

Bronchitis Prevention in the Elderly in DKI Jakarta, Indonesia

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Abstract

In Indonesia, bronchitis was not known with certainty, but this disease was part of chronic obstructive pulmonary disease, the 2017 Directorate General of Disease Control reports 4%. The purpose of this study is to find out the causes of bronchitis in the elderly at Papanggo Public Health Center in Tanjung Priok, North Jakarta, and DKI Jakarta in 2019. Applied research methods taken from a case control study of 30 COPD cases and 64 not COPD were randomly sampled, 27 of them elderly and suffer bronchitis numbered 16 people (59.3%) and not Bronchitis 11 people. Data obtained by direct interview with the questionnaire have been tested for validity and reliability. Descriptive, Chi Square, multiple logistic regressions. Results suffered Bronchitis 16 people (59.3%), emphysema 14.8%. The characteristics of the elderly aged 60-75 years are 17 people (63%), 76-90 years 10 people (37%); male 18 people (66.7%), low education 24 people (88.9%), the work of drivers and employees each amounted to 6 people (44.4%), uncertain jobs at most 16 people (59.3%), length of work 30- 50 years 48.1%, working time 12-14 hours 63.0%, income at most Rp.500,000-3,000,000, - 22 people (81.5%), Body Mass Index at risk 13 people 48.1%, Abdominal rate at 21 people (77.8%) , High blood pressure 15 people (55.6%), not exercising 15 people (55.6%), 19 people have smoked (70.4%), 11-14 years old started smoking 20 people (74.1%), number of cigarettes per day < 5-> 5 cigarettes for 8 people (29.6%), daily costs for cigarettes Rp.27,500-Rp.50,000 (37%), length of smoking 37 years-51 years (37%), types of clove cigarettes (81.5%), How to smoke cigarettes feels up to the lungs 25 92.6%, exposed to cigarettes in the living area 70.4%, exposed to cigarettes at work 74.1%, exposed to cigarettes in public places 77.8%, COPD families 18.5%. 77.8% less knowledge, 37% less attitude. Test results of the relationship of bronchitis with all of these free variables that have significant values of $p \leq 0.05$ are gender, education, occupation, length of work, exercise, abdominal circumference, smoking, number of cigarettes smoked every day, exposed to cigarette smoke in the residence, place work, public places. The final model the causes of bronchitis in the elderly were smoked, cigarette smoke, exposed of cigarette smoke in the residence, work and public places. Conclusions smoking and cigarette smoke were the main causes of bronchitis in the elderly. Suggestions do not smoke and regulations and the implementation of regulations that are serious about not smoking, do not smoke in the home environment, workplaces and public places.

Keywords: Bronchitis, Elderly, Smoking, Exposure to Cigarette Smoke

Introduction

Acute bronchitis is a temporary inflammation of the trachea and major bronchi. Clinically, it is diagnosed on the basis of cough and sometimes phlegm, dyspnea, and wheezing acute lower respiratory tract infections such as pneumonia and acute bronchitis are the most common reasons for visiting a GP, especially among the elderly [1]. Chronic bronchitis is a part of the disease that causes Chronic Obstructive Lung Disease which is obstructed by pulmonary air flow [1, 2]. The phenomenon of a trend that tends to increase COPD sufferers from year to year stated by the World Health Organization. WHO estimates that around 65 million suffer from COPD and die as many as 3 million people due to COPD represent about 5% of mortality from the total causes of death cases in 2006. COPD(2) The WHO Global Report on NCD in 2014 showed that in 2012 the percentage of deaths from non-communicable diseases (PTM)

accounted for a proportion of 68% and more than 40% of deaths occurred under 70 years of age (premature deaths), including asthma and COPD which accounts for 10.7% of all causes of death due to disease [3].

WHO-South East Asia Region In 2008 said it had estimated 1.4 million people died of chronic lung disease, which included COPD of 86% and Asthma of 7.8%, while data from the Global Adult Tobacco Survey (GATS) in the year 2011 stated the prevalence of male smokers was 67.4% and women were 2.7%. From several surveys it turns out that 78.4% of adults have been exposed to cigarette smoke in the home [3]. In the Netherlands, the annual incidence of pneumonia and acute bronchitis per 1,000 patients aged 65-74 years is 12 and 32, respectively, and this is even higher in the very elderly [2]. Acute bronchitis affects about 44 out of 1000 adults (over 16 years of age) per year in the UK, around 82% of episodes occur in the fall or winter [1]. One survey found that acute bronchitis was the fifth most common reason for people of all ages to come to a

GP in Australia. Believed to be the trigger for acute bronchitis is a pathogenic infection, the pathogen has been identified in less than 55% of people [1]. Community studies that seek to isolate pathogens from the sputum of people with acute bronchitis find viruses in 8% to 23% of people, typical bacteria (*Streptococcus pneumoniae*, Hemophilic influenza, *Moraxella catarrhalis*) in 45%, and atypical bacteria (*Mycobacterium pneumoniae*, *Chlamydia pneumoniae*, *Chlamydia pneumoniae*, *Bordetella pertussis*) from 0% to 25% [1, 3, 4]. It is not clear whether smoking affects the risk of developing acute bronchitis. PROGNOSIS Acute bronchitis is considered a mild self-limiting disease, but there is limited data on the prognosis and level of complications, such as chronic coughing or progression to chronic bronchitis or pneumonia. One prospective longitudinal study reviewed 653 previously healthy adults who came to the suburbs in general practice over a 12-month period with symptoms of acute lower respiratory tract infections [1]. It was found that, in the first month of illness, 20% of people returned to practitioners with persistent or recurring symptoms, mostly persistent coughing. One RCT of 212 people (of which around 16% took antibiotics outside the study protocol) found that participants in the control group without treatment had at least a slight problem with coughing for an average of 11.4 days Cough was quite bad 'lasted for an average of 5.7 days. Large RCTs for 2,061 adults (over 18 years) who have an acute cough (duration of up to 28 days) or tend to be lower in respiratory infections (excluding clinical pneumonia), but include participants with asthma or COPD (15%), informative about the natural history of short-term acute bronchitis [5].

some countries in mainland Asia including the Pacific the number of COPD patients who have a moderate degree is estimated to reach 56.6% million with a prevalence of 6.3% stated by The Asia Pacific Chronic Obstructive Pulmonary Disease Roundtable Group in 2006. As for the number of prevalence between 3.5% - 6.7% are found in China with 38,160 million COPD cases, Japan with 5.014 million and Vietnam with 2.068 million. Such conditions indicate that the number of COPD cases occurring in various countries is quite large [1]. According to Hospital Information System data (SIRS) in 2011 that COPD is one of the top 10 causes of death in hospital hospitalizations with a percentage of 6.74%. This figure shows a tendency to increase and increase the number of sufferers. COPD which is part of Non-Communicable Diseases has become a health problem in the community in Indonesia.

The prevalence of COPD according to the Health Research and Development Agency in 2013 was 3.7%, which was higher in men by 4.2% than women at 3.3% with an OR value of 1.3. This is due to the higher smoking habits of men than women. There is a relationship between smoking and COPD events through the types of cigarettes smoked, the number of cigarettes smoked in one day and the length of time they consumed cigarettes. This is a risk factor for subsequent suffering from respiratory diseases including COPD [4].

From the trial results of the implementation of the Practical Approach to Lung Health (PAL) conducted in 3 provinces namely DKI Jakarta, West Java and Lampung provinces from 2009 - 2013, as many as

31.76% were visits of respiratory disorders aged > 5 years old in primary health facilities. The results of testing the application of PAL in the three provinces obtained COPD disease data of 1322 patients [3].

In Indonesia there have been several studies that have proven COPD cases, by the Ministry of Health through Basic Research of Health 2007 and 2013 which stated that COPD cases were ranked 6 out of 10 deaths from illness. This is reinforced in the 10 ranks of causes of death taken from the 2014 Simple Sample Registration (SRS) in Indonesia, around 4.9%. By looking at the high number of events, it can be predicted to rank as the 3rd leading cause of death in the coming 2030.

Indonesia is one of the countries that have the largest number of smokers after China, but unfortunately for COPD prevalence data only in Basic Research of Health 2013 there was no research or subsequent research, only emphasizing the condition of the number of smokers increasing from year to year according to government directives to optimize the program priority first. Basic Research of Health proves an increase in the prevalence of novice smokers for smokers under the age of 18 from 8.8 at Basic Research of Health 2013 to 9.1 at Basic Research of Health and 2018. It can be projected that there will be an increase in the number of COPD cases when they were 40 years old [4-7].

Data from the North Jakarta Health Office's annual report in 2018 which had been reported by 1,481 patients with diagnosed COPD cases. Based on the sex of patients with COPD cases, it was obtained in men as many as 1,043 people (70.4%) and women as many as 438 people (29.6%) and the average age of patients occurred at the age of more than 45 years. North Jakarta Health Office has 48 health centers where the highest cases are in Papanggo Public Health Center in Tanjung Priok.

Data on outpatient visits at the Papanggo Public Health Center in 2017 there were 471 people with COPD. Based on the proportion according to sex, there were 273 men (58%) and 228 women (42%). Whereas in 2018 the number of COPD sufferers was 337, in which the male gender was 235 (69%) and for women was 134 (39%). It can also be seen that the Papanggo Public Health Center Tanjung Priok is located in the Tanjung Priok sub-district where most of its territory is a very dense residential area with various socioeconomic status [8, 9].

Research Objectives

This study aims to prove the cause of bronchitis in the elderly at the Papanggo I Puskesmas Tanjung Priok, North Jakarta, DKI Jakarta in 2019. Applied research methods taken from a case control study of 30 COPD cases and 64 non-COPD cases were taken by random sampling, 27 of them were elderly and suffered from bronchitis of 16 people (59.3%) and 11 were not bronchitis subjects of this study. Data obtained by direct interview with the questionnaire have been tested for validity and reliability. This research used descriptive analytic analysis with Chi Square and logistic regression.

Research Result
Elderly Correspondent Characterization for Bronchitis Cases

NO	Variable	Bronchitis		Total	p value	OR	95%CI	
		Yes	NO				Lower	Upper
1	Age 76-90 Year 60-75 Year	7 (43.8%) 9 (56.3%)	3 (27.3%) 8 (72.7%)	10(37%) 17(63%)	0.448	2.074	0.397	10.845
2	Gender Male Female	14 (87.5%) 2 (12.5%)	4 (36.4%) 7 (63.6%)	18(66.7%) 9(33.3%)	0.011	12.250	1.788	83.946
3	Education < High School >College	16 (100%) 0 (0.0%)	8 (72.7%) 3 (27.3%)	24(88.9%) 3 (11.1%)	0.056	0.333	0.189	0.597
4	Income Rp.500000-3000000 >Rp.3000.000,-	13 (81.2%) 3 (18.8%)	9 (81.8%) 2 (18.2%)	22(81.5%) 5 (18.5%)	1.000	0.963	0.133	6.980
5	Occupation Before Worker Non Worker	1 (6.3%) 15 (93.8%)	1 (9.1%) 10 (90.9%)	2 (7.4%) 25 (92.6%)	1.000	0.667	0.037	11.936
6	Occupation Before Driver Non Driver	6 (37.5%) 10 (62.5%)	0 (0.0%) 11 (100%)	6 (22.2%) 21 (77.8%)	0.054	2.100	1.341	3.289
7	Occupation Before Merchant Non Merchant	2(12.5%) 14 (87.5%)	1 (9.1%) 10 (90.9%)	3 (11.1%) 24 (88.9%)	1.000	1.429	0.113	18.004
8	Occupation Before Builder Non Builder	0 (0%) 16 (100%)	1 (9.1%) 10 (90.9%)	1 (3.7%) 26 (96.3%)	0.407	2.600	1.599	4.228
9	Occupation Before Mother at home Non Mother	2(12.5%) 14 (87.5%)	1 (9.1%) 10 (90.9%)	3 (11.1%) 24 (88.9%)	1.000	1.429	0.113	0.113
10	Occupation Before Employee Non Employee	2 (12.5%) 14 (87.5%)	4 (36.4%) 7 (63.7%)	6 (22.2%) 21 (77.8%)	0.187	0.250	0.036	1.713
11	Occupation Before Entrepreneur Non Entrepreneur	1 (6.2%) 15 (93.8%)	2 (18.2%) 9 (81.8%)	3 (11.1%) 24 (88.9%)	0.549	0.300	0.024	3.799
12	Occupation Before Police Non Police	0 (0%) 16 (100%)	1 (9.1%) 10 (90.9%)	1 (3.7%) 26 (96.3%)	0.407	2.600	1.599	4.228
13	Occupation Before Miscellaneous Non Miscellaneous	2 (12.5%) 14 (87.5%)	0 (0%) 11 (100%)	2 (7.4%) 25 (92.6%)	0.494	1.786	1.262	2.528
14	Occupation After Miscellaneous Non Miscellaneous	13 (81.2%) 3 (18.8%)	3(27.3%) 8 (72.72%)	16(59.3%) 11 (40.7%)	0.015	11.556	1.860	71.795
15	Occupation After Employee Non-Employee	1 (6.3%) 15 (93.7%)	0 (0%) 11 (100%)	1(3.7%) 26 (96.3%)	1.000	1.733	1.247	2.409
16	Occupation After Domestic Mother Non	2 (12.5%) 14 (87.5%)	0 (0%) 11 (100%)	2 (7.4%) 25 (92.6%)	0.494	1.786	1.262	2.528
17	Occupation After Worker Non	1 (6.3%) 15 (93.7%)	0 (0%) 11 (100%)	1 (3.7%) 26 (96.3%)	1.000	1.733	1.247	2.409

18	Nutrition Cases IMT high risk IMT normal	8 (50%) 8 (50%)	5 (45.5%) 6 (54.5%)	13 (48.1%) 14 (51.9%)	1.000	1.200	0.257	5.593
19	Abdominal Width High Risk Normal	15 (93.8%) 1 (6.2%)	6 (54.5%) 5 (45.5%)	21 (77.8%) 6 (22.2%)	0.027	12.500	1.196	130.612
20	Blood Pressure High Normal	11 (68.8%) 5 (31.2%)	4 (36.4%) 7(63.6%)	15 (55.6%) 12 (44.4%)	0.130	3.850	0.761	19.946

Based on the characteristics of the majority of bronchitis respondents, young elderly with male genders, low education, before bronchitis, many worked with income <3 million rupiah, and after bronchitis also still worked but not necessarily, normal nutritional status, risky abdominal circumference, pressure high blood pressure, Based on the correlation analysis of characteristic factors that influence bronchitis are gender, education, occupation before the driver's illness, employment after indeterminate, abnormal abdominal linkage, while other factors have no effect because the p value > 0.05.

Respondent Behavior Bronchitis Case

NO	Variable	Bronchitis		Total	p value	OR	95%CI	
		Yes	NO				Lower	Upper
1	Smoking Smoker Non Smoker	15 (93.8%) 1 (6.3%)	4 (36.4%) 7 (63.6%)	19 (70.4%) 8 (29.6%)	0.002	26.250	2.459	280.203
2	Smoking Age 11-14 Year 12-14 Year	11 (68.8%) 5 (31.2%)	9 (81.9%) 2 (18.1%)	20 (74.1%) 7 (25.9%)	0.662	0.489	0.076	3.145
3	Smoking Duration 37-51 Year 29-36 Year	7 (43.8%) 9 (56.3%)	8 (72.7%) 3 (27.3%)	10 (37%) 17 (63%)	0.448	2.074	0.397	10.845
4	Cigarette Quantity <5 Cigarettes Non	8 (50%) 8 (50%)	0 (0%) 11 (100%)	8 (29.6%) 19 (70.4%)	0.008	2.375	1.402	4.024
5	Cigarette Cost 27.500-50.000 15.000-27499	8 (50%) 8 (50%)	2 (18.2%) 9 (81.8%)	10 (37%) 17 (63%)	0.124	4.500	0.730	27.739
6	Cigarette Type Filter Non Filter	4 (25%) 12(75%)	1 (9.1%) 10 (90.9%)	5 (18.5%) 22 (81.5%)	0.618	3.333	0.319	34.830
7	Smoking method Smoking through nose and mouth Smoking through Lung	0 (0%) 16 (100%)	2 (18.2%) 9 (81.8%)	2 (7.4%) 25(92.6%)	0.157	2.778	1.647	4.685
8	Smoking Exposure At Home Outside	16 (100%) 0 (0%)	3 (27.3%) 8 (72.7%)	19 (70.4%) 8 (29.6%)	0.000	0.158	0.056	0.446
9	Smoking Exposure At Office Outside	16 (100%) 0 (0%)	4 (36.4%) 7 (63.6%)	20 (74.1%) 7 (25.9%)	0.000	2.000	0.083	0.480
10	Smoking Exposure At Public Spaces Outside	16 (100%) 0 (0%)	5 (45.5%) 6 (54.5%)	21 (77.8%) 6 (22.2%)	0.002	0.238	0.111	0.512
11	Smoking Exposure At Public Spaces Outside	16 (100%) 0 (0%)	5 (45.5%) 6 (54.5%)	21 (77.8%) 6 (22.2%)	0.002	0.238	0.111	0.512

12	Exercise							
	Exercising	12 (75%)	3 (27.3%)	15 (55.6%)	0.022	8.000	1.399	45.756
	Not Exercising	4 (25%)	8 (72.7%)	12 (44.4%)				

Based on the distribution and frequency of respondents' behavior before bronchitis, most of them had smoked, young smoking, 29-36 years old smoked, the number of cigarettes <5> 5 cigarettes, the cost of smoking Rp.15000-Rp.27, 499, -, type of clove cigarettes, smoking cigarettes until they are exposed in the lungs, exposure to cigarettes in their homes and surroundings, at work and in public places, and exercising. Based on the analysis of the correlation of behavioral factors that influence Bronchitis are smoking, number of cigarettes smoked every day, exposure to cigarettes in the residence, workplace and public places and lack of exercise, while other factors do not affect bronchitis due to the p value 0.05.

Respondent Disease and Bronchitis Genetics

NO	Variable	Bronchitis		Total	p value	OR	95%CI	
		Yes	NO				Lower	Upper
1	Emfisiema lung	13 (81.2%)	10 (90.9%)	23 (85.2%)	0.624	0.433	0.039	4.818
	Emfisiema Non Emfisiema	3 (18.8%)	1 (9.1%)	4 (14.8%)				
2	COPD	4 (25%)	1 (9.1%)	5 (18.5%)	0.618	0.333	0.319	34.830
	COPD Non COPD	12 (75%)	10 (90.9%)	22 (81.5%)				

Based on the table of the diseases of the other respondents and the descendants of COPD to the incidence of bronchitis there is no meaningful relationship.

Knowledge and Respondent Behavior for Bronchitis Control

NO	Variable	Bronchitis		Total	p value	OR	95%CI	
		Yes	NO				Lower	Upper
1	Knowledge	11 (68.8%)	10 (90.9%)	21 (77.8%)	0.350	0.220	0.022	2.220
	Lower Standard	5 (31.3%)	1 (9.1%)	6 (22.2%)				
2	Behavior	4 (25%)	6 (54.5%)	10 (37%)	0.224	0.278	0.054	1.432
	Lower Standard	12 (75%)	5 (45.5%)	17 (63%)				

Knowledge about prevention is not affected by bronchitis and emphysema or COPD is not significantly related, attitude is also like that.

Analysis of the model of the characteristics, behavior, disease, heredity, knowledge and attitudes of respondents about the prevention of bronchitis, influencing factors with a value of $p < 0.05$ are a number of 11 factors including Gender, Education, Work before the driver, work after indeterminate, not sports Abdominal girth is not normal, never smoked. The number of cigarettes smoked a lot, and exposed to cigarette smoke in the residence, workplace and public places. The last modeling only ever smoked.

Discussion

The study prevalence of chronic bronchitis was 59.3%, men 87.5% and women 12.5%, sex correlation analysis odd ratio 12,250 CI 95% (1,788-83,946), had ever smoked an odd ratio of 26,250 (2,459-280,203), exposed to cigarette smoke on the spot staying Odd ratio 0.158, 95% CI 0.056-0.446; exposure to cigarette smoke in the workplace odd ration 12,250.95% CI 1,788-83,946, exposure to cigarettes in public places odd ratio 0.238, 95% CI 0.111-0.512, while other studies prevalence of bronchitis chronic is 13.0% in

women and 18.6% in men Double logistic regression produces the following predictors for chronic bronchitis: male sex (odds ratio with 95% confidence interval 1.1 (0.9-1.3), previous smoking odds ratio 1.7 (1.2-2.2)), current smoking odds ratio 2.1 (2.1-3.8), previous exposure to dust and smoke (odds ratio 2.2 (1.7-2.7), chest infections in childhood (odds ratio 2.1 (1.6-2.9), more than 6 chest infections in the previous 10 years (odds ratio 6.2 (4 , 1-9.2) and alcohol consumption of more than 3 drinks a day (odds ratio 1.8 (1.3-2.3). Conclusion smoking is one of the causes of bronchitis, exposure to cigarette smoke and gender of the male which is a lot of bronchitis.

Behavioral factors that influence bronchitis are smoking, number of cigarettes smoked every day, exposure to cigarettes in residence, workplaces and public places and lack of exercise, while other factors do not affect bronchitis because of $p > 0.05$, research Although this only discusses Bronchitis, the results are in line with research conducted by Laode Ismail with the case control design at the Lepo Lepo Health Center, Kendari City, South Celebes, Indonesia in 2017, the results of smoking and other comorbidities were significant for COPD events with p values of 0.038 and OR 2.641. The difference lies in other accompanying diseases such as

emphysema is not meaningful because this study may be the same disease and emphysema and Bronchitis equal in number so that in theory it should be meaningful one of the factors may be Bronchitis and emphysema almost the same number of respondents so there are no significant differences. The results of this study are the same as a study conducted by Liza Salawati in 2014 examining the relationship of smoking with COPD degrees also significant with a value of $p < 0.007$. Helmi Niagara's research in 2013 with the cross sectional descriptive smoking design was the highest proportion with a p value of 0.006, also male sex with a value of $p < 0.028$, having no-risk occupations, mostly respiratory system diseases. The difference between respondents here includes risk groups such as the work of a driver, and also employees because they have smoked, exposed to cigarettes in their homes, workplaces and public places and every day the number of cigarettes smoked > 5 cigarettes, with the expenditure of smoking money per Rp.15,000- Rp.27,499, -, when I started smoking young people aged 11-14 years and the duration of smoking 29-36 years.

Conclusions and Suggestions

The cause of chronic bronchitis in the elderly was smoking and exposed to cigarette smoke in the residence, work and public places. Conclusions smoking and cigarette smoke were the main causes of bronchitis in the elderly.

Suggestions do not smoke and regulations and the implementation of regulations that are serious about not smoking, do not smoke in the home environment, workplaces and public places.

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