ANALYSIS OF KNOWLEDGE ON CHRONIC OBSTRUCTIVE LUNG DISEASE

Susanthy Djajalaksana[1], Aditya Sri Listyoko[1], Maria Kristiani[1], Tiar Oktavian Effendi[1], Magdalena[1*]

[1]*Department Pulmonology dan Respiratory Medicine Saiful Anwar General Hospital, Universitas Brawijaya*
*Email: magda2009apps@gmail.com

ABSTRACT

Chronic obstructive pulmonary disease (COPD) is a common worldwide leading cause of morbidity, mortality and disability. It also becomes the large healthcare system's economic problem. By knowing the level of public understanding of this disease, we were able to find out what education could be given to increase understanding about COPD. This study was undergone to determine the level of knowledge of the nonmedical and medical personnel about COPD, and to evaluate the personnel medical knowledge by comparing with nonmedical knowledge. This is descriptive research. The research was conducted cross-sectionally with 200 respondents consisting of 100 medical subjects and 100 non-medical subjects. This research was carried out in the RSSA environment in November 2021. The data collection technique is that respondents filled out a *Google Form*. The total score of the six categories showed that 73.875% of the medical group and 47.17% of the non-medical group already understood COPD. In all categories, the results of the analysis showing statistical significance ($p<0.001$). Our study shows significant knowledge about all knowledge of COPD between the general public and medical personnel. Socialization to the public about COPD and the importance of the community getting to know COPD in preventive and treatment measures.

KEYWORDS

COPD, education, questionnaire

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common worldwide leading cause of morbidity, mortality and disability. It also becomes the large healthcare system's economic problem. Helping physicians diagnose and manage COPD patients was the aim of researchers to produce evidence-based clinical practice guidelines.[1]

Chronic Obstructive Pulmonary Disease (COPD) is a common, preventable and treatable disease with characterization of persistent respiratory symptoms and limited airflow caused by airway and/or alveolar abnormalities. These abnormalities are usually caused by noxious particles or gases' exposure.[2] The World Health Organization (WHO) predicts that there will be an increase in the prevalence of COPD in the future. This is important with industrialization increasing air and environmental pollution and increasing smoking habits.[3] The World Health Statistics 2021 released by WHO shows three lung diseases are the top 10 causes of death in the world in 2019, namely COPD in 3rd place with 3,220,000 deaths, lung infections in 4th place with 2,590,000 people dying, and cancer. Lung is the 7th cause of death in the world with 1,760,000 people dying annually.[4]

Not only that, in the term of recent covid 19 pandemic, COPD and history of smoking are also the co-factor for worsening covid19 patients.[5] Compared to former and never smokers, current smokers were at greater risk of severe complications and higher mortality rate.[6] A study by Riblet et al, also shown that COPD and smoking are also associated as independent risk factors for depression and interact to cause depression.[7]

COPD is estimated to affect 384 million people worldwide, with 3 million people dying each year. COPD is one of the leading causes of lung disease death in Indonesia, with a prevalence rate of around 4.5 percent and the primary risk factor for COPD being exposure to cigarette smoke.[8] There has been an increase in patient and family education about medical conditions in recent years. This is partially demonstrated by patients' desire to be better informed about their condition and the importance of patient self-management.[9]

Progressive dyspnoea that gets worse with exercise and is persistent. Chronic coughing may be intermittent and ineffective, accompanied by recurrent wheezing. Chronic sputum production can also

occur with any sputum production pattern. Additionally, patients with COPD will develop recurrent lower respiratory tract infections if they have a risk factor or family history of the infection. Host factor (which may include genetic factors and congenital/developmental abnormalities), tobacco smoke (which may include popular local preparations), smoke from home cooking and heating fuels, and occupational dust, vapours, fumes, gases, and other chemicals.[2]

COPD symptoms frequently do not manifest themselves until significant lung damage has occurred, and they typically deteriorate over time, especially if smoking exposure continues. COPD symptoms and signs may include shortness of breath, particularly during physical activity, wheezing, chest tightness, a chronic cough with mucus (sputum) that may be clear, white, yellow, or greenish, frequent respiratory infections, fatigue, unintended weight loss (in later stages), and swelling in the ankles, feet, or legs.[9]

People with COPD are more likely to have exacerbations, which are periods when their symptoms become worse than usual and last for several days. In order to prevent and treat COPD, it is critical to identify and reduce COPD risk factors. For example, smoking cessation is a critical intervention, and healthcare providers are encouraged to provide patients with smoking cessation messages and interventions, such as counselling, financial incentive schemes, and patient education. In the absence of contraindications, therapies for tobacco addiction such as varenicline, sustained-release bupropion, nortriptyline, nicotine gum, nicotine inhaler, nicotine nasal spray, and nicotine patches are indicated. Furthermore, lowering indoor and outdoor pollutants, such as biomass fuel and occupational inhalants, may necessitate governmental policy reforms as well as individual preventive measures.[9] In smokers who experience night-time oxygen desaturation, quitting smoking improves pulmonary functional metrics significantly.[10]

Unfortunately, despite having the greatest impact on disease progression and the documented benefit of the discussed pharmaceutical therapy, smoking cessation is one of the most challenging therapeutic strategies in COPD. Prolonging the duration of administration, combining alternatives, or using sequential pharmacotherapy are all possible ways to improve the chances of success.[11] Exhaled CO levels, FEV1/FVC ratio, and the existence of mental disorders were all found to be substantially linked with program success or failure in COPD patients with nicotine addiction.[12] Medical diagnosis was the most prevalent reason given by both successful and unsuccessful quitters for considering a quit attempt; however, effective quitting was impacted by demographic characteristics and possibly the intensity of nicotine dependency.[13]

Nonetheless, health care practitioners should focus more on effective smoking cessation tactics because, according to Dardouri et al cross-sectional's study, smoking cessation is linked to the physical component of HRQL. There were no statistically significant differences between smoking cessation, mental component, and HRQL total score.[14]

COPD has increased in prevalence worldwide over several decades until the first decade after the millennium shift.[15] Pulmonary rehabilitation should be considered an important component of integrated patient management in combination with pharmacologic therapies. A Cochrane meta-analysis has reported that pulmonary rehabilitation can relieve dyspnoea and fatigue, improve emotional function and enhance the sense of control that patients have over their condition.[9]

Patients who participate in regular physical activity have a lower incidence of exacerbations, COPD hospital admissions, and all-cause mortality, according to research. Health education can also help patients cope with their condition, and it has the potential to influence behavioural changes (such as smoking cessation) and the achievement of specific therapeutic goals. Finally, influenza and pneumococcal (PCV13 and PPSV23) immunizations are advised for COPD patients, especially those who are older. Vaccination can help prevent major illness, and some studies have indicated that it can also lower the number of exacerbations. For COPD, pharmacologic therapy is used to manage symptoms, minimize the frequency and severity of exacerbations, and enhance exercise tolerance and overall health. Long-acting 2-agonists (LABAs), long-acting muscarinic antagonists (LAMAs), and inhaled corticosteroids (ICS) are three types of medicines routinely used to treat COPD. Within each class, the choice is based on the availability of medication as well as the answers and preferences of the patients. Once a clinical and spirometry diagnosis of COPD has been confirmed, clinical guidelines from the GOLD strategy report can be used to determine the best available evidence for initial pharmacologic treatment, highlighting the significance of choosing the right treatment from the start.

The model, which uses the ABCD evaluation scheme to measure symptoms and exacerbation risk on an individual basis. Short-acting bronchodilators should be provided as a last alternative for urgent symptom alleviation, but their usage is not suggested on a regular basis. After then, a long-acting bronchodilator is frequently prescribed. A combined medication such as LAMA/LABA (for patients with severe dyspnoea) or LABA/ICS (for patients with a high risk of exacerbations and higher blood eosinophil levels) may be recommended as a first treatment option for some patients.[9]

There has been an improvement in patient and family education on medical issues in recent years. Patients' willingness to be better informed about their illness, as well as the importance of patient self-management, are driving this trend.[16]

COPD education is recommended by health specialists. There is no adequate measure for assessing educational achievements and quantifying knowledge. The validity and consistency of the multiple-choice questionnaire (BCKQ) were assessed after it was designed and tested. In the appendix, we'll obtain a copy of the multiple-choice questionnaire. The questionnaires were evaluated by members of the general public as well as health professionals.[16]

MATERIAL AND METHODS

This research is descriptive research. The research was conducted cross-sectionally with 200 respondents consisting of 100 medical subjects and 100 non-medical subjects. This research was carried out in the RSSA environment in November 2021. In this research, what is meant by medical subjects are doctors, nurses, pharmacists, dieticians, and midwives who work in the RSSA. While the non-medical subjects were room administration, patients and their families in the IRNA 1 room and the RSSA pulmonary polyclinic. This research has been endorsed by the Committee on Health Research Ethics of the Regional General Hospital Dr. Saiful Anwar with number 400/207/K.3/302/2021. Inclusion criteria for this study are those who were suitable with medical and non-medical criteria and present in RSSA environment when the research conducted. Exclusion criteria for this study is those who does not want to participate in this research. In this study, there are two variables: an independent variable and a dependent variable. In this study, the independent variables include latest education and age, while the dependent variables are understanding or knowledge of COPD in both medical and non-medical subjects. The data collection technique in this study is that respondents filled out a *Google Form* in mobile phone or laptop. The *Google Form* contained informed consent and questionnaires consisting of the respondent's personal identity data and several multiple-choice questions. Informed consent is used to provide subjects with the information such as purpose and methods of this research. This information is provided to subjects to make a decision to volunteer for this research study. The respondent's personal identity data such as Age, Gender, Last Education, Smoking History, History of COPD. There are 24 multiple-choice questions which modified from the Bristol COPD knowledge questionnaire. These multiple-choice questions consist of 6 categories of questions, namely the category of understanding of the definition of COPD, diagnosis of COPD, COPD risk factors, COPD symptoms, COPD therapy, and prevention of COPD. Each category consisting of 4 statements that should be answered by one of three choices, which are “True”, “False”, and “Don’t Know”. Every answer that correctly answered would be counted as 1 point, so if the Respondent answered all of the question correctly, it would be counted as 4 points. Therefore, every answer that is not correctly answered or answered by “Don’t Know” would be counted as 0 point. Every point that each respondents got then collected using Excel Software. The data analysis technique in this study is statistical analysis using the Chi-Square test with SPSS version 26 software, not the calculation of each category including true or false.

RESULTS AND DISCUSSION

This study involved a total of 200 subjects who had met the inclusion criteria that have been set with the demographic data shown in Table 1. From the demographic data, we got an even distribution by gender where in the medical group, 37 people (37%) subjects were male and 63 people (63%) were female subjects with an average age of 33 years (25-56 years), while in the non-medical group there were more male subjects than female subjects. Meanwhile, from age we got the average age of the subjects 37 years with the age range of the subjects between 19 to 78 years. Medical group subjects have Diploma Education as much as 30% and Bachelor's education as much as 70%, while education in the non-medical group is mostly undergraduate as much as 56% and high school as much as 27%,

while 4 subjects have the latest education in elementary school, 6 subjects in junior high school, and 7 subjects with Diploma. Additionally, we obtained 10 smokers in the medical group and 34 in the non-medical group from this study. The smoking factor in this study may not have a direct effect on knowledge about COPD because medical and non-medical group subjects may be healthy subjects who have never been diagnosed with COPD.

Table 1. Demographic Data

Variabel	Medic	Non Medic
Gender		
-Male	37 (37%)	61 (61%)
-Female	63 (63%)	39 (39%)
Age		
-20-50 years	97 (97%)	89 (89%)
->50 years	3 (3%)	11 (11%)
-The age range	33.05	37.27
Latest Education		
-Elementary school	0	4 (4%)
-Junior high school	0	6 (6%)
-Senior high school	0	27 (27%)
-Diploma	30 (30%)	7 (7%)
-Bachelor	70 (70%)	56 (56%)
Smoker		
-Yes	10 (10%)	34 (34%)
-No	90 (90%)	66 (66%)

Our data are in accordance with the research of White et al., 2006. We divided 2 groups, namely medical and non-medical where medical was the control of our research subjects. The control group consisted of people who had never received formal education and had not participated in an educational program. The second group had received formal education in the past, but not in the past six months, and did not participate in an educational program.

We recognize that primary care physicians' knowledge of the core element of recent guidelines for the management of COPD and their self-reported practice with COPD patients. This is consistent with the study by Staiou et al., who stated that general practitioners practicing in the canton of Geneva were unaware of the essential elements of these guidelines and that their clinical practice was inconsistent. with current recommendations. Although doctors recognize the magnitude of the problem, most do not take recommended precautions (immunizations, smoking cessation counselling), feel uncomfortable with the advice, do not know how to handle it. diagnostic criteria for COPD and poor awareness of the indications and benefits of COPD. the treatments they provide to their patients. In particular, it is clear that they overuse rehabilitation programs and abuse oral steroids beyond exacerbations. The questionnaire that we used in this study is a modification of the Bristol Questionnaire which has often been used in various studies on COPD where the language we use is Indonesian so that it is easily understood by both medical and non-medical group subjects.

One of the main reasons for the BCQ's design was the lack of a tool that provided a single centre for quantifying COPD information. In the QQ, correct answers are marked with a 1 and incorrect answers are marked with a 0. The total number of successfully confirmed items, or the %, will then be determined. "When elements are combined to form a ladder, they must have internal agreement," Bland and Altman write. All things must have the same measurement; hence they must be connected with one another. The items on the BCKQ measure knowledge, therefore it wouldn't be surprising if individuals who were "well informed" did well in certain areas and those who were "poorly educated" did poorly in others, i.e., a desirable quality of a knowledge questionnaire was the most accurate. Internal consistency establishes a positive relationship between the variables. This BCKQ had three options (true/false/don't know). Finding out what subjects know or don't know about the questions, or what they think they know

but don't, is crucial. As a result, a "don't know" option was provided as a response option. We consider "don't know" to be the incorrect answer during the statistical analysis because we want to ensure that the accurate answer comes from what they truly know about COPD, not from speculative thoughts. The average score in subjects without any prior schooling was 54.7%, showing that overall knowledge was weak. The issue is perhaps excessively complex, and the level of expertise expected is unreasonably high. However, we have carefully considered the problems with bad knowledge and have come to the conclusion that they are related to sectors where knowledge demands are high and where knowledge goes beyond a certain degree.

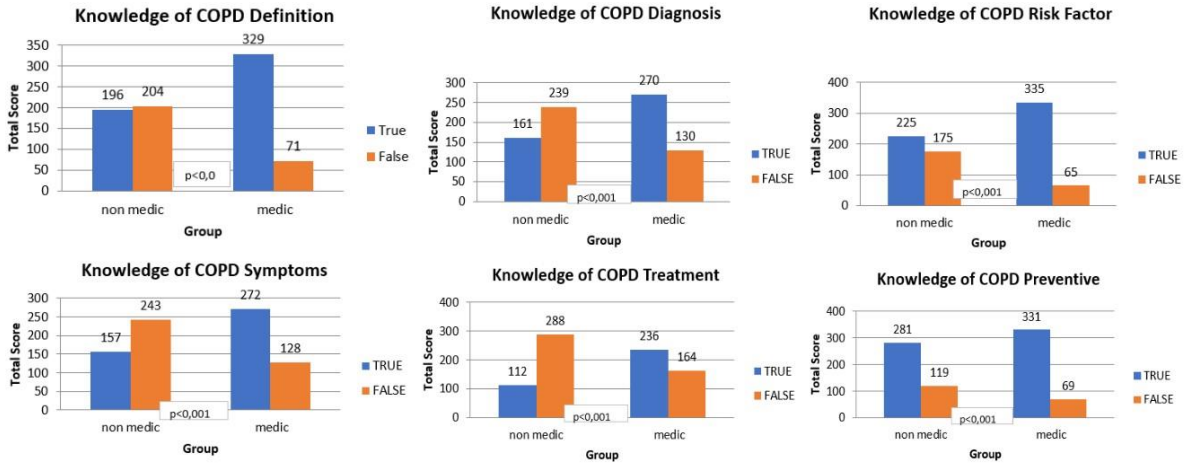

Figure 1. Comparison of Understanding of Chronic Obstructive Pulmonary Disease in Medical and Non-Medical Groups

The results of the analysis we obtained regarding the comparison of the six categories of questions about understanding COPD between medical and non-medical groups are presented in Figure 1.

Table 2. The Comparison Between Medical and Non-Medical Groups regarding Knowledge of COPD

Variable	Category	Proportion	P Value
Knowledge of COPD Definition	Medical	True 329	<0,001
		False 71	
	Non-Medical	True 196	
		False 204	
Knowledge of COPD Diagnosis	Medical	True 270	<0,001
		False 130	
	Non-Medical	True 161	
		False 239	
Knowledge of COPD Risk Factor	Medical	True 335	<0,001
		False 65	
	Non-Medical	True 225	
		False 175	
Knowledge of COPD Symptoms	Medical	True 272	<0,001
		False 128	
	Non-Medical	True 157	
		False 243	
Knowledge of COPD Treatment	Medical	True 236	<0,001
		False 164	
	Non-Medical	True 112	
		False 288	
Knowledge of COPD Preventive	Medical	True 331	<0,01
		False 69	
	Non-Medical	True 281	

False 119

From the perspective of the total score of the COPD definition understanding category, this category has 4 problems, namely COPD or delayed lung. The term "chronic" means severe; COPD usually worsens over time; COPD hinders daily activities; COPD is a genetic disease. We got 96 correct answers (49%) and 204 incorrect answers (51%) in the non-medical group. At the same time, 329 people (82.25%) in the medical group got the correct answer and 71 people (17.75%) got the wrong answer. The analysis results showed that compared with the non-medical group, there was a significant difference in the understanding of COPD definition between the medical group and the non-medical group (82.25% vs 49%), with a p value of <0.001. As many as 51% of non-medical subjects believe that chronic means serious, which is wrong. Over time, COPD will indeed get worse because it is an irreversible and progressive disease. If α-antitrypsinase is lacking, it may be a genetic disease, but it is not common. Whereas, in a medical group, more than 80% of participants already recognized what COPD was.

Shortness of breath is generally caused by narrowing of the respiratory tract in the COPD diagnosis category, which has four questions; COPD can only be confirmed by pulmonary function tests (spirometry); blood oxygen levels are always low in COPD; One of the most prevalent symptoms of COPD is wheezing. In the non-medical category, we received 161 accurate answers (40.25%) and 239 erroneous answers (59.75%). Meanwhile, there were 270 accurate answers (67.5%) and 130 erroneous responses in the medical group (32.5%). This category was incorrectly answered by over 60% of non-medical individuals. The most common symptom of COPD is shortness of breath, which is caused by constriction of the bronchial airways, and wheezing can also occur. A breathing test confirms the diagnosis of COPD (spirometry). The findings of the research revealed that there was a significant difference in knowledge of the diagnosis category of COPD between the medical and non-medical groups (67.5% vs 40.25%) with a p value of 0.001.

COPD is most common in adults over 40 years old, according to the COPD risk factor category, which has four questions. Smoking reduces lung damage; nonetheless, it increases the risk of lung cancer. Exacerbations of COPD can be exacerbated by infection. In the non-medical group, we got 225 accurate responses (56.25%) and 175 erroneous answers (43.75%) for COPD condition, which causes repeated lung infections. Meanwhile, there were 335 accurate answers (83.75%) and 65 erroneous responses in the medical group (16.25%). Moreover, 80% of medical participants were aware of COPD risk factors, while 56.25% of non-medical participants believed that smoking is the main risk factor and that infection can cause COPD exacerbation and worsen the condition. The research revealed that there was a significant difference in knowledge between the medical and non-medical groups (83.75% vs 56.25%) with a p value of 0.001 for the risk factor category of COPD.

The symptoms that frequently appear in COPD are swelling of the ankles, and the symptoms that frequently appear in COPD are weariness; there are four questions in this area. In the non-medical group, we had 157 accurate responses (39.25%) and 243 erroneous answers (60.75%) for the most prevalent symptom of COPD, chest pain. Meanwhile, there were 272 accurate answers (68 percent) and 128 erroneous responses in the medical group (32%). We could see that 32 of the medical group's individuals still didn't fully comprehend the signs of COPD, which is a sickness that starts with a respiratory tract and organ problem but can lead to heart organ complications. The results of the analysis revealed a substantial difference in comprehension between the medical and non-medical groups (68% vs 39.25%), with a p value of 0.001 for the symptom category of COPD.
In the COPD therapy area, there are four questions: removing phlegm can be aided by breathing exercises; bronchodilator drugs can help COPD patients' clear phlegm; and in mild COPD, antibiotic therapy is frequently required. In the non-medical group, we had 112 correct answers (28%) and 288 false answers (72%) when steroid tablets were administered to COPD patients (e.g., prednisolone). Meanwhile, there were 236 accurate answers (59%) and 134 erroneous responses in the medical group (41%). The data in the therapy category revealed the need for increased education to comprehend COPD treatment. Twenty-eight non-medical people get it right, which could be related to their experience as COPD sufferers or their families who help them care for the disease. The research revealed a substantial difference in knowledge between the medical and non-medical groups (59% vs 28%) with a p value of 0.001 when it came to the COPD therapy category.

In the COPD preventive area, there are four questions: quitting smoking always improves lung function; influenza vaccine is suggested once a year; and Walking is an excellent way to increase fitness.

Exercise does not need to be halted if it causes COPD patients to get short of breath, according to the non-medical group, which had 281 accurate answers (70.25%) and 119 incorrect answers (29.75%). Meanwhile, there were 331 accurate answers (82.75%) and 69 erroneous responses in the medical group (17.25%). It's encouraging to see that more than 70% of medical and nonmedical participants were already aware of COPD prevention strategies. As we all know, the best method to avoid the onset of the disease and its progression is to implement a preventative program. In the preventative category of COPD, the findings of the analysis revealed a significant difference in knowledge between the medical and non-medical groups (82.75% vs 70.75%) with a p value of 0.001.

COPD was previously understood by 73.875% of the medical group and 47.17% of the non-medical group, according to the total score of the six categories. We get statistical significance (p=0.001) in all categories as a consequence of the analysis. Instead of the results suggesting that the medical group had a higher mean score than the non-medical group because they all had a greater educational background, it demonstrated that some medical subjects also require a higher level of understanding regarding COPD. Only about half of the medical group participants got the COPD questions wrong. It could be owing to a lack of awareness about their educational backgrounds, as 37% of them had only completed high school. Furthermore, despite the fact that 63% of them have a diploma or graduate program (S1), they may not know much about COPD due to their lack of health-related schooling and no recognition of people or relatives with COPD in their immediate environment. The participants' lack of understanding about COPD demonstrates a dearth of COPD education and counselling in the community. Patients' failure to seek treatment in a timely manner may be due to a lack of information about the early symptoms of COPD. The PLATINO trial in Brazil discovered that individuals who had prior knowledge of the condition were the most symptomatic.[17] Even among people with respiratory symptoms in Africa, there was a lack of such knowledge.[18] According to the previously mentioned Canadian study, 60% of those at risk of getting COPD had little or no knowledge of the disease. This rate varies by region in Spain, ranging from 73.7% to 91.0%. COPD patients in another Canadian study indicated a significant lack of understanding regarding the disease's aetiology, symptoms, and therapy.[19]

The questionnaire can be utilized in a variety of ways. The BCKQ could be used to assess a person's level of knowledge. Incorrect responses or "don't know" responses show a lack of understanding that requires further study. It looked to be useful for BCKQ as a basis for discussion and teaching material; as a result, it can also be information for a society that can help to avoid COPD by reducing risk factors such as smoking and monitoring their health status if they have COPD symptoms.[16]

Our research reveals that there are variations in the care provided to COPD patients by non-medical and medical professionals, as well as gaps in their expertise. This fact could be the first step toward the creation of an integrated COPD training program, bridging the knowledge gap and allowing individuals to learn more about COPD in the near future.

Health professionals recommend public education about COPD. There is no satisfactory instrument for measuring knowledge and assessing educational outcomes. The multiple choices questionnaire (BCKQ) was designed and tested, its validity and consistency were assessed. A copy of the multiple choice’s questionnaire is provided in the appendix. The questionnaires were assessed by the lay public and health professionals.[9]

CONCLUSIONS AND SUGGESTION

The general people and medical experts have quite different understandings of COPD, according to our research. We hope that in the future, the public will be educated about COPD and the importance of the community is familiar with COPD and taking preventive and treatment steps as soon as feasible.

REFERENCES

1. Rutschmann, O.T., Janssens, J.P., Vermeulen, B. and Sarasin, F.P., 2004. Knowledge of guidelines for the management of COPD: a survey of primary care physicians. Respiratory medicine, 98(10), pp.932-937.
2. Gupta, N., Malhotra, N. and Ish, P., 2021. GOLD 2021 guidelines for COPD—what’s new and why. *Advances in Respiratory Medicine*.

3. Lim, J.U., Lee, J.H., Kim, J.S., Hwang, Y.I., Kim, T.H., Lim, S.Y., Yoo, K.H., Jung, K.S., Kim, Y.K. and Rhee, C.K., 2017. Comparison of World Health Organization and Asia-Pacific body mass index classifications in COPD patients. *International journal of chronic obstructive pulmonary disease*, *12*, p.2465.
4. Zhao, Qianwen, et al. The impact of COPD and smoking history on the severity of COVID-19: A systemic review and meta-analysis. Journal of medical virology 92.10 (2020): 1915-1921.
5. Alqahtani, Jaber S., et al. Prevalence, severity and mortality associated with COPD and smoking in patients with COVID-19: a rapid systematic review and meta-analysis. PloS one, 2020, 15.5: e0233147.
6. Riblet, N. B., Gottlieb, D. J., et al. 2020. An analysis of the relationship between chronic obstructive pulmonary disease, smoking and depression in an integrated healthcare system. *General hospital psychiatry*, *64*, 72-79.
7. Susanto, A.D., 2021. Problems of Chronic Obstructive Pulmonary Disease (COPD) Among Workers. Jurnal Respirologi Indonesia, 41(1), pp.64-73.
8. Vogelmeier, Claus F., et al. "Goals of COPD treatment: focus on symptoms and exacerbations." *Respiratory medicine* 166 (2020): 105938.
9. Pezzuto, A., & Carico, E. 2020. Effectiveness of smoking cessation in smokers with COPD and nocturnal oxygen desaturation: functional analysis. The clinical respiratory journal, 14(1), 29-34.
10. Antoniu, S. A., Buculei, I., Mihaltan, F., et al. 2021. Pharmacological strategies for smoking cessation in patients with chronic obstructive pulmonary disease: a pragmatic review. Expert Opinion on Pharmacotherapy, 22(7), 835-847.
11. Backman, H., Vanfleteren, L., Lindberg, A., et al. 2020. Decreased COPD prevalence in Sweden after decades of decrease in smoking. Respiratory research, 21(1), 1-12.
12. Lindsay, H. G., Wamboldt, F. S., Holm, K. E., et al. 2021. Impact of a medical diagnosis on decision to stop smoking and successful smoking cessation. Chronic Obstructive Pulmonary Diseases: Journal of the COPD Foundation, 8(3), 360.
13. Dardouri, M., Limam, M., Ajmi, T., et al. 2020. Association between smoking cessation and quality of life among patients with COPD in Tunisia. European Journal of Public Health, 30(Supplement_5), ckaa165-1358.
14. Hashimoto, R., Tomioka, H., Wada, T., & Yoshizumi, Y. 2020. Outcomes and predictive factors for successful smoking cessation therapy in COPD patients with nicotine dependence. Respiratory investigation, 58(5), 387-394.
15. Staiou, M., Kotrotsiou, E., Gourgoulianis, K. and Raftopoulos, V., 2018. The Psychometric Properties and Test-Retest Reliability of the Bristol COPD Knowledge Questionnaire when Adapted in a Sample of Greek Nurses. International Journal of Caring Sciences, 11(1), p.157.
16. White R, Walker, P, Roberts, S, Kalisky, S, White, Paul. Bristol COPD knowledge questionnaire (BCKQ): testing what we teach patients about COPD DO - 10.1191/1479972306cd117oa. Chronic respiratory disease. 2006; 3: 123–131
17. Menezes AM, Wehrmeister FC, Padilla RP, et al. 2017. The PLATINO study: description of the distribution, stability, and mortality according to the Global Initiative for Chronic Obstructive Lung Disease classification from 2007-2017. International Journal of COPD,12:1491-1501.
18. Castro MC, Queiroz AM, Moreira MA, et al. 2014. Knowledge about COPD among users of primary health care services. International Journal of COPD, 10: 1-6.