Correlation Between The Knowledge On Health Effects Of Smoking And Motivation On Smoking Cessation In Ex-Smokers Of Lung Department Patients, Siloam General Hospital, Lippo Village.

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Abstract

Introduction: Data from WHO showed that deaths caused by tobacco reaches approximately ± 6 million deaths annually. There are many information about the danger of smoking which spreading from various sources. The level of knowledge about the danger of smoking can be associated with motivation to stop smoking. Therefore, motivation toward smoking cessation arises if someone knows the benefits that can be taken, through an adequate knowledge.

Aim: To determine the relationship between the level of knowledge on the health effects of smoking with motivation to stop smoking in ex-smokers of lung department patients at Siloam General Hospital, Lippo Village.

Methodology: This is a cross-sectional study, analyzing 138 ex-smokers of Siloam General Hospital's lung department patients using consecutive sampling techniques.

Results: the results showed 73.2% of people have good knowledge about the danger of smoking and 26.8% are not. Then, 58% of people have high motivation to stop smoking and 42% have low motivation. The results of statistical test using Chi Square showed a significant relationship between the level of knowledge and the motivation to quit smoking (OR = 4.293 [95% CI: 1,921-9,594], *P*<.001). The results of the multivariate logistic regression test showed educational factors (*P*=0.014), and the frequency of smoking (*P*=0.007) also influence the motivation to stop smoking.

Conclusion : There's a significant relation between knowledge about the danger of smoking and the motivation to quit smoking.

Introduction

Tobacco use is a significant global problem and a major cause of a preventable fatal deaths. Smoking is the main form of tobacco use and has been accepted by the majority of Indonesians as a habit. According to World Health Organization (WHO) data, nearly 6 million deaths annually caused by tobacco. This number is expected to increase even more than 8 million deaths by 2030.[1] The incline in smoking prevalence is seen to be greater at a young age than in adult age.

Appeals regarding the danger of smoking that have been carried out by various aspects such as in advertisements, warning labels on the cigarette packages, increased cigarette costs, counseling about smoking-free and many more, but still it's underestimated and ignored by Indonesian smokers. Therefore, the prevalence of smoking in Indonesia is still very high.

Indonesia ranks at number three as a country with the largest cigarette consumption in the world after China and India. West Java's the highest in Indonesia (32.7%). While the lowest smoking prevalence goes to Papua's Province (21.9%).[1] There are 13 provinces out of 33 provinces which have a smoking prevalence higher than the national average. Globally, the impact of smoking accounts for 22% of all cardiovascular diseases and is also associated with hypertension and cerebrovascular disease. Between 56%-80% of all chronic respiratory diseases (including chronic bronchitis and emphysema) are caused by smoking. It is estimated that tobacco-related deaths

account for 10% or around 200,000 per year of total deaths in Indonesia. WHO estimates that most of deaths in Indonesia (61%) are caused by non-communicable diseases[2], and three conditions are included as causes of death due to non-communicable diseases are cardiovascular disease, malignant neoplasms, and chronic obstructive pulmonary disease. Smoking is claimed to be the cause of 90% of lung cancer in men and around 70% in women in Indonesia. Smoking often assumed to be a symbol of masculinity and courage. Judging from several studies related to the knowledge about danger of smoking, a person can be motivated to stop smoking by a high level of knowledge because it's one of the intrinsic factors that builds up a motivation.

Knowledge makes someone to have reason and foundation to make a choice, such as for being motivated. Lack of knowledge and motivation leads to inappropriate behavior because there is no basis for positive values from the knowledge they get. Someone's behavior and actions will be better if it's based on knowledge and motivation. The higher one's knowledge will contribute to the next behavior which will ultimately give an impact. Knowledge is also closely related to education, where it is expected that with higher education, a person will have broader level of knowledge. However, it needs to be emphasized, it does not mean that someone with low education has an absolute lower knowledge.[3]

Knowledge about smoking is the first step for smokers to be motivated on smoking cessation, if the knowledge in providing motivation is not good enough, it would makes that person not being able to stop smoking.[3]

Objective

Determining the relationship between the level of knowledge on the health effects of smoking with motivation to stop smoking in ex-smokers of lung department at Siloam General Hospital, Lippo Village.

Methodology

Design

The research is a categorical analytic with cross-sectional study design.

Sample

The samples are ex-smokers from lung department patients, Siloam General Hospital, Lippo Village that fulfill the inclusion criteria, which is a 15-64 years old patients. They agreed to participate in this research by signing an informed consent. The independent variable in this research was knowledge about smoking, and the dependent variable was motivation on smoking cessation. The other independent variables that are associated with the dependent variable were education and smoking frequency

Data Collection Method

This research data were collected using consecutive sampling method. Knowledge of smoking from each sample are assessed by International Tobacco Control's questionnaire containing 13 questions[4], while the motivation on smoking cessation containing 11 questions are assessed using ATC Center for Tobacco Treatment, Education, and Research Questionnaire (*Tobacco Use Context Section E number 11 and Tobacco Quitting History Section F*)[5]. The ways of working and data collection technique include :

1. Lung department patients in Siloam General Hospital (aged 15-64 y.o)
2. Samples taken by consecutive sampling
3. Fulfilled inclusion criteria
4. Informed Consent
5. Fulfilled questionnaire of knowledge about the danger of smoking (ITC) and the motivation on smoking cessation (ATC Center for Tobacco Treatment, Education, and Research).
6. Checking the completeness of the questionnaire.
7. Analysing data and result interpretation

Data Analysis

Data obtained were processed and analyzed using *Statistical Program for Social Science* (SPSS) 22.0

Result and Discussion

Samples included in this research were part of research target population. A total sample of 138 people were included in data processing. Data on age, sex, education, job, economics, knowledge about the danger of smoking, and motivation to stop smoking were recorded and shown in the

demographic of samples table (Table 1). This research obtained 97.1% men and only 2.9% of women, having an average age at 47 years.

The youngest was 18 years and the oldest was 64 years old. In this research, knowledge about the danger of smoking from each sample was assessed using a questionnaire consisting of 13 questions related to smoking (Table 2). Furthermore, the results of the questionnaire, the sample would be categorized as having a good level of knowledge if the results shown were ≥10, while it's categorized as having a level of poor knowledge if <10.

Table 1. Demographic characteristics of respondents

Characteristics (n=138)	Frequency	Percentage (%)
Age		
15-25 y.o	5	3.6
26-45 y.o	51	37
46-54 y.o	82	59.4
Sex		
Man	134	97.1
Woman	4	2.9
Age (start smoking)		
< 21 y.o	105	76.1
>21 y.o	33	23.9
Reasons to smoke		
Parents/ siblings	15	10.9
Friends	120	86.9
Mass media	3	2.2
Social media	0	0
Number of cigarettes consumed		
≥21 /day	44	31,9
<21 /day	94	68.1
Economics		
High (> UMK)	115	83.3
Low (< UMK)	23	16.7
Education		
College ✓	37	26.8
College ✗	101	73.2
Smoking time		
Several times/ day	9	6.5
Several times/ week	89	64.5
Every time with friends	40	29
Knowledge about smoking		
Good	101	73.2
Poor	37	26.8
Motivation on smoking cessation		
High	80	58
Low	58	42

After analyzing the knowledge survey data, it was found that more samples had good knowledge (73.2%) compared to poor knowledge (26.8%). The smallest value of knowledge about smoking was 6 and the greatest was 13 (100%). After processing the data, it showed that there were more samples who began smoking because of their friends' influence. For the education data, more samples showed that they do not attend college (26.8%) rather than the ones do (73.2%). From which the classification of smokers are categorized as a heavy smoker and a non-heavy smokers, this research have more a non-heavy smokers (68.1%) rather than the heavy ones (31.9%).

Table 2. Description of Smoking Knowledge Questionnaire

NO	QUESTIONS	RIGHT N (%)	WRONG N (%)
1.	Carbon Monoxide (CO) is a chemical included in cigarette smoke	104 (75.4)	34 (24.6)
2.	Nicotine is a chemical included in cigarette smoke	135 (97.8)	3 (2.2)
3.	Tar is a chemical substance in cigarette smoke that causes most of lung cancer	113 (81.9)	25 (18.1)
4.	Nicotine is the main substance in tobacco that makes people addicted to smoke	133 (96.4)	5 (3.6)
5.	Smoking cause stroke on smokers	128 (92.8)	10 (7.2)
6.	Smoking cause impotence on male smokers.	121 (87.7)	17 (12.3)
7.	Smoking cause vascular diseases on smokers.	126 (91.3)	12 (8.7)
8.	Smoking cause bladder cancer on smokers.	115 (83.3)	23 (16.7)
9.	Smoking can increases mouth and throat cancer on smokers.	119 (86.2)	19 (13.8)
10.	Smoking cause heart attack on smokers and second-hand smokers	136 (98.6)	2 (1.4)
11.	Smoking cause lung diseases in smokers (such as emphysema and bronchitis)	120 (87)	18 (13)
12.	Smoking can increases the risk of blindness on smokers	98 (71)	40 (29)
13.	A mother who smokes during pregnancy cause serious harm to the baby (such as premature)	121 (87.7)	17 (12.3)

The result of the questionnaire above shown in table 2 showed that the disease that seems to be very familiar to the patients is the one that says “smoking can cause a heart attack”, because 98.6% of all samples can correctly answer the question, and the second highest correct answer was the question that asks about nicotine in cigarettes smoke and the addictive ability (only 2.2%-3.6% of all people that don’t answer this correctly). The most wrong question is the one that says “smoking can increase the risk of blindness”. Most of the samples didn’t know that smoking can affect their eyes. For the motivation on smoking cessation, assessed by using ATC Center for Tobacco Treatment, Education, and Research Questionnaire consisting of 11 questions about the motivation to stop smoking.

From this research, it was found that most people tend to quit tobacco because they had a diseases. 58% of the samples showed a high motivation to quit tobacco (score ≥7), mostly by using “cutting down” technique, where they reduce the cigarettes they consume slowly. For the 42% of people that do not have a high motivation on smoking cessation, they have a

motivation score <7.

Statistical Analysis

Tabulation result shown in table 3 showed that 101 of 138 respondents had good knowledge about the danger of smoking , with 68 (67.3%) of them having a high motivation to stop smoking and 33 (32.7%) others had a low motivation. About 37 samples that had poor knowledge, 12 (32.4%) of them had a high motivation and 25 (67.6%) samples had low motivation. Data analysis Chi-Square showed p value = 0,000 supported by Odd and 95% CI = 1.921-9.594; which stated that there was a significant relation between knowledge about the danger of smoking and the motivation to stop.

Table 3. The Relation Between Knowledge about The Danger of Smoking and Motivation on Smoking Cessation

Variabel	Motivation to stop smoking		Total	*P* value	Odd Ratio	95% CI
	High	Low				
Knowledge about The danger of smoking						
Good	68 (67.3%)	33 (32.7%)	101	0.000	4.293	1.921-9.594
Poor	12 (32.4%)	25 (67.6%)	37			

Table 4. Chi-Square Analysis between the correlation of motivation on smoking cessation and variable

Variable	Motivation to stop smoking		Total	*P* value	Odd Ratio	95% CI
	High	Low				
Age				0.735	0.835	0.420-1.660
15-45	31 (55.4%)	25 (44.6%)	56			
46-64	49 (59.8%)	33 (40.2%)	82			
Sex				0.400	4.309	0.437-42.518
Man	79 (59%)	55 (41%)	134			
Woman	1 (25%)	3 (75%)	4			
Education				0.018	2.691	1.239-5.846
College ✓	33 (73.3%)	12 (26.7%)	45			
College ✗	47 (50.5%)	46 (49.5%)	93			
Age (start smoking)						
< 21	59 (56.2%)	46 (43.8%)	105	0.580		
					0.733	0.327-1.643
≥ 21	21 (63.6%)	12 (36.4%)	33			
Smoking Frequency					0.357	0.171-0.747
<21 (Non- Heavy smokers)	62 (66%)	32 (34%)	94			
				0.010		
≥ 21(Heavy smokers)	18 (41%)	26 (59%)	44			
Economics				0.700	1.326	0.540-3.258
>Minimum wage	68 (59%)	47 (41%)	115			
<Minimum wage	12 (52%)	11 (48%)	23			

For multivariate analysis that consists of 6 factors; education, economics, smoking frequency, age at starting smoking, sex, and age, there's only 2 factors that showed a significancy with the dependent variable (motivation to stop smoking), which are education and smoking frequency. It was found that education has a significancy with P = .014 and for smoking frequency; P =.007, shown in table 5, with a probability:

$$P(X) = \frac{1}{e^{-(1.711-(0.998x education)-(1.036x smoking frequency)}}$$

Table 5. Final Result of Multivariate Logistic Regression Analysis

Variables in the Equation

		B	S.E.	Wald	dF	Sig.	Exp(B)	95% C.I. for Lower	Upper
Step 1[a]	education	-.998	.407	6.010	1	.014	.369	.166	.819
	smoking frequency	-1.036	.386	7.204	1	.007	.355	.166	.756
	Constant	1.711	.684	6.252	1	5.535			

Discussion

Based on demographic characteristics of the respondents in table 1, it shows that samples in this research are mostly men 134 (97.1%), while women are only 2.9%. The samples which is an ex-smokers who are a lung department patients in Siloam General Hospital, Lippo Village are mostly 47 years old or so, range in age from 18-64 years old. Table 1 shows that 80 samples were highly motivated to stop smoking, which 68 of them had good knowledge about smoking (said to be good if ≥ 10 questions were correct), and the remaining 12 people had poor knowledge (if <10 questions were correct).4 It also showed from 58 samples with low smoking cessation motivation, 33 of them have a good knowledge and 25 of them have bad knowledge. Chi Square test results obtained P<.001 and Odd Ratio 4.293 with 95% CI 1.921-9.594 which can be interpreted that there is a significant correlation between knowledge about the danger of smoking with one's motivation to stop smoking. 95% Confidence Interval (1.921-9.594), which means that the confidence interval does not contain value = 1, so it shows the relationship between knowledge about smoking with smoking cessation motivation at a significance level of 5%.

In accordance with the results of the knowledge questionnaire regarding the danger of smoking in Table 2, it is found that 29% of the samples are wrong in answering questions about smoking can increases risk of blindness on smokers. Tobacco smoking is the prime modifiable risk factor for age related macular degeneration. Evidence indicates that more than a quarter of all cases of age related macular degeneration with blindness or visual impairment are attributable to current or past exposure to smoking.[6] But, there's still many samples who don't know about this information.

As a matter of fact, some of the respondents' knowledge, are somehow still low regarding the danger of smoking, eventhough there are many information spread from tv, newspaper, pictorial health warning, to counselling. This research proved that eventhough those are important but environmental are also really important in influencing someone's motivation to stop smoking such as their family and friends.[7]

This study's result is parallel with the result of International Tobacco Control Four Country Survey' study conducted on 9058 active smokers, aged > 18 years, who consumed at least 100 cigarettes and still smoked in the past 1 month, the results showed that knowledge is closely related to the intention of the smokers to stop smoking with P =0.001. However, it is also said that one's knowledge about the danger of smoking, cannot or is not enough to be the only trigger for someone to stop smoking.[8]

Data analysis for this research uses Chi Square because the research is categorized as an unpaired comparative analytic. So it

cannot be analyze with other tests such as T-Test or Man-Whitney test.

In this study, the results of the Chi Square test for the correlation between the knowledge on health effects of smoking and motivation on smoking cessation in ex smokers of lung department patients, aged 15-64 years who have high and low motivation to stop smoking in Siloam General Hospital can be seen in table 3.

Usually, people who are addicted to cigarettes said that it is very difficult to let go and not consume cigarettes daily. In this study, respondents told that the reasons that smoking is a difficult thing to let go are because smoking gives benefits such as to relieve stress, distract mind, and replace hunger. However, there are also respondents that said it's only because of his habit and assumptions, it doesn't really replace hunger etc. This relates to knowledge as an understanding that is possessed by humans both in terms of theoretical and practical, it can undergo transformation at any time if it's used properly. Proved by this study, where the samples that have good knowledge and understanding about the danger of smoking have higher motivation to quit smoking compared to the sample group that has poor knowledge.

In a study at the Centers for Disease Control and Prevention in the US, it was said that those who started smoking regularly before age 18 having an intention to quit (OR, 0.66; 95% CI, 0.60-0.72) and had a lower chance of adjusting on smoking cessation (OR, 0.75; 95% CI, 0.69- 0.81) than those who started smoking at the age of 21 or more. People who start smoking regularly at age 18 to 20 also have lower intention to quit (OR, 0.73; 95% CI, 0.66-0.81) and a smaller chance on succeeding smoking cessation (OR, 0.83; 95% CI, 0.75-0.90) than those starting from age 21 or older.[9] So it can be concluded, people who do not smoke before the age of 21, are expected to have greater intentions and motivation to stop smoking. In this study, age at starting smoking was divided into 2 groups, namely <21 years and 21 years.[10] It can be seen in table 4 where the results are stated to be insignificant because the value of P<0.581 where P>0.05 so that there is no relationship between the age of smoking and the motivation to stop smoking.

In a study conducted by Henni Barus of 106 active smokers students majoring in FKM and FISIP UI regarding the relationship between sex and motivation to stop smoking, P =0.46 was obtained, which shows the two variables were not significantly related.[11] Similarly, in this study no significant relationship was found between sex and motivation to stop smoking, showed in table 4. However, this might occur because the sample is uneven where there are more samples taken from men; 134 people than women who were only 4 people.

Based on Henni Barus' research on the relationship between smoking frequency and motivation to stop smoking, P=0.129 was obtained, which means the two do not have a meaningful correlation.[10] In contrast to this study, the final P value between the frequency of smoking (calculated from the number of cigarettes consumed per day) and the motivation to stop smoking, obtained a significant P=0.010 which means there is a significant correlation between the two variables. This study illustrates that someone with a lower smoking frequency has a higher motivation on smoking cesation and vice versa. Then for the relationship between age and motivation to stop smoking the results obtained is a P=0.712 so that means no significant correlation was found between the variables. In this study the age range is divided into 2 groups which are included in the inclusion of 15-45 years and 46-64 years and the results show P=0.735 which means there is no significant relation as in previous studies.

Based on research conducted by Indah Oktarita on 80 public transport drivers who have ever stopped smoking in the Indralaya city area, Indonesia as a respondent regarding the economic relationship with the motivation to stop smoking showed P= 0.028 where it's P<0.05 so that means that there are a correlation between the respondent's economic and motivation to

quit smoking.[12] The study illustrates that someone who has a lot of income certainly does not think too much about spending to buy cigarettes. This make the respondents' motivation to stop smoking low. However, in this study, P =0.700 was obtained which indicates that the two variables are not significantly related.

Education is one of the variables studied and can be an indicator that affects motivation on smoking cessation. In this study it was found that there was a significant relationship between education and motivation because P=0.018 was obtained. Sulastri, et al (2009) research on smokers' compliance to DKI Jakarta regulations showed that the higher the level of education, the higher the smokers' compliance to DKI Jakarta regulations. Thus, education affects one's motivation.

In a study conducted at Santun Untan High School students, Pontianak by Alex regarding the relationship of the level of knowledge about Pictorial Health Warning (PHW) on cigarette packaging (which is one of the indicators of knowledge about smoking) with motivation to stop smoking shows that there is no significant relationship; P=0.759.[13] Contrast results showed in this study, there were a significant relationship between the knowledge of the dangers of smoking and motivation to stop smoking; P<.001.

In a study that also conducted by Henni Barus, described the results of the relationship between knowledge about danger of smoking with the motivation to quit showed P=0.054 so there was no significant relationship. The results in this study are different, which sateted before that it was found that there are a significant relationship between the knowledge of the dangers of smoking and motivation to stop smoking giving a P<.001.[11]

The final results of multivariate logistic regression analysis in this study can be seen in table 5, which is useful for predicting outcomes and assessing which variables are the strongest and most significant, showed that there are only 2 variables that have a significant relationship with motivation on smoking cessation, namely education (P= 0.014) and the frequency of smoking; measured by the number of cigarettes consumed per day (P=0.007) so it can be interpreted that this variables are proved to be an independent variables that significantly influenced the motivation to stop smoking.

The limitation in this research is the number of confounding variables that cannot be controlled which can be the factors that influenced the dependent variable so that the main independent variable (knowledge about the danger of smoking) is not the only one that can be significantly related to the dependent variable (motivation to quit smoking). Then the samples taken are not balanced between men and women. More men (97.1%) studied than women (2.9%) so it is less evenly distributed. Weakness in this study also can be seen in the questionnaire where translation is done but has not been validated internally or externally, also the subject of this study is different from previous studies because this study conducted on ex-smokers while in previous studies conducted on active smokers. Therefore there are differences that might lead into a bias. But because this study is still limited in Indonesia, it is hoped that the results of this study can contribute to providing data or an overview of the correlation between knowledge and motivation so this issue will become more concern in Indonesia.

Conclusion

The results show a significant relation between knowledge about the danger of smoking and motivation to stop smoking. 73.2% samples have a good level of knowledge about the danger of smoking and 58% samples have a high motivation on smoking cessation.

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