

Prevalence of Anxiety and Depression Among Filipino Patients with Chronic Obstructive Pulmonary Disease: A Multi-Center Study

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Abstract

Background: One under-explored area in chronic obstructive pulmonary disease (COPD) patients is anxiety and/or depression, which may have negative impact in the patients' condition. This is possibly the first study to possibly assess the burden of anxiety and depression in COPD patients in the Philippines.

Study Design: This is a prospective descriptive survey in three tertiary care hospitals in Manila, Philippines.

Participants: A total of 204 patients were enrolled in the study with the following inclusion criteria: Filipino patients who are aged more than or equal to 40 years with a diagnosis of COPD (documented post-bronchodilator FEV1/FVC ratio less than 0.7) by a physician seen at the outpatient clinics of three tertiary care hospitals with no primary diagnosis of asthma, no previous lung volume reduction surgery, lung transplantation or pneumonectomy and at least finished Grade 2 education.

Exclusion criteria include pregnant patients and patients previously diagnosed to have an anxiety, depression, or on any anti-depressant medications.

Methods: Descriptive statistics was obtained with frequency and percentages of the demographic and physiologic variables in the study by tabulation and graph. The prevalence of anxiety and depression was determined by calculating the percentage of each patient with a score of 8 or higher on the Hospital Anxiety and Depression Scale (HADS) with validated Tagalog version, respectively.

Results: The prevalence of anxiety in Filipino COPD patients is 47.55%. The prevalence of depression in Filipino COPD patients is 31.37%.

Conclusion: The prevalence of depression in Filipino COPD patients is comparable to the prevalence of depression from other general medical conditions nationwide according to the study of Batar (31.37% vs. 31%). Anxiety is slightly more prevalent in COPD from other general medical conditions (47.55% vs. 36%). A study on the risk factors of anxiety and depression among Filipino COPD patients is recommended.

Keywords: prevalence, anxiety, depression, COPD

Introduction

Chronic obstructive pulmonary disease (COPD) is a global health concern and is a major cause of chronic morbidity and mortality worldwide. The death rate associated with COPD has doubled in the past 30 years, depicting the failure of the healthcare system to make an impact on this problem.

Anxiety and depression are major comorbidities in COPD. Although there is limited literature on screening among COPD patients, there are many studies examining the assessment, diagnosis, and treatment of depression in other chronic illnesses.¹ The Patient

Health Questionnaire-9 (PHQ-9) is a nine-item measure that emulates the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) and is useful for making a diagnosis of depression and monitoring response to treatment². Other scales that may be considered for depression screening include Center for Epidemiological Studies Depression Scale (CES-D),³ Geriatric Depression Scale⁴, and Zung Self-Rating Depression Scale.⁵ Anxiety screening instruments have received less attention. The following are all reasonable choices for screening anxiety: Hospital Anxiety and Depression Scale (HADS)⁶, Depression Anxiety Stress Scale,⁷ and Beck Anxiety Inventory.⁸

Many studies from 2000 up to the present showed that the prevalence rates of anxiety and depression in patients with COPD are consistently greater than that in the general population. The estimates vary widely, due in part to the use of different measurement tools and to the different degrees of illness severity across studies. In a systematic review by Solano, et. al.⁹ of 64 studies that focused on patients with severe disease, the prevalence of depression ranged

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from 37% to 71%, and that of anxiety from 50% to 75%. These figures are comparable to or higher than prevalence rates in other advanced diseases such as cancer, AIDS, heart disease, and renal disease. In patients who have recently recovered from an acute exacerbation of COPD, the prevalence of depression is between 19.4% and 50%, while anxiety ranges between 9.3% and 58%.¹⁰⁻¹⁴

Hayashi's study¹⁵ in 2011 showed the prevalence of depressive symptoms was 29.8% based on CES-D and 40.5% based on HADS. The reasons behind this difference include the fact that HADS frequently detected depressive symptoms in patients with mild COPD as well as a tendency for HADS to be strongly influenced by education levels. In contrast, the severity of COPD was reflected in CES-D. The prevalence of depression may differ in accordance with the applied screening tool.

In a recent systematic review, meta-analysis and meta-regression of eight studies by Zhang et al.,¹⁶ the prevalence proportion of depressive symptoms was found to be significantly higher (pooled odds ratio (OR): 2.81; 95% confidence interval (CI) 1.69 to 4.66) among 39,587 individuals with COPD as compared to 39,431 controls (24.6%, 95% CI 20 to 28.6% vs. 11.7%, 95% CI 9 to 15.1%). Meta-regression was conducted to account for the heterogeneity of the prevalence proportion, but moderators like mean age, gender, mean FEV1 and proportion of current smokers among COPD patients were not significant and could not explain heterogeneity in the prevalence of depressive symptoms. Subgroup analyses showed no significant differences based on different methods of assessment of depressive symptoms and countries sampled.

In a local study by Batar¹⁷ of 6,323 patients using HADS, nationwide prevalence of depression was 31%. Those aged 51 to 65 and 65 above, those on first visit and those earning monthly income of Php 50,000 and below were significantly more likely to be depressed. Prevalence rate of depression was highest in Iloilo and Southern Luzon, while lowest in the National Capital Region (NCR). On the other hand, nationwide prevalence of anxiety was 36%. Females, 12 to 50 years old, compared to the 51 and older, those on first visit, those earning a monthly income of Php 50,000 and below were significantly most likely to be anxious. Prevalence rate of anxiety was highest in Iloilo, followed closely by Southern Luzon and North/Central Luzon. It was lowest in the NCR.

Rationale

One under-explored area in COPD patients is anxiety and/or depression, which may have negative impact in the patients' condition. Many studies have investigated the relationships between the magnitudes of anxiety

or depression related symptoms and demographic or anthropometric variables in the COPD population. In most Asian countries, many cultural barriers are present before diagnosis relating to psychiatry can be made. This is possibly the first study to document the presence of anxiety and depression in COPD patients in the Philippines.

Results from the National Emphysema Treatment Trial¹⁸ showed that depression increases all hospitalizations. Anxiety and depression was also linked to increased mortality, decreased functional status, and decreased quality of life in these patients. Recognition of these comorbidities can prevent these consequences. Anxiety and depression in COPD patients should be treated according to guidelines. Unfortunately, only a small proportion of patients with these condition receive treatment. In two studies¹⁹⁻²⁰, fewer than one third of patients were receiving appropriate treatment.

Research Question

What is the prevalence of anxiety and/or depression using HADS in Filipino COPD patients in the outpatient clinic of three tertiary care hospitals, Manila?

Objectives

General:

To determine, using HADS, the prevalence of anxiety and/or depression using HADS of Filipino COPD patients in the outpatient clinic of three tertiary care hospitals, Manila from April 1, 2012 to July 31, 2012.

Specific:

1. To determine the demographic and physiologic profile of Filipino COPD patients in the out-patient clinic, as to the following:
 - a) Global Initiative for Chronic Obstructive Lung Disease (GOLD) B+ (post bronchodilator FEV1/FVC <70% predicted and post bronchodilator FEV1 <80% predicted) COPD patients by age and sex;
 - b) GOLD B+ COPD patients by pack-years and sex;
 - c) Distribution of occupation based on disease severity; and
 - d) Distribution of enrollment of Filipino COPD patients to pulmonary rehabilitation program based on disease severity.
2. To determine the prevalence of anxiety and/or depression among Filipino COPD patients in the outpatient clinic using HADS or HADS-P
3. To determine the top five comorbidities of Filipino COPD patients

Methodology

Study Design

The research design is a prospective descriptive survey of five months duration.

Study Setting

This study was conducted at the outpatient clinics at the:

1. Section of Internal Medicine, Pulmonary Medicine and Family Medicine of the University of the Philippines, Philippine General Hospital, Taft Avenue, Ermita, Manila from July 1 to August 31, 2012;
2. Section of Internal Medicine and Pulmonary Medicine of the University of Perpetual Help Dalta Medical Center, Las Pinas City from June 1 to August 31, 2012;
3. Section of Internal Medicine of Quirino Memorial Medical Center, Quezon City from April 1 to August 31, 2012.

Study Population

Inclusion Criteria:

1. Filipino patients who are aged more than or equal to 40 years;
2. with diagnosis of COPD by a physician;
3. who are seen at the outpatient clinics of UP-PGH, UPHDMC and QMMC;
4. with documented post-bronchodilator FEV1/FVC ratio less than 0.7;
5. with no primary diagnosis of asthma;
6. with no previous lung volume reduction surgery, lung transplantation or pneumonectomy;
7. at least finished Grade 2 education; and
8. with written consent to participate in the study.

Exclusion Criteria:

1. Patients who were previously diagnosed to have anxiety, or depression, on any anti-anxiety medications or on any anti-depressant medications;
2. Pregnant

Sample Size

Based on the prevalence rate of depression ranging from 37% to 71%, and that of anxiety from 50% to 75%, this study utilized 50% (0.5) frequency of event with 5% margin of error. Three hundred eighty four patients was the computed sample size.

One hundred forty patients were enrolled in UP-PGH. Thirty-four patients were enrolled in UPHDMC. Thirty patients were enrolled in QMMC. A total of 204 patients were enrolled in the study.

Maneuver

All outpatients diagnosed with COPD consulting at the outpatient clinics of three centers, namely UP-PGH, UPHDMC and QMMC during the recruitment period was screened for eligibility for the study by the study coordinator of each site. Eligible patients include Filipino COPD patients scheduled in the outpatient clinic for the day with pulmonary function test confirming the diagnosis. Each patient was asked to sign an informed consent after full explanation of the study. The asking of consent, interview and giving of questionnaire was conducted by the principal investigator or one of the study coordinators. Patients who gave consent and have met all of the inclusion criteria and none of the exclusion criteria was given the questionnaire (English or Tagalog, whichever they preferred) to answer. Demographic and physiologic profile was also obtained (Appendix III). The informed consent (Appendix I, II) and the questionnaires (Appendix IV, V) were read to those patients with difficulty reading due to ophthalmologic problems.

The Hospital Anxiety and Depression Scale (HADS)¹⁷ was developed by Zigmond and Snaith in 1983. HADS and its Pilipino translation (HADS-P) are utilized in this study. In 1990, the HADS translation into Pilipino carried out by Pfizer Philippines was utilized with permission. The HADS-P validation among the Filipino patients was done by Rosanna de Guzman, M.D. Permission was likewise obtained.

HADS was developed to identify possible and probable anxiety disorders and depression among patients in non-psychiatric acute care hospitals. It has 14 items and 2 subscales, anxiety and depression; and each item scored on a 4-point scale of 0 to 3 (Appendix VI).

Coordination with the patients' attending physicians was done with regards to the results of the questionnaire and for proper referral to a psychiatrist if anxiety and/or depression were noted.

Ethical Considerations

The study was reviewed and ethically approved by the University of the Philippines-Manila, Research Ethics Board (UPMREB), UPHDMC and QMMC.

The study was performed in compliance with the written protocol. It was initiated only after proper approval of the Research Ethics Board according to applicable local regulations.

Each patient was informed that all data gathered in relation with the study was confidential and was used exclusively for purposes of the study only. In the event of a positive finding of anxiety and/or depression, attending physicians were informed for proper referral to a psychiatrist for possible treatment.

List of psychiatrists' names was provided to the attending physician for the patient to choose from. Patients found to have anxiety and/ or depression. All expenses were shouldered by the investigators.

Operational Definition of Terms

1. Chronic Obstructive Pulmonary Disease - post-bronchodilator airflow limitation as an FEV1/FVC ratio of less than 0.7 with any risk factor for COPD.
2. Anxiety - Scores of greater than or equal to 8 on subscale of anxiety on HADS or HADS-P.
3. Depression - Scores of greater than or equal to 8.0 on subscale of depression on HADS or HADS-P.
4. Exacerbation - an acute event characterized by a worsening of the patient's respiratory symptoms that is beyond normal day-to-day variations and leads to a change in medication.
5. Patient Group A - low risk, less symptoms. Typically GOLD 1 or GOLD 2 (mild or moderate airflow limitation) and/or 0-1 exacerbation per year and Modified Medical Research Council (mMRC) grade 0-1.
6. Patient Group B - low risk, more symptoms. Typically GOLD 1 or GOLD 2 (mild or moderate airflow limitation) and/or 0-1 exacerbation per year and mMRC grade >2.
7. Patient Group C - high risk, less symptoms. Typically GOLD 3 or GOLD 4 (severe or very severe airflow limitation) and/or >2 exacerbation per year and mMRC grade 0-1.
8. Patient Group D - high risk, more symptoms. Typically GOLD 3 or GOLD 4 (severe or very severe airflow limitation) and/or >2 exacerbation per year and mMRC grade >2.

Data Analysis

Descriptive statistics was obtained with frequency and percentages of the variables in the study by tabulation and graph. This included age, gender, basal metabolic index, marital status, living condition, highest educational attainment, smoking history, comorbidities and other COPD-related variables (e.g. spirometry results, respiratory symptoms using mMRC, etc.). The prevalence of anxiety and depression was determined by calculating the percentage of each patient with a score of 8.0 or higher on the HADS

or HADS-P, respectively. The top five comorbidities for these patients were also determined.

Results

COPD was noted to be greater in males (79.77%) than in females (20.22%) and increases with age for both sex, except for a decrease from aged 60-69 years of age (39.44%) to >70 years of age (33.8%) in males (Figure 1). Patients with COPD B+ are 15.73% among non-smokers. Most of the smokers (58.43%) have smoking history of more than 20 pack-years. Notably, most of the female COPD patients are non-smokers (61.29%), while most of the male COPD patients are heavy smokers (Figure 2).

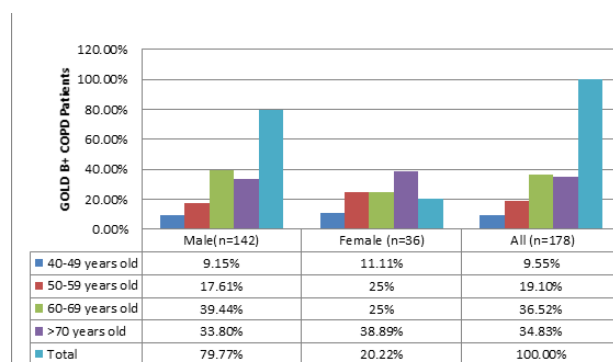


Figure 1: GOLD B+ COPD* by age and sex in three tertiary care hospitals in Manila

*Post bronchodilator FEV1/FVC <70% predicted and post bronchodilator FEV1 <80% predicted.

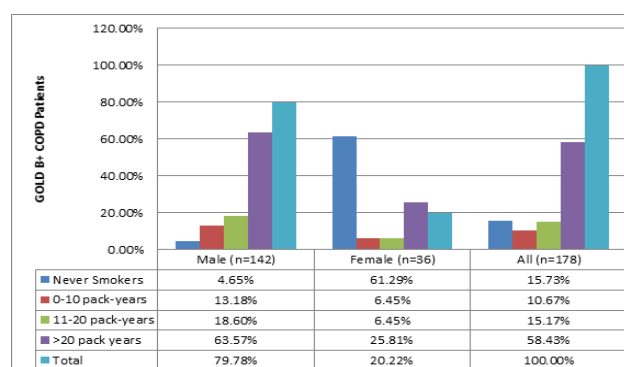


Figure 2: GOLD B+ COPD* by pack-years and sex in three tertiary care hospitals in Manila

*Post bronchodilator FEV1/FVC <70% predicted and post bronchodilator FEV1 <80% predicted.

Among the 204 Filipino COPD patients included in the study, 96 (47.06%) patients are Group D with high risk and more symptoms, followed closely by Group C with 64 patients (31.37%). Majority of

the study population are retired or unemployed (Figure 3). All housewives (6 COPD patients) are under Patient Group D, which is 2.94% of the total study population.

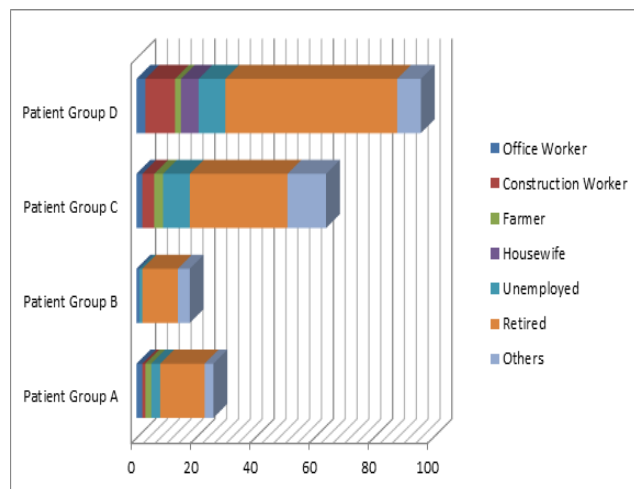


Figure 3: Distribution of occupation of Filipino COPD patients based on disease severity in three tertiary care hospitals in Manila

Forty out of the 204 patients (19.61%) are currently or previously enrolled in pulmonary rehabilitation program. Most of the patients enrolled are Group C with high risk and less symptoms (Figure 4).

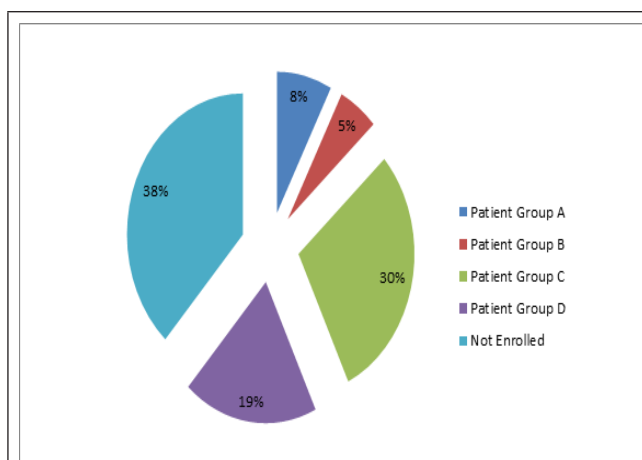


Figure 4: Distribution of enrollment of Filipino COPD patients to pulmonary rehabilitation program based on disease severity in three tertiary care hospitals in Manila

Depression is prevalent in 31.37% of Filipino COPD patients. Anxiety is prevalent in 47.55% of Filipino COPD patients. Table I shows the demographic and physiologic profile of patients with

or without depression and patients with or without anxiety. Co-existence of anxiety and depression are present in a lot of the COPD patients; depression with comorbid anxiety vs. anxiety with comorbid depression (68.75% vs. 45.36%).

Out of the 204 Filipino COPD patients, majority (140) from PGH. This is followed by UPHDMC with 34 patients and QMMC with 30 patients (Figure 5).

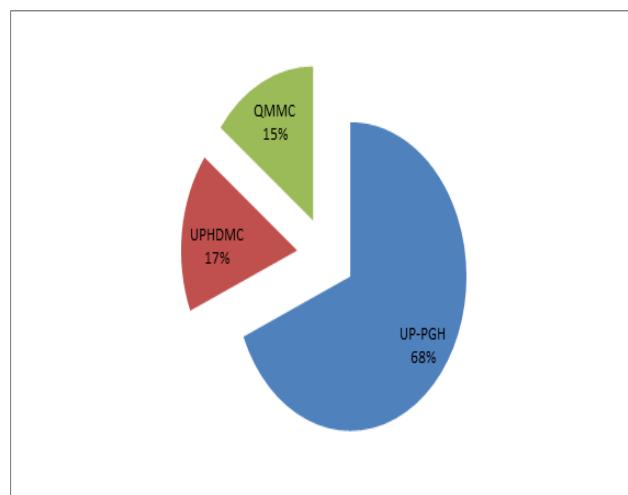


Figure 5: Distribution of Filipino COPD Patients in three tertiary care hospitals in Manila

From the total 204 COPD patients, 97 patients with COPD are anxious with a prevalence of 47.55% and 64 patients with COPD are depressed with a prevalence of 31.37%. In UP-PGH, the prevalence of anxiety and depression among Filipino COPD patients is 45% and 24.29%, respectively. In QMMC, the prevalence of anxiety in Filipino COPD patients is 50%, while the prevalence of depression is 33.33%. The highest prevalence of anxiety and depression among Filipino COPD patients is in UPHDMC at 55.88% and 58.82%, respectively.

The top five co-morbidities from the study population are listed below (Table II). Hypertension is the most common co-morbidity, followed by anxiety and depression. Less common co-morbidity in this study includes pulmonary tuberculosis (7.84%), malignancy (5.88%) and cerebrovascular disease (4.41%).

Table I: Demographic and physiologic profile of Filipino patients with COPD according to depression and anxiety (N=204)

	No Depression (HADS-D <7) n = 140	Depression (HADS-D >8) n = 64	No Anxiety (HADS-A <7) n = 107	Anxiety (HADS-A >8) n = 97
HADS total score, mean (SD)	4.14 + 2.06	9.78 + 1.93	4.82 + 1.82	10.64 + 2.82
Comorbid anxiety, n (%)	53 (37.86%)	44 (68.75%)	---	---
Comorbid depression, n (%)	---	---	20 (18.69%)	44 (45.36%)
Age, year, mean (SD)	65.21 + 9.74	64.41 + 11.43	66.22 + 9.81	63.57 + 10.64
Male sex, n (%)	112 (80%)	52 (81.25%)	84 (78.5%)	80 (82.47%)
Married, n (%)	116 (82.86%)	58 (90.63%)	93 (86.2%)	81 (83.51%)
Living alone, n (%)	10 (7.14%)	7 (10.94%)	9 (8.41%)	8 (8.25%)
Presence of family support, n (%)	105 (75%)	40 (62.5%)	86 (80.37%)	59 (60.82%)
High School or above, n (%)	112 (80%)	44 (68.75%)	89 (83.18%)	67 (69.07%)
Occupation				
Employed	39 (27.86%)	19 (29.69%)	26 (24.3%)	32 (32.99%)
Unemployed/Housewife	16 (11.43%)	12 (18.75%)	18 (16.82%)	10 (10.31%)
Retired	85 (60.71%)	33 (51.56%)	63 (58.88%)	58 (56.7%)
BMI, kg/m ² , mean (SD)	21.87 + 3.97	21.86 + 3.57	21.76 + 3.83	21.99 + 3.86
Smoking History				
Never Smoker	27 (19.29%)	4 (6.25%)	17 (15.89%)	14 (13.08%)
Previous Smoker	107 (76.43%)	53 (82.81%)	84 (78.5%)	76 (71.03%)
Cumulative smoking, pack-years, mean (SD)	38.5 ± 29.08	31.11 ± 19.59	35.9 ± 26.88	36.22 ± 26.22
Current Smoker	6 (4.29%)	7 (10.94%)	6 (5.61%)	7 (6.54%)
Cumulative smoking, pack-years, mean (SD)	29.17 ± 21.59	37.29 ± 28.34	30.67 ± 20.35	36 ± 29.43
Exacerbation in past year >2, n (%)	15 (10.71%)	42 (65.63%)	15 (14.02%)	62 (63.92%)
Exacerbation in past year >10, n (%)	16 (11.43%)	21 (32.81%)	12 (11.21%)	21 (21.65%)
Hospital admission for the last exacerbation, n (%)	59 (42.14%)	11 (17.19%)	51 (47.66%)	15 (15.46%)
COPD maintenance medications >1, n (%)	64 (45.71%)	39 (60.94%)	34 (31.78%)	47 (48.45%)
Significant comorbidities >2, n (%)	76 (54.29%)	56 (87.5%)	50 (46.73%)	86 (88.66%)
With Hypertension		38 (59.38%)		64 (65.98%)
Symptoms, n (%)	1 (0.71%)		1 (0.93%)	
mMRC Grade 0	59 (42.14%)	0 (0%)	54 (50.47%)	0 (0%)
mMRC Grade 1	52 (37.14%)	26 (40.63%)	38 (35.51%)	31 (31.96%)
mMRC Grade 2	19 (13.57%)	20 (31.25%)	9 (8.41%)	34 (35.05%)
mMRC Grade 3	9 (6.43%)	11 (17.19%)	5 (4.67%)	21 (21.65%)
mMRC Grade 4		7 (10.94%)		11 (11.34%)
COPD, n (%)	21 (15%)		20 (18.69%)	
Group A	16 (11.43%)	5 (7.81%)	10 (9.35%)	6 (6.19%)
Group B	42 (30%)	3 (4.69%)	36 (33.64%)	9 (9.28%)
Group C	61 (43.57%)	22 (34.38%)	41 (38.32%)	28 (28.87%)
Group D	21 (15%)	34 (53.13%)	19 (17.76%)	54 (55.67%)
Enrolled in pulmonary rehabilitation, n (%)	21 (15%)	19 (29.69%)	19 (17.76%)	21 (21.65%)

Table II: Top five comorbidities in Filipino COPD patients (N=204)

Comorbidity	n (%)
Hypertension	114 (55.88)
Anxiety	97 (47.55)
Depression	64 (31.37)
Coronary Artery Disease, Heart Failure, Atrial fibrillation/flutter	39 (19.12)
Diabetes Mellitus	19 (9.31)

Discussion

COPD is frequently thought of as a disease of the elderly. In this study, majority of the patient population are between 60-69 years of age (36.52%), followed by more than 70 years of age (34.83%). COPD is also considered a disease mostly of male smokers as supported by the results in this study

(Figure 2). Smoking is still the most common risk factor for COPD. However, indoor pollution from biomass cooking and poorly ventilated dwellings is gaining popularity also as risk factor for COPD. In this study, 30.39% were never smokers, most of which are females (61.29%). Six patients (2.94%) were housewives, all of which were under Group D.

Occupations at risk for COPD include coal miners, construction workers and workers in the paper mills. Fifteen patients (7.35%) of the study population are construction workers, most of which were categorized under patient Group C and D (Figure 3). However, the effect of smoking far outweighs any influences from the work environment.

Kaneda, et. al.²¹ studied 156 COPD patients. The prevalence of anxiety using HADS among the Japanese patients was 26% and prevalence of depression using HADS was 44%. Factors causing anxiety included living alone and hospitalization. Factors causing depression included hospitalization, low BMI and low educational level. On the other hand, the prevalence of depression among Filipino COPD patients of 31.37% is comparable to the nationwide prevalence of depression reported by Batar¹⁷ among 6,323 patients with general medical conditions of 31%. The prevalence of anxiety is higher at 47.55% in this study compared to the 36% nationwide in patients with general medical conditions.

UP-PGH is a tertiary state-owned teaching hospital administered and operated by the University of the Philippines Manila, the University of the Philippines System's Health Sciences Center. It is the largest government hospital administered by the university with a 1,500-bed capacity and located at Taft Avenue, Ermita, Manila. It has a three-year internal medicine residency training program and a two-year pulmonary fellowship training program. It has a six-week pulmonary rehabilitation program for patients with obstructive lung diseases involving patient assessment, exercise training, education, nutritional interventions and psychosocial support.

In UP-PGH, the prevalence of anxiety and depression among Filipino COPD patients is 45% and 24.29%, respectively. The investigators hypothesized that the, most of these patients have meager income to live-by, have a lower subjective dyspnea tolerance to their condition compared to the other two tertiary care hospitals.

QMMC is a government-owned 350 bed capacity hospital located in Katipunan Avenue, Quezon City built and organized for the indigents. It also has a residency training program for internal medicine. It does not have a pulmonary rehabilitation program. The prevalence of anxiety in Filipino COPD patients in this institution is 50%, while the prevalence of depression is 33.33%.

UPHDMC is a tertiary private-owned 350-bed

hospital with state-of-the-art medical facilities offering medical and health care services to the rustic areas of Southern Metro Manila. It has a three-year internal medicine residency training program and a two-year pulmonary fellowship training program. It also has a comprehensive, multidisciplinary pulmonary rehabilitation program. However, it has the highest prevalence of anxiety and depression among the three tertiary care hospitals at 55.88% and 58.82%, respectively. The 34 patients averaged 19 exacerbations in a year. The investigators hypothesized that patients are possibly sub-optimally managed.

COPD benefits from pulmonary rehabilitation program. Although there is still no protocol for the pulmonary rehabilitation program, COPD patients clearly benefits from it. In the GOLD 2011 guidelines, pulmonary rehabilitation program is part of the non-pharmacologic management of COPD, Group B to D. It improves exercise tolerance and decreases dyspnea (Evidence A). In this study, most of the patients have not enrolled in the program (38%). On the other hand, most of the COPD patients enrolled in the program are Group C (30%) and Group D (18%).

This study ranked the top five comorbidities in Filipino COPD patients. Hypertension is the most common comorbidity. This is followed by anxiety at 47.55%. In Lung 2010²², hypertension was also the most common comorbidity (64.2%), followed by chronic renal failure (26.3%), diabetes mellitus (25.3%), and cardiac diseases (22.1%). It was only in recent studies that anxiety is now one of the 12 co-morbidity in COPD patients with the most robust association with mortality together with other co-morbidities, such as cancers of the lung, pancreas, esophagus, and breast, followed by pulmonary fibrosis, atrial fibrillation/flutter, congestive heart failure, coronary artery disease, gastric/duodenal ulcers, liver cirrhosis and diabetes with neuropathy.

There are several limitations to this study. First, because of its multi-center character and focus on other underrepresented populations, the population with COPD may not be an accurate representative of a nationwide population with COPD. Second, the definition of anxiety and depression was based on a validated scoring instrument (HADS). An objective, physician-based diagnosis of anxiety and depression was not sought. Third, the study population was selected based on predefined criteria, and may not accurately represent the general population of COPD patients. Lastly, a larger scale study with larger sample size is recommended.

Conclusion and Recommendation

There are many studies about anxiety and

depression in patients with COPD. The prevalence of and the risk factors that affect anxiety and depression differ depending on cultural backgrounds and assessment methods. In the Philippines, physicians do not routinely assess the presence of anxiety and/or depression. In addition, Filipino patients have cultural barriers to psychiatric referral. Detection of these co-morbidities can improve morbidity and mortality in this common and rising disease entity.

The prevalence of depression in Filipino COPD patients is comparable to the prevalence of depression from other general medical conditions nationwide. Anxiety is slightly more prevalent in COPD from other general medical conditions. A study on the risk factors of anxiety and depression in Filipino COPD patients should follow.

Acknowledgements

Rodolfo V. Dizon, Jr., MD, FPCP, Ricardo M. Salonga, MD, FPCP, FCCCP, Alvel R. Tang-Manga, MD, Arturo C. Patanao, Jr., MD and Ma. Jojo M. Mercado, MD aided in the data collection in UPHDMC and QMMC. Elena L. Dimaano aided in recruitment of some patients from UP-PGH.

The primary investigator received travel grant from GlaxoSmithKline for the presentation of this research at the 4th Union Asia Pacific Region Conference against Tuberculosis and Lung Health, Hanoi, Vietnam; had free consultation from statistical team from Medichem Pharmaceuticals, Incorporated.

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APPENDIX I

Consent Form

Study Title:

Prevalence of Anxiety and Depression among Filipino Patients with Chronic Obstructive Pulmonary Disease: A Multi-Center Study

Principal Investigator: Dr. Sue Kimberly M. Tan

Patient _____

You are invited to participate in this study entitled **“Prevalence of Anxiety and Depression among Filipino Patients with Chronic Obstructive Pulmonary Disease: A Multi-Center Study.”**

Your doctors have performed physical examination and tests on you which confirm you have chronic obstructive pulmonary disease (COPD). Many previous studies abroad have shown that there is a prevalence of anxiety and depression in patients with COPD greater than that in the general population. Anxiety and depression was also linked to increased mortality, decreased functional status, and decreased quality of life in these patients. This research is being conducted in out-patient clinics of:

1. Section of Internal Medicine, Pulmonary Medicine and Family Medicine of University of the Philippines, Philippine General Hospital, Taft Avenue, Ermita, Manila;
2. Section of Internal Medicine and Pulmonary Medicine of University of Perpetual Help Dalta Medical Center, Las Pinas City;
3. Section of Internal Medicine of Quirino Memorial Medical Center, Quezon City.

This study is to find out how many among Filipino COPD patients have anxiety and depression using the Hospital Anxiety and Depression Scale (HADS) and its Pilipino translation (HADS-P). The study was designed to determine the prevalence of anxiety and depression among Filipino patients with COPD and its determinants.

The principal investigator or any study coordinator will ask for your consent to participate in the study. Once you have agreed to participate, a doctor from the study team will review your records, interview and examine you and order a pulmonary function test if not done before. You will then be asked to answer a one page questionnaire.

Participation in this study will benefit you as it will determine the presence of anxiety and depression. We will be informing your doctor at the out-patient clinic about your participation in this study and the results of the questionnaire. We will also be coordinating with your doctor so proper referral to a psychiatrist will follow and that we can time our future check-ups to coincide with your usual follow-up schedule at the out-patient clinic. List of psychiatrists' names will be given to your doctor for you to choose from, whether as private patient or as charity patient.

Participation in this study is purely voluntary. Your decision to join or not join should not affect the care you will continue to receive at the out-patient clinic. There will be no form of money given when you participate in this study. All expenses will be shouldered by the principal investigator and the study coordinators.

All information gathered will be kept confidential by the researchers. The result of this paper may be presented in conferences and publications. The authors have no conflict of interest.

Please do not hesitate to ask any questions at this point. Should you have any other comments or questions, please call or send a message to: Dr. Sue Kimberly Tan at 0917-3180004 or 0922-8252453.

We appreciate your positive decision to participate in this study.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I understand what was explained to me and will voluntarily consent to participate as a participant in this research.

Name and Signature of Patient_____
Date Signed_____
Name and Signature of Witness_____
Name and Signature of Witness

Informed Consent Obtained By:

Name and Signature_____
Date Signed

APPENDIX II

Consent Form (Filipino Version)

Pamagat ng Pananaliksik:
**Prevalence of Anxiety and Depression among Filipino Patients with
 Chronic Obstructive Pulmonary Disease: A Multi-Center Study**

Pangalan ng Principal Investigator: Dr. Sue Kimberly M. Tan

Pangalan ng Pasyente _____

Kayo po ay inaanyayahan maging bahagi ng isang pananaliksik na may pamagat ng **“Prevalence of Anxiety and Depression among Filipino Patients with Chronic Obstructive Pulmonary Disease: A Multi-Center Study.”**

Ayon sa inyong mga doktor sa despensaryo (OPD), kayo ay may COPD. May mga pag-aaral na nagawa sa ibang bansa na nagpapakita na mas madami ang nagkakaroon ng sakit na pagkabalisa at lubay sa mga pasyenteng may COPD kung ihambing sa mga taong walang sakit. Ang pagkabalisa at lubay ay maari ring mag-sanhi ng mataas nakamamatay at pagkawalan ng gana sa buhay. Ang pag-aaral na ito ay gagawin sa out-patients clinics ng:

1. Section of Internal Medicine, Pulmonary Medicine and Family Medicine of University of the Philippines, Philippine General Hospital, Taft Avenue, Ermita, Manila;
2. Section of Internal Medicine and Pulmonary Medicine of University of Perpetual Help Dalta Medical Center, Las Pinas City;
3. Section of Internal Medicine of Quirino Memorial Medical Center, Quezon City.

Ito ay para malaman kung ilan sa mga pasyenteng may COPD ay mayroon din ng pagkabalisa at lubay gamit ng Hospital Anxiety and Depression Scale (HADS) at ang Pilipino version nito (HADS-P).

Ang principal investigator o study coordinator ay hihingi ng inyong pagpayag sa pananaliksik na ito. Sa inyong pagpayag, may mga doktor na titingin sa inyo upang kunin ang buong pangkalusugan na history at physical examination ninyo. Bibigyan din nila kayo ng request upang kayo ay magawan ng pulmonary function test kung hindi pa nagawa. Pagkatapos, may ibibigay na papel para sagutan (questionnaire).

Ang pagsali sa pag-aaral na ito ay makakatulong sa inyo dahil maaaring malaman kung mayroon kayong pagkabalisa o lubay. Kung kayo ay may mayroon ng pagkabalisa o lubay, ipagbibigay alam sa inyong doktor ang inyong pagsali at upang ma-refer kayo sa isang espesyalista sa pag-iisip (psychiatrist). Ang mga resulta ng tests ay ipamamahagi sa inyong doktor sa OPD. Aayusin din naming ang iskedyul ng inyong mga check-up para kasabay sa inyong iskedyul ng pagbalik sa OPD. Bibigyan namin ang inyong doktor ng listahan ng mga psychiatrist ubang inyong pagpipilian.

Ang pagsali sa pag-aaral na ito ay boluntaryo at walang bayad. Ang inyong desisyon na sumali ay di makakaapekto sa inyong pagkonsulta sa OPD. Ang lahat ng impormasyon sa pag-aaral na ito ay kompidensiyal. Ang lahat ng gastos ay babayaran ng principal investigator o study coordinator.

Huwag mag-atubiling magtanong kung mayroon kailangang linawin ukol sa pag-aaral na ito. Kung mayroon pang mga katanungan, maaaring makipag-ugnayan kay: Dr. Sue Kimberly Tan. Pwede niyo ako tawagan o i-text sa mga numerong ito, 0917-3180004 o 0922-8252453.

Lubos po naming ikagagalak at pasasalamatang ang inyong pagsali sa pananaliksik na ito at pumapayag akong sumali at pag-aaral na ito.

Pangalan at Lagda ng Pasyente

Petsa ng Lagda

Pangalan at Lagda ng Witness

Petsa ng Lagda

Informed Consent Obtained By:

Pangalan at Lagda

Petsa ng Lagda

APPENDIX III

DATA COLLECTION TOOL

Prevalence of Anxiety and Depression among Filipino Patients with Chronic Obstructive Pulmonary Disease: A Multi-Center Study

1.	What is the patient's case number?	
2.	What is the patient's study number? PGH – Start as 1001 to... QMMC – Start as 2001 to... UPHDMC – Start as 3001 to...	
3.	What is your gender? CIRCLE APPROPRIATE CHOICE.	Male 1 Female 2
4.	Address	
5.	What is the patient's height?	cm
6.	What is the patient's weight?	kg
7.	In what month and year were you born?	Year DON'T KNOW YEAR 9998 Month DON'T KNOW MONTH 98
8.	What do you consider as your main occupation which is the source of your household income? CIRCLE ONLY ONE CHOICE.	Call Center Agent 1 Health Care Worker 2 Miner 3 Farmer 4 Office worker 5 Retired 6 Others 7 PLEASE SPECIFY _____
9.	Landline Area Code Mobile - Person to call in case you cannot be contacted	
10.	What is the patient's highest completed educational attainment? CIRCLE ONLY ONE CHOICE.	Elementary 1 High School 2 Vocational 3 College 4 Post Graduate 5
11.	What is the patient's smoking history? CIRCLE ONLY ONE CHOICE. IF SMOKING, FILL UP PACK YEARS. Pack Years = number of cigarette/day X number of years 20	Current smoker 1 Ex smoker 2 Pack Years Never smoked 3
12.	What is your marital status? CIRCLE ONLY ONE CHOICE.	Married 1 Separated 2 Single 3
13.	Are you contented with the support given by your family?	YES 1 NO 2

14.	Are you living alone?	YES 1 NO 2 ☐
INCLUSION CRITERIA (All answers must be YES)		
15.	Is the patient aged 40 years and above?	YES 1 NO 2 ☐
16.	Does the patient have COPD?	☐
17.	Does the patients have postbronchodilator FEV1/FVC ratio less than 0.7?	☐
18.	Does the patient have no primary diagnosis of asthma?	☐
19.	Does the patient have no previous lung volume reduction surgery, lung transplantation or pneumonectomy?	☐
20.	Does the patient seek consult at the out-patient clinic, section of pulmonary medicine of UP-PGH?	☐
21.	Did the patient finished Grade 2 education?	☐
22.	Is there an informed consent? PLACE YOUR CHOICE INSIDE THE BOX.	☐
EXCLUSION CRITERIA (All answers must be NO)		
23.	Were you previously diagnosed to have an anxiety, depression, on any anti-anxiety medications or on any anti-depressant medications?	☐
24.	Is the patient pregnant? (Answer only if female) PLACE YOUR CHOICE INSIDE THE BOX.	☐
25.	What is the Spirometry result?	PLEASE ATTACH PHOTOCOPY OF SPIROMETRY RESULT.
26.	Is the patient enrolled in pulmonary rehabilitation?	YES 1 NO 2 ☐
27.	When were you diagnosed with COPD?	Year DON'T KNOW YEAR 9998
28.	Is this your first consultation for COPD?	YES 1 NO 2 ☐
29.	What are your current medications for COPD? PLACE A CHECK MARK ☒ INSIDE THE BOX FOR ALL THAT APPLIES.	☐ A. Tiotropium ☐ B. Salmeterol + Fluticasone ☐ C. Budesonide + Formoterol ☐ D. Indacaterol ☐ E. Salbutamol + Ipratropium ☐ F. Home Oxygen ☐ G. Doxofylline ☐ H. Theophylline ☐ I. Prednisone ☐ J. Methylprednisolone ☐ K. Others _____

30.	Does the patient have any co-morbidities? PLACE A CHECK MARK ☒ INSIDE THE BOX FOR ALL THAT APPLIES.	☐ A. Hypertension ☐ B. Coronary Artery Disease, heart failure, atrial fibrillation/flutter ☐ C. Cerebrovascular Disease ☐ D. Diabetes ☐ E. Malignancy _____ ☐ F. HIV ☐ G. Gastric/duodenal ulcer, liver cirrhosis ☐ H. Others _____
31.	How many times do you have exacerbation in a year?	 NONE 99
32.	Were you admitted in your last exacerbation?	YES 1 NO 2 ☐
33.	How severe are your symptoms for COPD? Grade 0 – I only get breathless on strenuous exercise. Grade 1 – I get short of breath when hurrying on the level or walking up a slight hill. Grade 2 – I walk slower than people of the same age on the level because of breathlessness, or I have to stop for breath when walking on my own pace on the level. Grade 3 – I stop for breath after walking 100 meters or after a few minutes on the level. Grade 4 – I am too breathless to leave the house or I am breathless when dressing or undressing. PLACE YOUR CHOICE INSIDE THE BOX.	mMRC Grade 0 1 mMRC Grade 1 2 mMRC Grade 2 3 mMRC Grade 3 4 mMRC Grade 4 5 ☐
34.	Is the patient disabled?	YES 1 NO 2 ☐

APPENDIX IV

Hospital Anxiety and Depression Scale (HADS)

Instruction: Please put a check mark ☒ on the box beside the reply that best describes your answer.

1. I feel tense.	2. I feel as if I am slowed down.
☐ Most of the time	☐ Nearly all the time
☐ A lot of time	☐ Very often
☐ From time to time, occasionally	☐ Sometimes
☐ Not at all	☐ Not at all
3. I still enjoy the things I used to enjoy.	4. I get sort of frightened feeling like "butterflies" in the stomach.
☐ Definitely as much	☐ Not at all
☐ Not quite so much	☐ Occasionally
☐ Only a little	☐ Quite often
☐ Hardly at all	☐ Very often
5. I get a sort of frightened feeling as if something awful is about to happen.	6. I have lost interest in my appearance.
☐ Very definitely and quite badly	☐ Definitely
☐ Yes, but not too badly	☐ I don't take so much care as I should
☐ A little, but it doesn't worry me	☐ I may not take as much care
☐ Not at all	☐ I take just as much care as ever
7. I can laugh and see the funny side of things.	8. I feel restless as if I have to be on the move.
☐ As much as I always could	☐ Very much indeed
☐ Not quite so much now	☐ Quite a lot

☐ Definitely not so much now	☐ Not very much
☐ Not at all	☐ Not at all
9. Worrying thoughts go through my mind.	10. I look forward with enjoyment to things.
☐ A great deal of the time	☐ As much as ever I did
☐ A lot of time	☐ Rather less than I used to
☐ From time to time but not too often	☐ Definitely less than I used to
☐ Often occasionally	☐ Hardly at all
11. I feel cheerful.	12. I get sudden feelings of panic.
☐ Not at all	☐ Very often indeed
☐ Not often	☐ Quite often
☐ Sometimes	☐ Not very often
☐ Most of the time	☐ Not at all
13. I can sit at ease and feel relaxed.	14. I can enjoy a good book, radio or TV program.
☐ Definitely	☐ Often
☐ Usually	☐ Sometimes
☐ Not often	☐ Not often
☐ Not at all	☐ Very seldom

APPENDIX V

Hospital Anxiety and Depression Scale-Pilipino Translation (HADS-P)

Direksyon: Maari pong pakisagutan ang mga sumusunod na tanong sa pamamagitan ng paglagay ng ☒ sa kahon na mahahayag ng inyong palagay. Wala pong tama o maling kasagutan sa bawat tanong.

1. Naliligalig at punong-puno na ako.	2. Pakiramdam ko parang pinapabagal ako.
☐ Mas madalas kaysa hindi	☐ Halos lagi-lagi
☐ Madalas	☐ Napakadalas
☐ Paminsan-minsan	☐ Minsan
☐ Hinding-hindi	☐ Hinding-hindi
3. Ikinasasaya ko pa rin ang mga bagay na dati ko nang ikinasasaya.	4. Para akong natatakot na may nararamdamang sobrang nerbiyos.
☐ Katulad din ng dati	☐ Hinding-hindi
☐ Hindi na kasingdalas	☐ Paminsan-minsan
☐ Konti lang	☐ Medyo madalas
☐ Halos hindi na	☐ Madalas na madalas
5. Para akong nakakaramdam na may mangyayaring masama.	6. Nawalan na ako ng interes sa aking hitsura.
☐ Lagi-lagi at medyo malala	☐ Talaga
☐ Palagi pero di-gaanong malala	☐ Hindi ako nangangalaga ng dapat
☐ Konti pero di ako nag-aalala	☐ Pwedeng hindi ako magalaga ng nararapat
☐ Hinding-hindi	☐ Pinangangalagaan ko pa rin ito tulad ng dat
7. Kaya ko pang tumawa at mapansin ang nakakatuwang bahagi sa mga bagay-bagay.	8. Hindi ako mapakali na parang gusto kong may pinakakaabalahan.
☐ Lagi-lagi tulad ng dati	☐ Talagang madalas
☐ Mas madalang na ng kaunti jaysa dati	☐ Medyo madalas
☐ Hindi na katulad ng dati	☐ Di naman gaano
☐ Hinding-hindi	☐ Hinding-hindi
9. Pag-aalala ang nasa isip ko.	10. Masaya akong umaasa sa bagay-bagay
☐ Madalas na madalas	☐ Kasingdalas ng nakagawian ko
☐ Madalas	☐ Di-kasingdalas ng nakagawian ko
☐ Di gaanong madalas	☐ Mas madalang kaysa nakagawian ko
☐ Konting-konti	☐ Halos hindi na
11. Masaya and aking pakiramdam.	12. Bigla akong nakakaramdam ng pagkasindak.
☐ Hindi kailanman	☐ Madalas na madalas
☐ Madalang	☐ Medyo madalas
☐ Paminsan-minsan	☐ Di gaanong madalas
☐ Kadalasan	☐ Hinding-hindi

13. Kaya kong umupo ng kumportable at mag-relax.	14. Kaya akong maaliw sa isang magandang libro o programa sa radio o TV.
☐ Palagi	☐ Madalas
☐ Madalas	☐ Paminsan-minsan
☐ Madalang	☐ Madalang
☐ Hinding-hindi	☐ Hinding-hindi

APPENDIX VI

Hospital Anxiety and Depression Scale (HADS)

A	I feel tense or 'wound up': Most of the time A lot of the time From time to time (occ.) Not at all	3 2 1 0
D	I still enjoy the things I used to enjoy: Definitely as much Not quite as much Only a little Hardly at all	0 1 2 3
A	I get a sort of frightened feeling as if something awful is about to happen: Very definitely and quite badly Yes, but not too badly A little, but it doesn't worry me Not at all	3 2 1 0
D	I can laugh and see the funny side of things: As much as I always could Not quite so much now Definitely not so much now Not at all	0 1 2 3
A	Worrying thoughts go through my mind: A great deal of the time A lot of the time From time to time, but not often Only occasionally	3 2 1 0
D	I feel cheerful: Not at all Not often Sometimes Most of the time	3 2 1 0
A	I can sit at ease and feel relaxed: Definitely Usually Not often Not at all	0 1 2 3

D	I feel as if I am slowed down: Nearly all the time Very often Sometimes Not at all	3 2 1 0
A	I get a sort of frightened feeling like "butterflies" in the stomach: Not at all Occasionally Quite often Very often	0 1 2 3
D	I have lost interest in my appearance: Definitely I don't take as much care as I should I may not take quite as much care I take just as much care	3 2 1 0
A	I feel restless as I have to be on the move: Very much indeed Quite a lot Not very much Not at all	3 2 1 0
D	I look forward with enjoyment to things: As much as I ever did Rather less than I used to Definitely less than I used to Hardly at all	0 1 2 3
A	I get sudden feelings of panic: Very often indeed Quite often Not very often Not at all	3 2 1 0
D	I can enjoy a good book or radio/TV program: Often Sometimes Not often Very seldom	0 1 2 3