BEHAVIOR RISK FACTORS IN INDONESIA: NATIONAL HOUSEHOLD HEALTH SURVEY 2001

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FAKTOR-FAKTOR RESIKO PERILAKU DI INDONESIA: SURVEI KESEHATAN RUMAH TANGGA 2001

Abstract. A series of National Household Health Surveys (NHHS) reported the occurrence of epidemiological transition caused by demographic transition and prolonged economical diversity. Communicable diseases are still prevalent, followed by the emergence of Non Communicable Diseases (NCDs), which are due to an increasing level of behavior risk factors in the population. In the NHHS 2001, a morbidity survey collected information about behavioral risk indicators, whereas the WHO'S STEPwise approach was one of the study instruments. The 'WHO Step 1 questionnaire' was adapted with some modifications. Samples of NHHS, morbidity survey was sub-sample of module sample of National Social Economic Survey (NSES) 2001. A sample of 15,148 people aged 10 years+ were analyzed to identify their behavior regarding smoking, alcohol consumption and physical activity. These findings are a representation of the national figures, which were presented by characteristics of the population such as: sex, age, residence, region and economic status. Economic status was divided into 5 strata, which were calculated from a quintile of household expenditure. The results showed that 29.7% of the population aged 10 years+ are daily smokers. This is more prevalent in males than females (58.9% vs. 3.7%). This behavior increases by age group, except for the oldest; there are slightly more smokers in rural areas than urban areas (31% vs. 28%), and no difference among regions (30-31%). Those with better economic status are less likely to smoke than poorer ones. Alcohol consumption is reportedly very low (2.7%), more prevalent in males than females (4.9% vs. 0.8%), and higher in rural areas than urban areas (3.1% vs. 2.1%). Eastern Indonesia was higher than Sumatra, Java and Bali (6.3%, 4.7%, and 1.2% respectively). There were no differences in alcohol consumption according to economic status. Physical inactivity is very high (68%), more prevalent in females than males (73% vs. 63%), and higher in urban areas than rural ones (78.4% vs. 60.6%). Among regions, Java Bali region (72%) was higher than Eastern Indonesia and Sumatra (62% and 59% respectively). Those with a better economic status are more likely to be inactive than their counterparts. These behaviors are a reflection of future diseases , which may cause the morbidity of NCDs. This information on risk factors is essential for future caseload predictions in regards to NCDs and for preventive program planning.

Keywords: Health, Behavior Monitoring & Research, tobacco, alcohol, physical activity, health indicators.

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INTRODUCTION

In 2000, the WHO 53rd World Health Assembly passed a resolution on the Prevention and Control of Non Communicable Diseases (NCDs) with the goal being to support Member States in their efforts to reduce the toll of morbidity, disability and premature mortality related to NCDs. This global strategy has three main objectives; 1) to map the emerging epidemics of NCDs and to analyze their social, economic, behavioral and political determinants in order to provide guidance for policies, legislation and finance, 2) to reduce the level of exposure of individuals and populations to common risk factors from NCDs, 3) to strengthen health care for people with NCDs [1].

A series of National Household Health Surveys (NHHS 1995-2001) reported the occurrence of epidemiological transition caused by demographic transition and prolong economical diversity. Communicable diseases are still prevalent, followed by the emergence of Non Communicable Diseases (NCDs), which are caused by increasing the level of behavioral risk factors in the population [2].

The NHHS 2001 morbidity survey collected information regarding behavioral risk indicators, whereas the WHO'S STEPwise approach was one of the study instruments.

The aims of the study were to identify behaviors regarding smoking, alcohol consumption and physical inactivity on different characteristics of sex, age groups, residence, region, and economic status. These behaviors are a reflection of future diseases that may cause morbidity from NCDs, Disability and Mortality, whereas prevention of these is best. Information regarding risk factors is essential for Planning primary preventive programs and for predicting future caseload of NCDs.

METHODOLOGY

A sampling scheme from the National Social Economic Survey (NSES) 2001 was used for NHHS 2001. NSES 2001 employed the principle of a multi stage sampling design. For urban areas, census blocks (CB's) were selected systematically, and 16 households (HH) were systematically drawn in each selected CB. For rural areas, sub-districts were first selected with PPS, then two CB's were selected randomly in each selected sub-district and finally, 16 house-holds were drawn systematically in each selected CB. NSES 2001 has a sample size of 220,898 HH (13,806 CB) for Core and 65,280 HH (4,080 CB) for Module. Forty percent of module samples from NSES 2001 were allocated for samples of NHHS 2001: MCH and Pregnant Women FU Studies, and 25% of households within this sample were allocated for the NHHS 2001 Morbidity Survey.

A sample of 15,148 people aged 10 years+ was analyzed to identify their behavior in terms of smoking, alcohol consumption and physical activity from different background characteristics i.e. sex, age, education, residence and economic status.

The WHO Step 1 questionnaire was adapted with some modifications. Variables for smoking behavior were current smoker, ex-smoker, and never smoked. Variables for alcohol consumption were regular drinker, former drinker, lifetime abstainer. Variables for physical activity were inactivity in each domain and inactivity in the overall domain.

A current smoker according to the 'Guidelines for controlling and monitoring the tobacco epidemic' is someone who at the time of survey smokes any tobacco product either daily or occasionally. The group of current smokers was divided into two categories, daily smokers who smoke any tobacco product at least once a day (people who smoke everyday with rare exceptions such as not on a days of religious fasting or during acute illness are still classified as daily smokers) and non daily smokers (also referred to as occasional smokers i.e. someone who smokes, but not everyday). Non-smokers are individuals who have never smoked at all. Ex-smokers are people who were former smokers but currently do not smoke at all.

Current drinker is someone who has consumed at least one alcoholic drink in the week preceding the survey. Former drinker is someone who have ever had consumed any type of alcoholic drink in their lifetime, but did not consume in the past week preceding the survey. Lifetime abstainer is someone who has never consumed any alcohol in his or her lifetime.

The disadvantage of using the last 7 days method is that this approach is sensitive to the frequency and regularity of each individual's drinking patterns. The less frequently an individual drinks, the greater the likelihood that any one-week period will fail to represent their overall volume or pattern of consumption, hence consumption by some infrequent drinkers may be missed altogether by such an approach.

The WHO Step 1 Global Physical activity Questionnaire (GPAQ) was adapted with some modifications (see attachment 1). This instrument was developed to quantify the total amount of activity spent in three domains where most physical activity occurs; a) occupational physical activity, b) non-occupational physical activity, c) travel related physical activity. Domains a and b consist of 3 questions i.e., 1) hours mainly for activities of sitting or standing with only a little walking, 2) hours for activities that require the same effort, such as continuous walking, cleaning, etc, and 3) hours for activities that require the same effort such as heavy lifting or heavy work. Domain c consists of 3 questions i.e., 1) hours for travel in a car, bus or motorcycle and rarely if ever, by bicycling or walking, 2) hours for travel by walking or cycling and also by spending sometime in a car, bus, or on a train, 3) hours spent for travel by doing a lot of walking or by cycling with only little time sitting in a car, bus or train.

Definition of inactivity in the overall domain is set for each individual as more than half of the proportional time spent in the inactive category such as activities of sitting or standing with only little walking.

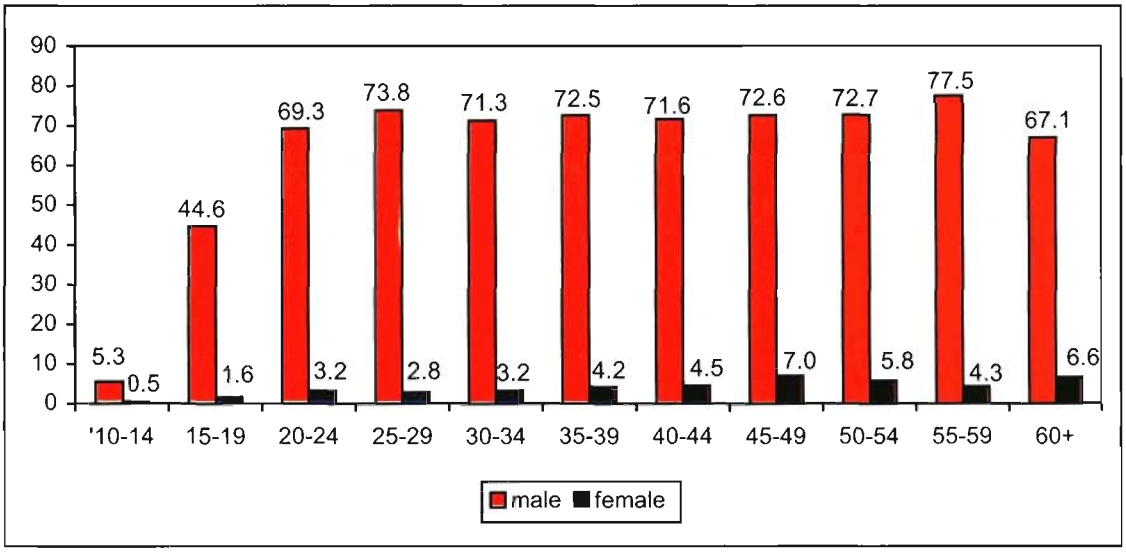
RESULT

Table 1 shows 30% of the population aged 10 years+ are current smokers, which is more prevalent for males than females (59% compare to 4%). Most of them are current daily smokers who smoke any tobacco product at least once a day.

Picture 1 shows smoking behavior by population 10 years+ by sex and age groups. The prevalence of male and female smokers is greater the higher the age. In males, the sharp increase in prevalence can be seen in adolescent age groups 10-14, 15-19, and 20-24. The percentage of current smokers is slightly higher in rural than urban areas (31% compare to 28%). The percentage of male current smokers in rural areas is 60% compared to 57% in urban areas.

Table 1. Smoking Behavior by Population Aged 10 Years+ by Sex, NHHS 2001

Smoking behavior	Male # 7.149	Female # 7.998	Male & Female # 15.147
A. Current smoker			
1. Daily smoker	50.3	2.6	25.1
2. Non daily smoker/ occasional smoker			
a. 1 x / more in a week	5.0	0.5	2.6
b. Less than once a week	3.6	0.6	2.0
B. Non smokers			
1. Never smoked	32.0	94.8	65.2
2. Ex-smoker	9.1	1.5	5.1
Total	100.0	100.0	100.0



Picture 2. Prevalence of Smoking Behavior in The Male and Female Population Aged 10 Years+, by Age Group, NHHS 2001

There is a slight difference in current smokers among regions (29-31%). Smoking behavior varies by economic status. In males, the worse their economic status the more likely they are to smoke. (Table 2).

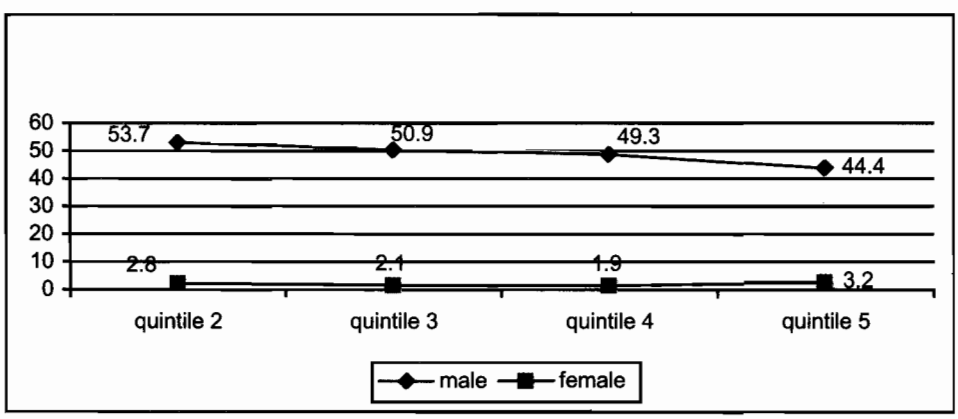
Picture 2 shows the prevalence of current daily smokers among the diversity of economic status, in males and females. In males, the worse the economic status they have, the more likely they are to smoke, while in females, the wealthier they are, the more likely they are to smoke.

Most of the population age 10 years+ are lifetime abstainer (90%). The prevalence of current alcohol drinkers is reported as very low (3%). Male populations are more likely to drink alcohol than females (5% compared to 1%). Populations who are former drinkers 7.0%, most of them are male (14%).

Table 4 shows the prevalence of alcohol consumption by residence, region and economic status. In males, the number of current drinkers is slightly higher in rural areas than urban areas (6% compared to 4.0%), while the number of former drinkers is higher in urban areas (17% compared to 12% in rural areas). East Indonesia has the highest prevalence of alcohol consumption (11%). There is no difference in alcohol consumption according to economic status.

Table 2. Smoking Behavior in The Male and Female Population Age 10 Years+, by Characteristics, NHHS 2001

	Male (# 7149)		Female (# 7999)		Male & Female # 15.148	
	Current smoker	Non smoker	Current smoker	Non smoker	Current smoker	Non smoker
Residence						
- urban	56.8	43.3	3.1	96.8	28.0	72.0
- rural	60.4	39.6	4.0	96.0	30.9	69.1
Region						
- Sumatra	58.5	41.6	5.4	94.5	30.9	69.1
- Java Bali	59.5	40.6	2.8	97.1	29.4	70.6
- East Indonesia	57.4	42.6	4.6	95.4	29.7	70.3
Economic status						
- Quintile 1	-	-	-	-	-	-
- Quintile 2	62.8	37.3	4.0	96.1	31.2	68.8
- Quintile 3	60.9	39.2	3.5	96.5	31.0	69.0
- Quintile 4	56.3	43.7	2.8	97.2	28.7	71.2
- Quintile 5	52.7	47.4	4.1	95.9	26.8	73.2
Total	58.9	41.1	3.8	96.3	29.7	70.3



Picture 2. Prevalence of Current Daily Smoker by Economic Status, NHHS 2001

Table 3. Alcohol Consumption in Population Age 10 Years+, by Sex, NHHS 2001

	Drink alcohol			Total	
	Lifetime abstainer	Former drinker	Current drinker		
Male	81.3	13.8	4.9	100.0	7149
Female	98.4	0.9	0.7	100.0	7998
Total	90.3	7.0	2.7	100.0	15147

Table 4. Alcohol Consumption by Population Age 10 Years+, by Characteristics

	Male			Female			Male &Female		
	Current drinker	Former drinker	Lifetime abstainer	Current drinker	Former drinker	Lifetime abstainer	Current drinker	Former drinker	Lifetime abstainer
Residence									
Urban	4.0	17.1	78.9	0.4	0.8	98.7	2.1	8.4	89.5
Rural	5.5	11.6	82.9	0.9	0.9	98.2	3.1	6.0	90.9
Region									
Sumatra	8.3	17.6	74.1	1.3	1.0	97.7	4.7	9.0	86.4
Java	2.2	11.1	86.7	0.3	0.4	99.3	1.2	5.4	93.4
Bali									
East	11.4	20.3	68.3	1.6	2.5	95.9	6.3	10.9	82.8
Indo									
Economic status									
Quintile 1	-	-	-	-	-	-	-	-	-
Quintile 2	4.5	11.2	84.2	0.8	0.9	98.3	2.5	5.7	91.8
Quintile 3	4.7	13.3	82.1	0.7	0.8	98.5	2.6	6.8	90.6
Quintile 4	5.7	14.5	79.7	0.4	1.2	98.4	3.0	7.6	89.4
Quintile 5	5.0	16.7	78.4	1.2	0.7	98.2	2.9	8.1	88.9
Total	4.9	13.8	81.3	0.8	0.9	98.4	2.7	7.0	90.3

Table 5 shows seven out of ten people are inactive, the prevalence being higher in females than males (73% compared to 63%). The number of male and females aged 10 years+ who are physically inactive is higher in urban than rural areas. There are sharp differences among regions, whereas Java Bali is the highest (66% of males and 77.1% of females) (Table 6).

The prevalence of inactivity is higher according to higher economic status (Figure 3).

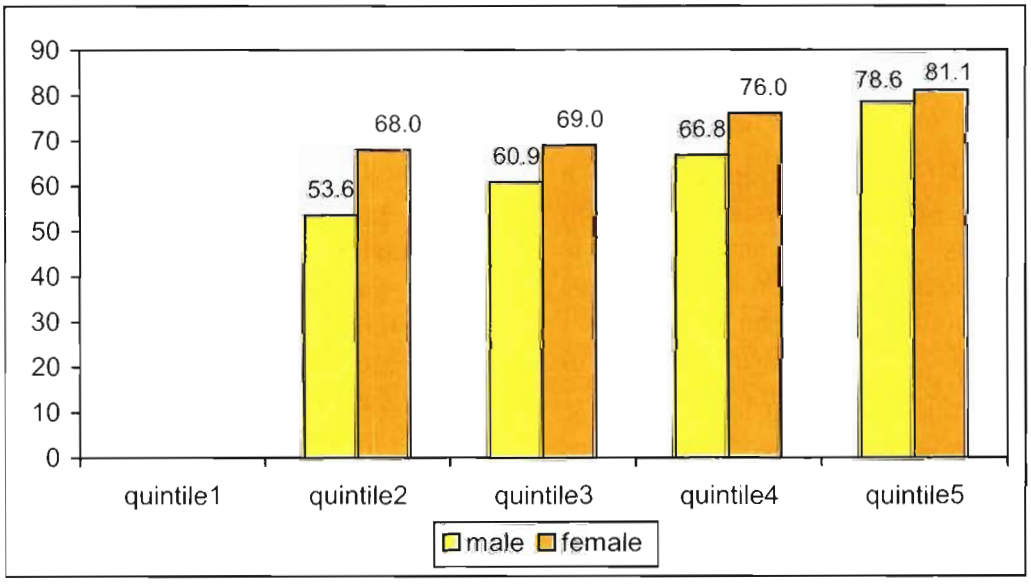
Inactive behavior is more prevalence in females than males. This sharp difference between sexes can be seen in all age groups (Figure 4).

Table 5. Physical Activity by Population Aged 10 Years+ by Sex, NHHS 2001

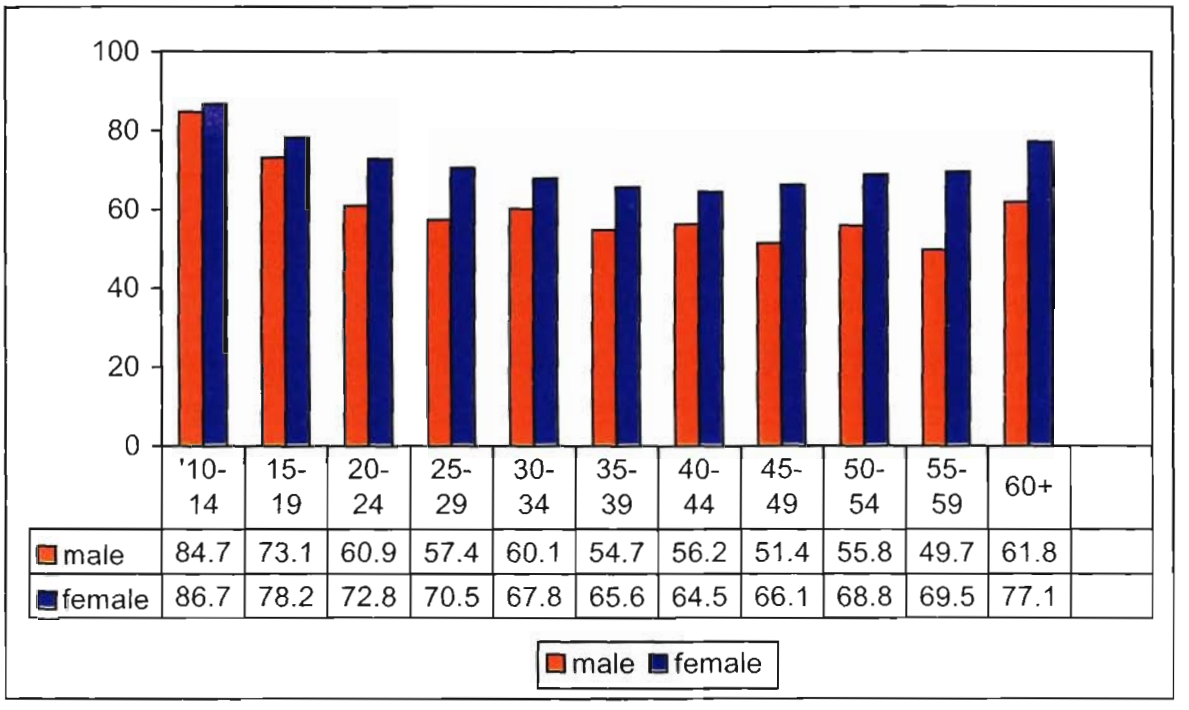
	Physical activity			
	Active	Inactive	Total	
Male	37.1	62.9	100.0	7046
Female	27.5	72.5	100.0	7887
Total	32.0	68.0	100.0	14933

Table 6. Prevalence of Physical Inactivity by Characteristics, NHHS 2001

	Male		Female	
	Active	Inactive	Active	Inactive
Residence				
- Urban	25.0	75.0	18.7	81.3
- Rural	45.4	54.6	33.9	66.1
Region				
- Sumatra	45.4	54.6	36.9	63.1
- Java Bali	34.0	66.0	22.9	77.1
- East Indonesia	40.2	59.8	36.0	64.0
Total	37.1	62.9	27.7	72.3



Picture 3. Prevalence of Physical Inactivity by Economic Status, NHHS 2001



	'10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
male	84.7	73.1	60.9	57.4	60.1	54.7	56.2	51.4	55.8	49.7	61.8
female	86.7	78.2	72.8	70.5	67.8	65.6	64.5	66.1	68.8	69.5	77.1

Picture 4. Physical Inactivity by Age Groups, NHHS 2001

DISCUSSION

Smoking

The NHHS 2001 findings shows a total of 30% of the Indonesian population aged 10 years+ are current smokers; this is more prevalent for males than females (59% compared to 4%). The NSES 2001 reported that 27.7% of them are current smokers, 54.5% male and 1.2% female [5].

Especially for males, the sharp increase of prevalence can be seen in the adolescent age groups i.e., 5% from 10-14, 45% from 15-19, and 69% from 20-24. This finding is supported by NSES 2001, which reported that the percentage of smokers who begin to smoke before they are 20 years of age has increased sharply in the past five years. The percentage of smoker who began to smoke before they were 20 increased from 62% (NSES 1995) to 68% (NSES 2001). NSES 2001 also reported that in a 6-year period (1995-2001) it has found an increasing of 4% in current smokers among the population aged 10 years+.

Most smokers are current daily smokers who smoke any tobacco product at least once a day. The percentage of male and female smokers is higher the older they are. The prevalence of male smokers is higher in rural areas than urban areas. (60% compared to 57%). Smoking behavior varies according to economic status, with males tending to smoke more the poorer they are. Since this information can be gathered periodically, it can be used to monitor and evaluate the promotion program in order to reduce smoking and provide input to policy makers.

Legislation regulating smoking has at least two functions, to protect non-smokers from the adverse health effects of passive

smoking and to prevent young people from smoking [6]. Data gathered from the Behavior Risk Factor Surveillance System (BRFSS) survey can have a powerful effect on state legislators. In Oregon, BRFSS tobacco data was used to pass a cigarette tax. In most states, BRFSS data has been used to support tobacco control legislation [3].

Alcohol Consumption

The prevalence of current alcohol drinker is very low (3%). The male population is more likely to drink alcohol than females (5% compared to 1%). Populations who are former drinkers 7.0%, most of them are male (14%). In males, the number of current drinkers is slightly higher in rural than urban areas (6% compared to 4%). East Indonesia has the highest prevalence of alcohol consumption (11%). There is no difference in alcohol consumption according to economic status.

Patterns of drinking vary considerably according to cultural setting. Some communities abstain from alcohol entirely, while in others it may be consumed many times during the week. Drinking may also be traditionally associated with particular religious festivals or parties. Hence, the less frequently an individual drinks, the greater the likelihood that any one-week period will fail to represent their overall volume or pattern of consumption, and the consumption of some infrequent drinkers may be missed all together by such an approach. The low percentage of alcohol drinkers followed by the higher percentage of former drinkers might be caused by the 'infrequent drinkers', mainly in males.

Physical Inactivity

A total of 68% of the population is inactive. Inactive behavior is more prevalent in females living in urban areas and of higher economic status. Java Bali region is the most prevalent.

Regular physical activity provides important health benefits, including a lower risk of coronary heart disease, certain cancers, osteoporosis, and other leading causes of death and disability [6]. Despite such benefits, the proportion of inactive people, especially females, is very high (72 %) and constant high (65-87%) on different age groups.

The major risk factors for one NCD are also likely to affect one or more of the other NCDs. In addition, some of the NCD risk factors tend to appear in 'clusters' in individuals; i.e. physical inactivity often clustering with obesity and high blood pressure. (WHO steps). Extended analysis is needed to explore the relationship between these variables.

In summary, 30% of the Indonesian population aged 10 years and above are current smokers, which are mostly current daily smoker. The prevalence of smokers is higher in the higher age groups. Male smokers are more prevalent than female smokers (59% compared to 4%). The prevalence of male smokers is higher in rural areas than urban areas (60% compare to 57%).

Smoking behavior varies by economic status. In male, the lower their economic status, the more likely they are to smoke. This is the opposite in females however. Most of the population aged 10 years and above are lifetime abstainer (90%). This high figure is due to the most population's religion which is Moslem, which prohibited drinking.

The prevalence of current alcohol drinkers is very low (3%). Male drinkers are more prevalent than female drinkers (5% compared to 1%). The prevalence of

male drinkers is slightly higher in rural than urban areas (6% compared to 4%).

East Indonesia has the highest prevalence of alcohol drinkers (11%). There is no difference in alcohol consumption according to economic status, 68% of the population is physically inactive. Inactive behavior is more prevalent in females than males (63% compared to 72%). In females, the prevalence of physical inactivity is consistently high (65-87%) in different age groups. Physical inactive behavior is more prevalent in urban areas than rural areas. Physical inactive behavior is more prevalent for those with higher economic status.

These behaviors are reflections of future diseases that may cause the morbidity of NCDs, disability and mortality, whereas prevention of these is the best solution. Information on risk factors is essential for planning primary preventive programs and for predicting future caseload of NCDs.

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