

Characteristics of High-Risk Behaviours Related to Alcohol and Illicit Drug Use and their Associated Factors among Adolescents in Middle and High School

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Abstract

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Background: Use of narcotics, psychotropic and addictive substances (NPA) in adolescents has become one of the major social problems we are facing in society and gives a negative impact. This study was done to determine the characteristics and factors that influence high-risk behaviour of NPA use in adolescents in middle and high school, also introducing CRAFFT questionnaire as an early screening tool for alcohol and illicit drugs use.

Methods: Quantitative study (validated questionnaire) was conducted among 514 subjects aged 12-18 years old. CRAFFT questionnaire was used to detect a high-risk behavior of alcohol and illicit drugs use and self-reported questionnaire used to determine the risk factors of NPA.

Result: Most participants (19,6%) were involved in high-risk behaviour of alcohol and illicit drugs, with the majority was males (12,4%). This study showed smoking behaviour (23,8%), drinking alcohol (15,8%) and illicit drugs use (13,6%). The type of drugs being used were cannabis (52,7%), tramadol (15,2%), dextromethorphan (10,7%) and methamphetamine (6,3%). CRAFFT questionnaire has a good internal consistency with Cronbach's α 0,73. Education level, authoritarian parenting style, unharmonious parents, peer pressure or threat, and extracurricular activities were factors that influenced high-risk behavior of alcohol and illicit drug use

Conclusions: Early detection, comprehensive treatment, and intervention of risk factors of NPA use are needed. CRAFFT can be use as one of the screening tools for detection of alcohol and illicit drugs use in adolescents.

Introduction

The use of Narcotics, Psychotropic and Addictive (NPA) substances in adolescents has become one of the major social problems we face in society. According to *Badan Narkotik Nasional (BNN)* survey in 2011, the use of NPA among High School and junior high school students is estimated to be around 7,3% with prevalence of 7,1% in males and 1,9% in females. The

prevalence of NPA use is higher among high school students compared to lower grade students.¹ World Health Organization reported among youth aged 13-15 years, at least one out of five students are smokers. In a survey conducted by the Indonesian Ministry of Health in 2007, 2.6% of adolescents aged 13-15 years consumed alcohol and 11,8% smoked or used other tobacco products.²

Narcotics, psychotropic, and addictive substances use has a negative impact and is often associated with disruption of social function such as behavioural changes, lower academic achievement, school dropout, and violence.³ Other than the social problem, NPA also negatively affect health ranging from mild to life-threatening medical condition, such as nausea, vomiting, muscle spasm, hallucinations, hearing loss, liver and kidney injury, anxiety, to death caused by overdose.

Adolescents are the future of the nation and hold a crucial role in the development of a country. Indonesia as a developing country has 28% percentage of adolescents from total population.⁴ Based on the survey, adolescent NPA users in Indonesia are progressively increasing, which will negatively impact the future and increase the burden of the country. Prevention of drug use is very important and will be much more efficient and cost-effective compared to the intervention. Problems arising from the use of NPA in adolescents stand for 60-70% of social problem. More than two-thirds of deaths and illnesses during adulthood are associated with high-risk behaviours in adolescent, such as drinking alcohol, smoking, drug use, and unprotected sexual intercourse.

Early detection of NPA use is very important and can be done using screening tools. A process of gathering information to evaluate whether further comprehensive action is required. There are lots of existing screening tools.

CRAFFT screening tool is used in this study because it is simple, easy to use, has already been validated (92.3% sensitivity and 82.1% specificity), has a good reliability (Cronbach's $\alpha = 0.79$), and recommended by American Academy of Paediatrics. Based on the awareness of negative effects of NPA use, we conduct this study, hopefully

it can bring valuable implication in preventing risky behavior and eventually can be used as health promotion for the health of teenagers.

Methods

We performed a cross-sectional study and subjects were recruited with random sampling method. The target population was 12-18 years old Junior and Senior High School students in Central Jakarta from April to June 2014. Initially, the CRAFFTS and Risk Factor Questionnaire were tested for validation by giving the questionnaire to thirty adolescents aged 12-18 years old who are not included in the selected school. The questionnaire's validity and reliability were analyzed using Pearson correlation and Cronbach's α test. The questionnaire is considered valid if it has p-value < 0.05 and reliable if the Cronbach's α test values ≥ 0.7 . After the questionnaire validity had been proven, data was collected at 2 Junior High schools and 2 senior high schools that were selected randomly. The explanation about this study was given to the subject. Then, the parental consent and student assent forms were obtained prior to the study. The questionnaire will be filled independently by the subjects and took 10-15 minutes. Inclusion criteria were students aged 12-18 years, willing to participate in the study, had parental consent to join the study, and able to fill the questionnaire completely. The exclusion criteria were physical and/or psychological disorders that does not allow the student to join the study and refusal to be included.

The collected data were processed and analyzed using SPSS version 22. All dependent and independent variables were analyzed descriptively. Continuous data will be presented as mean value (\bar{X}) and standard deviation (SD) if the data distribution was normal or presented as median value and min-max range if the data

distribution was abnormal. The categorical was presented as number (n) and percentage (%). The association between dependent and independent variable will be presented in the crosstable. The association between the categorical independent variable and the dependent variable will be analyzed by chi-square test, Fisher-exact test or Kolmogorov-Smirnov test. The association between two dichotomous variables will be presented as odds ratio (OR) with 95% confidence interval (CI). Then, the analysis will be followed by multivariate logistic regression analysis.

Result

The collected subjects were 514 adolescents, consisted of 43,3% males and 56,5% females with a median age of 15 years (range 12-18 years). Most of the subjects (95,7%) stay with their parent(s) and have middle-class financial status (**Table 1**). Most of the subjects (55.3%) also had family members consuming drugs. The most common drug used by family members is cigarettes (54.6%) (**Table 2**).

Table 1. Research Subjects Characteristics.

Characteristics	Categories	N (%)
Age		Median 15 years old (range 12-18 years old)*
Gender	Male	223 (43,4)
	Female	291 (56,6)
Education background	Junior High school	248 (48,2)
	Senior High School	266 (51,8)
Residence	With parents	492 (95,7)
	Not with parents	22 (4,3)
Father's occupation	Entrepreneur	215 (41,8)
	Employees	213 (41,4)
	Civil servants	70 (13,6)
	Unemployed	16 (3,1)
Mother's occupation	Entrepreneur	68 (13,2)
	Employees	56 (10,9)
	Civil servants	18 (3,5)
Father's education	Housewife	372 (72,4)
	High	166 (32,3)
	Medium	270 (52,5)
Mother's education	Low	78 (15,2)
	High	117 (22,8)
	Medium	271 (52,7)
Peer group	Low	126 (24,5)
	Yes	351 (68,3)
	No	163 (31,7)

Family financial status.	Low (< Rp. 972.210,-)	60 (11,7)
	Lower-middle (Rp.973.179-1.837.176,-)	218 (42,4)
	Upper-middle (Rp.3.838.116 11.849.690,-)	214 (41,6)
	High(>Rp.1.850.629,-)	22 (4,3)

*The median central tendency value was measured because the data is abnormally distributed

Table 2. The risk factor of NPA use among adolescents.

Characteristics	Category	N (%)
Extracurricular activities	Yes	371 (72,2)
	Never	143 (27,8)
Academic grading	≥75	348 (67,7)
	<75	166 (32,3)
Parents marital status	Married	436 (84,8)
	Divorced/ separated	35 (6,8)
	Widow/ widower	43 (8,4)
Authoritarian parenting	Yes	143 (27,8)
	No	371 (72,2)
Parents harmonious relationship	Yes	433 (84,2)
	No	81 (15,8)
Family member of NPA users	Yes	284 (55,3)
	No	230 (44,7)
Religious activity	Yes	374 (72,8)
	No	140 (27,2)
School distance to nightclub	Yes	39 (7,6)
	No	475 (92,4)
Student NPA user	Yes	316 (61,5)
	No	198 (38,5)
Drugs easily available	Yes	337 (65,5)
	No	177 (34,4)
Peer pressure	Yes	69 (13,4)
	No	445 (86,6)
Desire for peer acceptance	Yes	36 (7)
	No	478 (93)

Assessment of the subjects was done using CRAFFT questionnaire with cut-off value of ≥ 2 considered as high-risk behaviour. The results showed 19.6% of subjects had high-risk behaviour. Most of the subjects involved in high-risk behaviour were male (12.4%) (**Table 3**)

Table 3. High-Risk Behaviour in Adolescent

CRAFFT Score	Gender	N=101(%)
<2	Male	159 (31%)
	Female	254 (49,4%)
≥ 2	Male	64 (12,4%)
	Female	37 (7,2%)

The results showed that most of the adolescent who were involved in high-risk behaviours of NPA, and alcohol use were male (63.4%) and at Senior high school (71.3%) (**Table 4**). The smoker subjects were 23.8% and can be divided into daily

smoker (8.6%) and occasional smoker (15.2%). Age of first smoking based on the developmental phase of adolescence appeared mostly from early adolescence 10-13 years old (18.9%). The results showed that 21.6% of adolescent had consumed alcoholic beverages and can be further divided into daily drinker (0.4%), occasional drinker (15.4%), and former drinker (5.8%). Based on the age of first trying to drink alcohol, mostly started from middle age (14-16 years) (Table 5).

Table 4. Distribution of high-risk behaviour in adolescents based on the used substance

No	High-Risk Behaviour	N (%)
1	Smoking	
	- Daily Smoker	44 (8,6)
	- Occasional smoker	78 (15,2)
	- Ex-smoker	58 (11,3)
	- Non-smoker	334 (65)
2	Alcohol drinking	
	- Daily drinker	2 (0,4)
	- Occasional drinker	79 (15,4)
	- Ex-drinker	30 (5,8)
	- Non-drinker	403 (78,4)
3	Narcotics, psychotropic and addictive substances	70 (13,6)
	- User	444 (86,4)
	- Non-user	
4	Involved in at least 1 high-risk behaviour	210 (40,8%)

Table 5. Distribution of high-risk behaviour in adolescents based on the age of first NPA substance use

No	Type of High-Risk Behaviour	Age	N (%)
1	Smoking Behaviour	Early adolescence (10-13 years old)	97 (18,9)
		Mid-adolescence (14-16 years old)	78 (15,2)
		Late adolescence (≥ 17 years old)	5 (1)
2	Alcohol drinking behaviour	Early adolescence (10-13 years old)	42 (8,2)
		Mid-adolescence (14-16 years old)	65 (12,6)
		Late adolescence (≥ 17 years old)	4 (0,8)
3	Narcotics, psychotropic and addictive substances using behaviour	Early adolescence (10-13 years old)	15 (2,9)
		Mid-adolescence (14-16 years old)	47 (9,1)
		Late adolescence (≥ 17 years old)	8 (1,6)

Results of the study in adolescent showed that 13.6% of adolescents had used NPA (Table 4). The most commonly used substances in this study were marijuana (52.7%), tramadol (15.2%), dextromethorphan (10.7%), and shabu-shabu (6.3%) (Table 6)

Table 6. The percentage of Narcotics, psychotropic and addictive substances that were used by adolescent

Drugs Type	N (%)
Marijuana	59 (52,7%)
Cocaine	1 (0,9%)
Shabu-Shabu (methamphetamine)	7 (6,3%)
Ecstasy	2 (1,8%)
BK Pill- "Koplo" pill	4 (3,6%)
Amphetamine	1 (0,9%)
Glue-sniffing	4 (3,6%)
Alprazolam	3 (2,7%)
Dextromethorphan	13 (10,7%)
Tramadol	17 (52,2%)
Mushroom	1(0,9%)

Factors significantly associated ($p < 0,05$) with the high-risk behaviour of NPA use were age, gender, educational background, academic grading, extracurricular activities, parenting technique, parents' harmony, family member NPA user, religious activity, school location, student NPA user, NPA availability, peer pressure, and desire for peer acceptance. Parents marital status did not have a significant association (p -value = 0.079) to the high-risk behaviour of NPA use in adolescents. (Table 7).

Table 7. Association between high-risk of NPA use and risk factors

Risk Factors	CRAFFT		OR (95% CI)	P
	High Risk	Low Risk		
Age				
Mid-Late Adolescence (14-18 years)	98	366	4.20 (1.28-13.77)	0.011
Early Adolescence (10-13 years)*	3	47		
Gender				
Male	64	159	2.76 (1.76-4.34)	0.000
Female*	37	254		

Educational Level				
High School	72	194	2.80	0.000
Junior High School*	29	219	(1.75-4.50)	
Extracurricular Activities				
No	40	103	0.51	0.003
Yes*	61	310	(0.32-0.80)	
Academic Achievement				
Poor (<75)	41	125	1.58	0.047
Good (>75)*	60	288	(1.01-2.47)	
Parental Marital Status				
Married*	80	356	1.64	0.079/
Divorced/Widowed	21	57	(0.94-2.86)	NS
Authoritarian Parenting Style				
Yes	86	57	35.8	0.000
No*	15	356	(19.35-66.27)	
Harmonious Parents				
No	43	38	7.32	0.000
Yes*	58	375	(4.37-12.27)	
Family Member Using Illicit Drugs				
Yes	77	207	3.19	0.000
No*	24	24	(1.94-5.25)	
Religious Activities				
Yes*	48	326	4.14	0.000
No	53	87	(2.62-6.53)	
School Location				
Yes	13	26	2.20	0.025
No*	88	387	(1.09-4.46)	
Student Drug Use				
Yes	74	242	1.94	0.007
No*	27	171	(1.20-3.14)	
Ease of Access to Illicit Drugs				
Yes	85	252	0.30	0.000
No*	16	161	(0.17-0.52)	
Peer Pressure or Threat				
Yes	35	34	5.91	0.000
No*	66	379	(3.47-10.14)	
Desire for Social Acceptance				
Yes	26	10	13.97	0.000
No*	75	403	(6.47-30.12)	

The multivariate and logistic regression analysis showed the factors that contribute to high-risk behaviour of NPA use in adolescents, sorted from strongest to lowest association, were educational background, authoritarian parenting, broken-home, peer pressure and extracurricular activity (**Table 8**).

Table 8. Multivariate analysis of the factors associated to high-risk behaviour of NPA use in adolescent.

	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I for EXP (B)	
							Lower	Upper
Adolescent Educational Level	2.257	.399	32.014	1	.000	9.557	4.373	20.889
Extracurricular Activities	.714	.361	3.909	1	.048	2.043	1.006	4.147
Authoritarian Parenting Style	3.305	.388	72.697	1	.000	27.249	12.747	58.251
Disharmonious Parents	1.387	.402	11.886	1	.001	4.003	1.819	8.807
Family Member Using Illicit Drugs	.646	.355	3.314	1	.069	1.908	.952	3.824
Peer Pressure or Threat	1.183	.430	7.577	1	.006	3.254	1.406	7.576
Desire for Social Acceptance	1.086	.563	3.719	1	.054	2.963	.982	8.935
Constant	5.639	.541	108.599	1	.000	.004		

- The included variable in step 1: age, gender, educational background, extracurricular activities, academic grading, parents' marital status, authoritarian parenting, parents' relationship, family member of NPA user, religious activities, school location, students NPA user, accessibility to NPA, peer pressure or threat, desire for peers' acceptance.

Discussion

One of the main goals of this study was to find a way to screen high-risk behaviour of NPA and alcohol use using simple questionnaire. In our study, we found that 19,6% of the subjects had positive CRAFFT questionnaire (≥ 2), which indicated high-risk behaviour for NPA and alcohol consumption. Previous study by Levy et al. also showed similar results which was 16,1%.⁶

CRAFFT questionnaire is a screening instrument for high-risk behaviour of drugs and alcohol use. This questionnaire is recommended by AAP to be used in under <21 years old population. This questionnaire

has been used and adopted in many other countries, and thus has also been translated into many languages. The study about questionnaire's reliability, sensitivity and specificity had been done. CRAFFT questionnaire's reliability using Cronbach's α score 0,68-0,86, with 49-100% sensitivity and 61,8%-96,6% specificity.⁷⁻¹² This study Cronbach's α reliability score was 0,73. Therefore, CRAFFT questionnaire is a good screening instrument which has good reliability as early screening measures. It is recommended to be used in every patient visit, especially for adolescents.

Smoker adolescents (daily and occasional smoker) were 23,8%. Our result was higher than studies from other countries, such as, Thailand (8,8%), Malaysia (11,5%), Myanmar (2%), Cambodia (2,4%), Filipina (11%), India (11,2%) and People's Republic of China (8,9%).¹⁶⁻²² Lower result of 11,1% was also found in Indonesia health survey in 2007.² We also found out that there was lower prevalence of smoking habit in other developing countries other than Indonesia such as Kenya (13,9%), Uganda (4,3%), Zimbabwe (5,8%), Argentina (21%), Peru (17,3%), and Uruguay (10,5%).²³⁻²⁸ As well as smoking habit in developed countries such as United States of America (4,9%) and England (13%).²⁹⁻³¹

Our research revealed 18,9% of adolescents using cigarettes for the first time at age 10-13 years old. This result was similar to a study in India with mean age 12,4 years old.²² Cigarettes are considered as a gateway drug to high-risk behaviour and another illicit substance usage.³² This statement synchronized with our study which found that the age of first-time smoking cigarettes was early adolescent (10-13 years old). It will open the door to other illicit substances use at the older age. The study in the United States of America found that teenagers who smoke at the age of under 13 years old had a higher risk of marijuana usage (OR 3,3; CI 95% 2,3-4,6).³³

High smoking prevalence in our study (23,8%) was presumed to be due to the lack of government effort to implement the law limiting cigarettes access to the minors.

Indonesian government regulation number 105, year 2012 about the Protection of tobacco addictive substance to Health, regulated in article 25, stated that "every person is prohibited to sell any tobacco products to minors under 18 years old..."³⁴ Nevertheless, our study surprisingly found out that minors under 18 years old could buy cigarettes freely and easily in shops or stalls. Lack of strong implementation of government regulation makes progressively increasing smoking behaviour in adolescent and causing health problem in the future and further burden to the country.

At least 26,1 % of adolescent had tried drinking alcoholic beverage. Prevalence of adolescent drinker (daily drinker and occasional drinker) in this study was 15,8% and most of them tried drinking alcohol at age 14-16 years old. This result was similar to other countries such as Philippines (18,7%), Thailand (15,6%), Kenya (14,6%), Zimbabwe (15,4%), and Peru (27,1%).^{16,20,23,25,27} Higher prevalence of alcohol drinker was found in Argentina (51,8%), Uruguay (45%), and United States of America (30,8%), whereas lower prevalence was found in Malaysia (8,6%), Myanmar (0,8%), Cambodia (7,3%), People's Republic of China (13%), and Maldives (4,9%).^{17-19,21,26,28,31,35,36}

Indonesia has a higher prevalence compared to other countries in South-East Asia. This condition is caused by the lack of government regulations to restrict alcohol beverage distribution. Indonesia Ministry of trade regulation number 43/M-DAG/PER/9/2009 about Alcohol beverage procurement, distribution, sales, supervision, and control in article 17 subsection 4, stated that "alcoholic beverage buyer must show ID card older than 21 years old."³⁷ However, adolescent under the age of 18 years old was able to purchase alcoholic drinks easily without restrictions and the need of showing ID cards. This is presumed to be due to the lack of strong implementation of alcohol restriction law.

The study showed 13,6% of adolescent had used at least one type of illicit drugs or other addictive substances. Most of them

tried it for the first time at the age of 14-16 years old (9,1%). This result was higher if compared with BNN survey in 2011 around 7,3% and study in Thailand which was 6%.^{1,38}

The most common illicit drugs used by adolescent were marijuana (52,7%), tramadol (15.2%), dextromethorphan (10.7%), and shabu-shabu (methamphetamine) (6,3%). These findings were similar to BNN survey, Marijuana as the most commonly used drugs.¹

The use of marijuana will increase sexual desire and have an effect on cognitive function, including memory loss.^{39,40} Studies in the United States report that teenagers who use marijuana have a higher risk of sexual behavior.³⁹ The use of marijuana in adolescents is largely initiated by smoking behaviour and consumption of alcoholic beverages.³³ Studies in Thailand found that the use of marijuana and alcohol was the gateway to methamphetamine use.⁴¹ A large number of cannabis use in the study was due to the ease of obtaining marijuana and more affordable price than other types of illicit substances.

Tramadol is an analgesic drug that works selectively as an opioid agonist at μ receptor. It has the same structure as morphine and codeine. The study in Iran finds that 4.8% of adolescent routinely abusing tramadol.⁴² The use of tramadol is also associated with marijuana use (OR: 5; 95% CI: 1.5-21.9), ecstasy (OR: 8.9, 95% CI: 2.7 -29.4), methamphetamine (OR: 0,5, 95% CI: 0.03-7.0), opioid (OR: 2.3, 95%CI: 0.7-7.4), and drinking alcoholic beverages (OR: 2.2, 95% CI: 0.74-7.4).⁴² Tramadol addiction was also reported in 64% of people who bought it freely in Iran.⁴³

Dextromethorphan (DXM) is a methorphan analogue that acts on sigma-type opioid receptors. This drug is commonly used as an antitussive, but lately abused, especially by adolescent. Dextromethorphan has a hallucinogenic effect and in high doses (5-10 times of therapeutic dose) can cause confusion, euphoria, disorientation, and drowsiness. Studies in the United States showed that

there were 74.5% cases of DXM abuse among adolescents ages 9-17 years old, with the highest frequency at age 15-16 years.⁴⁴ Each country has its own policy of drug classification of DXM. The Singaporean state classified it as prescription drug, while Canada classified it as over-the-counter drug. Since June 2014, The Government of Indonesia has classified DXM as a prescription drug and withdraws all drugs containing DXM from the market.⁴⁵

Shabu-shabu is classified as the methamphetamine group. The effects including improved mood, increasing alertness, concentration, and energy in people who feel tired. Studies by Embry and colleagues found that adolescent girls who use methamphetamine also use marijuana.⁴⁶ Methamphetamine use in adolescents was associated with increased risk of sexual and anti-social behavior.^{46,47} Based on the results of this study, more governmental attention was required in preventing illicit drug and other addictive substances abuse, especially in adolescents.

The result of our study indicated that gender was not a risk factor for high-risk behaviour of drug use in adolescents. This was similar with studies in the United States who also didn't report gender as a risk factor for drug involvement in adolescents.⁴⁸ In contrast, study in Thailand found that the male had a higher risk of using illicit substances (OR: 3.7, 95% CI: 1,89-10,98; p value= 0.022)³⁸ and smoking behaviour (OR 2.44, 95% CI: 1.66-2.58).¹⁴ The previous study in Makassar, South-Sulawesi reported similar result of 30,7% of population had high-risk behaviour of drug use, with higher male user percentage.¹³ Studies from other countries such as Thailand and Pakistan also stated that 40% and 34% adolescent population had involved in at least one high-risk behavior.^{14,15}

Education level was a risk factor for high-risk behaviour of drug use. Middle-aged teenagers (14-18 years old) were more involved in high-risk drugs and alcohol use behaviour than early-adolescent (10-13 years old). Senior high school students had a greater risk than the lower level (OR: 9.56;

95% 95% CI: 4.37-20.89; p-value = 0,000). Similarly, a study in Makassar also reported that adolescents with higher education had higher risk of high-risk behaviour than those in lower educational stages (OR = 0,514; 95% CI= 0,276-0,959).¹³ Alcoholic drinking behaviour progressively increases with education levels, 7th grade (2.5%), 10th grade (10%), 12th grade (10.2%).¹⁴

Older age was also a predictor of the increased drugs use, however in this study, there was no association between ages with the risk of drug use. This may be due to unevenly distributed subject age and small sample size.

Authoritarian parenting is defined as rigid parenting, dictators and expect absolute obedience from a child without any questioning. People with this parenting style often use punishment and are not willing to explain the reasoning behind their rules. Authoritarian parenting is a risk factors for increased high-risk behaviours in adolescents.⁵⁰ This is consistent with the results of our study (OR 27,25; 95% CI 12,75-58,25; p value= 0,000). The result was thought to be due to poor parental relationships leading to increased risk of drug use. Studies in Pakistan showed that 75% of drug users had a bad relationship with parents, 49% did not have close relationship with parents, 63% were unable to communicate with parents, and 43% had a parental dispute.¹⁵

Parents have an important role in shaping healthy behaviour. They have roles as guardians, teachers, and supervisors of children. Lack of parental knowledge and skills, as well as community support, can be an obstacle in performing this role effectively.¹⁴

Inharmonious parents have a crucial role in increasing the high-risk behaviour of drug use, due to the lack of attention and affection of parents, and putting the adolescent in a stressful state with the frequent quarrel between parents.¹⁴ There is a close relationship between drug abuse with family problems, such as parental conflicts, lack of parental support and supervision, and separation from parents

early in life (before age 7).⁵¹ Results of the study found that parent-inharmonious relationship (OR 4.00; 95% CI 1.82-8,81 p value= 0.001) was significantly associated with high-risk behaviour of drug and alcohol use in adolescents.

Adolescence is a transitional phase from childhood to young adulthood marked by physical and psychological changes, as well as attempts to establish self-identity and gain self-reliance.⁵² Peer group influence is one of the most important factors of this period, where adolescents uphold high values of friendship and relationships with peers compared with family. Peer group influence has a large role on adolescents engaged in drug use and juvenile delinquency.⁴¹ Positive effects can be achieved if at this time given a good education, and held training programs for adolescents, such as counsellors and educators for peer groups.

The influence and pressure of the peer group posed a risk to smoking behaviour (OR 2.90, 95% CI 1.93-4.35) and drinking alcoholic beverages (OR 1.72; 95% CI 1.36-2.17).¹⁴ Adolescents have a tendency to use drugs if they have similar peer groups.^{53,54} Wongtongkam et al. found a close relationship between adolescents with peers using prohibited substances such as alcohol drinking and drug use, particularly marijuana and methamphetamine.⁴¹ Having drug user friends was associated with drug abuse in adolescents, especially marijuana (OR 6.94; 95% CI 4.12-11,71) . The results showed the same thing about peer group pressure on drug and alcohol use behaviour (OR 3.26; 95% CI 1.41-7.58; p-value = 0.006).⁴¹

Extracurricular activities such as participation in school organizations, arts, bands, and academic clubs have a role in reducing the risk of adolescent involvement in drug use.⁵⁵ In contrast, adolescents engaged in sports extracurricular activities have a higher risk of engaging in alcoholic drinking behavior.^{55, 56} Studies in Pakistan showed opposite results, with 74% of teenagers who had never taken drugs, were actively involved in sports activities.¹⁵ They also found that adolescents who did not

attend extracurricular activities were at higher risk of involvement in drug and alcohol use behaviour (OR 2.04; CI 95% 1.01-4.15; p-value = 0.048). In our study, we did not assess the type of extracurricular activities that exist. The amount of free time without supervision in adolescents provided more opportunities for adolescents to try illegal drugs than if they have activities.³⁸

This study was conducted using a quantitative method to assess high-risk behaviour of drug use in adolescents. Questionnaires were submitted in writing and completed independently by the research subjects.

There were some limitations to this study. First, the results of this study could not be considered to represent all teenagers in Central Jakarta due to the wide scope and variation in various aspects of population. The study was limited to school students and did not involve adolescents outside of the regular general school system, and only performed in four different locations. This study was designed as a preliminary study to look at the characteristics and risk factors of high-risk drug use in adolescents who meet the criteria of inclusion in a consecutive way to meet the required number of samples. Nevertheless, the results of this study can still be used to provide an overview of high-risk behaviour of drug use in school-age adolescents with similar characteristics.

Second, the data used in the analysis in this study was based on information obtained by independently filled questionnaire. The researcher must rely on the assumption that the information provided was accurate and correct. Some of the questions asked were sensitive questions and the responses received might not be accurate. Third, there are limitations on the variables of extracurricular activities by using dichotomous assessment so that no specific data about the type and form of extracurricular activities are found.

Conclusion

The study concludes that the CRAFFT questionnaire is a reliable and

effective tool for screening adolescents at risk of alcohol and illicit drug use. The research highlights that mid to late adolescence, particularly males, are most vulnerable to high-risk behaviors. Key contributing factors include individual characteristics, familial dynamics, and peer influence. These findings underscore the importance of targeted interventions to address these risk factors and reduce the incidence of substance use among adolescents.

Recommendation

Early adolescence (10-13 years) is a critical period to initiate school-based education on the dangers of drug use. Effective prevention strategies include providing educational materials, developing drug-free school programs, conducting random urine tests, promoting extracurricular activities under teacher supervision, and training teachers about the risks associated with drugs and alcohol. Parental involvement is crucial, as parents should be role models and receive training to improve their awareness of substance abuse risks. Health care professionals, including general practitioners and pediatricians, are encouraged to use the CRAFFT questionnaire for early detection of drug use risks in adolescents. Additionally, the government should enforce stricter regulations and penalties for the sale of cigarettes, alcohol, and other addictive substances. Further research with larger populations is necessary to understand drug use in Indonesian adolescents and to identify protective extracurricular activities.

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References

1. Badan Narkotik Nasional Republik Indonesia. Hasil penelitian BNN tahun 2011. Jakarta: Pusat Penelitian Data dan Informasi Badan Narkotika Nasional; 2011.
2. Prasodjo RS. Indonesia global school-based student health survey. Jakarta: World Health Organization; 2007 h.14-5.
3. Chen K, Sheth AJ, Elliot DK, Yeager A. Prevalence and correlates of past year substance use, abuse, and dependents in a suburban community sample of high school students. *Addict Behav.* 2004;29(2):413-423. <https://doi.org/10.1016/j.addbeh.2003.08.013>
4. Badan Pusat Statistik and Macro International. Indonesia young adult health reproductive survey 2007. Maryland: BPS and Macro International; 2008. h.53-84.
5. World Health Organization. European strategy for child and adolescent health and development. Geneva: World Health Organization; 2005.
6. Levy S, Sherritt L, Gabrielli J, Shrier LA, Knight JR. Screening adolescents for substance use related high risk sexual behaviors. *J Adolesc Heal.* 2009;45(5):1-9. <https://doi.org/10.1016%2Fj.jadohealth.2009.03.028>
7. Knight JR, Shrier LA, Bravender TD, Farrell M, Vander Bilt J, Shaffer HJ. A new brief screen for adolescent substance abuse. *Arch Pediatr Adolesc Med.* 1999;153(6):591-596. <https://doi.org/10.1001/archpedi.153.6.591>
8. Knight JR, Sherritt L, Shrier L, Harris SK, Chang G. Validity of the CRAFFT substance abuse screening test among adolescent clinic patients. *Arch Pediatr Adolesc Med.* 2002;156(6):607-614. <https://doi.org/10.1001/archpedi.156.6.607>
9. Jull A. The CRAFFT test was accurate for screening for substance abuse among adolescent clinic patients. *Evid Based Nurs.* 2003;6(1):23. <https://doi.org/10.1136/ebn.6.1.23>
10. Knight JR, Sherritt L, Harris SK, Gates EC, Chang G. Validity of brief alcohol screening tests among adolescents: a comparison of the AUDIT, POSIT, CAGE, and CRAFFT. *Alcohol Clin Exp Res.* 2003;27(1):67-73. <https://doi.org/10.1097/01.alc.0000046598.59317.3a>
11. Knight J, Harris S, Sherritt L, Van Hook S, Lawrence N, Brooks T, dkk. Adolescents' preference for substance abuse screening in primary care practice. *Subst Abus.* 2007;28(4):107-117. https://doi.org/10.1300/j465v28n04_03
12. Subramaniam M, Cheok C, Verma S, Wong J, Chong SA. Validity of a brief screening instrument- CRAFFT in a multiethnic Asian population. *Addict Behav.* 2010;35(12):1102-1104. <https://doi.org/10.1016/j.addbeh.2010.08.004>

13. Hidayningsih PS, Tjandrarini DH, Mubasyiroh R, Supanni. Faktor-faktor yang berhubungan dengan perilaku berisiko remaja di kota Makasar tahun 2009. *Bul Penelit Kesehat.* 2011;39(2):88-98. <https://dx.doi.org/10.22435/bpk.v39i2%20Jun.72.88-98>
14. Ruangchanasetr S, Plitponkarnpim A, Hetrakul P, Kongsakon R. Youth risk behavior survey: Bangkok, Thailand. *J Adolesc Health.* 2005;36(3):227-35. <https://doi.org/10.1016/j.jadohealth.2004.01.013>
15. Siddiqui S, Niaz U, Hassan S, Husain H, Ahmed S, Akhter R. A survey of psychosocial correlates of drug abuse in young adults aged 16-21 in Karachi: identifying “high risk” population target intervention strategies. *Pak J Med Sci.* 2005; 21(3):271-277. https://pjms.com.pk/issues/julsep05/pdf/drug_abuse.pdf
16. Kramomtong P. Thailand global school-based student health survey. Nonthaburi: World Health Organization; 2008. h.1-2.
17. Ahmad NA. Malaysia global school-based student health survey. Kuala Lumpur: World Health Organization; 2012. h. 32-5.
18. Tun A. Myanmar global global school-based student health survey. Yangon: World Health Organization; 2007. h. 1-2.
19. Tepirou C. Cambodia global school-based student health survey. Phnom Penh: World Health Organization; 2013. h. 17-9.
20. Segarra AB. Philippines global school-based student health survey. Manila: World Health Organization; 2011. h. 3-4.
21. Tian B. China (Beijing) global school-based student health survey. Beijing: World Health Organization; 2003. h. 1-2.
22. Agarwal M, Nischal A, Agrawal A, Verma J. Substance abuse in children and adolescents in India. *J Indian Assoc Child Adolesc Ment Heal.* 2013;9(3):62-79. <http://dx.doi.org/10.1177/0973134220130302>
23. Ogwel A. Kenya global school-based student health survey. Nairobi; 2003. h. 14-5.
24. Twa J. Uganda global school-based student health survey. Kampala: World Health Organization; 2003. h. 1-2.
25. Sithole EG. Zimbabwe global school-based student health survey. Harare: World Health Organization; 2003. h. 1-32.
26. Linetzky B. Argentina global school-based student health survey. Buenos Aires: World Health Organization; 2007. h. 1-2.

27. Baca ME. Peru global school-based student health survey. Lima: World Health Organization; 2010. h. 4-5.
28. Grumbaum S. Uruguay global school-based student health survey. Montevideo: World Health Organization; 2012. h. 3-4.
29. Hibell B, Guttormsson U, Ahlström S, Balakireva O, Bjarnason, Thoroddur Kokkevi A, dkk. The 2011 ESPAD report: substance use among students in 36 European countries. Stockholm: The Swedish Council for Information on Alcohol and Other Drugs (CAN); 2011. ISBN 978-91-7278-233-4
30. The NHS Information Centre Lifestyles Statistics. Statistics on drug misuse : England 2011. London: The Health and Social Care Information Centre; 2011. h. 5-6.
31. Centers for Disease Control and Prevention. Trends in the prevalence of tobacco , alcohol, and illegal drug use on school property national YRBS : 1991-2011. Atlanta; 2011.
32. Epps RP, Manley MW, Glynn TJ. Tobacco use among adolescents : strategies for prevention. *Pediatr Clin North Am.* 1995;42:389-402. [https://doi.org/10.1016/S0031-3955\(16\)38953-2](https://doi.org/10.1016/S0031-3955(16)38953-2)
33. Merril JC, Kleber HD, Shwartz M, Liu H, Lewis SR. Cigarettes, alcohol, marijuana, other risk behaviors, and American youth. *Drug Alcohol Depend.* 1999;56(3):205-212. [https://doi.org/10.1016/s0376-8716\(99\)00034-4](https://doi.org/10.1016/s0376-8716(99)00034-4)
34. Republik Indonesia. Peraturan Pemerintah Republik Indonesia No. 109 Tahun 2012 tentang Pengamanan Bahan yang Mengandung Zat Adiktif berupa Produk Tembakau Bagi Kesehatan. Jakarta: Biro Peraturan Perundang-undangan Sekretariat Kabinet Republik Indonesia; 2012.
35. Centers for Disease Control and Prevention. Trends in the prevalence of tobacco, alcohol, and illegal drug use on school property national YRBS : 1991-2011. Atlanta; 2011.
36. Luna JM. Maldives global school-based student health survey. Male: World Health Organization; 2009. h. 33-4.
37. Republik Indonesia. Peraturan Menteri Perdagangan Republik Indonesia No. 43/M-DAG/PER/9/2009 Tahun 2009 tentang Pengadaan, Peredaran, Penjualan, Pengawasan, dan Pengendalian Minuman Beralkohol. Jakarta: Kementerian Perdagangan Republik Indonesia; 2009.
38. Pengpid S, Peltzer K. Prevalence and psychosocial correlates of illicit drug use among school-going adolescents in Thailand. *J Soc Sci.* 2013;34(3):269-275. <http://dx.doi.org/10.1080/09718923.2013.11893138>

39. Bryan AD, Schmiege SJ, Magnan RE. Marijuana use and risky sexual behavior among high-risk adolescents: trajectories, risk factors, and event-level relationships. *Dev Psychol.* 2012;48(5):1429-1442. <https://doi.org/10.1037/a0027547>
40. Gorzalka BB, Hill MN, Chang SC. Male-female differences in the effects of cannabinoids on sexual behavior and gonadal hormone function. *Horm Behav.* 2010;58(1):91-99. <https://doi.org/10.1016/j.yhbeh.2009.08.009>
41. Wongtongkam N, Ward PR, Day A, Winefield AH. The influence of protective and risk factors in individual, peer and school domains on Thai adolescents' alcohol and illicit drug use: a survey. *Addict Behav.* 2014;39(1):1447-51. <https://doi.org/10.1016/j.addbeh.2014.05.026>
42. Nazarzadeh M, Bidel Z, Carson K V. The association between tramadol hydrochloride misuse and other substances use in an adolescent population: phase I of a prospective survey. *Addict Behav* 2014;39(1):333-7. <https://doi.org/10.1016/j.addbeh.2013.09.013>
43. Zabihi E, Hoseinzaadeh A, Emami M, Mardani M, Mahmoud B, Akbar MA. Potential for tramadol abuse by patients visiting pharmacies in northern Iran. *Subst Abuse.* 2011;5:11-5. <http://dx.doi.org/10.4137/SART.S6174>
44. Bryner JK, Wang UK, Hui JW, Bedodo M, Macdougall C, Anderson IB. Dextromethorphan abuse in adolescence. *Arch Pediatr Adolesc Med.* 2008;160(12):1217-1222. <https://doi.org/10.1001/archpedi.160.12.1217>
45. Badan Pengawas Obat dan Makanan Republik Indonesia (Badan POM RI). Keputusan Kepala Badan Pengawas Obat dan Makanan Republik Indonesia No HK.04.1.35.07.13.3855 tahun 2013 tentang Perubahan Atas Keputusan Kepala Badan Pengawas Obat yang Mengandung Dekstrometorfan Sediaan Tunggal. Jakarta: Badan Pengawas Obat dan Makanan Republik Indonesia; 2013.
46. Embry D, Hankins M, Biglan A, Boles S. Behavioral and social correlates of methamphetamine use in a population-based sample of early and later adolescents. *Addict Behav.* 2009;34(4):343-351. <https://doi.org/10.1016/j.addbeh.2008.11.019>
47. Springer AE, Peters RJ, Shegog R, White DL, Kelder SH. Methamphetamine use and sexual risk behaviors in U.S. high school students: findings from a national risk behavior survey. *Prev Sci.* 2007;8(2):103-113. <https://doi.org/10.1007/s11121-007-0065-6>
48. The National Center on Addiction and Substance Abuse at Columbia University. Adolescent substance use: america' s #1 public health problem. New York: CASA Columbia; 2011.

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49. Ljubotina D, Galić J, Jukić V. Prevalence and risk factors of substance use among urban adolescents: questionnaire study. *Croat Med J.* 2004;45:88-98. ISBN 0353-9504
 50. Swadi H. Individual risk factors for adolescent substance use. *Drug Alcohol Depend.* 1999;55:209-24. [https://doi.org/10.1016/s0376-8716\(99\)00017-4](https://doi.org/10.1016/s0376-8716(99)00017-4)
 51. Zimić JI, Jukić V. Familial risk factors favoring drug addiction onset. *J Psychoactive Drugs.* 2012;44:173-85. <https://doi.org/10.1080/02791072.2012.685408>
 52. Kakleas K, Kandyla B, Karayianni C, Karavanaki K. Psychosocial problems in adolescents with type 1 diabetes mellitus. *Diabetes Metab.* 2009;35(5):339-350. <https://doi.org/10.1016/j.diabet.2009.05.002>
 53. Malatestinić D, Mićović V, Kendel G, Baricev-Novaković Z. Assessment of psychological and social factors in adolescents risk behavior: questionnaire study. *Croat Med J.* 2005;46:81-7. ISBN 0353-9504
 54. Sookung P, Kim HS, Kim H, Sung K. Exploration of the prevalence and correlates of substance use among sheltered adolescents in South Korea. *Adolescence.* 2007; 42:603-16. ISBN 0001-8449 PMID: 18047242
 55. Eccles JS, Barber BL. Student council, volunteering, basketball, or marching band: what kind of extracurricular involvement matters? *J Adolesc Res.* 1999; 14:10-43. <https://doi.org/10.1177/0743558499141003>
 56. Fredricks JA., Eccles JS. Participation in extracurricular activities in the middle school years: are there developmental benefits for African American and European American youth? *J Youth Adolesc.* 2008;37:1029-43. <http://dx.doi.org/10.1007/s10964-008-9309-4>