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Old Smoking, Number of Cigarette Consumption Per Day, Body Mass Index (Bmi), Diabetes, Dyslipidemia, and Hypertension with The Decrease of Erection Function Performance in Men 45-64 Years Old Visiting Hospitals

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Abstract

The decrease in erectile function performance is the inability to sustain an erection long enough during intercourse (NIH Consensus Conference, 1993). The etiology of decrease in erectile function performance is multifactorial; organic factors, and psychogenic factors involved in the ability to get and maintain an erection (Agarwal, 2006). The decrease in erectile function performance in this study was measured using IIEF-5 questionnaire. This study is a cross-sectional observative research that use the results of the questionnaire answers of the respondents. Obtained a population of 161 people who were then screened to 109 people who fit the criteria of this research by using insidential sampling method. The results of this study showed a decrease in erectile function performance of 56.88% of the total respondents. Correlation test results showed a significant association of each variable age, duration of smoking, number of cigarettes per day, diabetes, dyslipidemia, and hypertension with a decrease in erectile function performance. Then for Body Mass Index (BMI) in this study did not show any significant relationship with decreased in erectile function performance. This is because the respondents in this study consist only of normal wight (18.5 to 24.9) and over weight (25 to 29.9). Advice given to avoid decrease in erectile function performance is to reduce cigarette consumption, and improve or treat an unhealthy condition such as BMI above normal, Diabetes, Dyslipidemia and hypertension. This study only retrieve data from the questionnaire so that the data are less and incomplete clear risk factors.

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INTRODUCTION:

Decreased erectile function performance is the inability to maintain an erection long enough during intercourse. The decline in erectile function performance is more common with lack of physical activity, obesity, in people with hypertension and a history of cardiovascular disease (Shamloul and Ghanem, 2013), diabetes (Lo *et al*., 2014; Anderssone*t al*., 2015), and hypercholesterolemia (Musicki*et al*., 2010). In men, a decrease in erectile function performance can cause stress, affect self-confidence and disrupt husband and wife relationships (Mayo, 2015).[1,2,3,4]

Risk factors for decreased erectile function performance are also risk factors for coronary artery disease. These include diabetes, smoking, lipid disorders (low levels of *high-density lipoprotein* cholesterol, total cholesterol levels), hypertension, obesity and lack of physical activity. (Feldman *et al*., 1994).

This study aims to determine the relationship between age, duration of smoking, number of cigarette consumption per day, *Body Mass Index* (*BMI*), diabetes, *dyslipidemia*, and hypertension with a decrease in erectile function performance in men aged 45-64 years who visit X Hospital. Surabaya. Researchers feel the need to raise the topic of this research because there is still a lack of literature on the decline in erectile function performance in Indonesia.

MATERIALS AND METHODS

This study was an *observative cross-sectional study* that analyzed the answers to questionnaires from respondents and described them in the discussion. The sampling technique in this study is *Insidential Sampling*. Where the researcher will select respondents according to the criteria of this study on the basis of the researchers' trust and confidence in the respondents which was carried out on 1 to 11 July 2016. In this study, the researcher succeeded in selecting the sample into 109 respondents. It should be made clear that the sample is not always the patient, because the researcher does not target the patient, but all visitors are the target, selecting the sample randomly. The data that has been obtained will be analyzed using descriptive statistical testsand processed by *Statistical Product and Service Solution* (SPSS) 20.

RESULTS

Data regarding the age of the respondents, it can be seen that the most respondents are in the 47-49 age category, namely 28 people with a percentage of 25.69% of the total study sample. Divided into 18 people (64.29%) who are in the category of zero erectile function decline (> 21) which means that there is no decrease in erectile function, six people (21.43%) are in the category of decreasing erectile function performance one (17-21) which means that there is a decrease in the performance of mild erectile function, and each of the two respondents (7.14%) are in the second category of decreased erectile function performance (12-16) which means that they experience a decrease in mild-moderate erectile function performance and the category of decreased function performance erection three (6-11) which means decreased performance of moderate-severe function.

The age category of 59-61 years had the smallest respondents in this study, namely four people with a percentage of 3.67% of the total study sample. In the category of decline in erectile function performance of zero (> 21) and one category of decline in erectile function performance (17-21) each as many as one respondent (25.00%), then there were no respondents in the category of decreasing erectile function performance two (12-16), and as many as two (50.00%) respondents were in the erectile function performance reduction category three (6-11).

The duration of smoking as measured in years has an uneven distribution. Respondents with smoking duration in the 7- <13 years category had the largest respondents, namely 35 people with a percentage of 32.11% of the total research sample. Divided into 27 people (77.14%) who were in the category of zero erectile function performance decline (> 21), three people (8.57%) were in the category of decreasing erectile function performance one (17-21), two people (5, 71%) were in the category of decreased erectile function performance two (12-16), and three (8.57%) respondents were in the erectile function performance reduction category three (6-11).

Meanwhile, there were only three respondents who had smoked in the 37-41 year category with a percentage of 2.75%. Divided into one person each (33.33%) in the erectile function performance reduction category of zero (> 21), two (12-16) decreased erectile function performance categories, and three erectile function reduction categories (6-11). There are no respondents with a length of smoking 37-41 years who are in the category of decreasing erectile function performance one (17-21).

Further data regarding the number of cigarette consumption per day. In the category of total cigarette consumption of 10-20 cigarettes per day, the number of respondents was 70 people with a percentage of 64.22% of the total research sample.

Table 1: Distribution of Research Result Data

Information		Descrease in Erectile Function Perfomance								Total	
		0		1		2		3			
		n	%	N	%	N	%	n	%		
Age (years)	44 - 46	10	45,45	3	13,64	4	18,18	5	22,73	22	20,18%
	47 - 49	18	64,29	6	21,43	2	7,14	2	7,14	28	25,69%
	50 - 52	9	42,86	6	28,57	5	23,81	1	4,76	21	19,27%
	53 - 55	6	30,00	4	20,00	5	25,00	5	25,00	20	18,35%
	56 - 58	2	28,57	1	14,29	2	28,57	2	28,57	7	6,42%
	59 - 61	1	25,00	1	25,00	0	0,00	2	50,00	4	3,67%
	62 - 64	1	14,29	1	14,29	2	28,57	3	42,86	7	6,42%
	Total	47	43,12	22	20,18	20	18,35	20	18,35	109	100,00%
Duration of smoking (Years)	1 - < 7	8	80,00	0	0,00	1	10,00	1	10,00	10	9,17%
	7 - < 13	27	77,14	3	8,57	2	5,71	3	8,57	35	32,11%
	13 - < 19	7	35,00	7	35,00	4	20,00	2	10,00	20	18,35%
	19 - < 25	3	17,65	5	29,41	3	17,65	6	35,29	17	15,60%
	25 - < 31	1	6,67	6	40,00	4	26,67	4	26,67	15	13,76%
	31 - < 37	0	0,00	1	11,11	5	55,56	3	33,33	9	8,26%
	37 - 41	1	33,33	0	0,00	1	33,33	1	33,33	3	2,75%
	Total	47	43,12	22	20,18	20	18,35	20	18,35	109	100,00%
Total Consumtion of Cigarettes of Day	< 10	11	73,33	0	0,00	3	20,00	1	6,67	15	13,76%
	10 - 20 stalk	34	48,57	16	22,86	11	15,71	9	12,86	70	64,22%
	> 20 stalk	2	8,33	6	25,00	6	25,00	10	41,67	24	22,02%
	Total	47	43,12	22	20,18	20	18,35	20	18,35	109	100,00%
Body Mass Index (BMI)	18,5 - 24,9	34	47,89	13	18,31	13	18,31	11	15,49	71	65,14%
	25 - 29,9	13	34,21	9	23,68	7	18,42	9	23,68	38	34,86%
	Total	47	43,12	22	20,18	20	18,35	20	18,35	109	100,00%
Diabetes	No	33	62,26	9	16,98	6	11,32	5	9,43	53	48,62%
	Yes	14	25,00	13	23,21	14	25,00	15	26,79	56	51,38%
	Total	47	43,12	22	20,18	20	18,35	20	18,35	109	100,00%
Dyslipidemia	No	29	64,44	8	17,78	5	11,11	3	6,67	45	41,28%
	Yes	18	28,13	14	21,88	15	23,44	17	26,56	64	58,72%
	Total	47	43,12	22	20,18	20	18,35	20	18,35	109	100,00%
Hypertension	No	31	65,96	8	17,02	5	10,64%	3	6,38	47	43,12%
	Yes	16	25,81	14	22,58	15	24,19%	17	27,42	62	56,88%
	Total	47	43,12	22	20,18	20	18,35%	20	18,35	109	100,00%

Table 2: Correlation Data Analysis*Spearman's rho*

Information	Descrease in Erectile Function Performance	
	R	***p value***
Age	0,243 (0,046; 0,410)	0,011
Duration of Smoking	0,549 (0,406; 0,674)	0,000
Total consumption cigarettes of day	0,407 (0,194; 0,551)	0,000
Body Mass Index (*BMI*)	0,129 (-0,072; 0,334)	0,180

Table 3: Results of Data Analysis Using TheTest*Chi Square* with *Mann-Whitney*

Information		**Descreased Erectile Function Perfomance**			
		N	**Mean**	**Z**	**p value**
Diabetes	No	53	0,68	-3,976	0,000
	Yes	56	1,54		
Dyslipidemia	No	45	0,60	-3,991	0,000
	Yes	64	1,48		
Hypertension	No	47	0,57	-4,368	0,000
	Yes	62	1,53		

Table 4: Correlation and Significance Test Results between Age, Duration of Smoking, Number of Cigarettes Consumption per Day, Body Mass Index (BMI), Diabetes, Dyslipidemia, and Hypertension with Decreased Erection Function Performance Using Multiple Linear Regression Analysis (Multiple Linear Regression).

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	aChange Statistics				
					R Square Change	F Change	df 1	Df 2	Sig. F Change
1	,642[a]	,412	,372	,920	,412	10,125	7	101	,000
a. a. Predictors: (Constant), Hypertension, Body Mass Index, Total Consumption_Batang_Cigarette per_Day, Age, Duration of Smoking, Diabetes, Dyslipidemia									

The division of respondents into four categories of decreased erectile function performance, namely 34 people with a decrease in erectile function performance (> 21) with a percentage of 48.57% of the total sample of respondents with the total consumption of cigarettes between 15-18 cigarettes per day, 16 people (22.86%) were in the erectile function performance reduction category one (17-21), 11 people (15.71%) were in the erectile function performance reduction category two (12-16), and nine people (12, 86%) of respondents are in the erectile function performance reduction category three (6-11).

Meanwhile, the smallest number of respondents was in the category of total cigarette consumption <10 cigarettes per day, namely 11 people with a percentage of 13.76% of the total research sample. Divided into four categories of erectile function performance reduction. 11 people (73.33%) were in the reduced erectile function performance category zero (> 21), three people (20.00%) were in the lower erectile function performance category 2 (12-16), one person (6.67%)) is in the category of decreasing erectile function performance 3 (6-11), and it is noted that there are no respondents who are in the category of decreasing erectile function performance one (17-21).

For data regarding *Body Mass Index* (*BMI*), in this study only divided into two categories, namely *normal weight* (18.5-24.9) of 71 people with a percentage of 65.14% of the total study sample and *over weight* (25 -29.9) of 38 people with a percentage of 34.86% of the total research sample. There are no respondents with a *Body Mass Index* (*BMI*)> 30.00 (obesity).

The distribution ofdata in *Body Mass Index* (*BMI*)thecategory*normal weight* (18.5-24.9), namely 34 people (47.89%) of respondents were in the category of zero erectile function performance decline (> 21), 13 people each (18.31%) were in the erectile function performance reduction category one (17-21) and two (12-16) decreased erectile function performance categories, 11 people (15.49%) respondents were in the erectile function performance reduction category three (6 -11).

Then, the distribution of data for *Body Mass Index* (*BMI*) in thecategory*over weight* (25-29.9), namely 13 people (34.21%) of respondents were in the category of decline in erectile function performance zero (> 21), seven people (18 , 42%) are in the category of decreasing erectile function performance in two (12-16), each as many as half a million people (23.68%) of respondents are in the category of decreasing erectile function performance one (17-21) and the category of decreasing erectile function performance three (6-11).

In this study, respondents who had diabetes were 56 people with a percentage of 51.38% of the total study sample. The division of respondents who have diabetes based on the category of decreased erectile function performance is respectively 14 people (25.00%) people in the category of zero erectile function performance decline (> 21) and in the category of decreased erectile function performance two (12-16), 13 people (23.21%) were in the erectile function performance decline category one (17-21), and 15 people (26.79%) respondents were in the erectile function performance reduction category three (6-11).

For respondents who do not have diabetes, as many as 53 people with a percentage of 48.62% of the total study sample. Divided into 33 people (62.26%) in the category of zero erectile function performance reduction (> 21), nine people (16.98%) in the category of decreasing erectile function performance one (17-21), six people (11.32%)) in the category of decreasing erectile function performance two (12-16), and four people (9.43%) were in the category of decreasing erectile function performance three (6-11).

There were 64 people (58.72%) of respondents who had *dyslipidemia* in this study. Eighteen people (28.13%) were in the category of decreasing erectile function performance zero (> 21), 14 people (21.88%) were in the category of decreasing erectile function performance one (17-21), 15 people (23.44) %) are in the category of decreasing erectile function performance two (12-16), and 17 people (26.56%) of respondents are in the third category of erectile function performance decline (6-11).

Furthermore, for respondents who do not have *dyslipidemia* as many as 45 people with a percentage of 41.28% of the total study sample. Divided into the category of reduction in erectile function performance zero (> 21) as many as 29 people (64.44%), in the category of decreasing erectile function performance one (17-21) as many as eight people (17.78%), in the category of decreased function performance two erections of five (11.11%), and three (6.67%) respondents were in the third erectile function performance category (6-11).

Sixty-two respondents had a history of hypertension in this study with a percentage of 56.88% of the total study sample. There were 16 people (25.81%) of respondents in the category of decreasing erectile function performance zero (> 21), 14 people (22.58%) in the category of decreasing erectile function performance one (17-21), 15 people (24, 19%) were in the category of decreasing erectile function performance two (12-16), and as many as 17 people (27.42%) of respondents were in the erectile function performance reduction category three (6-11).

For respondents who did not have a history of hypertension, there were 47 people with a percentage of 43.12% of the total study sample. Divided into 31 people (65.96%) of respondents who were in the category of decreasing erectile function performance zero (> 21), eight people (17.02%) were in the category of decreasing erectile function performance one (17-21), five people (10.64%) were in the erectile function performance reduction category two (12-16), and three (6.38%) respondents were in the erectile function performance reduction category three (6-11).

There is a significant relationship between age and a decrease in erectile function performance (table 2) (R: 0.243; *p value*<0.050), length of smoking with a decrease in erectile function performance (R: 0.549; *p value*<0.050), and the number of cigarette consumption per day (R: 0.407; *p value*<0.050). Meanwhile, the *Body Mass Index* (*BMI*) in this study did not show a significant relationship (*p value*> 0.050).

There is a significant difference between respondents who do not have diabetes and respondents who have diabetes, the relationship with a decrease in erectile function performance. It can be said that respondents who suffer from diabetes tend to experience a decrease in erectile function performance and respondents who do not suffer from diabetes tend not to experience a decrease in erectile function performance.

There is a significant difference between respondents who do not suffer from *dyslipidemia* and respondents who suffer from *dyslipidemia*, the relationship with a decrease in erectile function performance. It can be said that respondents who suffer from *dyslipidemia* tend to experience a decrease in erectile function performance and respondents who do not suffer from *dyslipidemia* tend not to experience a decrease in erectile function performance.

There is a significant difference between respondents who do not suffer from hypertension and respondents who suffer from hypertension, the relationship with a decrease in erectile function performance. It can be said that respondents who suffer from hypertension tend to experience a decrease in erectile function performance and respondents who do not suffer from hypertension tend not to experience a decrease in erectile function performance.

There is a significant relationship between all variables age, duration of smoking, number of cigarette consumption per day, *Body Mass Index* (*BMI*), diabetes, *dyslipidemia*, and hypertension with a decrease in erectile function performance (table 4) with R of 0.642 and *p value* of 0.000 <0.050. It is known that the contribution of all these variables to the decline in erectile function performance in this study was 41.2%, of which 58.8% was influenced by other factors outside of this study.

DISCUSSION:

On the results ofstudy*an observativeThis cross-sectional study* shows the prevalence of men experiencing a decrease in erectile function performance of 56.88%. By using thecorrelation test, the correlation *Spearman's rho* coefficient for each variable was obtained. Age is significantly associated with decreased erectile function performance. This shows that with increasing age, the decline in erectile function performance increases. For the duration of smoking and the number of cigarette consumption there is also a significant relationship with a decrease in erectile function performance. This result is supported by previous research reports that found a high incidence of decreased erectile function performance in smokers who smoked more than 20 cigarettes per day and 11-20 cigarettes per day (Mirone*et al*., 2002; Austoni*et al.*, 2005). Cao *et al.*(2014) stated that there was a positive relationship between the amount of cigarette consumption and the length of cigarettes with the risk of decreasing erectile function performance. The correlation between BMI and a decrease in erectile function performance is not significant. The positive correlation shows that there is a relationship between increasing BMI and decreasing erectile function performance, but it is not significant.

For diabetes, *dyslipidemia*,andhypertension,test was used *Chi Square* with the *Mann-Whitney* (U). The results show that there is a significant difference between respondents who do not suffer from diabetes and respondents who suffer from diabetes in relation to a decrease in erectile function performance. It can be said that respondents who suffer from diabetes tend to experience a decrease in erectile function performance and respondents who do not suffer from diabetes tend not to experience a decrease in erectile function performance.

There is also a significant difference between respondents who do not suffer from *dyslipidemia* and respondents who suffer from *dyslipidemia in* relation to a decrease in erectile function performance. It can be said that respondents who suffer from *dyslipidemia* tend to experience a decrease in erectile function performance and respondents who do not suffer from *dyslipidemia* tend not to experience a decrease in erectile function performance.

And there is a significant difference between respondents who do not suffer from hypertension and respondents who suffer from hypertension, its relationship with a decrease in erectile function performance. It can be said that respondents who suffer from hypertension tend to experience a decrease in erectile function performance and respondents who do not suffer from hypertension tend not to experience a decrease in erectile function performance.

According to Vlachopoulos*et al* (2008) and Dzau*et al* (1997) hypertension damages the endothelium and causes atherosclerosis. Diabetes affects erectile function by inhibiting NO production and damaging nerves (Muneer*et al*., 2005; Tesfamariam, Brown and Cohen, 1991), where *dyslipidemiawalls* forms plaque on arterial(Kim *et al*., 1994).

There is a significant relationship between all variables age, duration of smoking, number of cigarettes consumed per day, *Body Mass Index* (*BMI*), diabetes, *dyslipidemia*, and hypertension with a decrease in erectile function performance. With the contribution of age, duration of smoking, number of cigarette consumption per day, *Body Mass Index* (*BMI*), diabetes, *dyslipidemia*, and hypertension to a decrease in erectile function performance by 41.2% and 58.8% is determined by other factors outside the study.

CONCLUSION

There is a significant relationship between age, duration of smoking, number of cigarette consumption per day, diabetes, *dyslipidemia*, and hypertension with a decrease in erectile function performance. For the *Body Mass Index* (*BMI*) in this study, the results of the correlation test showed no significant relationship with a decrease in erectile function performance.

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Authors' Contributions

All authors have contributed to the final manuscript. The contribution of each author as follow: collected the data, drafted the manuscript and designed the figures, devised the main

conceptual ideas and critical revision of the article. All authors discussed the results and contributed to the finalmanuscript.

Conflict of Interest

The authors state there is no conflict of interest.

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