

## The pattern of smoking habits: A hospital-based study

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### Abstrak

Tujuan penelitian ini ialah untuk mendapatkan pola kebiasaan merokok di Indonesia dan untuk mendeteksi faktor risiko. Data mengenai usia, edukasi dan kebiasaan merokok dikumpulkan dari 10.502 pasien yang berkunjung di Poliklinik Penyakit Dalam RS Cipto Mangunkusumo Jakarta selama periode 1 Juni 1997 sampai 31 Mei 1998. Data ini yang disebut data 1998 dibandingkan dengan studi sebelumnya terhadap 13.427 pasien di Poliklinik yang sama tahun 1978-1979 dan disebut data 1978. Didapatkan sebagian besar responden laki-laki adalah perokok yang kebanyakan mulai merokok pada golongan usia 16-24 tahun. Pada data 1978 prevalensi perokok 58% dan persentase yang mulai merokok sebelum usia 25 tahun besarnya 76% sedangkan dalam data 1998 ditemukan 61% dan 80%. Prevalensi perokok wanita besarnya 6%. Perokok yang sudah merokok 15 tahun atau lebih meningkat dari 25% menjadi 58%, perokok yang menghisap sigaret lebih dari 10 batang per hari meningkat dari 35% menjadi 71%, perokok dengan resiko tinggi meningkat dari 5.4% menjadi 50% dan perokok yang berpendidikan universitas dan tamatan SD meningkat jumlahnya dari 13% dan 19% menjadi 30% dan 34%, tetapi menurun dari 68% menjadi 36% pada tamatan sekolah menengah. Kebanyakan perokok menyukai rokok kretek, yang dalam data 1978 berjumlah 6149 orang (79%) sedang dalam data 1998 berjumlah 2191 orang (62%). Pola merokok yang membahayakan ini pasti akan meningkatkan jumlah penderita penyakit akibat rokok di Indonesia. Strategi dan upaya pengendalian rokok yang bersifat nasional perlu segera diadakan.

### Abstract

The purpose of this study is to investigate the pattern of smoking habits in Indonesia and to identify its risk in the development of smoking-related illnesses. Ten thousands five hundreds and two (10502) patients visiting the Out Patient Department of the Department of Internal Medicine Faculty of Medicine University of Indonesia Dr. Cipto Mangunkusumo Hospital Jakarta, during the period of June 1, 1997 until May 31, 1998 have been interviewed about age, education and smoking habit. The collected data called the 1998 data was compared with the unpublished data collected by the same method from 13427 male patients visiting the same department during the period October 1, 1978 until March 1, 1979, called the 1978 data. This study found that the majority of male respondents were smokers, they started smoking mostly at the age of 16-24 years. In 1978 the prevalence of smokers was 58% and the percentage of those who began smoking before the age of 25 years was 76%, while in 1998 it was 61% and 80% respectively. The prevalence of female smokers was 6%. The percentage of smokers who smoked for 15 years or more increased from 25% to 58%, of smokers who consumed more than 10 cigarettes per day increased from 35% to 71%, of high risk group smokers increased from 5.4% to 50%, of smokers who graduated from university and of smokers with elementary school diploma increased from 13% and 19% to 30% and 34% respectively, but it decreased from 68% to 36% among smokers with high school diploma. Most smokers preferred kreteks, their number in 1978 was 6149 (79%) and in 1998 it was 2191 (62%). These risky consumption patterns undoubtedly will increase tobacco related diseases in Indonesia. Now it is urgently needed to establish a national policy and strategy for tobacco control.

**Keywords:** smokers, smoking habits, age, education, high risk smokers

### INTRODUCTION

After Columbus landed in the New World on October 12, 1492 tobacco was brought to Europe and was grown

in the - 16<sup>th</sup> century in Spain, Portugal and England.<sup>1</sup> In Indonesia tobacco cultivation was begun in 1650's. Subsequently tobacco smoking became widespread throughout the world in various form: cigarettes, kreteks, cigars, pipes etc. Beside common white cigarettes, kreteks are popular in Indonesia and manufactured by hand-rolled in small industries and machine-made in big factories. They are similar in size to western filter and non filter cigarettes but they contain a substantial addition of cloves which gives

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soft sound of crackles and a characteristic aroma during smoking.<sup>2</sup>

According to 1979 Surgeon General of the United States of America, beginning 1950, numerous large-scale epidemiological studies observed cigarette smoking as risk factor for major chronic diseases including lung cancers, cardiovascular disease and non malignant respiratory diseases.<sup>3</sup> The risk is increased with increasing doses of smoking, measured by number of cigarettes smoked per day, age at initiation of smoking, duration of smoking habits, degree of inhalation, tar and nicotine content of cigarettes smoked.<sup>3</sup>

Most studies show that increased risk of coronary heart disease (CHD) is associated with increasing number of cigarettes smoked,<sup>4</sup> age at which persons started smoking,<sup>5</sup> and total duration of the smoking habit.<sup>6</sup> Current cigarette smoking is an independent risk factor for ischemic and hemorrhagic stroke in men and the risk for stroke is associated with the number of cigarettes smoked per day.<sup>7</sup>

Based on recent prospective cohort studies, the magnitude of increased risk for lung cancer is about 22 fold for current male smokers and 12 fold for female smokers compared with that for non smokers. This risk is related to the number of cigarettes smoked per day, the duration of smoking and the age at initiation of smoking.<sup>8</sup>

Cigarettes smoking is the leading cause of pulmonary illness and death. The degree of tobacco exposure as measured by number of cigarettes smoked daily and duration of smoking, strongly affect the risk of death from chronic obstructive pulmonary disease (COPD).<sup>9</sup>

The purpose of this study is to investigate the pattern of smoking habits in Indonesia and to identify some risks in the development of smoking-related illnesses which may be beneficial in the effort to reduce smoking prevalence.

## METHODS

Ten thousands five hundreds and two (10.502) new patients visiting the Out Patient Department of the Department of Internal Medicine Faculty of Medicine University of Indonesia Dr. Cipto Mangunkusomo Hospital Jakarta, during the period of June 1, 1997 until May 31, 1998 have been interviewed about age, education and smoking habit.

Among them there were 3535 male and 286 female smokers, and were further interviewed about the num-

ber of cigarettes smoked per day, kind of cigarettes smoked, whether it is the common white cigarettes or the specific Indonesian kreteks cigarettes, the brand of cigarettes, the duration of smoking, the age when they started smoking regularly, whether there was any attempt to stop smoking and its result. The high risk group for having lung cancer was defined as men smoking 10 or more cigarettes per day during 15 years or more, either at the time of entry into the investigation or within the preceding years.<sup>14</sup>

This data collection was called the 1998 data, and compared with the unpublished data collected by the same method from 13427 male patients visiting the same department during the period October 1, 1978 until March 1, 1979. This was called the 1978 data. The smoking enquete among female patients in 1978 was discontinued as the number of smokers in the test enquete among the personnel of the Hospital was less than 1%.

## RESULTS

The number of respondents in 1978 was 13427, consisting of 7796 (58%) smokers and 5631 (42%) non smokers. In 1998 there were 10.502 respondents, consisting of 5748 male and 4754 female. The number of male smokers was 3535 (61%) and female smokers was 286 (6%). The age of male smokers ranged from 13 to 89 years in 1978 and 6 to 88 years in 1998, while the age of female smokers ranged from 16 to 80 years in 1998.

Table 1 shows the number and percentage of smokers by age and educational category. Most male smokers were high school graduates, their proportion decreased from 68% in 1978 to 36% in 1998. But the proportion of male smokers with elementary school diploma and university graduates increased from 19% and 13% in 1978 to 34% and 30% in 1998.

Distribution of the age at smoking initiation and kinds of the cigarettes smoked are presented in Table 2. The number of young male smokers who began smoking within the age of 6-15 years decreased from 17% in 1978 to 16% in 1998. Most male smokers in 1978 as well as in 1998 started smoking regularly within the age of 16-24 years which was the age while they were still in high school or in the first year of university. Their percentage increased from 59% in 1978 to 64% in 1998. The number of male smokers who started this habit before the age of 25 years was 5935 (76%) in 1978 and 2786 (80%) in 1998. Among the kinds of cigarette smoked by male smokers, kreteks was the

Table 1. Current age of smokers and their education

Age	Male 1978			Male 1998			Female 1998		
	Elementary school	High school	University	Elementary school	High school	University	Elementary school	High school	University
< 15	34 (0)	37 (0)	-	3 (0)	5 (0)	1 (0)	0 (0)	0	0
16-20	160 (2)	1027 (13)	14 (0)	15 (0)	68 (2)	23 (1)	0 (0)	9 (3)	2 (1)
21-25	147 (2)	1542 (20)	139 (2)	63 (2)	150 (4)	89 (3)	1 (0)	15 (5)	14 (5)
26-30	135 (2)	1049 (14)	297 (4)	47 (1)	158 (4)	146 (4)	0 (0)	24 (8)	22 (8)
31-35	99 (1)	455 (6)	227 (3)	45 (1)	117 (3)	46 (4)	1 (0)	18 (6)	14 (5)
36-40	145 (2)	420 (5)	150 (2)	72 (2)	115 (3)	107 (3)	5 (2)	22 (8)	10 (3)
41-45	154 (2)	216 (3)	95 (1)	82 (2)	140 (4)	96 (3)	7 (2)	23 (8)	7 (2)
46-50	127 (2)	239 (3)	52 (1)	80 (2)	133 (4)	112 (3)	1 (0)	14 (5)	10 (3)
51-55	153 (2)	126 (2)	30 (0)	112 (3)	111 (3)	85 (2)	9 (3)	9 (3)	2 (1)
56-60	133 (2)	84 (1)	18 (0)	145 (4)	145 (4)	91 (3)	2 (1)	13 (5)	7 (2)
61-65	87 (1)	62 (1)	5 (0)	154 (1)	491 (3)	76 (2)	4 (2)	2 (1)	4 (2)
66-70	40 (0.5)	27 (0)	4 (0)	141 (4)	75 (2)	53 (1)	4 (2)	3 (1)	2 (1)
> 70	40 (0.5)	24 (0)	3 (0)	173 (5)	43 (1)	27 (1)	3 (1)	2 (1)	1 (0)
Total	1454 (19)	5308 (68)	1034 (13)	1132 (32)	1351 (38)	1052 (30)	37 (13)	154 (54)	95 (33)

( ) = percentage

Table 2. Age when smoking began and kinds of cigarette smoked

Age began smoking	Male 1978			Male 1998			Female 1998		
	Kreteks	Cigarette	Others	Kreteks	Cigarette	Others	Kreteks	Cigarette	Others
6-12	244 (3)	54 (1)	14 (0)	15 (0)	7 (0)	0 (0)	7 (3)	2 (1)	0 (0)
13-15	883 (11)	130 (2)	37 (1)	354 (10)	132 (4)	32 (1)	13 (5)	7 (3)	0 (0)
16-18	1506 (19)	240 (3)	29 (0)	271 (8)	27 (1)	101 (3)	18 (6)	25 (9)	4 (1)
19-21	1419 (18)	324 (4)	57 (1)	573 (16)	253 (8)	118 (4)	30 (10)	49 (17)	0 (0)
22-24	771 (10)	205 (3)	22 (0)	615 (18)	244 (7)	44 (1)	10 (3)	19 (7)	0 (0)
25-27	513 (7)	173 (2)	29 (1)	77 (2)	143 (4)	39 (1)	15 (5)	22 (8)	2 (1)
28-30	341 (4)	85 (1)	26 (0)	72 (2)	30 (1)	6 (0)	11 (4)	11 (4)	0 (0)
31-33	179 (2)	41 (1)	12 (0)	104 (3)	67 (2)	21 (1)	4 (1)	4 (1)	1 (0)
34-36	125 (2)	35 (0)	17 (0)	16 (0)	14 (0)	1 (0)	5 (2)	3 (1)	0 (0)
37-40	47 (1)	34 (0)	4 (0)	30 (0)	19 (0)	1 (0)	8 (3)	4 (1)	0 (0)
40-42	44 (1)	24 (0)	4 (0)	38 (1)	19 (0)	4 (0)	1 (0)	1 (0)	0 (0)
> 43	77 (1)	40 (1)	11 (0)	26 (1)	16 (0)	6 (0)	7 (3)	1 (0)	2 (1)
Total	6149 (79)	1385 (18)	262 (3)	2191 (62)	971 (27)	373 (11)	129 (45)	148 (52)	9 (3)

( ) = percentage

Table 3. Current age of smokers and duration of smoking

Age	Duration of smoking (years)											
	Male 1978				Male 1998				Female 1998			
	0-4	5-9	10-14	> 15	0-4	5-9	10-14	>15	0-4	5-9	10-14	>15
11-15	71(100)	--	--	--	8(67)	1(8)	0(0)	3(25)	0(0)	0(0)	0(0)	0(0)
16-20	1018(85)	171(14)	12(1)	--	93(73)	23(18)	7(6)	4(3)	11(100)	0(0)	0(0)	0(0)
21-25	1028(56)	613(34)	172(9)	15(1)	145(47)	111(36)	38(12)	13(4)	22(73)	4(13)	4(13)	0(0)
26-30	428(29)	513(35)	461(31)	79(5)	90(24)	117(31)	135(36)	36(9)	18(40)	18(40)	8(18)	1(2)
31-35	151(19)	158(21)	304(39)	168(22)	50(14)	86(24)	106(30)	110(31)	7(21)	9(27)	9(27)	8(24)
36-40	80(11)	93(33)	168(24)	374(52)	36(12)	12(4)	57(19)	196(65)	11(29)	2(5)	13(34)	12(32)
41-45	38(8)	33(7)	71(15)	322(69)	47(14)	14(4)	30(9)	237(72)	11(29)	6(16)	8(21)	13(34)
46-50	27(7)	17(4)	52(12)	322(77)	34(11)	16(5)	27(9)	229(75)	6(22)	1(4)	3(11)	17(63)
51-55	12(4)	11(4)	33(10)	253(82)	22(7)	8(3)	18(6)	245(84)	8(40)	1(5)	2(10)	9(45)
56-60	8(3)	5(2)	21(9)	201(86)	20(6)	15(4)	18(5)	290(85)	3(18)	1(6)	2(12)	11(65)
61-65	3(2)	3(2)	3(2)	145(94)	19(7)	8(3)	10(4)	243(86)	1(10)	1(10)	1(10)	7(70)
66-70	1(1)	2(3)	4(4)	64(92)	7(7)	3(1)	5(2)	217(90)	2(22)	0(0)	0(0)	7(78)
> 70	--	--	3(4)	64(96)	13(5)	2(1)	13(5)	238(89)	1(13)	0(0)	2(25)	5(62)
Total	2866	1619	1304	2007	594	416	464	2061	101	43	52	90
%	(37)	(21)	(17)	(25)	(17)	(12)	(13)	(58)	(36)	(15)	(18)	(31)

( ) = percentage

Table 4. Current age of smokers and amount of cigarettes smoked per day

Age	Cigarette amount per day											
	Male 1978				Male 1998				Female 1998			
	1-9	10-19	20-39	> 40	1-9	10-19	20-39	> 40	1-9	10-19	20-39	40
< 15	71(1)	-	-	-	5(0)	3(0)	1(0)	0(0)	0(0)	0(0)	0(0)	0(0)
16-20	1060(14)	128(2)	12(0)	1(0)	57(2)	44(1)	4(0)	0(0)	8(3)	3(1)	0(0)	0(0)
21-25	1306(17)	454(6)	48(1)	20(0)	129(4)	119(3)	34(1)	3(0)	21(7)	5(2)	4(1)	0(0)
26-30	939(12)	439(6)	70(1)	33(1)	139(4)	159(4)	54(1)	0(0)	330(10)	14(5)	1(0)	2(1)
31-35	422(5)	293(4)	40(1)	26(1)	99(3)	150(4)	50(1)	5(0)	17(6)	11(4)	3(1)	1(0)
36-40	365(5)	259(3)	66(1)	25(0)	89(3)	120(3)	80(2)	5(0)	23(8)	12(4)	2(1)	1(0)
41-45	240(3)	171(2)	41(1)	13(0)	87(2)	153(4)	75(2)	6(0)	28(10)	7(2)	3(1)	0(0)
46-50	222(3)	158(2)	24(0)	14(0)	95(3)	147(4)	76(2)	7(0)	314(5)	8(3)	4(1)	0(0)
51-55	159(2)	112(1)	24(0)	14(0)	73(2)	146(4)	88(2)	8(0)	11(4)	7(2)	2(1)	0(0)
56-60	129(2)	84(1)	17(0)	5(0)	73(2)	172(5)	114(3)	18(1)	310(4)	5(2)	2(1)	0(0)
61-65	81(1)	62(1)	7(0)	4(0)	61(2)	154(4)	86(2)	15(0)	3(1)	4(1)	1(0)	2(1)
66-70	43(0)	24(0)	1(0)	3(0)	44(1)	118(3)	86(2)	17(0)	4(1)	5(2)	0(0)	0(0)
> 70	39(0)	23(0)	3(0)	2(0)	84(2)	80(2)	94(3)	9(0)	4(1)	2(1)	2(1)	0(0)
Total	5076(65)	2207(28)	353(5)	160(2)	1035(29)	1565(44)	842(24)	93(3)	173(60)	83(29)	24(8)	6(2)

( ) = percentage

most preferred by all ages. The number of male who smoked kreteks in 1978 was 6149 (79%) and in 1998 was 2191 (62%). On the other hand, female smoked less kreteks than common white cigarettes (45% vs 52%), but as in male they started smoking regularly at the age of 16-24 years and the percentage of smokers who began smoking before the age of 25 year was 64%.

The percentage of male smokers who had been smoking for 15 years or more increased from 25% in 1978 to 58% in 1998, while for female smokers it was 31% (Table 3). This table shows that the percentage of smokers who smoke for 15 years or more is increasing in conformity with the advance of their age groups. This is an indication that people who started smoking at an early age are consistently preserving in their habit and become addicted to it.

The number of smokers and the number of cigarettes smoked per day are given in Table 4. The proportion of the current male smokers who consumed more than 10 cigarettes per day increased from a low of 35% in 1978 to a high of 71% in 1998. From this table it can be seen that 39% of female smokers comprising of 113 persons smoked more than 10 cigarettes per day.

Table 5 shows the number of smokers categorized as high risk group i.e. smokers smoking more than 10 cigarettes per day during 15 years or more. There were 421 persons (5.4%) in 1978 and 1764 persons (50%) in 1998 of male smokers and 23 persons (8%) of female smokers.

Table 5. The number of high risk smokers

Current age and number of high risk smokers			
Age	Male 1978	Male 1998	Female 1998
11-15	-	2 (0)	-
16-20	-	2 (0)	-
21-25	-	7 (0)	2 (8.7)
26-30	6 (1.5)	28 (2)	3 (13)
31-35	30 (7)	82 (5)	3 (13)
36-40	57 (12)	160 (9)	2 (8.7)
41-45	78 (18.5)	189 (11)	2 (8.7)
46-50	89 (21)	189 (11)	3 (13)
51-55	62 (15)	217 (12)	1 (4.3)
56-60	51 (12)	278 (16)	4 (17.4)
61-65	29 (7)	232 (13)	2 (8.7)
66-70	14 (3.5)	299 (17)	-
> 70	11 (2.5)	169 (10)	1 (4.3)
Total	421 (100)	1764 (100)	23 (100)

() = percentage

To stop smoking was not an easy effort. Table 6 shows the number of male smokers having tried to stop smoking, comprising 1902 persons in 1978 and 2354 persons in 1998. Of these 483 persons (25%) in 1978 and 566 persons (24%) in 1998 were able to persist in their effort more than one year, while the other smokers were only able to stop at a varying period of 7 days to less than 1 year. The number of female smokers who tried to stop smoking was 141 persons, only 50 persons (35%) of these were able to persist in their effort more than one year.

Table 6. Number of smokers attempting to stop smoking and length of attempt

Duration of attempt	Male 1978	Male 1998	Female 1998
< 7 days	153 (8)	184 (8)	14 (10)
7 days - 1 month	375 (20)	430 (18)	26 (19)
1 month - 1 years	891 (47)	1174 (50)	51 (36)
1 year - 2 years	391 (21)	458 (19)	24 (17)
3 years - 5 years	75 (3)	91 (4)	12 (8)
> 5 years	17 (1)	17 (1)	14 (10)
Total	1902 (100)	2354 (100)	141 (100)

() = percentage

Table 7 gives further indication of the difficulty to stop smoking. There were 621 persons in 1978 and 808 persons in 1998 who declared to have stopped smoking, but among them only 278 persons (45%) and 315 (39%) in 1978 and 1998 respectively have stopped smoking for 1 to 10 years, while the other smokers have ceased smoking for less than 1 year. Among 104 female smokers who have quitted smoking, there were 77 persons (74%) who have stopped smoking for 1 - 10 years and 27 smokers have ceased smoking for less than 1 year. Compared with Table 6, those smokers who quitted smoking for less than 1 year can not be described as already have discarded their habit definitely.

Table 7. Number of smokers who quitted smoking and its duration

Duration of stop smoking	Male 1978	Male 1998	Female 1998
< 1 month	73 (12)	85 (11)	7 (7)
1 month - 1 year	270 (43)	408 (50)	20 (19)
1 year - 2 years	165 (27)	194 (24)	22 (21)
3 years - 5 years	74 (12)	81 (10)	18 (18)
6 years - 10 years	21 (3)	22 (3)	15 (14)
> 10 years	18 (3)	18 (2)	22 (21)
Total	621 (100)	808 (100)	104 (100)

() = percentage

Considering the levels of their education and the kinds of cigarettes smoked, it was apparent that kreteks cigarettes were the most preferred by all, but the percentage differed slightly. The higher one's education the higher the preference to white cigarettes and the smaller percentage for the consumption of other tobacco products. (Figure 1a and 1b). In 1978 the number of high school graduates who smoked kreteks and

common cigarettes was 4269 (55%) and 901 (11%) respectively, while in 1998 it was 842 (24%) and 374 (10%). The proportion of university graduates who smoked kreteks and cigarettes increased from 10% and 4% in 1978 to 17% and 9% in 1998. Female smokers graduated from high school and university smoked less kreteks than cigarettes (kreteks 23% and 14% vs cigarettes 29% and 19%).

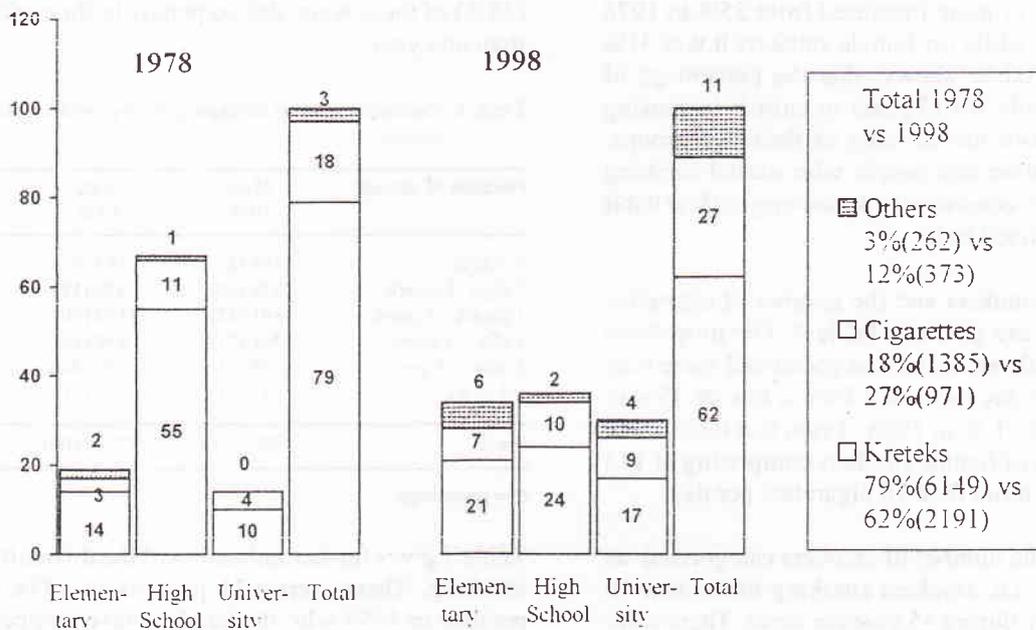


Figure 1a. Education of male smokers and kinds of cigarettes smoked in 1978 and 1998

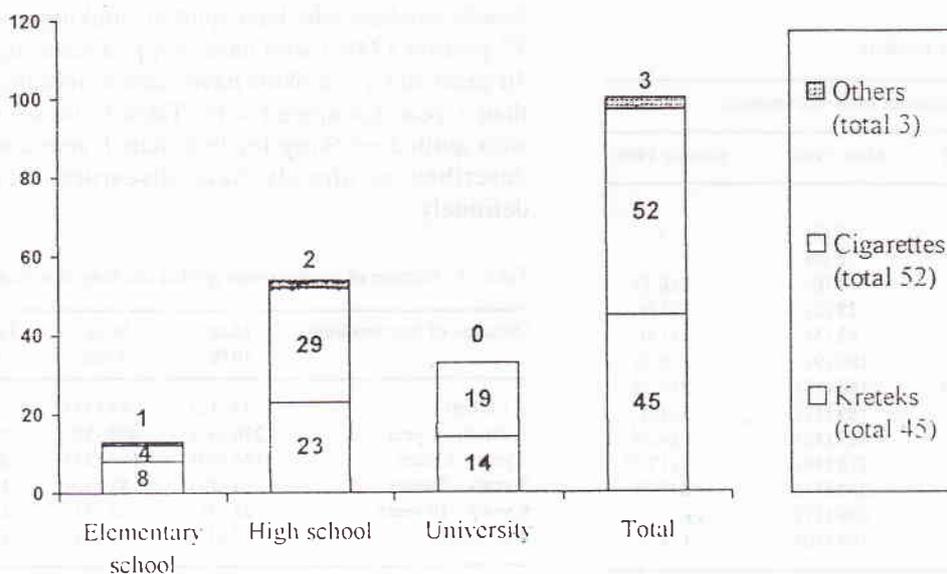


Figure 1b. Education of female smoker and kinds of cigarettes smoked

## DISCUSSION

The current study showed that the prevalence of male smokers increased slightly from 58% in 1978 to 61% in 1998 while for female smokers it increased from less than 1% in 1978 to 6% in 1998. It did not differ with that in the second survey of Monica-Jakarta, reporting that the prevalence of female smoker was 6.8% in 1993.<sup>11</sup> The remarkable difference between the prevalence of male and female smokers shows that smoking is a behavior practiced predominantly by man. The prevalence of smoking in Indonesia differed with data from National Health Interview Surveys (NHIS) which showed that the prevalence of smoking in 1985 was 33.5% male and 27.6% female smokers.<sup>9</sup>

The proportion of male smokers with high school diploma decreased from 68% in 1978 to 36% in 1998 but there was a converse trend in the proportion of smokers among the university graduates which was 13% in 1978 and 30% in 1998 (Table 1). The highest smoker prevalence by education category in 1978 as well as in 1998 was among high school graduates. It is apparent that the majority of smokers are high school graduates who after having acquired a job with a fixed income start smoking regularly. Therefore it might be assumed that the smoking habit is closely related to the socio-economic condition. These smoking prevalences differed with the data reported by the Office on Smoking and Health. From 1974 to 1985 smoking prevalence among persons with less than high school diploma declined from 36.3% to 34.2%, the smoking prevalence of high school graduates decreased from 37.4% to 34.4%, whereas prevalence for college graduates decreased from 28.5% to 18.4%.<sup>10</sup>

Although cigarette smoking has been identified as a major public health problem and the single most preventable cause of premature death,<sup>8</sup> about 60% Indonesian male still smoke. There are several reasons for this tragic situation. There is no national program to prevent tobacco use, the government still needs the high and increasing revenue from the tax on cigarettes, many millions of people still earn their living from clove cultivation. Eventhough there are tobacco control measures, such as health warning in packs, partial restriction on tobacco advertising, smoking ban on national airlines, in some health and education facilities, in some cinema houses, which supported by several non government organizations like *Yayasan Kanker Indonesia*, *Yayasan Jantung Indonesia*, but these activities have been hindered by the high expenditure of tobacco industries for advertising and promotion.<sup>11,12</sup>

In the current study it was found that the percentage of smokers who began smoking within the age of 6-15 years decreased but of those who began it within the age of 16-24 years increased from 1978 to 1998 (Table 2). The prevalence of male smokers, who started smoking before the age of 25 years increased from 76% in 1978 to 80% in 1998, while for female smokers it was 64% in 1998. These high numbers are alarming. According to Hammond<sup>5</sup> the mortality ratio for those who started smoking at an age before 25 years is very high (more than 10).

In the current study, the prevalence of male smokers who consumed more than 10 cigarettes per day increased from 35% in 1978 to 71% in 1998 (Table 4). The relative risk of fatal coronary heart disease was 2.4 for 1-4 cigarettes smoke per day<sup>15</sup> while the Standard Mortality Ratio (SMR) of lung cancer was 15.6 for smokers of 11-19 cigarettes per day<sup>16</sup> and the SMR of COPD was 28.8 for smokers of 15-24 cigarettes per day.<sup>17</sup>

The percentage of smokers who had been smoking for 15 years or more increased from 25% in 1978 to 58% in 1998 (Table 3). The SMR of lung cancer among smokers who had smoked for 10-19 years was 6.45<sup>18</sup> and the SMR of COPD among smokers of British Male Physicians followed for 20 years was 16.7.<sup>19</sup>

The National Cancer Institute Cooperative Early Lung Cancer Detection Program of USA has screened smokers who were at high risk for the development of lung cancer. They defined the high risk group as smoker of 45 years of age or older, smoking 20 or more cigarettes per day. There were 223 (0.7%) pathologically confirmed lung cancer detected among the 31,360 high risk persons during 5 years follow up.<sup>13</sup> The study of smoking and lung cancer in Cipto Mangunkusumo Hospital examined 419 high risk smokers who smoked more than 10 cigarettes per day and had smoked for more than 15 years. The prevalence of lung cancer in this study was 1.4%.<sup>14</sup> In the current study there were 421 (5.4%) persons in 1978 and 1764 (50%) in 1998 of male smokers and 23 persons (8%) of female smokers who belonged to high risk group.

From the current study it is clear that part of the smokers who began smoking before the age of 25 years, who smoked more than 10 cigarettes per day, who had smoked for more than 15 years or those who were categorized as high risk group, are in the greatest risk of developing lung cancer, coronary heart disease and COPD.

Smoking has become widespread throughout the world because it satisfies some common needs. These are partly psychosocial, and partly pharmacological. The former include the use of tobacco as a social activity that helps to breakdown personal reserve and as a distraction that is provided by lighting, holding a cigarettes, and watching the smoke. The latter are complex and include both cerebral stimulation and sedation as smokers sometimes find the tobacco helps them to concentrate and at other times that it helps them to relax. Once smokers have become accustomed to its effects, prolonged abstention is distressing, and the feeling of distress can be relieved by further use. This is due to the neuro-pharmacological action of nicotine.<sup>20</sup>

It seemed that the habit of smoking was very difficult to stop. This was shown by the number of those who tried to stop smoking, where only 483 persons (25%) in 1978 and 566 persons (24%) in 1998 could persist in their effort for more than 1 year (Table 6). Table 3 shows smokers who started smoking at an early age are consistently preserving in their habit and become addicted to it. Among smokers who confessed of having stopped with smoking only 278 persons (45%) in 1978 and 315 (39%) in 1998 who truly stopped with smoking (Table 7).

As for the kind of cigarette smoked Table 2 shows that 62% - 79% of male and 45% female smokers are consuming kreteks. This kind of cigarette is the favorite of all ages and of all educational levels. It is sold as filter and non filter kreteks cigarette. The production of filter kreteks increased markedly from 1978, may be after the demonstration of causal relationship between smoking and lung cancer. In 1995 the quantity of filter kreteks cigarette produced was 109.528.826.000 pieces and the non filter kreteks was 67.308.390.000 pieces while the quantity of common white cigarette was 38.735.615.000 pieces.<sup>21</sup>

### Summary

The pattern of smoking habits in the 1978 data compared to the 1998 data revealed that the prevalence of male smokers increased from 58% to 61%, the proportion of smokers graduated from university and smokers with elementary school diploma increased, but smokers with high school diploma decreased. The proportion of smokers who tried to stop and of those who stopped smoking decreased. In addition the proportion of smokers who began smoking within the age of 16-24 years, who smoked more than 10 cigaret-

tes per day, who smoked for 15 years or more and of high risk smokers increased remarkably in 1998.

These risky consumption patterns undoubtedly will increase tobacco related diseases in Indonesia. Now it is urgently needed to establish a national policy and strategy for tobacco control. A national wide ban on tobacco advertisements, a law that prohibits smoking among the children under the age of 18 years, an increase in the number of laws against smoking in public places and working places, more aggressive public education about the danger of cigarette smoking, and a higher tax on cigarettes would diminish the number of smokers.

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