proportion of non-COPD, COPD and four different categories of COPD among smoking population by pack-yr smoked at a glance.
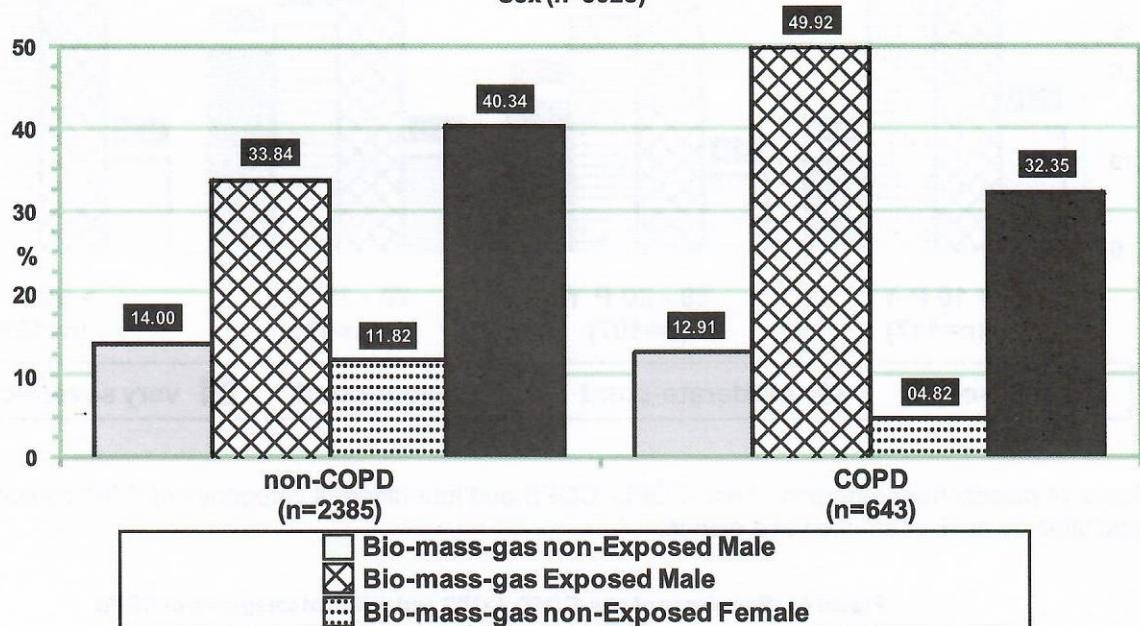
Figure 44 : Prevalence of non-COPD, COPD and different categories of COPD by Pack-year Smoked (n=1 226)

05.11 Relation with Bio-gas-mass exposure
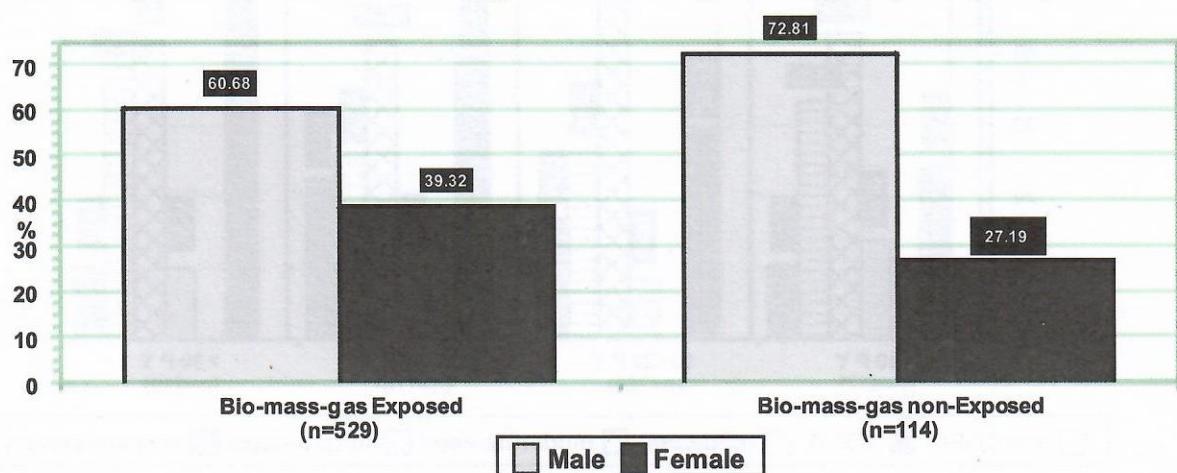
When looked for prevalence of non-COPD and COPD among respondents by bio-mass-gas exposure it was found among non-COPDs bio-mass-gas non-exposed male and female were 14.00% and 11.82%, where as biomass- exposed male and female were 33.84% and 40.34% respectively. On the other hand among COPDs biomass- gas non-exposed male and female were 12.91% and 04.82%, where as bio-mass-exposed male and female were 49.92% and 32.35% respectively. Figure 45 shows the prevalence of non-COPD and COPD among respondents by bio-mass-gas-exposure and sex.

Figure 45 : Prevalence of non-COPD and COPD by Bio-mass-gas Exposure and Sex (n=3028)

Legend:
- Bio-mass-gas non-Exposed Male
- Bio-mass-gas Exposed Male
- Bio-mass-gas non-Exposed Female

When looked for prevalence of COPD among male and female respondents by bio-mass-gas exposure it was found among those who categories as 'bio-mass-gas non-exposed' male vs. female were 72.81% vs. 27.19% (OR 0.625, 95% CI 0.470 – 0.827) vs. (OR 0.508, 95% CI 0.329 – 0.764), where as this figure for those who categories as 'bio-mass-gas exposed' male vs. female were 60.68% and 39.32% (OR 1. 601, 95% CI 1.211 – 2.130) vs. (OR 1.967, 95% CI 1.309 – 3.037) respectively. Figure 46 shows the prevalence of COPD among male and female respondents by bio-mass-gas-exposure.

Figure 46 : Prevalence of COPD among Male and Female by Bio-mass-gas Exposure (n=643)

Legend:
- Male
- Female

When looked for prevalence of four different categories of COPD among respondents by bio-mass-gas exposure it was found among those who were diagnosed as mild-COPD bio-mass-gas non-exposed male and female were 17.78% and 10.00%, where as bio-mass-exposed male and female were 38.89% and 33.33% respectively. On the other hand among moderate-COPDs bio-mass-gas non-exposed male and female were 11.99% and 04.45%, where as bio-mass-exposed male and female were 46.23% and 37.33% respectively.Whereas among those who were severe-COPD bio-mass-gas non-exposed male and female were 12.09% and 04.40%, where as bio-mass-exposed male and female were 55.49% and 28.02% respectively. And among those who were labeled as very-severe-COPDs bio-mass-gas non-exposed male and female were 12.66% and 01.27%, where as bio-mass-exposed male and female were 63.29% and 22.78% respectively. Figure 47 shows the prevalence of non-COPD and COPD among respondents by bio-mass-gas-exposure and sex.

Figure 47 : Prevalence of different categories of COPD by Bio-mass-gas Exposure and Sex (n=3028)
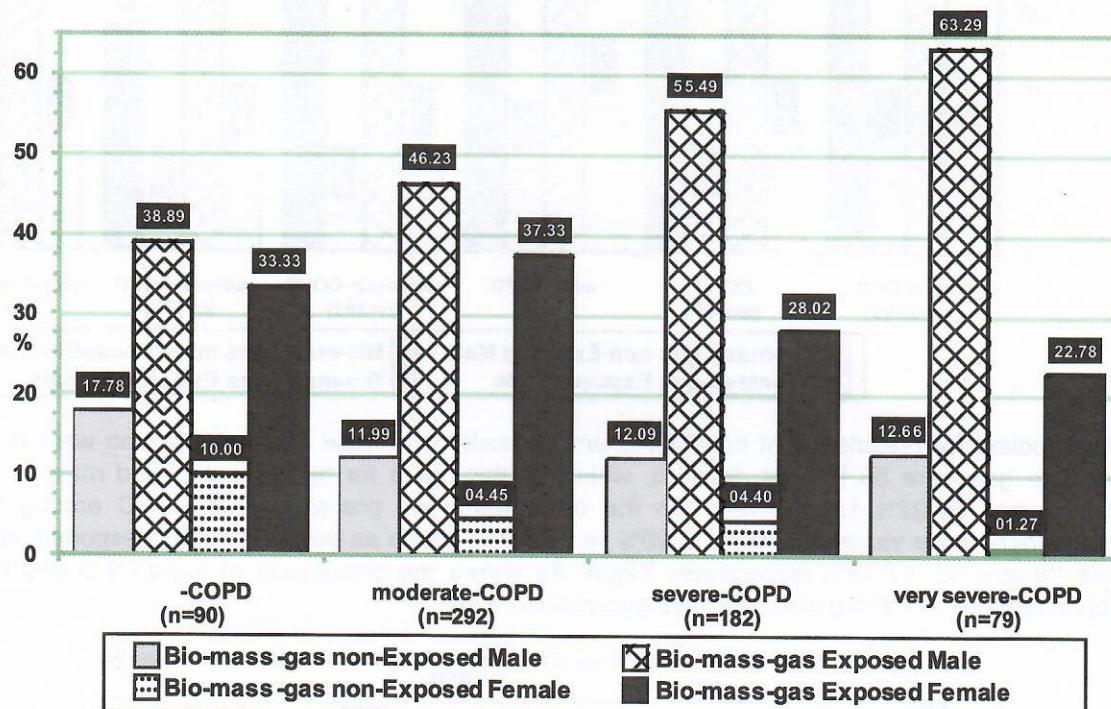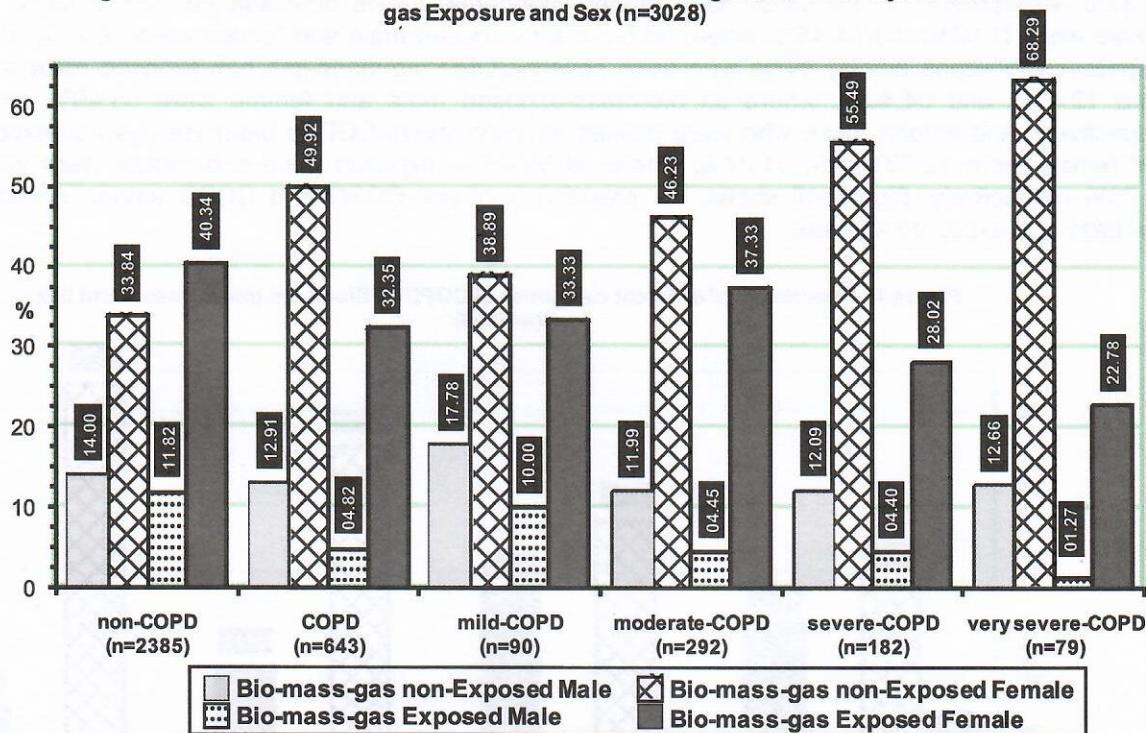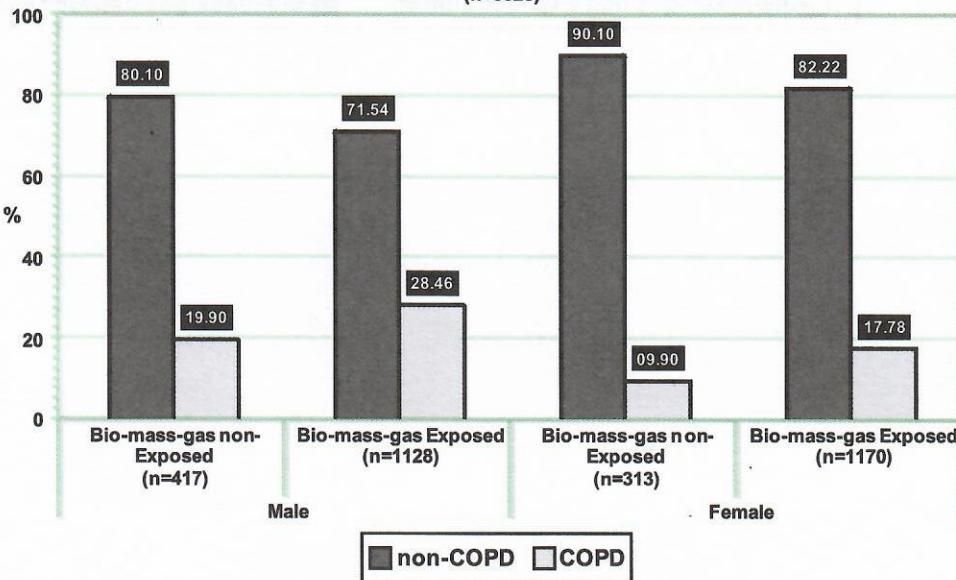
Figure 48 shows at a glance among non-COPDs, COPDs and four categories of COPDs by bio-mass-gas exposure and sex.

Figure 48 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas Exposure and Sex (n=3028)
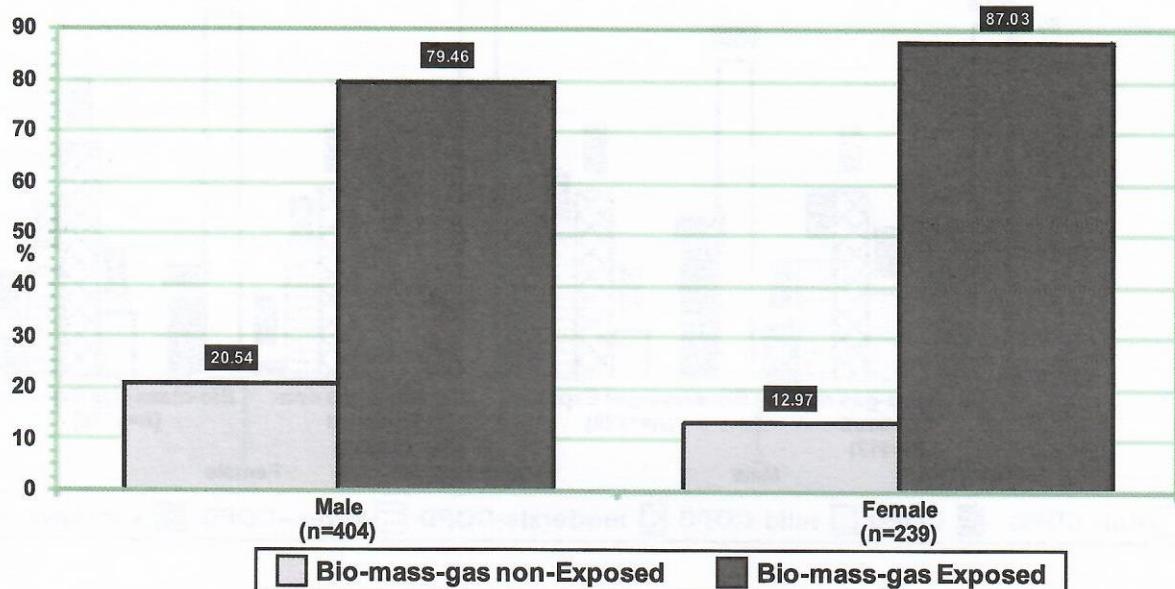
When looked for prevalence of non-COPD among male vs. female respondents who were non-exposed to biomass- gas were 80.10% vs. 90.10%, where as this figure for bio-mass-exposed male vs. female were 71.54% and 82.22% respectively. On the other hand the prevalence of COPD among bio-mass-gas non-exposed male vs. female were 19.90% vs. 09.90%, where as this for bio-mass-exposed male vs. female were 28.46% vs. 17.78% respectively. Figure 49 shows the prevalence of non-COPD and COPD among respondents by sex along with bio-mass-gas-exposure status.

Figure 49 : Prevalence of non-COPD and COPD by Bio-mass-gas Exposure and Sex (n=3028)

When looked for prevalence of COPD among male respondents it was found to be 20.54% for those who were bio-mass-gas non-exposed and this figure for those who were bio-mass-gas exposed were 79.46%, where as among female respondents it was 12.97% for those who were bio-mass-gas non-exposed and 87.03% for those who were bio-mass-gas exposed respectively. Figure 50 shows the prevalence of COPD among male and female respondents by bio-mass-gas-exposure.

Figure 50 : Prevalence of COPD among Male and Female by Bio-mass-gas Exposure (n=643)

When looked for prevalence of mild-COPD among male vs. female respondents who were non-exposed to biomass- gas were 19.28% vs. 29.03%, where as this figure for bio-mass-exposed male vs. female were 10.90% and 14.42% respectively. This figure for moderate-COPD among bio-mass-gas non-exposed male vs. female were 42.17% vs. 41.94%, where as this for bio-mass-exposed male vs. female were 42.06% vs. 52.40% respectively. The prevalence of severe-COPD among bio-mass-gas non-exposed male vs. female were 26.51% vs. 25.81%, where as this figure for bio-mass-exposed male vs. female were 31.46% vs. 24.52% respectively. Where as the prevalence of very-severe-COPD among bio-mass-gas non-exposed male vs. female were 12.05% vs. 03.23%, where as this for bio-mass-exposed male vs. female were 15.58% vs. 08.65% respectively. Figure 51 shows the prevalence of non-COPD and COPD among respondents by sex along with bio-massgas- exposure status.

Figure 51 : Prevalence of different categories of COPD by Bio-mass-gas Exposure and Sex (n=643)
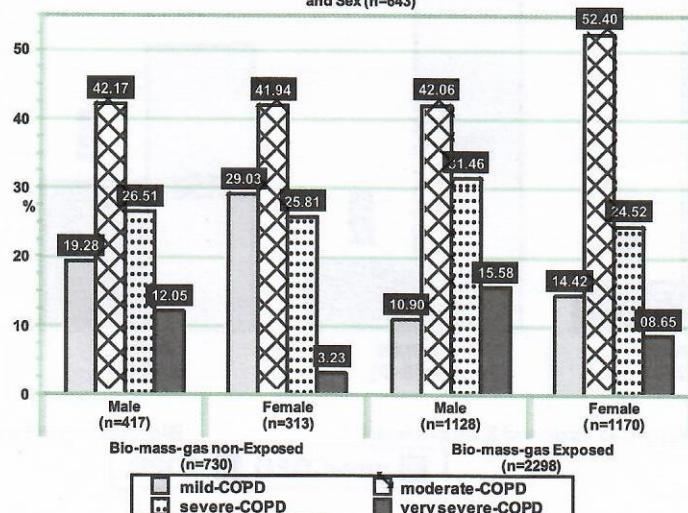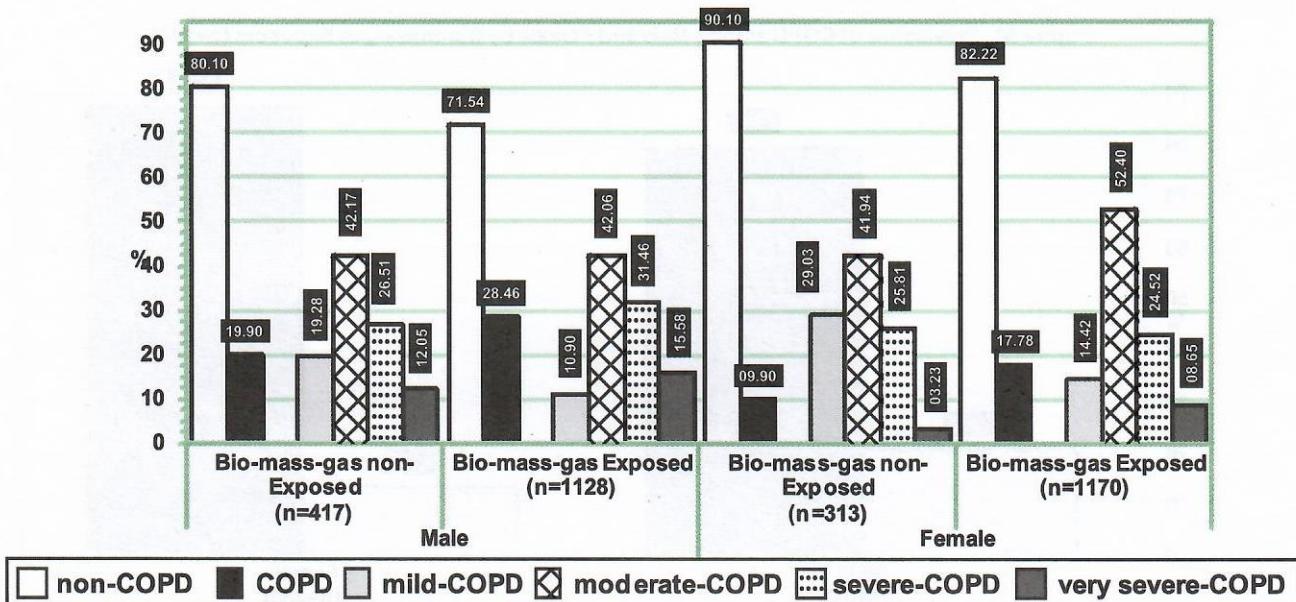
Figure 52 depicts at a glance the proportion of respondents by sex along with bio-mass-gas-exposure status among non-COPDs, COPDs and four categories of COPDs.
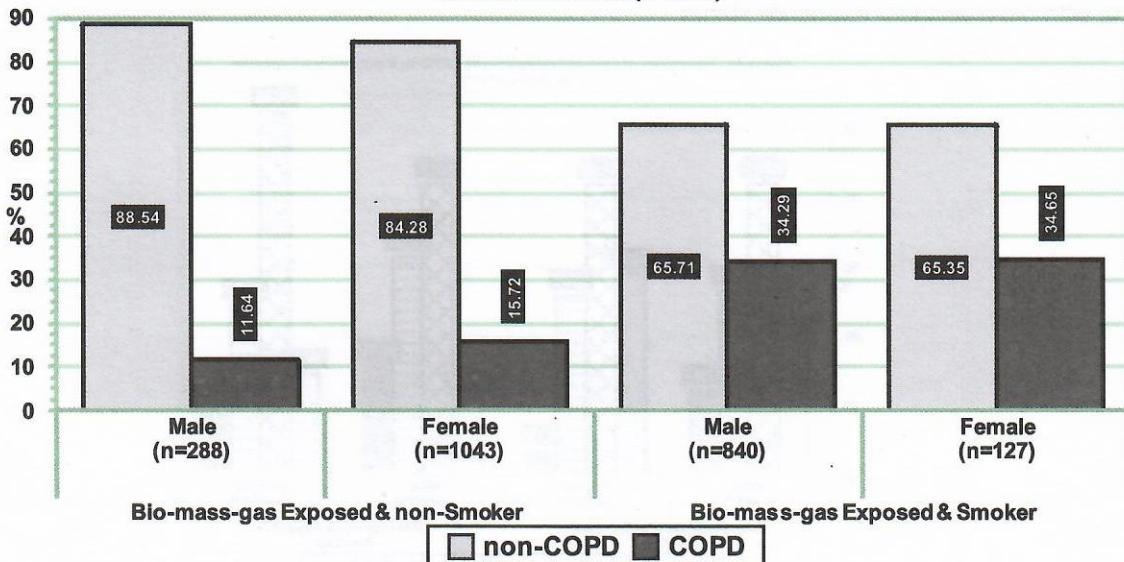
Figure 52 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas Exposure and Sex (n=3028)

Legend: □ non-COPD ■ COPD □ mild-COPD ⊠ moderate-COPD ▦ severe-COPD ■ very severe-COPD

05.12 Relation with Bio-mass-gas Exposure and Smoking
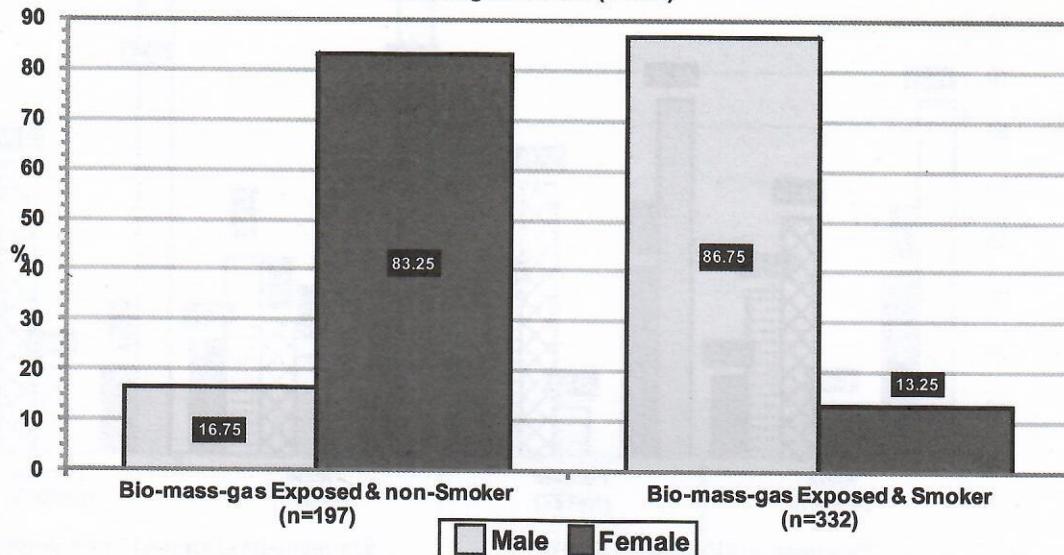
When looked for prevalence of non-COPD and COPD among non-smoker male vs. female who were exposed to bio-mass-gas it were 88.54% and 11.46% vs. 84.28% and 15.72%. These figures for smoker male vs. female were 65.71 and 34.29% vs. 65.35% and 34.65% respectively. Figure 53 shows prevalence of non-COPD and COPD among male and female respondents who were exposed to bio-mass-gas by smoking behaviour.

Figure 53 : Prevalence of non-COPD and COPD among Bio-mass-gas Exposed by Smoking behaviour and Sex (n=2298)

Legend: □ non-COPD ■ COPD

When looked for prevalence of COPD among those who were bio-mass-gas exposed by their smoking behaviour, it were found that respondents who were non-smoker 16.75% were male and 83.25% were female.Where as these figures for those who were smoker 86.75% were male and 13.25% were female. Figure 54 depicts prevalence of COPD among bio-mass-gas exposed by their smoking behaviour and sex.

Figure 54 : Prevalence of COPD among Male and Female by Bio-mass-gas Exposure & Smoking behaviour (n=529)

When looked for four different categories of COPD (mild, moderate, sever and very-severe) among respondents who were exposed bio-mass-gas for non-smoker male it were 18.19%, 24.24%, 36.36% and 21.21% respectively. These figures for smoker male were 10.07%, 44.10%, 30.90% and 14.93% respectively. Where as these for non-smoker female were 15.85%, 53.05%, 23.17% and 07.93% respectively and for those female who were smoker these figures were 09.09%, 50.00%, 29.55% and 11.36% respectively. Figure 55 depicts prevalence of four categories of COPD among bio-mass-gas exposed by their smoking behaviour and sex.

Figure 55 : Prevalence of four different categories of COPD among Bio-mass-gas Exposed by Smoking behaviour and Sex (n=529)
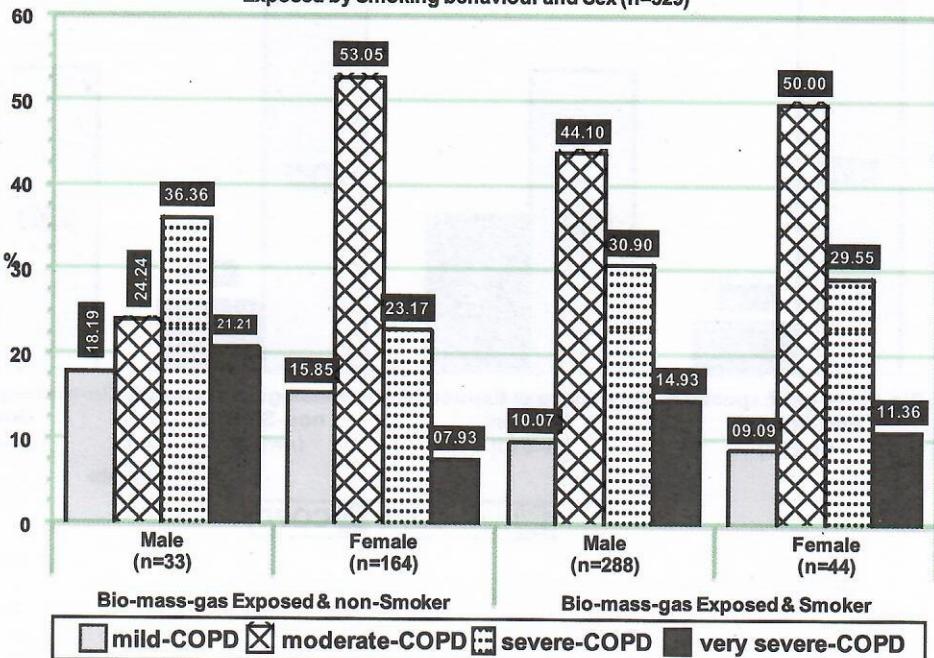
Figure 56 shows at a glance the proportion among male and female respondents by bio-mass-gas exposure and smoking behaviour non-COPDs, COPDs and different categories of COPDs

Figure 56 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas Exposure, Smoking behaviour and Sex (n=2298)
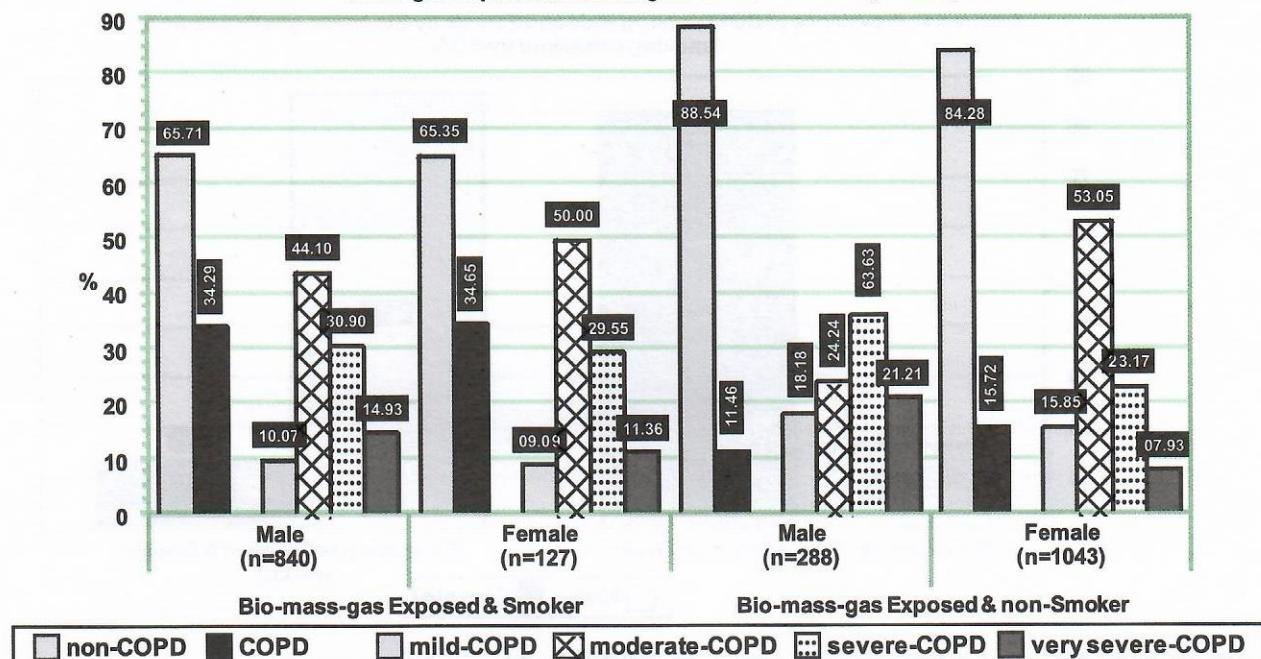
Figure 57 : Prevalence of non-COPD and COPD among Bio-mass-gas Exposed by Sex and Smoking behaviour (n=2298)
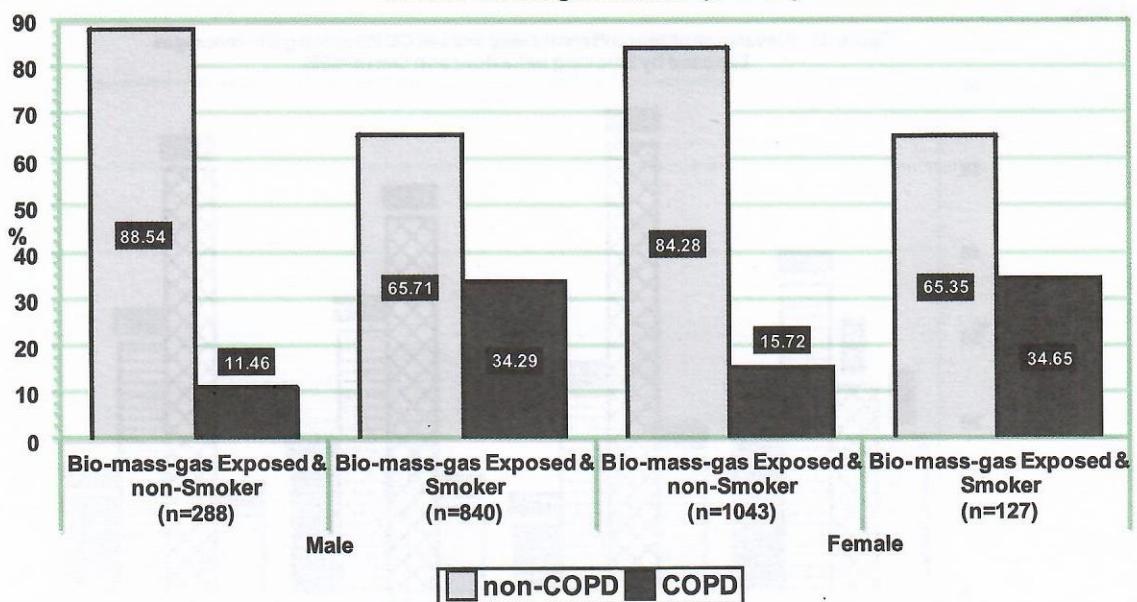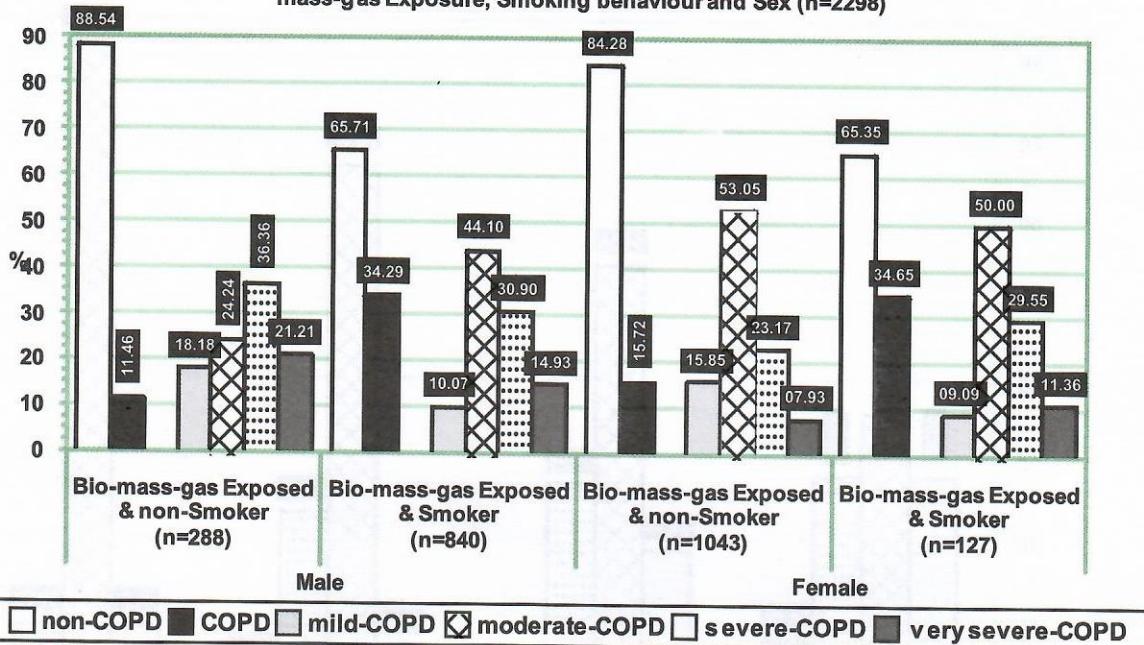
Figure 58 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas Exposure, Smoking behaviour and Sex (n=2298)

Legend: □ non-COPD ■ COPD □ mild-COPD ◇ moderate-COPD □ severe-COPD ■ very severe-COPD

When looked for prevalence of non-COPD and COPD among those who were non-exposed to bio-mass-gas i.e. smoke-emitting-stove or open fire it was found that the prevalence of non-COPD were 23.54%, 30.68%, 44.64% and 1.14% respectively for non-smoker and smoker male and female. On the other hand the prevalence of COPD was 16.67%, 56.14%, 24.56% and 02.63% for non-smoker and smoker male and female respectively. Figure 58 shows the prevalence of non-COPD and COPD among bio-mass-gas non-exposed respondents by their smoking behaviour and sex.

Figure 59: Prevalence of non-COPD and COPD among Bio-mass-gas non-Exposed by Smoking behaviour and Sex (n=730)

Legend:
□ Bio-mass-gas non-Exposed and non-Smoker Male
◇ Bio-mass-gas non-Exposed and Smoker Male
⋯ Bio-mass-gas non-Exposed and non-Smoker Female
■ Bio-mass-gas non-Exposed and Smoker Female
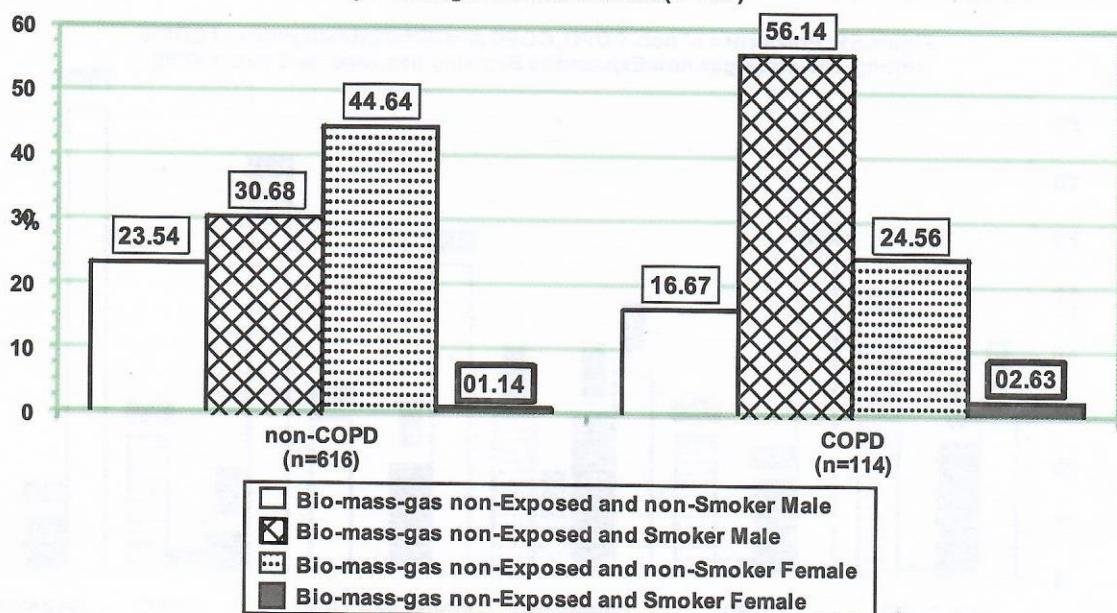
Figure 60 shows the prevalence of four different categories of COPD (mild, moderate, severe and very-severe) among bio-mass-gas non-exposed respondents by smoking behaviour and sex i.e. non-smoker and smoker male and female.

Figure 60 Prevalence of four categories of COPD among Bio-mass-gas non-Exposed by Smoking behaviour and Sex (n=114)

Legend:
- ☐ Bio-mass-gas non-Exposed and non-Smoker Male
- ☒ Bio-mass-gas non-Exposed and Smoker Male
- ⫶ Bio-mass-gas non-Exposed and non-Smoker Female
- ■ Bio-mass-gas non-Exposed and non-Smoker Female
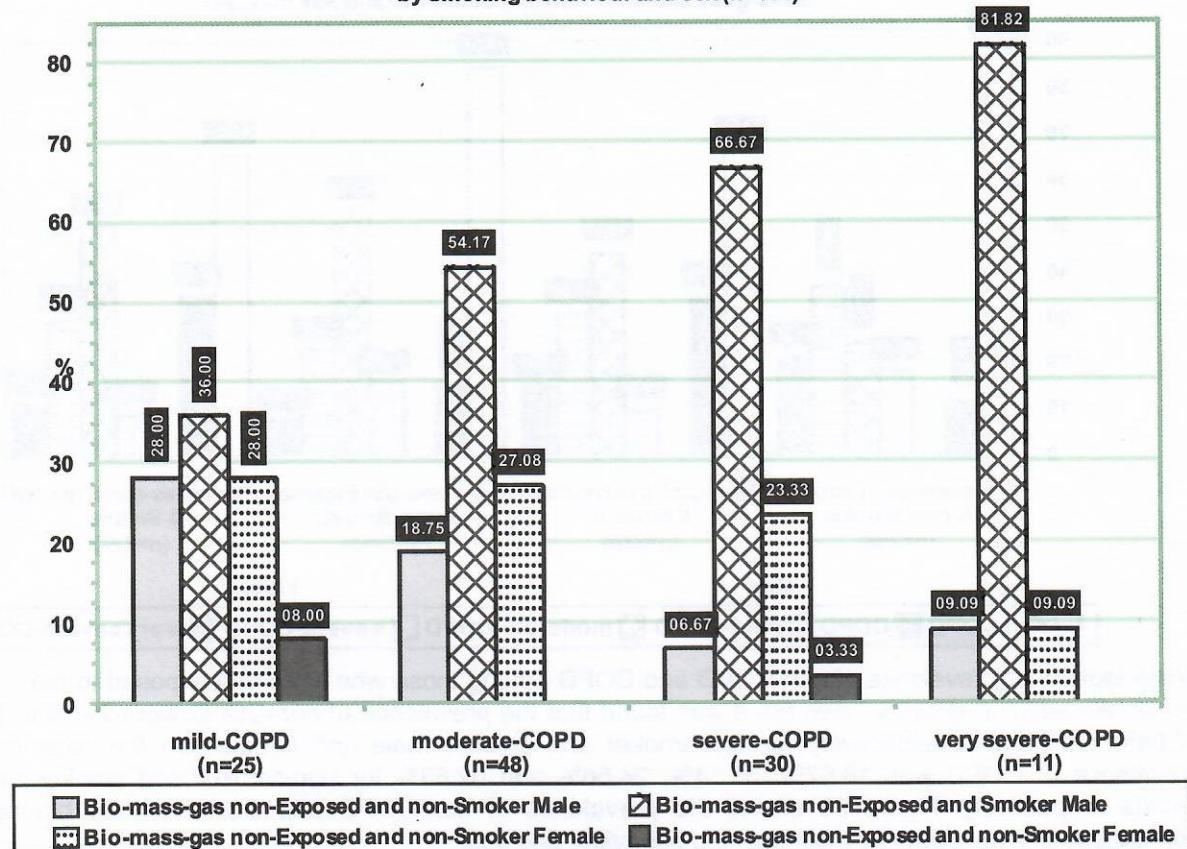
Figure 61 shows the prevalence of non-COPD and COPD among bio-mass-gas exposed respondents by their smoking behaviour and sex.

Figure 61 : Prevalence of non-COPD, COPD and different categories of COPD among Bio-mass-gas non-Exposed by Smoking behaviour and Sex (n=730)

Legend:
- ☐ Bio-mass-gas non-Exposed and non-Smoker Male
- ■ Bio-mass-gas non-Exposed and Smoker Male
- ☒ Bio-mass-gas non-Exposed and non-Smoker Female
- ⫶ Bio-mass-gas non-Exposed and Smoker Female
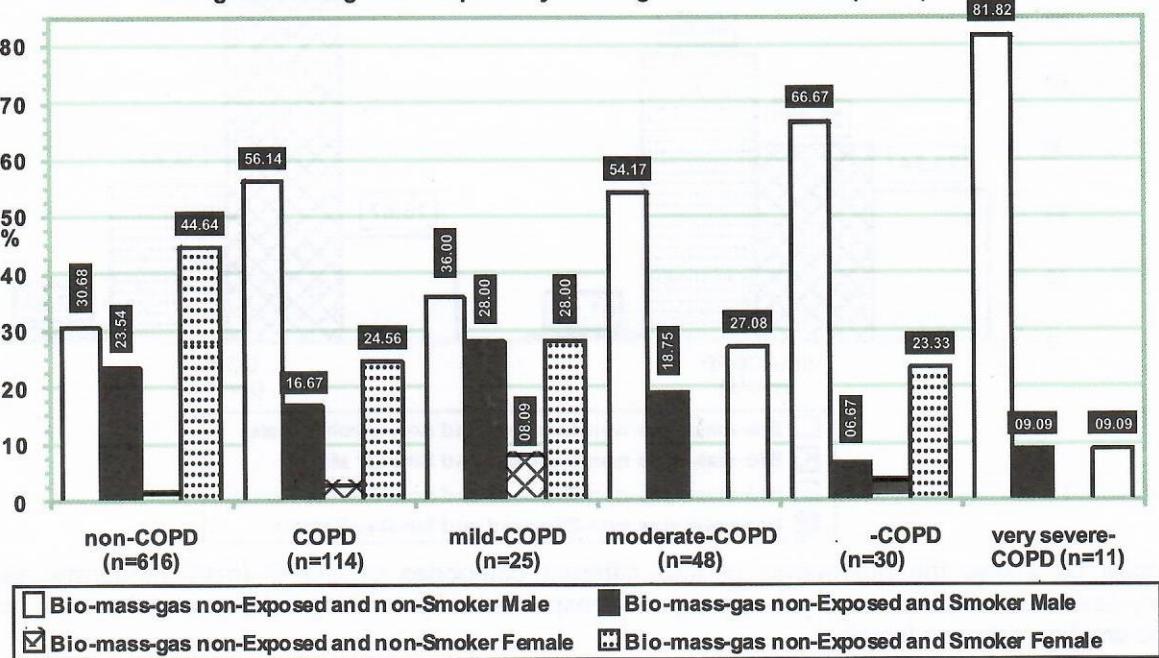
Figure 62 shows the prevalence of four different categories of COPD (mild, moderate, severe and very-severe) among bio-mass-gas exposed respondents by smoking behaviour and sex i.e. non-smoker and smoker male and female.

Figure 62: Prevalence of four categories of COPD among Bio-mass-gas Exposed by Smoking behaviour and Sex (n=529)
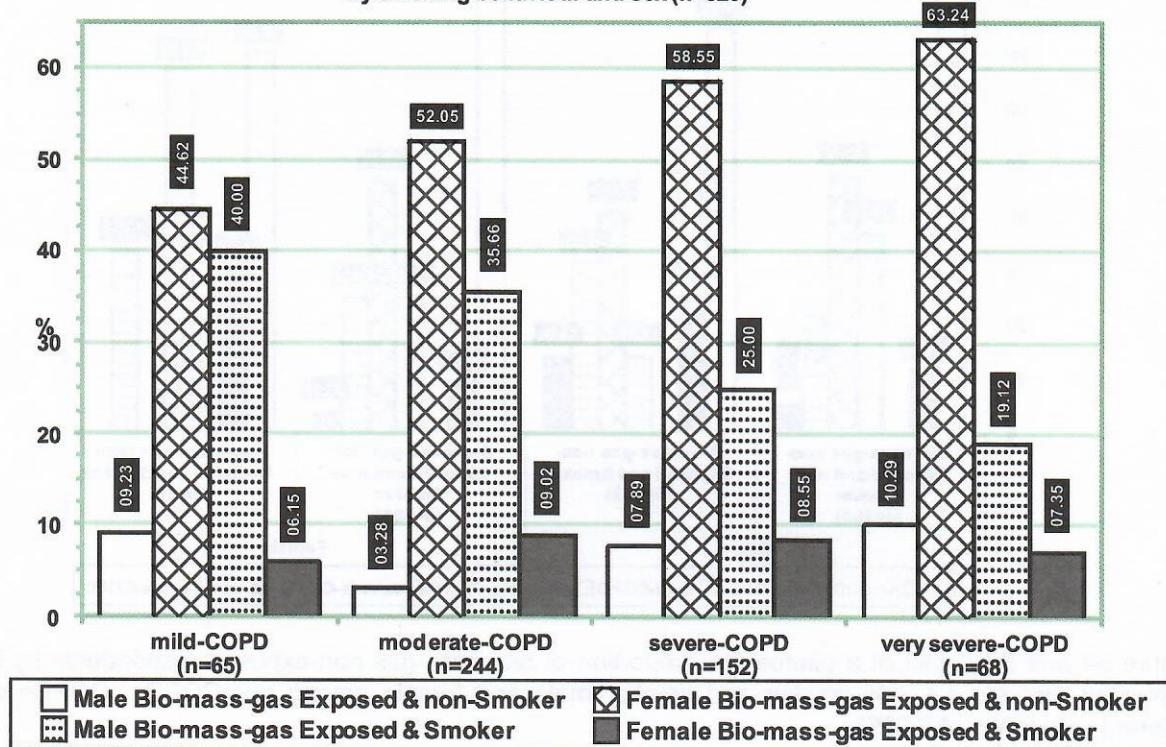
Figure 63 depicts at a glance the proportion of bio-mass-gas exposed respondents by smoking behaviour and sex i.e. non-smoker and smoker male and female among non-COPDs, COPDs and four different categories of COPDs.

Figure 63: Prevalence of non-COPD, COPD and four categories of COPD among Bio-mass-gas Exposed by Smoking behaviour and Sex (n=2298)
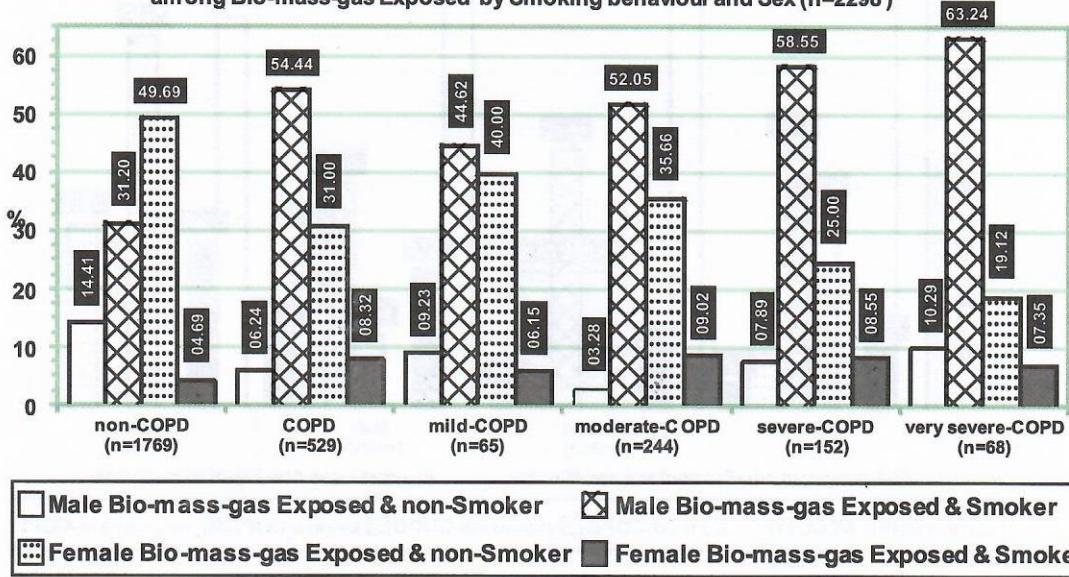
Figure 64 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas non-Exposure, Smoking behaviour and Sex (n=730)
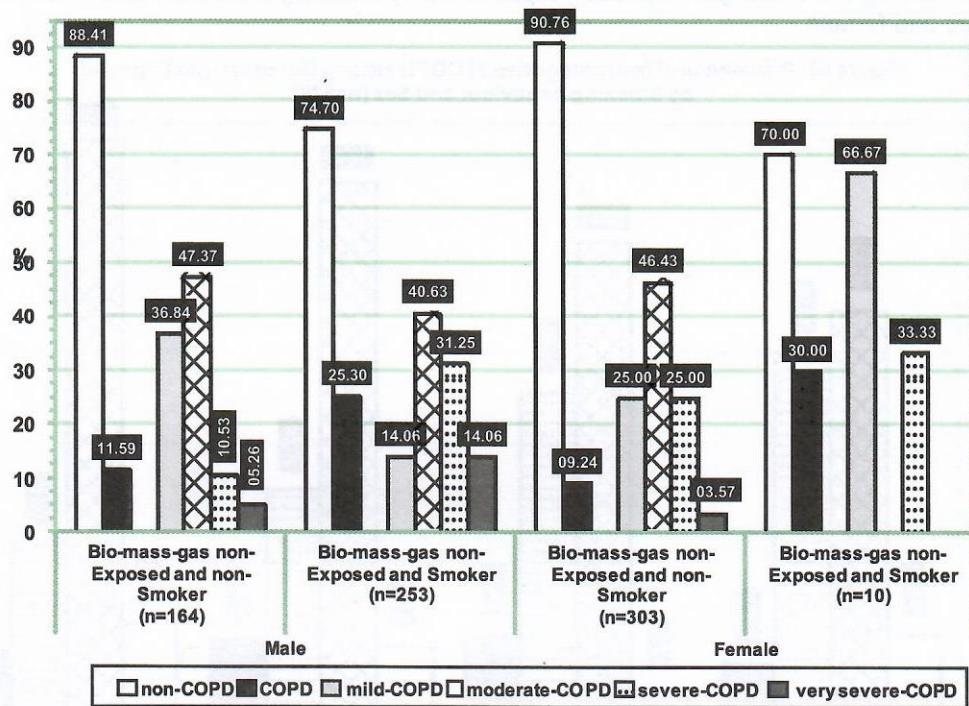
Figure 64 and 65 depict at a glance the proportion of bio-mass-gas non-exposed respondents by smoking behaviour and sex i.e. non-smoker and smoker male and female among non-COPDs, COPDs and four different categories of COPDs.

Figure 65 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas non-Exposure, Smoking behaviour and Sex (n=730)
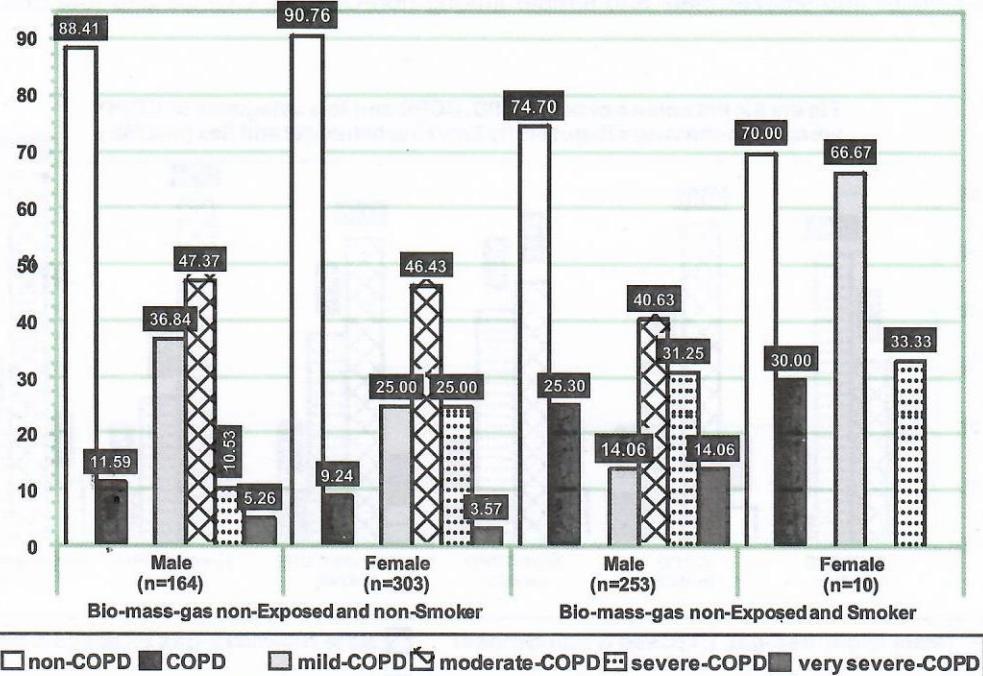
Figure 66 depicts at a glance the proportion of bio-mass-gas non-exposed respondents by smoking behaviour and sex i.e. non-smoker and smoker male and female among four different categories of COPDs.

Figure 66 : Prevalence of different categories of COPD by Bio-mass-gas non-Exposure and Sex (n=114)
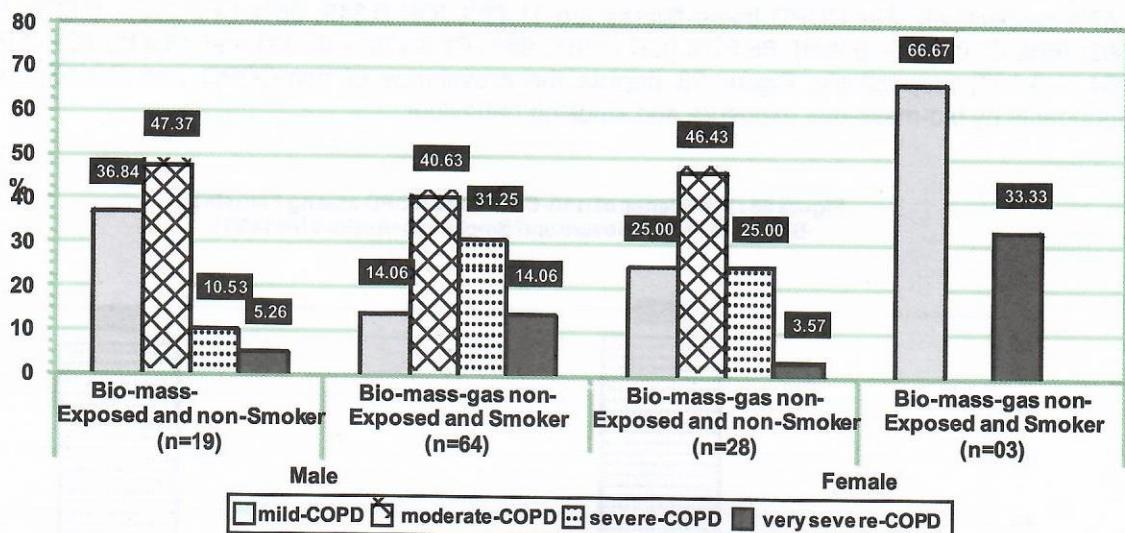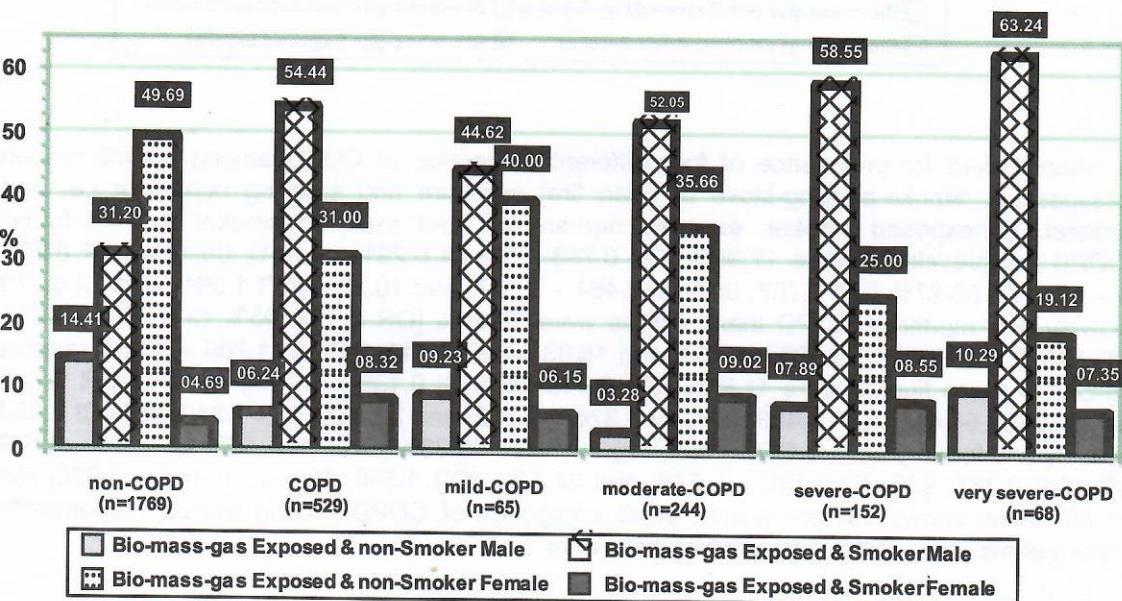
Figure 67 depicts at a glance the proportion of bio-mass-gas exposed respondents by smoking behaviour and sex i.e. non-smoker and smoker male and female among non-COPDs, COPDs and four different categories of COPDs
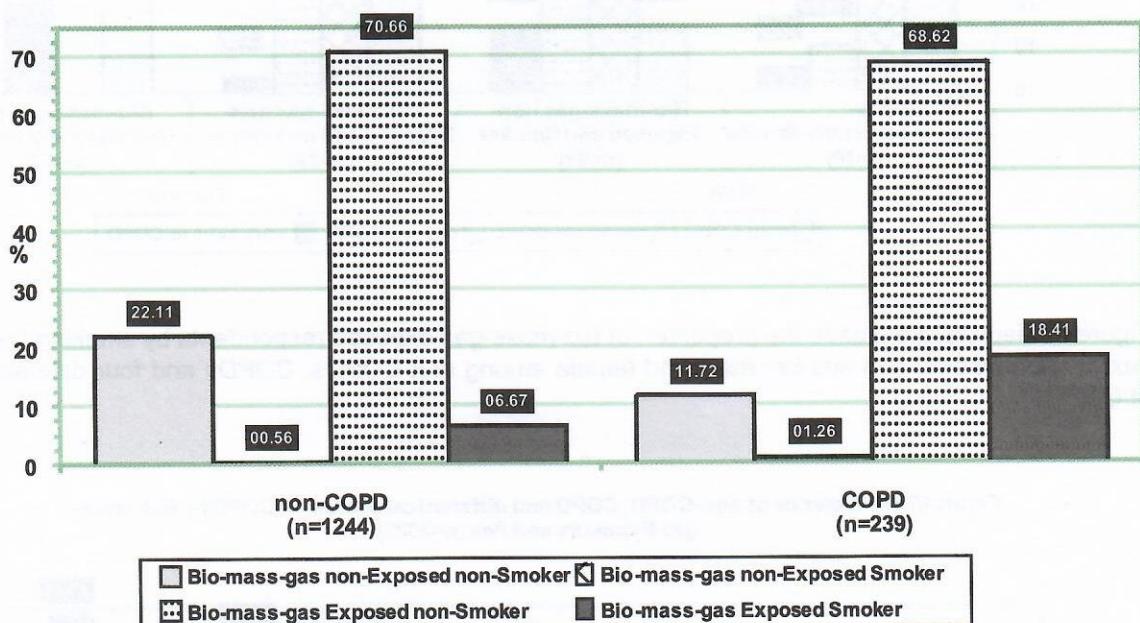
Figure 67 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas Exposure and Sex (n=2827)

05.13 Relation with Bio-mass-gas exposure and Smoking among Female

When looked for prevalence of non-COPD among female respondents by bio-mass-gas i.e. 'smoke-emittingstove or open fire' exposure and smoking behaviour i.e. non-exposed non-smoker, non-exposed smoker, exposed non-smoker and exposed smoker, it were found 22.11%, 00.56%, 70.66% and 06.67% respectively. For COPD these figures are 11.72% [OR 0.349, 95% CI 0.226 – 0.523], 01.26% [OR 1.592, 95% CI 0.265 – 6.999], 68.62% [OR 0.587, 95% CI 0.479 – 0.717] and 18.41% [OR 2.037, 95% CI 1.364 – 3.007] respectively. Figure 68 depicts the prevalence of non-COPD and COPD among female respondents by bio-mass-gas exposure and smoking behaviour.

Figure 68 : Prevalence of non-COPD and COPD among Female by Bio-mass-gas Exposure and Smoking behaviour (n=1483)

Again when looked for prevalence of four different categories of COPD among female respondents by bio-massgas i.e. 'smoke-emitting-stove or open fire' exposure and smoking behaviour i.e. non-exposed non-smoker, nonexposed smoker, exposed non-smoker and exposed smoker it were found that for mild-COPD the prevalence were 17.95% [OR 0.753, 95% CI 0.291 – 1.641], 05.13% [OR 8.324, 95% CI 0.848 – 42.466], 66.67% [OR 0.767, 95% CI 0.464 – 1.237] and 10.26% [OR 1.064, 95% CI 0.279 – 2.894] respectively. For moderate-COPD these figures were 10.66% [OR 0.393, 95% CI 0.204 – 0.695], 0.00%, 71.31% [OR 0.790, 95% CI 0.600 – 1.034] and 18.03% [OR 2.041, 95% CI 1.206 – 3.320] respectively. For severe-COPD these figures were 11.86% [OR 0.345, 95% CI 0.135 – 0.735], 01.69% [OR 1.742, 95% CI 0.040 – 12.685], 64.41% [OR 0.483, 95% CI 0.326 – 0.702] and 22.03% [OR 1.843, 95% CI 0.933 – 3.366] respectively and for very-severe-COPD these figures were 05.26% [OR 0.112, 95% CI 0.003 – 0.649], 0.00%, 68.42% [OR 0.367, 95% CI 0.185 – 0.676] and 26.32% [OR 1.566, 95% CI 0.485 – 3.920] respectively. Figure 69 below shows the prevalence of all categories of COPD among female respondents by their bio-mass-gas exposure status and smoking behaviour.

**Figure 69: Prevalence of four categories of COPD among Female by Bio-mass-gas Exposure and Smoking behaviour (n=239)**
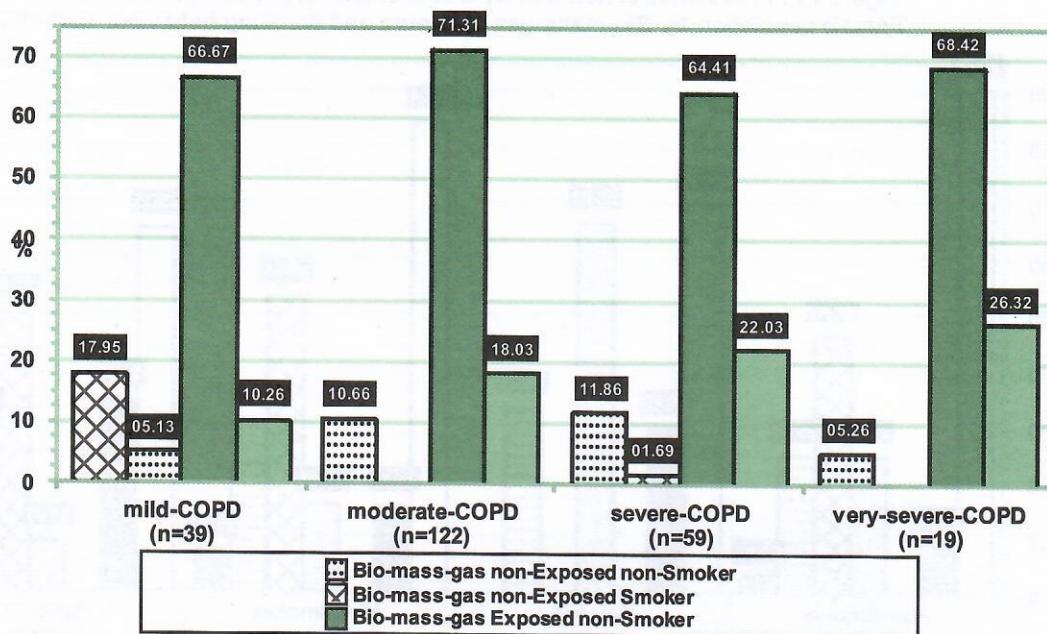
Figure 70 shows at a glance the proportion of female respondents among non-COPDs, COPDs and four categories of COPDs by bio-mass-gas exposure and smoking behaviour.

Figure 70 : Prevalence of non-COPD, COPD and different categories of COPD in Female population by Bio-mass-gas Exposure and Smoking behaviour (n=1483)
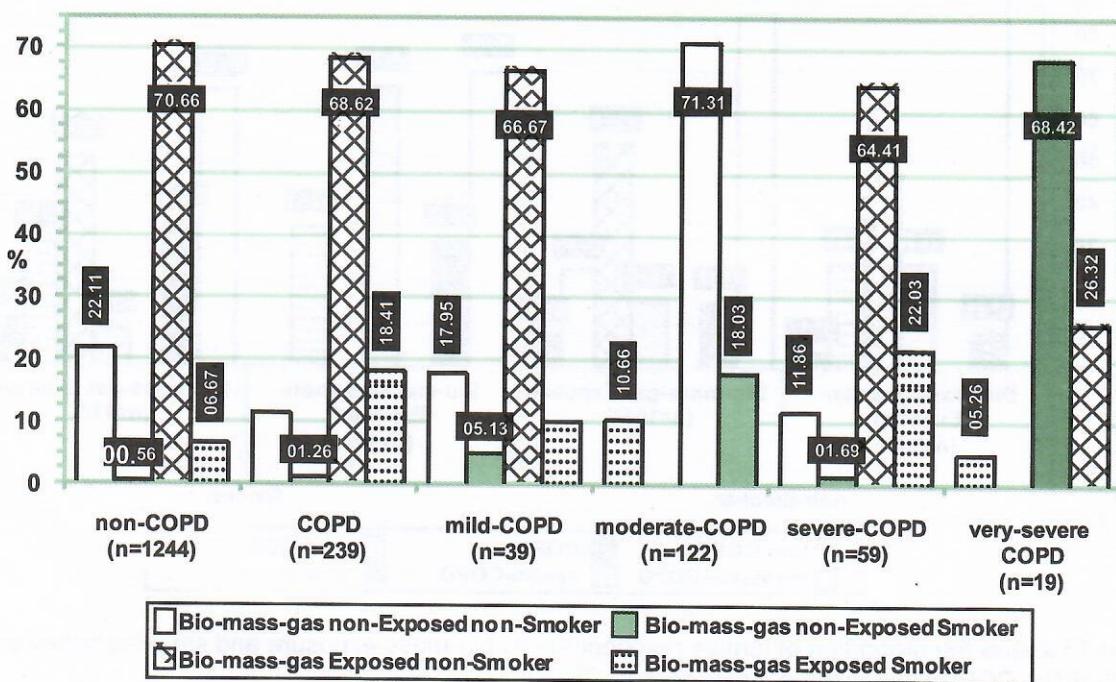
Figure 71 and 72 depict at a glance the proportion of non-COPD, COPD and four categories of COPD among female respondents by smoking behaviour and by bio-mass-gas exposure.

Figure 71 : Prevalence of non-COPD, COPD and different categories of COPD in Female population by Bio-mass-gas Exposure and Smoking behaviour (n=1483)
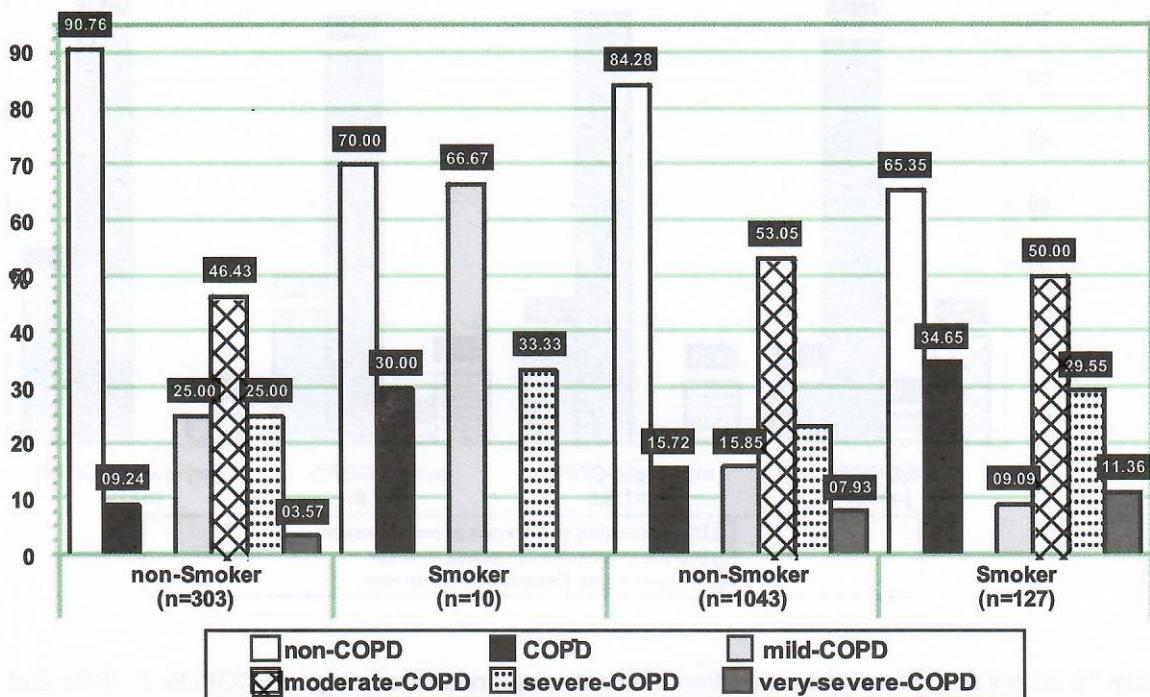
Figure 72 : Prevalence of non-COPD, COPD and different categories of COPD in Female population by Bio-mass-gas Exposure and Smoking behaviour (n=1483)
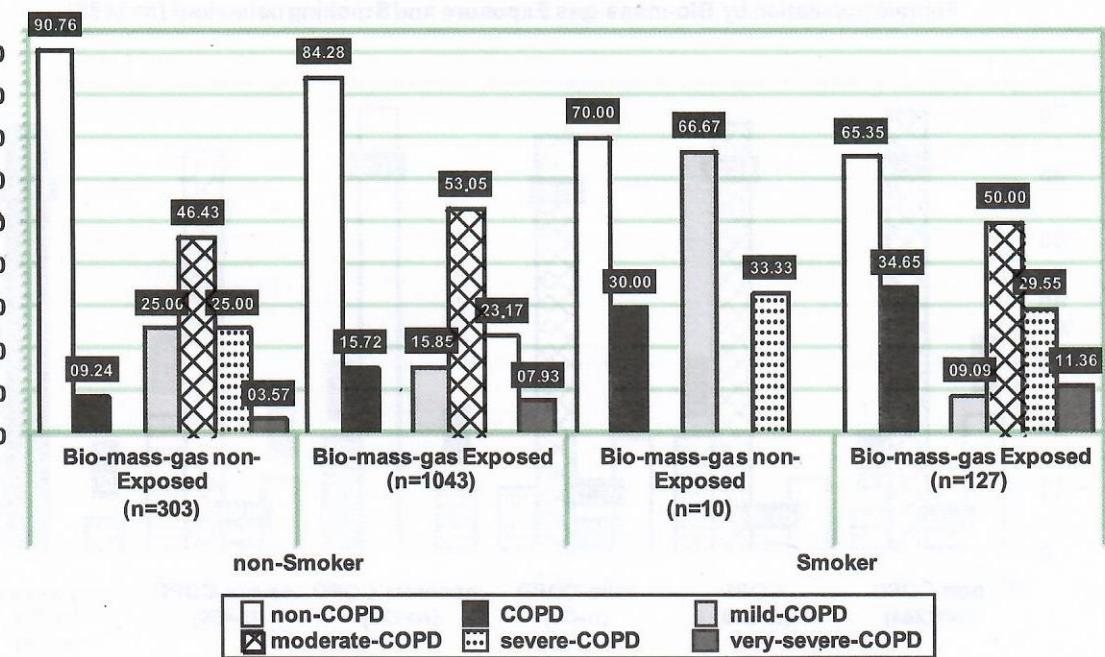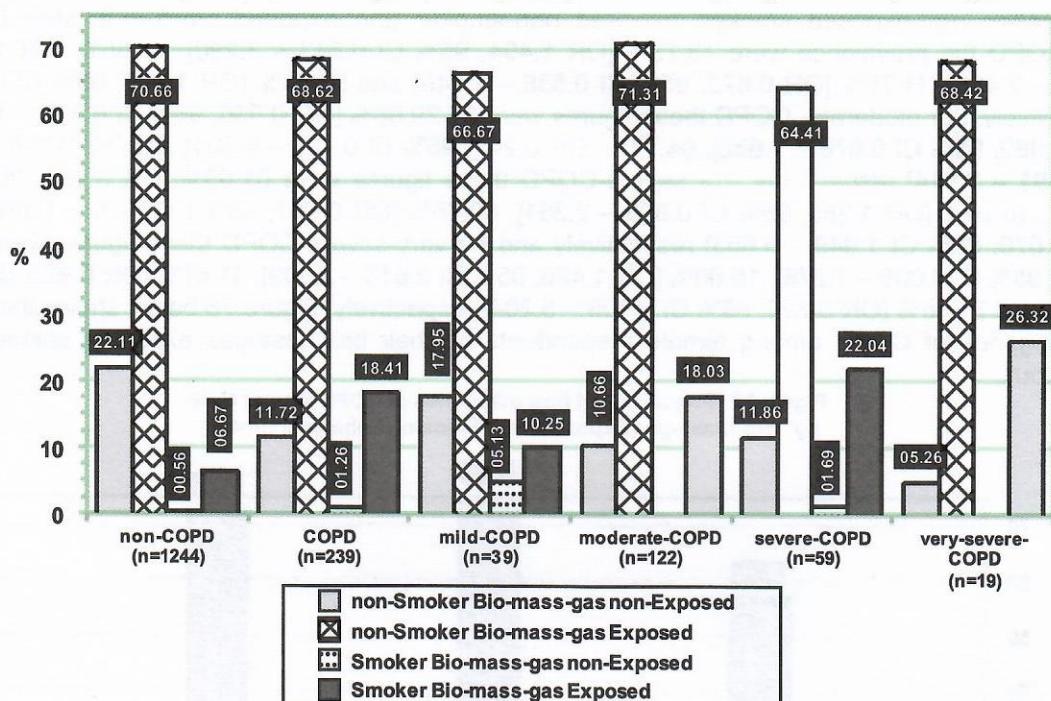
Figure 73 shows the proportion of female respondents by bio-mass-exposure and smoking behaviour among non-COPDs, COPDs and different categories of COPDs.
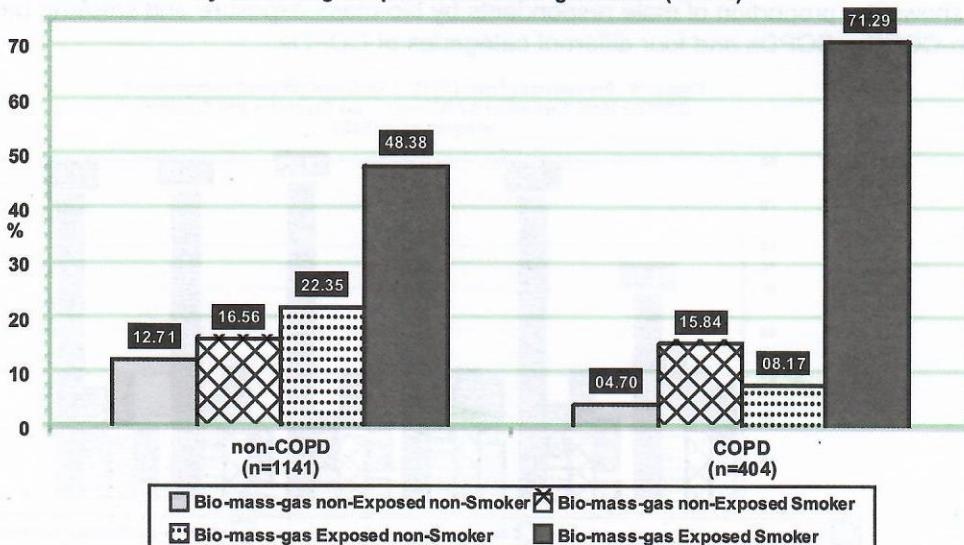
Figure 73 : Prevalence of non-COPD, COPD and different categories of COPD in Female population by Bio-mass-gas Exposure and Smoking behaviour (n=1483)

05.14 Relation with Bio-mass-gas Exposure and Smoking among Male

When looked for prevalence of non-COPD among male respondents by bio-mass-gas i.e. 'smoke-emittingstove or open fire' exposure and smoking behaviour i.e. non-exposed non-smoker, non-exposed smoker, exposed non-smoker and exposed smoker, it were found 12.71%, 16.56%, 22.35% and 48.38% respectively. For COPD these figures are 04.70% [OR 0.470, 95% CI 0.273 – 0.769], 15.84% [OR 1.284, 95% CI 0.938 – 1.741], 08.17% [OR 0.452, 95% CI 0.301 – 0.660] and 71.29% [OR 2.694, 95% CI 2.236 – 3.246] respectively. Figure 75 depicts the prevalence of non-COPD and COPD among male respondents by bio-mass-gas exposure and smoking behaviour.

Figure 74: Prevalence of non-COPD and COPD among Male by Bio-mass-gas Exposure and Smoking behaviour (n=1545)

Again when looked for prevalence of four different categories of COPD among female respondents by biomass- gas i.e. 'smoke-emitting-stove or open fire' exposure and smoking behaviour i.e. non-exposed nonsmoker, non-exposed smoker, exposed non-smoker and exposed smoker it were found that for mild-COPD the prevalence were 13.73% [OR 1.494, 95% CI 0.543 – 3.290], 17.65% [OR 1.227, 95% CI 0.535 – 2.486], 11.76% [OR 0.673, 95% CI 0.538 – 1.546] and 56.86% [OR 1.247, 95% CI 0.767 – 1.988] respectively. For moderate- COPD these figures were 05.29.66% [OR 0.530, 95% CI 0.235 – 1.047], 15.29% [OR 1.080, 95% CI 0.678 – 1.662], 04.71% [OR 0.247, 95% CI 0.105 – 0.501] and 74.71% [OR 2.184, 95% CI 1.691 – 2.814] respectively. For severe-COPD these figures were 01.63% [OR 0.184, 95% CI 0.022 – 0.686], 16.26% [OR 1.385, 95% CI 0.808 – 2.261], 09.76% [OR 0.657, 95% CI 0.329 – 1.198] and 72.35% [OR 2.670, 95% CI 1.949 – 3.653] respectively and for very-severe-COPD these figures were 01.67% [OR 0.219, 95% CI 0.005 – 1.276], 15.00% [OR 1.425, 95% CI 0.618 – 2.909], 11.67% [OR 0.923, 95% CI 0.355 – 2.207] and 71.66% [OR 3.225, 95% CI 2.006 – 5.204] respectively. Figure 75 below shows the prevalence of all categories of COPD among female respondents by their bio-mass-gas exposure status and smoking behaviour.

Figure 75 : Prevalence of four categories of COPD among Male by Bio-mass-gas Exposure and Smoking behaviour (n=404)
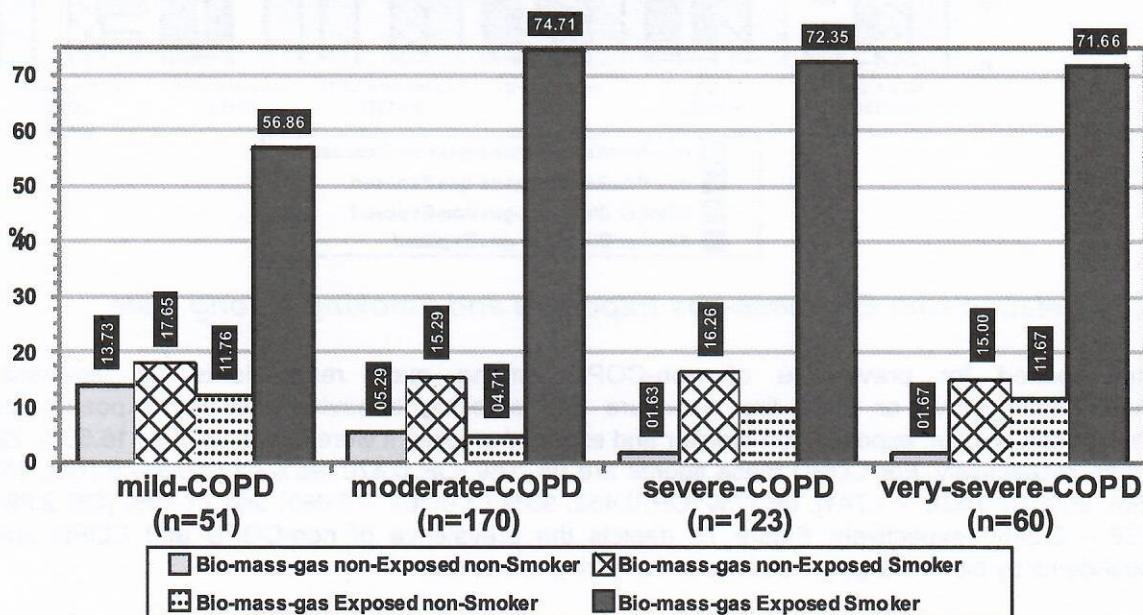
Figure 76 shows the proportion of male respondents by bio-mass-exposure and smoking behaviour among non-COPDs, COPDs and four different categories of COPDs.

Figure 76 : Prevalence of non-COPD, COPD and different categories of COPD in Male population by Bio-mass-gas Exposure and Smoking behaviour (n=1545)
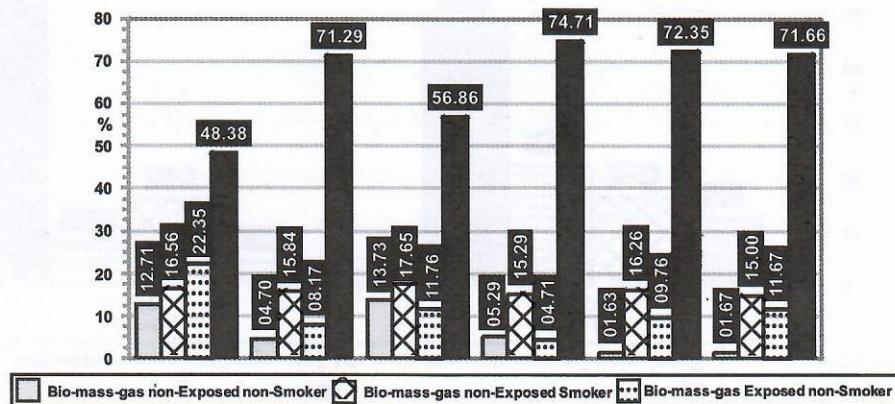
Figure 77 and 78 depict at a glance the proportion of non-COPD, COPD and four categories of COPD among male respondents by smoking behaviour and by bio-mass-gas exposure.

Figure 77 : Prevalence of non-COPD, COPD and different categories of COPD in Male population by Bio-mass-gas Exposure and Smoking behaviour (n=1545)
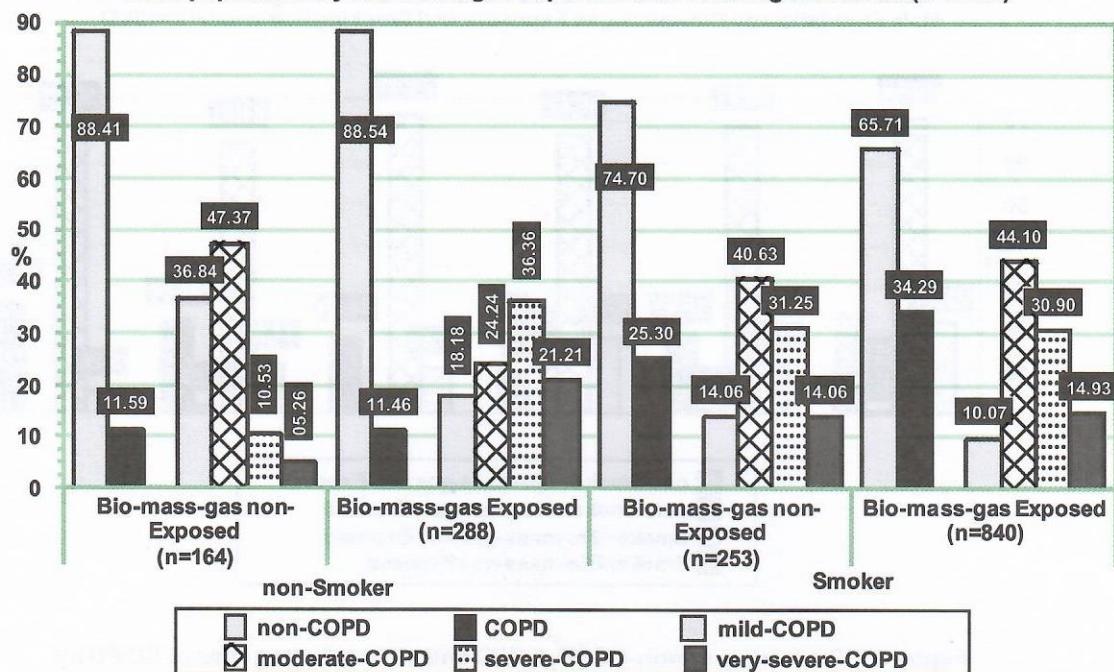
Figure 78: Prevalence of non-COPD, COPD and different categories of COPD in Male population by Bio-mass-gas Exposure and Smoking behaviour (n=1545)
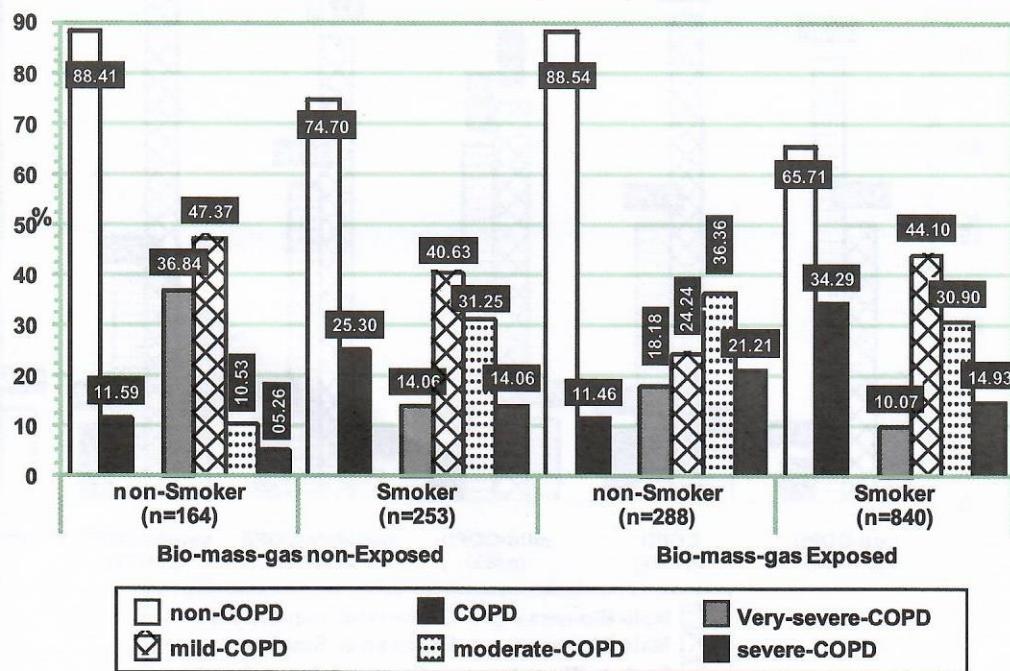
Figure 79 and 80 shows the proportion of male respondents by bio-mass-exposure and smoking behaviour among non-COPDs, COPDs and four different categories of COPDs.

Figure 79: Prevalence of non-COPD, COPD and different categories of COPD in Male population by Bio-mass-gas Exposure and Smoking behaviour (n=1545)


Legend:
- non-Smoker Bio-mass-gas non-Exposed
- non-Smoker Bio-mass-gas Exposed
- Smoker Bio-mass-gas non-Exposed
- Smoker Bio-mass-gas Exposed
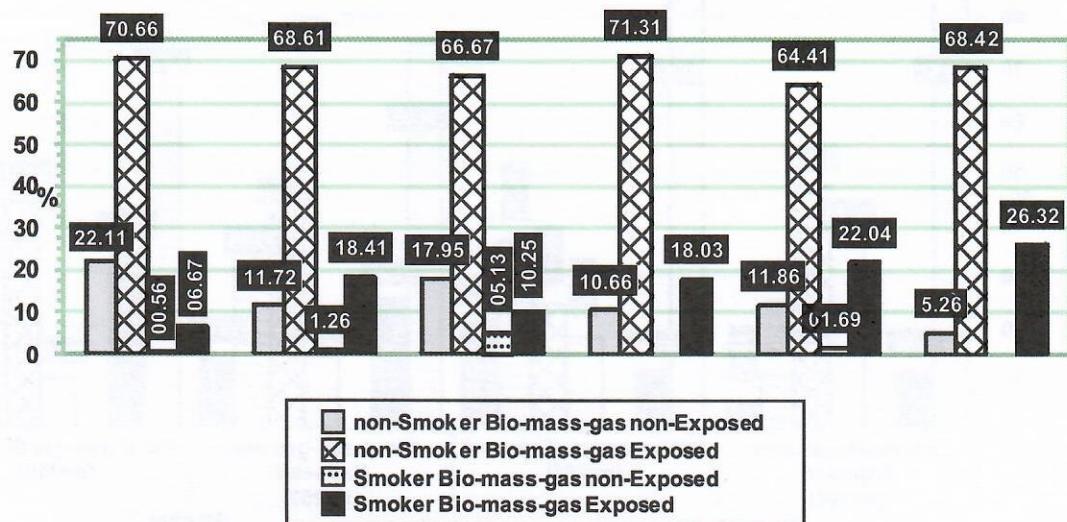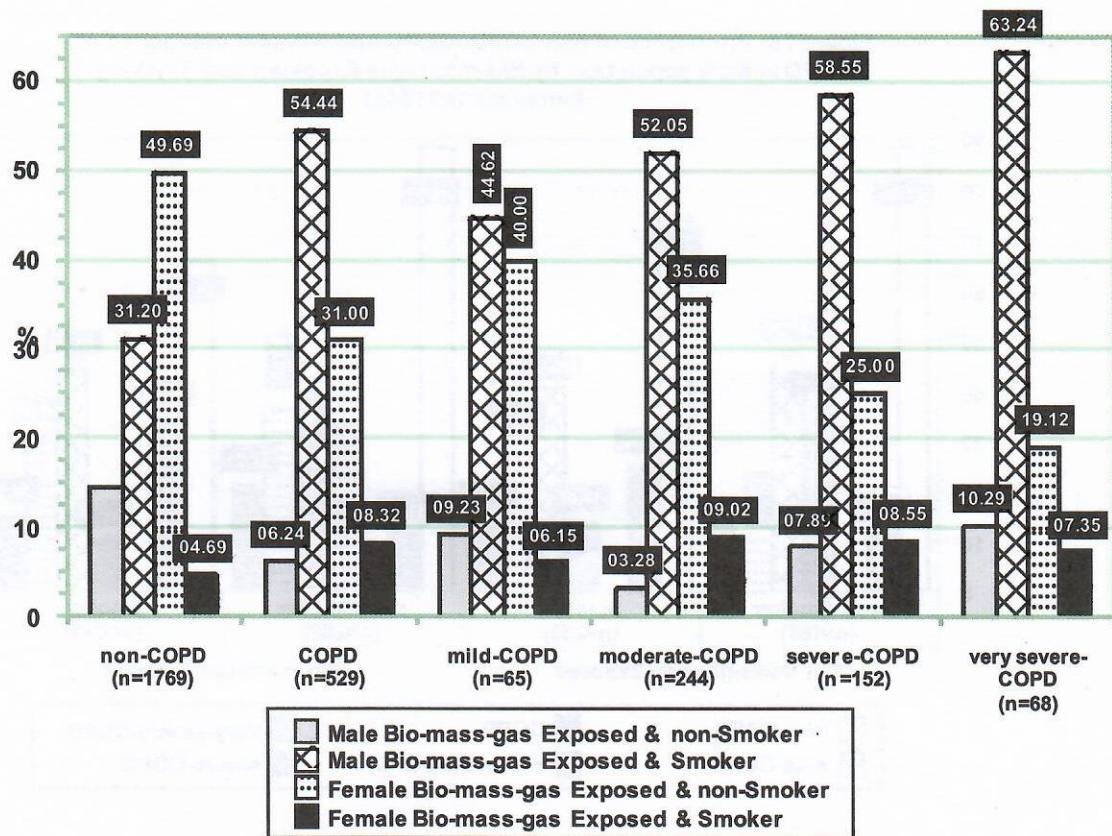
Figure 80 : Prevalence of non-COPD, COPD and different categories of COPD by Bio-mass-gas Exposure, Smoking behaviour and Sex (n=2298)

Legend:
- Male Bio-mass-gas Exposed & non-Smoker
- Male Bio-mass-gas Exposed & Smoker
- Female Bio-mass-gas Exposed & non-Smoker
- Female Bio-mass-gas Exposed & Smoker

06. Discussion

Prevalence of COPD in > 40 years population is found to be 21.24%. According to National Census, 2001, > 40 years population in Bangladesh is 28000000. So the total number of patients of COPD in Bangladesh is assumed to be 5947200. The over all prevalence of COPD in total population of Bangladesh (i.c. 140million) is estimated to be 4.32%. Among the COPDs the prevalence of mild-COPD, moderate-COPD, severe-COPD and very-severe-COPD were found to be 14.00%, 45.41%, 28.30% and 12.29% respectively.

The prevalence of COPD was found to be highest for rural population 23.15% (OR 1.187, 95% CI 0.987 – 1.429), followed by urban 22.62% (OR 1.130, 95% CI 0.937 – 1.362) and was lowest for metropolitan population 17.77% (OR 0.728, 95% CI 0.596 – 0.887). Majority (45.41%) of the patients were suffering from moderate- COPD, the prevalence of which in rural areas (48.55%) was higher than that of urban and metropolitan areas (44.30% and 42.53% respectively). In general, males suffer more than females 62.83% vs. 37.17%.

From our findings it is obvious that COPD is a disease of the low-income population, >80% (81.03%) of the COPD patients belong to this group. Though the prevalence among this group is 22.86% [OR 1.523, 95% CI 1.221 – 1.909], the prevalence among high-income population group was 24.36% [OR 1.200, 95% CI 0.671 – 2.060] and it was for middle-income population 15.35% [OR 0.610, 95% CI 0.480 – 0.772]. The productive age group (40-50 years) is the main victim 42.06% [OR 0.458, 95% CI 0.382 - 0.549]. The prevalence decreases with the increase of age while the odds ratio increases; for the age group 51 – 60 years it was 26.64% [OR 1.405, 95% CI 1.142 – 1.1.724]; for the age group 61 – 70 years it was 20.72% [OR 2.069, 95% CI 1.631 – 2.615]; for the age group 71 – 80 years it was 08.10% [OR 2.075, 95% CI 1.434 – 2.975] and for the age group 81 years and above it was lowest 02.49% [OR 1.765, 95% CI 0.903 – 3.309] respectively. About 50% patients are illiterate. In contrast to age as expected the prevalence decreases with increase of years of education along with odds ratio; prevalence of COPD in illiterate, primary & below, secondary & below, higher secondary & below and above higher secondary population was respectively 49.77% (OR 1.279, 95% CI 1.070 – 1.529), 22.24% (OR 1.051, 95% CI 0.846 – 1.302), 17.42% (OR 0.728, 95% CI 0.575 – 0.915), 04.82% (OR 0.893, 95% CI 0.577 – 1.347) and 05.75% (OR 0.796, 95% CI 0.536 – 1.156).

When tried of looking for effect of passive smoking by smoker present or absent in the family, it was found as expected that the prevalence of COPD in the family where smoker present vs. prevalence of COPD when smoker is not present in the family was 59.10% (OR 1.235, 95% CI 1.031 – 1.479) vs. 40.90% (OR 0.810, 95% CI 0.676 – 0.970).

Majority (62.23%) COPD patients are active smokers. This phenomenon is extremely high in male COPD patients – about 87.44% are smokers, whereas only 19.58% of female COPD patients are smokers. Interestingly the prevalence of COPD among smoker male and female showed very little difference 67.80% vs. 65.69%. Among COPD-patients who were smokers 88.22% (OR 2.684, 95% CI 2.237 – 3.220) were male and rest 11.78% (OR 2.011, 95% CI 1.366 – 2.929) were female. We found a strong positive relation between gradual raise in COPD prevalence with increased pack-years of cigarette consumption. The prevalence COPD among those who smoked less than ten pack-year was 29.32% (OR 1.251, 95% CI 0.986 – 1.581), among those who smoked 10 – 20 pack-year was 26.82% (OR 1.682, 95% CI 1.303 – 2.161), among those who smoked 20 – 30 pack-year was 16.79% (OR 2.578, 95% CI 1.840 – 3.590) and among those who smoked more than 30 packyear was 27.07% (OR 4.136, 95% CI 3.088 – 5.531). It showed that smokers need only around 10 pack-years of smoking to develop the disease.

From our findings it is obvious that exposure to bio-mass gas (open stove/wood burn) appears to be a significant risk factor in COPD. More than 80.00% (82.21%) COPD patients are exposed to it. The figure is even higher among female COPD patients more than 85.00% (86.53%).When we looked for the prevalence of COPD among those who were bio-mass-gas exposed by their smoking behaviour, it was found that respondents who were nonsmoker 16.75% were male and 83.25% were female.Where as these figures for those who were smoker 86.75% were male and 13.25% were female.

07. Conclusion

Our total prevalence (among all age) is 4.32%. In India, prevalence of COPD in male is 5% & in female is 2.7%. They surveyed among the >30 years and above aged persons, whereas our lowest age limit was 40 years. We can say that our prevalence rate is consistent with that of neighboring India.

Almost half of the patients suffer from moderate COPD (45.41%). COPD is more prevalent among the productive age group, among the poor and among the illiterates.

Males suffer more than females, but the ratio is narrow in rural areas, indicating more COPD among rural females. This may be attributed to high exposure to bio-mass gas in rural females.

Majority of COPD patients are active smokers, which supports the notion that smoking is the major risk factor in developing the disease. About 80% of smokers need to smoke only around 10 pack years to catch the disease. This finding is more alarming than the international findings, where 20 pack-years are set as a benchmark in developing COPD.

08. Recommendations

Meticulous analysis of the findings are warranted
- More preventive measures in low income and illiterate group should be employed
- Anti-smoking campaign must be strengthened
- Steps should be taken to limit bio mass gas emission

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ANNEXURE- I

Study on Burden of Obstructive Lung Diseases in Bangladesh
Communication with the respondents

The respondents will be communicated by the doctors keeping in mind the principles of counselling. The respondents will be treated as the most respectable persons and they can never be hurt or humiliated by any sort of gesture or attitude on the part of the doctors while talking to. The principles of skills of communication are to be strictly followed during taking the interview :

- Exchange of greetings
- Giving introduction
- Describing the purpose of the visit
- Non verbal communication : head level/ close sitting/ no barrier in between/ appro pri ate touch/ tak ing time
- Gestures showing interest to the affair of the parents/ children
- Praise of their good things
- Brief the respondents clearly and concisely in a simple and understandableway about their any query
- Try to help them and answer to all their queries and take opinion of the senior inves tigators whenever necessary
- Thank them for giving their valuable time for the interview

ANNEXURE- II

সম্মতি পত্র

বাংলাদেশে সিওপিডি রোগের প্রকোপ বিষয়ক জরিপ
(Study on Burden of Obstructive Lung Diseases in Bangladesh)

গবেষণার উদ্দেশ্য:

চল্লিশ বছরের উর্দ্ধে সকল জনসাধারণের উপর সিওপিডি (শ্বাস-কাশ জনিত এক প্রকার দীর্ঘমেয়াদী রোগ)- এর ব্যাপকতার উপর একটি সমীক্ষা করা হবে । মুখোমুখি সাক্ষাৎকারের মাধ্যমে প্রশ্নপত্রের দ্বারা প্রয়োজনীয় তথ্য সংগ্রহ করা হবে এবং সেই সঙ্গে প্রয়োজনে ফুসফুসের কার্যক্ষমতা নির্ণয়ের জন্য একটি ঝুঁকিমুক্ত ছোট পরীক্ষা করা হবে ।

প্রয়োজনীয়তা:

বাংলাদেশে পরিবেশ দূষণের মাত্রা অত্যধিক । উল্লেখযোগ্য সংখ্যক ব্যক্তি এদেশে ধূমপানে আসক্ত । পরিবেশ দূষণ ও ধূমপানের জন্য সিওপিডির প্রকোপ বেশী হতে পারে । সিওপিডির ব্যাপকতা জানার জন্য এই সমীক্ষা খুবই প্রয়োজন ।

সুফল:

পরবর্তীকালে সিওপিডির সুষ্ঠু ও সহজলভ্য চিকিৎসা উদ্ভাবনে এ সমীক্ষা সহায়ক হতে পারে ।

গবেষনার ঝুঁকি:

সাক্ষাৎকার গ্রহণে এবং ফুসফুসের কার্যক্ষমতা নির্ণয়ের পরীক্ষা কোন ঝুঁকি নাই ।

সম্মতি পত্র

আমি আমার এলাকায় সিওপিডি রোগের প্রাদুর্ভাবের উপর গবেষণার বিষয়টি সম্পূর্ণভাবে অবগত হয়ে স্বেচ্ছায় সাক্ষাৎকার প্রদানে এবং ফুসফুসের কার্যক্ষমতা নির্ণয়ের জন্য পরীক্ষা করার অনুমতি প্রদান করলাম ।

নাম: _____   স্বাক্ষর

ANNEXURE- III

QUESTIONNAIRE ON
"STUDY ON BURDEN OF OBSTRUCTIVE LUNG DISEASES IN BANGLADESH"

'বাংলাদেশ সিওপিডি রোগের ব্যাপকতা বিষয়ক জরিপ'

———————————— প্রশ্নমালা ————————————

পরিবারের তথ্যাদি

পরিবার নং □□□□□

১. ঠিকানা...

২. বাড়ীতে বসবাসকারী সদস্য সংখ্যা .... □

৩. ৪০ বৎসর বা তদুর্ধ্ব বয়সীর সংখ্যা .... □

৪. ধর্ম (মুসলিম =১, হিন্দু=২, খ্রীষ্টান = ৩, বৌদ্ধ =৪, অন্যান্য = ৯)... □

৫. বাসা/বাড়ী থেকে বড় রাস্তার দূরত্ব আনুমানিক কত মিটার?.. □□□□

৬. বাসার নিকটে কোন স্থানীয় দূষনের উৎস (যথা- মিল/কারখানা ইত্যাদি) আছে কি? (আছে =১, নাই =২) .... □

৭. বাসার মেঝে কেমন (পাকা=১, কাঁচা =২, মোজাইক =৩, অন্যান্য =৯) .... □

৮. বাড়ীতে রুমের সংখ্যা কত ? .... □

৯. বাড়ীতে আলাদা রান্নাঘর আছে কি? (আছে =১, নাই =২) .... □

১০. বাড়ীতে কি ধরনের জ্বালানী ব্যবহার করেন? (টিক চিহ্ন দিন)

    ১. গ্যাস □ ২. কেরোসিন □ ৩. কাঠ □ ৪. গোবর □ ৫. কয়লা □ ৬. বিদ্যুৎ □ ৯. অন্যান্য □

১১. মশার কয়েল বা তরল মশা নিরোধক ব্যবহার করেন কি ? (হ্যা = ১, না=২) .... □

১২. পরিবারের আর্থিক সঙ্গতি (সাক্ষাৎকার গ্রহণকারীর ধারণা অনুসারে) (উদ্বৃত্ত =১ স্বচ্ছল = ২, অভাবী = ৩) ...... □

১৩. পরিবারের নীচের জিনিসিগুলো আছে কি? (হ্যাঁ =১,না=২)

    ১. রেডিও/টেপরেকর্ডার... □

    ২. টিভি... □

    ৩. ডিভিডি/ভিসিপি.. □

    ৪. ফ্রিজ .... □

    ৫. কম্পিউটার .... □

    ৬. মটরসাইকেল/মটরগাড়ি .... □

    ৭. নিজস্ব বাড়ী/ফ্ল্যাট .... □

    ৮. নিজস্ব জমি .... □

১৪. পরিবারে ধুমপায়ী আছে কি? (হ্যাঁ = ১,না = ২) .... □

সাক্ষাৎকার গ্রহণকারীর নাম ও স্বাক্ষর   তারিখ: □□□□□□

ব্যক্তিগত তথ্যাদি

পরিবার নং ☐☐☐☐

১. নাম.. ব্যক্তি নং ☐☐☐

২. বয়স (বৎসর) .... ☐☐

৩. লিঙ্গ (পুরুষ =১, মহিলা = ২) .... ☐

৪. মাসিক আয় কত? .... ☐

   (৩০০০ টাকার নিচে =১, টাকা ৩০০০-৭০০০ =২, টাকা ৭০০০-১৫০০০ = ৩, টাকা ১৫০০০ বা তদূর্ধ্ব = ৪, নিরুত্তর = ৯)

৫. বৈবাহিক অবস্থা (বিবাহিত = ১, অবিবাহিত =২, বিধবা/বিপত্নীক =৩, তালাকপ্রাপ্ত=৪, সম্পর্ক বিচ্ছিন্ন = ৫, অন্যান্য = ৯) .... ☐

৬. শিক্ষাগত যোগ্যতা (০০-অশিক্ষিত, ০১-১৬ শিক্ষা বৎসর) .... ☐☐

৭. পেশা (কৃষিকাজ =১, মৎস্য জীবি=২, ব্যবসা=৩, চাকুরী=৪, শ্রমজীবি=৫, অবসরপ্রাপ্ত=৬,গৃহিনী=৭, ছাত্র= ৮, অন্যান্য =৯, বেকার=০) .... ☐

৮. আপনি দিনের বেশীরভাগ সময় কোথায় অতিবাহিত করেন ? (কক্ষের অভ্যন্তরে =১, বাহিরে = ২) .... ☐

৯. আপনি কিভাবে কর্মক্ষেত্রে/মার্কেট-বাজারে যাতায়াত করেন? (টিক চিহ্ন দিন)

১. বাস ☐ ২.ট্রেন ☐ ৩.গাড়ী ☐ ৪.রিক্সা/সাইকেল ☐ ৫. অটোরিক্সা/মটর সাইকেল ☐ ৬. পায়ে হেঁটে ☐ ৭. নৌকা/লঞ্চ ☐ ৯. অন্যান্য ☐

১০.আপনাকে কি প্রতিদিনই কর্মক্ষেত্র/বাসায় কোন প্রকার উত্তেজক (ইরিটেন্ট) বস্তুর সান্নিধ্যে আসতে হয় ।

   (যেমন ধুলা, বিড়ি/সিগারেট/গাড়ীর ধুয়া ইত্যাদি) (হাঁ=১, না=২) .... ☐

ধূমপান সংক্রান্ত প্রশ্নাবলী

১১. ধূমপান জনিত অবস্থা
   (কেবলমাত্র পরোক্ষ ধূমপায়ী =১, কখনো পান করেন নাই=২, পূর্বে পান করতেন =৩, বর্তমানে পান করেন =৪) .... ☐
   (পরোক্ষ ধূমপায়ী/অধূমপায়ীর ক্ষেত্রে প্রশ্ন ১২-১৫ বাদ দিন)

১২. ধূমপানের ধরণ (সিগারেট=১, বিড়ি=২, হুঁকো=৩, পাইপ=৪, মিশ্র=৮,অন্যান্য=৯) .... ☐

১৩. কত বছর ধরে ধূমপান করছেন বা অতীতে করেছেন ? .... ☐☐

১৪. প্রতিদিন কতটি বিড়ি/সিগারেট পান করতেন বা বর্তমানে পান করেন ? (এ পর্যন্ত সর্বোচ্চ সংখ্যা) .... ☐☐

১৫. পূর্বে ধূমপায়ী হয়ে থাকলে কত বছর পূর্বে ধূমপান ছেড়েছেন ? .... ☐☐

শ্বাসতন্ত্রের রোগ এবং এলার্জি সংক্রান্ত প্রশ্ন

১৬.বর্তমানে আপনি কি অ্যাজমা/হাঁপানীতে ভুগছেন? (হ্যা=১, জানা নাই =২, জানা নেই=৯) .... ☐☐

১৭.কোন ডাক্তার/স্বাস্থ্যকর্মী আপনার অ্যাজমা/ হাপানী আছে /ছিল বলেছেন কি? (হ্যা=১, না=২) .... ☐

১৮.বর্তমানে আপনি কি ক্রনিক ব্রঙ্কাইটিস/সিওপিডি/এমফাইসিমাতে ভুগছেন ? (হ্যা=১, না=২, জানা নাই =৯) .... ☐☐

১৯.কোন ডাক্তার/স্বাস্থ্যকর্মী আপনার ক্রনিক ব্রঙ্কাইটিস /সিওপিডি/এমফাইসিমা আছে/ছিল বলেছেন কি? (হ্যা=১, না=২) .... ☐

কাশি

২০. আপনি কি প্রায়ই ঠান্ডা না লাগা সত্ত্বেও কাশিতে ভোগেন? (হ্যাঁ=১, না=২) .... ☐

   (উত্তর 'না' হলে প্রশ্ন ২১-২৬ বাদ দিন) ☐

২১. আপনি যখন সকালে ঘুম থেকে উঠেন তখন আপনার কি প্রায়ই কাশি হয়? (হ্যাঁ=১, না=২) .... ☐

২২. আপনার কি দিনের অন্য সময় বা রাত্রে সাধারণতঃ কাশি হয় ? (হ্যাঁ=১, না=২) .... ☐

২৩. আপনার কাশি কি দিনের বেশীর ভাগ সময় থাকে? (হ্যাঁ=১, না=২) .... ☐

২৪. আপনার কাশি কি বছরে ৩ মাস বা অধিক সময় ধরে থাকে? (হ্যাঁ=১, না=২) .... ☐

২৫. উত্তর হ্যাঁ হলে, কোন কোন মাসে বেশি কাশি হয় ? (টিক চিহ্ন দিন)

১. জানুয়ারী☐ ২. ফেব্রুয়ারী☐ ৩. মার্চ ☐ ৪. এপ্রিল ☐ ৫.মে ☐ ৬. জুন ☐ ৭. জুলাই ☐ ৮. আগষ্ট ☐ ৯. সেপ্টেম্বর☐ ১০. অক্টোবর☐ ১১. নভেম্বর ☐ ১২. ডিসেম্বর☐

২৬. কত বছর ধরে আপনার এ ধরনের কাশি হচ্ছে? .... ☐☐

শ্লেষ্মা/কফ

২৭. আপনার কি ঠান্ডা না লাগা স্বত্ত্বেও বারবার বুক থেকে কফ বের হয় বা চেষ্টা করে বের করতে হয়? (হ্যাঁ=১, না=২) .... ☐

   (উত্তর না হলে ২৮-৩৩ বাদ দিন)

২৮. আপনি যখন ঘুম থেকে উঠেন তখন কি সাধারনতঃ বুক থেকে কফ ফেলেন বা বের করেন? (হ্যাঁ=১, না=২) .... ☐

২৯. আপনি কি সাধারনতঃ বুক থেকে কফ দিনের অন্য সময় বা রাতে বের করেন বা ফেলেন? (হ্যাঁ=১, না=২) .... ☐

৩০. এই সমস্যা কি দিনের বেশীর ভাগ সময় ধরে থাকে ? (হ্যাঁ=১, না=২) .... ☐

৩১. এই সমস্যা বছরে ৩মাস বা অধিক সময় ধরে থাকে? (হ্যাঁ=১, না=২)..................................... ☐

৩২. উত্তর হ্যা হলে, কোন কোন মাসে বেশী হয়? (টিক চিহ্ন দিন)

১. জানুয়ারী ☐ ২. ফেব্রুয়ারী ☐ ৩. মার্চ ☐ ৪.এপ্রিল ☐ ৫. মে ☐ ৬. জুন ☐ ৭. জুলাই ☐ ৮. আগষ্ট ☐ ৯.সেপ্টেম্বর ☐ ১০.অক্টোবর ☐ ১১. নভেম্বর ☐ ১২. ডিসেম্বর☐

৩৩. কত বছর ধরে আপনার এ ধরনের সমস্যা হচ্ছে? .... ☐☐

শ্বাসকষ্ট

৩৪. গত ১২ মাসে আপনার বুকের মধ্যে বাঁশির মত সাঁ সাঁ শব্দ হয়েছে কি? (হ্যাঁ=১, না=২) .... ☐

৩৫. সাঁ সাঁ শব্দ হয়ে থাকলে ঐ শব্দ কি শুধু ঠান্ডা লাগার সময়েই হয়েছে? (হ্যাঁ=১, না=২, প্রযোজ্য নয় =০) .... ☐

৩৬. সাঁ সাঁ শব্দ হয়ে থাকলে ঐ সময় কি আপনার দমবন্ধ ভাব হয়েছে? (হ্যাঁ=১, না=২, প্রযোজ্য নয় =০) .... ☐

৩৭. আপনি যখন ব্যস্ততা/তাড়াহুড়ার মধ্যে থাকেন বা সমতল ভূমিতে দ্রুত হাটেন বা সামান্য ঢাল বেয়ে উপরে ওঠেন
   তখন কি শ্বাসকষ্টে ভুগেন? (হ্যাঁ=১, না=২) .... ☐
   (উত্তর না হলে প্রশ্ন ৩৮-৪৭ বাদ দিন)

৩৮. সমতল ভূমিতে স্বাভাবিক গতিতে হাঁটার সময় আপনি কি শ্বাসকষ্ট বোধ করেন? (হ্যাঁ=১, না=২) .... ☐

৩৯. আপনাকে কি শ্বাস স্বাভাবিক রাখতে মাঝে মাঝে হাঁটা বন্ধ করতে হয়? (হ্যাঁ=১, না=২) .... ☐

৪০. আপনাকে কি শ্বাস স্বাভাবিক রাখতে মাঝে মাঝে ছোট ছোট কদম ফেলতে হয়? (হ্যাঁ=১, না=২) .... ☐

৪১. আপনি কি জামা-কাপড় পরতে বা খুলতে গেলে, ওযু করতে গেলে বা অনুরূপ দৈনন্দিন কাজের সময় শ্বাসকষ্ট

অনুভব করেন? (হ্যাঁ=১, না=২) .... ☐

৪২. আপনার কি কখনও শ্বাসকষ্ট এত বেশী ছিল যে স্বাভাবিক দৈনন্দিন কাজে সমস্যা হয়েছে অথবা

আপনি কাজে/অফিসে যেতে পারেন নি ? (হ্যাঁ=১, না=২) .... ☐☐

৪৩. গত ১২ মাসে আনুমানিক কয়বার এরকম হয়েছে? (প্রযোজ্য না হলে ০০ লিখুন) .... ☐☐

৪৪. গত ১২ মাসে আনুমানিক কতদিন এজন্য আপনার স্বাভাবিক দৈনন্দিন কাজে সমস্যা হয়েছে অথবা

আপনি কাজে/অফিসে যেতে পারেন নি (প্রযোজ্য না হলে০০০ লিখুন) .... ☐☐☐

৪৫. এ জন্য গত ১২ মাসে কতবার আপনাকে ডাক্তার বা স্বাস্থ্যকর্মীর কাছে যেতে হয়েছে ? (প্রযোজ্য না হলে ০০ লিখুন) .... ☐☐

৪৬. এজন্য গত মাসে কতবার সারাদিনের জন্য আপনাকে হাসপাতালে থাকতে হয়েছে? (প্রযোজ্য না হলে ০০ লিখুন) .... ☐☐

৪৭. এজন্য গত মাসে মোট কতদিনের জন্য আপনাকে হাসপাতালে থাকতে হয়েছে? (প্রযোজ্য না হলে ০০ লিখুন) ...... ☐☐

৪৮. শ্বাসকষ্ট ছাড়া আপনার কি অন্য কোন রোগ আছে যে জন্য আপনার হাঁটতে কষ্ট হয়? (হ্যাঁ=১, না=২) .... ☐

৪৯. উত্তর হ্যা হলে, বর্ণনা করুন ....

৫০. আপনি কাশি/শ্বাসকষ্ট/বাঁশির মত শব্দের জন্য কোন চিকিৎসা করেছেন কি? (হ্যাঁ=১, না=২) .... ☐

(উত্তর 'না' হলো প্রশ্ন ৫১-৫৩ বাদ দিন)

৫১. হ্যাঁ হলে, কি ধরনের চিকিৎসা? (টিক চিহ্ন দিন)

১. এলোপাথিক ☐   ২. হোমিওপ্যাথি ☐   ৩. কবিরাজ/আয়ুর্বেদী ইত্যাদি ☐   ৪. তাবিজ/পানিপড়া/ঝাড়ফুঁক ইত্যাদি ☐   ৫. অন্যান্য ☐

৫২. এলোপ্যাথি হলে কি কি ঔষধ ব্যবহার করেছেন? (টিক চিহ্ন দিন)

১. উপশম কারী ইনহেলার Reliever ☐   ২.বাধাদানকারী ইনহেলার Preventer ☐   ৩. ট্যাবলেট/ইনজেকশন ☐   ৪.জানা নেই ☐   ৯. প্রযোজ্য নয় ☐

৫৩. কোন ঔষধ কাশি/বাঁশির মত শব্দ কমিয়েছে কি? (হ্যাঁ=১, না=২, প্রযোজ্য নয় =০) .... ☐

স্পাইরোমেট্রি

৫৪. উচ্চতা (সেমি) .... ☐☐☐

৫৫. ওজন (কেজি) .... ☐☐

৫৬. স্পাইরোমিটারের মাধ্যমে নির্ণিত ফুসফুসের কার্য-ক্ষমতার অবস্থা (ইনহেলার ব্যবহারের পূর্বে)

	Predicted Value	Measured Value	%
PEFR			
FEV1			
FVC			
FEV1/FVC			

৫৭. স্পাইরোমিটারের মাধ্যমে নির্ণিত ফুসফুসের কার্য-ক্ষমতার অবস্থা (৪ পাফ সালবুটামল ইনহেলার ব্যবহারের পর)

	Predicted Value	Measured Value	%
PEFR			
FEV1			
FVC			
FEV1/FVC			

সাক্ষাৎকার গ্রহণকারীর নাম ও স্বাক্ষর   তারিখ ঃ ☐☐☐☐☐