

# Study on Epidemiology of Chronic Obstructive Pulmonary Disease (COPD) at Western Regional Hospital, Pokhara

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## ABSTRACT

According to the curriculum of Bachelor of Medicine and Bachelor of Surgery (MBBS) program of the Tribhuvan University (TU), Institute of Medicine (IOM), the Department of Community Medicine of Gandaki Medical College (GMC) has been conducting the District Health System Management (DHSM) study for the students of MBBS, third phase (4th year).

This program provides us an opportunity for clinical and community orientation to develop skills to become a competent medical professional to work at different levels of hospitals and district health system. This course enables us to assess resource potentials and constraints, prioritize the health problems and set strategies for solving them. It also enables us to be able to work in promotive, preventive, curative and rehabilitative health services as part of district health team. The program begins with theory classes on management and orientation classes at the college and placement of the students in three different places with rotation along with field supervisions in between.

Here we are presenting our investigations on epidemiology of chronic obstructive pulmonary disease made at Western Regional Hospital during our District Health System Management (DHSM) study in third phase (Fourth year).

## Keywords

*Chronic obstructive pulmonary disease, Cough, Dyspnea, Sputum*

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## INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is defined as a disease state characterized by airflow limitation that is not fully reversible. COPD includes **Emphysema**: An anatomically defined condition characterized by destruction and enlargement of the lung alveoli. **Chronic bronchitis**: A clinically defined condition with chronic cough and phlegm. **Small airways disease**: A condition in which small bronchioles are narrowed.

COPD is present only if chronic obstruction occurs; chronic bronchitis without chronic obstruction of airway is not included in COPD. COPD has now become a global

problem. Estimates suggest that COPD will rise from sixth to third common cause of death worldwide by 2020 A.D..

## Risk Factors

- Cigarette smoking
- Ambient air pollution
- Increased airway responsiveness
- Increased respiratory infections
- Occupational exposure
- Passive, or second hand, smoking exposure
- Low birth weight

- Low socioeconomic status and nutrition
- Genetic factors

### CLINICAL FEATURES

The three most common symptoms of COPD are cough, sputum production and exertional dyspnea. Hemoptysis may complicate exacerbations of COPD. Commonly present in patients over the age of 40 years. On extreme case, patient may also develop resting hypoxemia and requiring institution of supplemental oxygen.

#### On physical Examination

Current smokers may have signs of active smoking, including an odor of smoke or nicotine staining of finger nails. On severe cases, examination is notable for a prolonged expiratory phase and may include expiratory wheezing. In addition, purse-lip breathing, hyperactivity of accessory muscle of respiration along with sitting in the characteristic "tripod" position to facilitate the actions of the sternocleidomastoid, scalene, and intercostal muscles. Patients may develop cyanosis, visible in the lips and nail beds.

#### Rationale

COPD is one of the major preventable causes of mortality in Nepalese people.

- COPD is one of the major causes of morbidity and mortality worldwide
- In the context of Nepal, COPD was first cause of in-patient mortality and fourth cause of in-patient morbidity (Annual report, DoHS, 2015/16 A.D. (2070/71 B.S.))
- Number one cause of mortality and number three cause of morbidity as per the annual report of WRH, 2015/16 A.D. (2070/71 B.S.)
- Reliable data was available
- COPD being a non-communicable disease is adding misery along with communicable diseases in our country.

### OBJECTIVES

General objective is to conduct an epidemiological study on chronic obstructive pulmonary disease at the Western Regional Hospital, Pokhara.

Specific objectives are to learn to

1. collect relevant secondary data for the purpose of

conducting an epidemiologic study

2. analyze the data collected in terms of time, place and person
3. acquire skills to study the magnitude and changing pattern of disease over years in Western Regional Hospital, Pokhara

### METHODOLOGY

**Study duration:** Two weeks

**Study design:** Descriptive study

**Study method:** Quantitative

**Study area:** Western Regional Hospital, Pokhara

**Study technique:** Secondary data review, literature review, interview with key informants and focus group discussion

**Study Tools:** Data collection table

**Study variables**

**Time variable:** Month, season and year wise distribution

**Place variable:** data not available

**Person variable:** Age and sex wise distribution

#### Data Collection

**Source:**

Statistical division, Western Regional Hospital, Pokhara

Annual report, WRH

Annual Report, DOHS

**Type:** Qualitative and quantitative

**Data Processing:**

Manual processing

Analysis

**Interpretation:** indicators, calculation, graphs, figures

**Validity and reliability:**

Consultation with concerned personnel from Western Regional Hospital and discussion of the findings

### OPERATIONAL DEFINITIONS

For epidemiological analysis of COPD at WRH, Pokhara, the cases admitted with diagnosis of emphysema and chronic bronchitis were included. Chronic bronchitis and emphysema are not differentiated as they often co-exist. **Emphysema:** Enlargement of air spaces distal to the terminal bronchioles with destruction of their walls.

**Chronic bronchitis:** Cough with sputum production on most days for three months of a year for two consecutive years

**FINDINGS AND DISCUSSIONS**

There are total of 21016, 20474, 20956 inpatient cases in fiscal years 2013/14 A.D. (2069/70 B.S.), 2014/15 A.D. (2070/71 B.S.), 2015/16 A.D. (2071/72 B.S.) respectively among which there were 544, 515, 545 cases of COPD in respective fiscal years.

Population under study was patients of all ages admitted at Western Regional Hospital.

**Distribution of COPD according to time**

**Yearly Trend**

Following table shows trend of COPD in past three years.

**Table 1:** Trend of COPD in past three years

Year	Total cases admitted	Total cases of COPD			% of COPD cases
		Females	Males	Total	
2013/14 A.D. (2069/70 B.S.)	21016	365	179	544	2.58%
2014/15 A.D. (2070/71 B.S.)	20494	289	226	515	2.51 %
2015/16 A.D. (2071/72 B.S.)	20956	325	220	545	2.60 %

The data shows incidence of COPD has slightly declined in year 2014/15 A.D. (2070/71 B.S.) than that of previous year and has increased in fiscal year 2015/16 A.D. (2071/72 B.S.). Also, the incidence of COPD is higher in females in all three consecutive fiscal years than that of males.

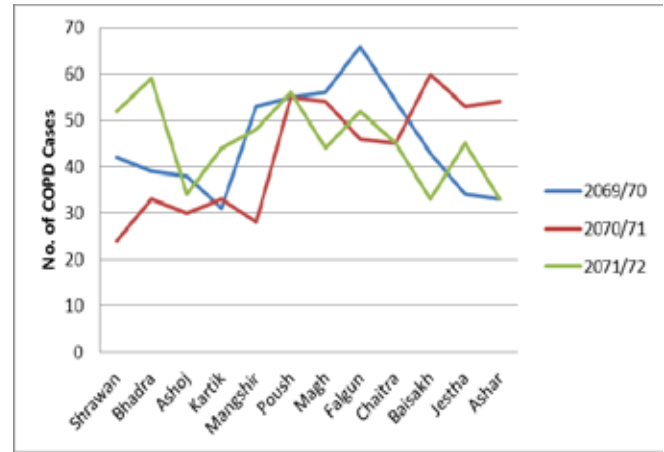
**Monthly Trend**

**Table 2:** Monthly trend of COPD

Months	2013/14 A.D. (2069/70 B.S.)	2014/15 A.D. (2070/71 B.S.)	2015/16 A.D. (2071/72 B.S.)	Total
July/Aug (Shrawan)	42	24	52	118
Aug/Sept (Bhadra)	39	33	59	131
Sept/Oct (Ashoj)	38	30	34	102
Oct/Nov (Kartik)	31	33	44	108
Nov/Dec (Mangsir)	53	28	48	129
Dec/Jan (Poush)	55	55	56	166
Jan/Feb (Magh)	56	54	44	154
Feb/Mar (Falgun)	66	46	52	164
Mar/April (Chaitra)	54	45	45	144
April/May (Baisakh)	43	60	33	136
May/June (Jestha)	34	53	45	132
June/July (Ashar)	33	54	33	120
<b>Total</b>	<b>544</b>	<b>515</b>	<b>545</b>	<b>1604</b>

The data shows cases of COPD were reported high during December/January (Poush) months and lowest on September/October (Ashoj) as dusty and cold weather of December/January (Poush) precipitates the exacerbation of COPD.

**Fig 1:** Graph showing monthly trend of COPD



**Quarter wise Distribution**

The study period was divided into four quarters comprising three months each:

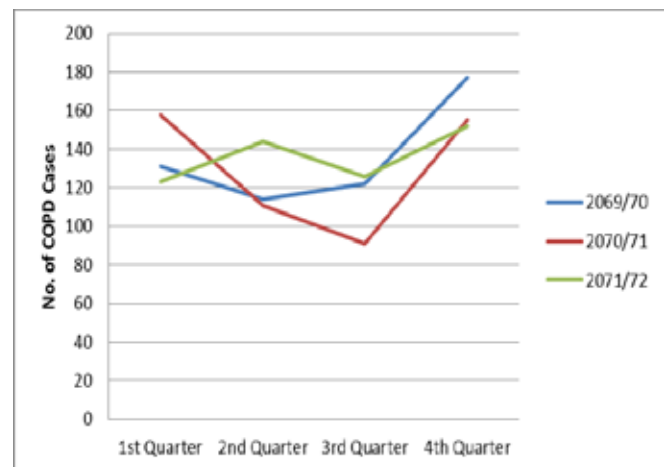
First quarter: March/April to May/June (Chaitra to Jestha)

Second quarter: June/July to August/September (Ashar to Bhadra)

Third quarter: September/October to November/December (Ashwin to Mangsir)

Fourth quarter: December/January to February/March (Poush to Falgun)

**Fig 2:** Quarter wise distribution of COPD



The distribution of the disease has decreased towards the third quarter in each fiscal year. It has then increased in the fourth quarter of each fiscal year. COPD is found more

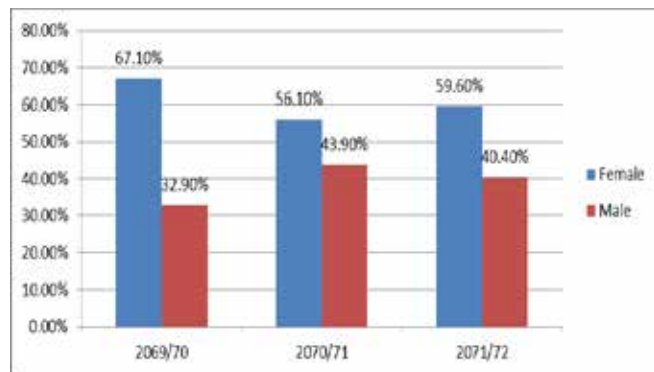
in the months December/January (Poush), January/February (Magh), February/March (Falgun), March/April (Chaitra) and April/May (Baisakh) when the environment is cold and dusty.

**Distribution of COPD according to person**

**Distribution according to sex**

Following bar graph shows cases of COPD were drastically high in females compared to males on each fiscal year.

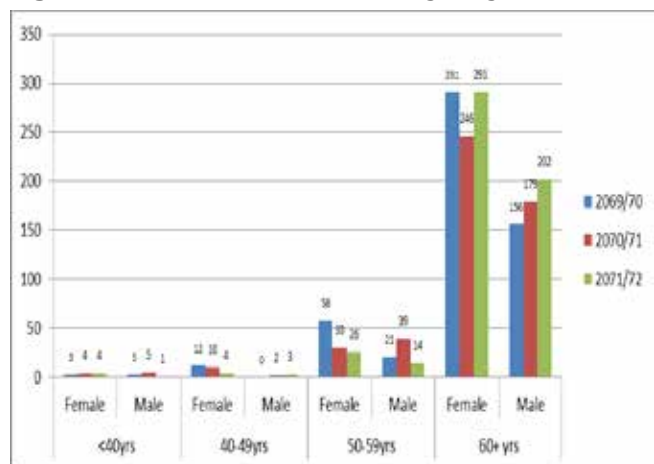
**Fig 3:** Distribution of COPD according to sex



In each of the fiscal years, the incidence of COPD was high in females compared to males. This is due to the higher number of female patient flow in Western Regional Hospital which is a government hospital and hence cheaper.

**Distribution according to Age**

**Fig 4:** Distribution of COPD according to age



Distribution of COPD has drastically increased in the age group of 60+ in both females as well as males i.e. 447 out of 544 in 2013/14 A.D. (2069/70 B.S.), 425 out of 515 in 2014/15 A.D. (2070/71 B.S.) and 493 out of 545 in 2015/16 A.D. (2071/72 B.S.). It is because it is a chronic disease and the effect of smoking also presents in later life. The graph also shows that the disease is least common in <40yrs age group.

**Recovery Ratio of inpatient COPD cases**

Among 1604 total admitted COPD cases in the fiscal years 2013/14 A.D. (2069/70 B.S.), 2014/15 A.D. (2070/71 B.S.) and 2015/16 A.D. (2071/72 B.S.), 1508 recovered fully and 96 died. This makes the overall recovery ratio 94.01% of all COPD cases in Western Regional Hospital, Pokhara.

**Table 3:** Recovery ratio of inpatient COPD cases

Year	Total COPD cases	Total Recovered Cases	Total Deceased Cases	% of COPD patients recovered
2013/14 A.D. (2069/70 B.S.)	544	507	37	93.19%
2014/15 A.D. (2070/71 B.S.)	515	487	28	94.56%
2015/16 A.D. (2071/72 B.S.)	545	514	31	94.31%

**CONCLUSIONS**

Due to increasing burden of COPD, it is stated as one of the major public health problem in Nepal. In Western Regional Hospital, COPD is the number one cause of mortality and number three cause of in-patient morbidity. The epidemiological study conducted on COPD by review of secondary data provided, major findings that we made were:

- COPD is identified as the number one cause of mortality and in third place in morbidity in the hospital in fiscal year 2015/16 A.D. (2071/72 B.S.).
- Highest number (166) of cases were reported in the month of December/January (Poush), followed by 164 cases in the month of February/March (Falgun) in three consecutive fiscal years.
- The prevalence of COPD is found to be high in females than in males in all the three fiscal years.
- COPD prevalence was highest in 60+ age group while it was least in <40 years age group.
- The overall recovery ratio of in-patient COPD cases in three consecutive fiscal years is 94.01% in Western Regional Hospital, Pokhara

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