Family Role towards Smoking Behaviour among Children in Jakarta

Peranan Keluarga terhadap Perilaku Merokok Anak di Jakarta

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Abstract

In Indonesia, the prevalence of smoking among 5 – 9 years old children has increased from 0.4% in 2001 to 2% in 2007. Among present adults smokers (>20 years), 17% started to smoke before the age of 13 years. This study identified factors related to smoking behaviour among 8 – 12 years old children in Jakarta, Indonesia using a questionnaire based cross sectional survey to obtain smoking status and possible predictors towards smoking habit. The total sample size was 1,097 students among 3rd - 7th grade students from schools in Jakarta. Self-reported smoking status was defined as whether the child had smoked tobacco within the past two months prior to the interview. The prevalence of smoking was 13.4%. Logistic regression analysis showed that high parental approval on tobacco use (OR=13.4; CI 95%: 5.1 – 35.1) was the strongest predictor on children smoking status, followed by low parental control (OR=12.1; CI 95%: 6.9 – 21.2), being a male compared to a female (OR=10.7; CI 95%: 5.3 – 21.7), mother (OR=10.58; CI 95%: 3.96 – 28.28), father (OR=7.69; CI 95%: 3.59 – 16.47), sibling (OR=7.91; CI 95%: 4.41 – 14.17) smoking status. Smoking parents and siblings, low parental control, and high parental approval on smoking were related to higher odds of smoking among children. The results were used as a rationale for suggestions and recommendations of relevance for future intervention programs and tobacco related research with specific focus on children.

Keywords: Children, parental control, parental support, smoking, tobacco

Abstrak

Prevalensi anak perokok umur 5-9 tahun di Indonesia meningkat dari 0,4% di tahun 2001 menjadi 2% di tahun 2007. Tujuh belas persen perokok dewasa menyatakan mulai merokok ketika berumur di bawah 13 tahun. Penelitian ini bertujuan untuk menentukan faktor terkait perilaku merokok anak umur 8-12 tahun di Jakarta dengan menggunakan pendekatan potong lintang untuk menjaring perokok anak dan faktor yang mungkin menyebabkan perilaku tersebut. Kuesioner digunakan untuk menjaring status perilaku merokok anak dalam dua bulan terakhir sebelum survei. Total 1.097 murid kelas 3 sampai 7 di Jakarta menjadi sampel penelitian dengan 13,4% responden merokok dalam 2 bulan terakhir. Analisis regresi logistik menunjukkan bahwa pembolehan merokok di dalam rumah oleh orang tua (OR=13,4; CI 95%: 5,1 – 35,1) menjadi penyebab terkuat, diikuti dengan rendahnya kontrol orang tua (OR=12,1; CI 95%: 6,9 – 21,2), siswa laki-laki (OR=10,7; CI 95%: 5,3 – 21,7), ibu (OR=10.58; CI 95%: 3.96 – 28.28), ayah (OR=7,69; CI 95%: 3,59 – 16,47), dan saudara kandung yang perokok (OR=7,91; CI 95%: 4,41 – 14,17). Orang tua dan saudara kandung yang merokok, rendahnya pengawasan orang tua, dan tingginya pembolehan merokok di dalam rumah menjadi penyebab perilaku merokok anak umur 8-12 tahun. Hasil penelitian dapat dimanfaatkan sebagai rekomendasi untuk program intervensi di masa depan dan penelitian terkait tembakau dengan fokus kepada anak-anak.

Kata kunci: Anak, kontrol orang tua, dukungan orang tua, merokok, tembakau

Introduction

Globally, the number of young tobacco smokers has increased. World Health Organization (WHO) estimated that there are presently more than 1.3 billion smokers worldwide, and globally 84% of the smokers live in low-middle income countries.[1] In the near future, LMICs may face many diseases related to the 'tobacco pandemic'. In contrast, the health facilities in LMICs are not ready to cope with the pandemic of tobacco related diseases.[1] Therefore, the LMICs will spend extra efforts to reduce the number of diseases related to tobacco smoking.

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The prevalence of adult smokers (>20 years) in Indonesia has increased over time for the last two decades, and accounted for 27% (1995), 31.5% (2001), 34.4% (2004), 34.2% (2007), and 34.7% (2010).[2] Indonesian Ministry of Health also found that more than 62% of all smokers in Indonesia started smoking before the age of 20 years.[2,3] The first experience with tobacco most commonly occurred in the age group 15-19 years, followed by children aged 10-14 years, and 5-9 years old.[3]

Greater Jakarta Transition to Adulthood Survey (GJTAS) in 2010 also found that 17% of adult smokers (20–34 years) started smoking before they were 13 years old.[4] In 2008, a video of a two-years old boy in Banyuasin, South Sumatra Province, Indonesia who appeared as being addicted to cigarette smoking and had a consumption of approximately 20 cigarettes turned into a viral event and shocked both Indonesian and internet users worldwide.[5] On the other hand, the exact number of similar cases in other parts of Indonesia is still unknown.

Currently, there is only limited research with specific focus on predictors for smoking among children in LMICs. Besides killing more than 5 million people each year, as a consequence of the high public health cost of smoking related to disease treatment, smokers being less productive due to sickness period, and premature death causing lost income source in the family, tobacco use has furthermore important negative impacts on national economies.[1] Therefore, there is a need to press down the prevalence of young smokers with cost-effective and comprehensive while the prevalence of young smoker is growing. Since children have daily interaction with their family, it is possible that these groups may influence perceptions and practice in relation to smoking. More knowledge on the role of family smoking status, parental control and permissiveness on tobacco use could be used to inform a discussion and development of cost-effective anti-tobacco campaigns with specific focus on children.

Method

This study was conducted in East Jakarta region, Indonesia. Convenience sampling was used to select the participants where 12 schools were asked voluntary to participate in the period of two weeks. In addition, this study surveyed students in 3rd – 7th grade, only when they were available to be interrupted for survey. Therefore, this study did not ask students, who had tryout and practical national examination, to participate. On the other hands, 1st and 2nd grade students were not included due to their reading and writing skills still developed.

This study used a self-reported questionnaire-based cross-sectional study design to assess the association between selected factors and smoking status among children. The predictors included family control and approval and smokers in family. Before the study began, the instrument was tested among 3rd grade students. The major improvement for the instrument had been done after testing to 3rd grade students who were not included in the analysis.

The inclusion criteria of sampling in this study was students aged 8 - 12 years who attended school in Jakarta, Indonesia. The minimum of sample size is measured by using case-control sampling calculation. In this study, 1,161 students were asked to fill the questionnaire. A total of 43 students did not fill the questionnaire correctly while 21 students were more than 13 years old. Therefore, only 1,097 respondents were included in the analysis.

The outcome in this study was children smoking status. The criteria of smoking habits among children was defined as their cigarette smoking in the past two months prior to interview. In addition, parental control was defined according to the parents' attitudes to their children after school time. The criteria, which were used to categorize parental control level, was whether parents always pick students up after school time, prohibit students to play outside home after school, ask students to study after school time, have to know their playmates, allow them playing with friends in home only, and students live with their parents.

Parental permissiveness or parental approval on smoking was defined as parents' permissiveness on indoor smoking inside the house. The following criteria of parental permissiveness on smoking was used to identify its level whether parents allow any family members to smoke inside, allow guests to smoke inside, and give cigarette to any guests who visit them. Furthermore, pocket money was categorized into less than IDR 10,000 each day and more than IDR 10,000 each day. Smoking status of family members was defined as tobacco smoking of father, mother, and at least 1 elder sister or brother.

Results

As can be seen at Table 1, the mean age of respondents in this study was ten years. The number of interviewed male students was almost similar to the respective number of female students. The mean daily allowance was 7,179 IDR or an equivalent of 0.6 USD.

A total of 147 students (13.4%) reported to have smoked within the last two months prior to the interview. The mean age of smokers was 10.7 years. For each female smoker there were almost 9 male smokers. The majority of children (64.8%) lived with a father who smoked, whereas 4.6% and 14.9% of the children reported that their mother or at least one of their siblings smoked, respectively. In addition, the majority of the smokers belonged to the low parental control group (51.5%) and to

the high parental approval group (64.6%). However, the prevalence of children who smoked was low and vary in different schools. Therefore, it affected the confidence interval where a wide gap of confidence interval occurred on some variables at Table 2.

The results of bivariate and multivariate analyses in relation to predictors for smoking among the interviewed children are presented in Table 2. The prevalence of smoking among children aged 8 years was 3.6% and increased by age and reached a prevalence of 25.5% among the 12 years old children. The bivariate analysis shows all variables were statistically significant except the pocket money variable. Furthermore, the significant variables were used in multivariate analysis as can be seen at Table 2.

The results of the multivariate analysis showed that the strongest statistical significant predictor for smoking was having high parental approval on tobacco use (OR=13.4; CI 95%: 5.1 – 35.1), followed by low parental control (OR=12.1; CI 95%: 6.9 – 21.2) and being a male compared to a female (OR=10.7; CI 95%: 5.3 – 21.7). Other significant predictors for smoking were a mother, father, and sibling who smoked (OR=8 for all predictors) whereas 12 years old (OR=6.8) group and 11 years old group (OR=4.2) were also statistically significant as compared to 8 years old group.

Table 1. Characteristics of Respondents (N=1097)

Characteristics	
Mean age (years)	10.04
Ratio male: female	1.03
Mean daily pocket money (IDR)	7,178.67
No. of children who smoked in last 2 months (%)	147 (13.4%)
Mean age children who smoked in last 2 months in years	10.65
Ratio male smokers: female smokers	8.8
Children with a father who smoked (%)	64.8
Children with a mother who smoked (%)	4.6
Children with at least one sibling who smoked (%)	14.9
No. of smoking children in high parental control group (%)	63 (6.7)
No. of smoking children in low parental control group (%)	84 (51.5)
No. of smoking children in low parental approval group (%)	116 (11.1)
No. of smoking children in high parental approval group (%)	31 (64.6)
Prevalence of smoking children in school A (%)	11 (12.2)
Prevalence of smoking children in school B (%)	1 (0.8)
Prevalence of smoking children in school C (%)	8 (9.4)
Prevalence of smoking children in school D (%)	11 (8.6)
Prevalence of smoking children in school E (%)	20 (19)
Prevalence of smoking children in school F (%)	10 (6.5)
Prevalence of smoking children in school F (%)	39 (23.2)
Prevalence of smoking children in school G (%)	25 (12.6)
Prevalence of smoking children in school H (%)	22 (61.1)

Discussion

The findings showed that parental control and approval on tobacco use as well as mother, father, and sibling smoking status were all statistically significant associated with smoking status among children. The prevalence of children who smoked increased with increasing age and was higher among male smokers as compared to female smokers. In the present study, 13.4% of the children aged 8 - 12 years reported to have smoked within the last two months prior to the interview. In other words, slightly more than 1 out of 7 children had smoked at least one cigarette within the last two months. Since the study did not collect comprehensive information about the quantity of smoking among children, it is assumed that some of the children also reported smoking, which ap-

Table 2. Odds of Exposures and Co-Variables towards Smoking Status among Children

Variables	Category	n	% of Smokers	Bivariate Analysis		Multivariate Analysis*	
				OR (95% CI)	p Value	OR (95% CI)	p Value
Age (years old)	8	112	3.6	1.00		1.00	
	9	264	5.3	1.51 (0.49 - 4.69)	NS	1.05 (0.26 – 4.2)	NS
	10	286	12.6	3.89 (1.35 - 11.19)	0.012	1.93 (0.55–6.81)	NS
	11	337	20.2	6.83 (2.43 - 19.17)	< 0.001	4.21 (1.23–14.34)	0.022
	12	98	25.5	9.25 (3.09 - 27.68)	< 0.001	6.76 (1.76 – 25.91)	0.005
Gender	Female	540	2.8	1.00		1.00	
	Male	557	23.7	10.87 (6.28 - 18.83)	< 0.001	10.71 (5.29–21.67)	< 0.001
Pocket money	≤ IDR 10,000	755	12.6	1.00	-		
	> IDR 10,000	342	15.2	1.25 (0.87 – 1.79)	NS	-	
Parental control	High	934	6.7	1.00	1.00		
	Low	163	51.5	14.7 (9.86 – 21.92)	< 0.001	12.10 (6.89–21.24)	< 0.001
Parental approval	Low	1049	11.1	1.00	1.00		
	High	48	64.6	14.67 (7.87 – 27.32)	< 0.001	13.41 (5.12 – 35.13)	< 0.001
Father smoking status	No	386	3.1	1.00		1.00	
	Yes	711	19.0	7.31 (3.99 - 13.37)	< 0.001	7.69 (3.59 – 16.47)	< 0.001
Mother smoking status	No	1047	11.7	1.00		1.00	
	Yes	50	48.0	6.93 (3.86 - 12.46)	< 0.001	8.17(3.34 – 19.99)	< 0.001
Sibling smoking status	No	934	8.6	1.00		1.00	
	Yes	163	41.1	7.45 (5.06 - 10.97)	< 0.001	7.91(4.41–14.17)	< 0.001

*) OR adjusted for age, gender, economic status, parental control, parental approval, father, mother, and sibling smoking status, and friend smoking total using logistic regression model

peared to be one of their first smoking trials.

Among the smokers, males were dominant while the prevalence of young female smokers was extremely low. In this context it is worth to notice that the observed overall prevalence of smoking among females was 2.8% while only 4.8% children had a mother who smoked. In Indonesia as well as in many Asian countries, there is a negative social stigma associated to female smokers. Mostly, people in Indonesia perceive smoking as being related to masculine behaviour while negative stereotypes are projected on female smokers, for instance that female smokers are associated with sex workers.[6,7] Hence, the low number of female smokers in this study is probably as a consequence of norms and culture-specific values in this specific area of Indonesia. However, this pattern commonly occurred in many Asian cultures, which often include norms and rules which indicate a social disapproval of female smokers.[8,9]

The results indicated that most children were already familiar with tobacco use since they commonly watched cigarette smoking in family. In addition, Gilman, *et al.*[10] (New England), Sirirassamee, *et al.*[11] (Thailand), Kim, *et al.*[12] (South Korea) observed that parental smoking status seemed like a stronger predictor on smoking among adolescents. In the present study, the strongest family related predictor was the smoking status of the mother. Smoking behaviour is a learning process from higher level status in vertical level social context, from parents to a kid, whilst they unconsciously give an example to children on cigarette use during smoking.[6,13]

However, Sirirassamee, *et al.*[11] and Kim, *et al.*[12] studies did not include the smoking status of father and mother separately. Since the prevalence of children with a father who smoked was high, children were more likely familiar with male smokers than female smokers. This finding emphasize that even though the prevalence of mother who smoked was extremely low and since female smokers was not common as compared to male smokers by norms and culture, mothers who smoked may have had a strong influence on the perception among their children so, they perceived that smoking is more acceptable as compared to being exposed by only a father who smoked.[8,9] In addition, Gilman, *et al.*[10] discovered that smoking fathers have stronger effect on male children, whereas smoking mothers have stronger influence on their female children.

The findings also indicated that sibling smoking status was a risk factor for children to smoke. It is consistent with previous studies conducted that sibling's smoking status has a substantial influence on smoking among children and adolescents.[14-16] As previously mentioned, older siblings were often viewed as an 'expert' by younger siblings while same gender siblings are more likely to influence each other as compared to mixed-gender sibling pairs.[14,15] Furthermore, siblings who share similar peer friends tend to be a stronger predictor of smoking status among children.[14,15] A study in Indonesia discovered that usually elder brother or sister, who were smokers, taught their younger brother or sister how to smoke intentionally.[6] In addition, Indonesian children commonly direct their highest appreciation to their parent and sibling based on culture, religion, traditional and local norms. Hence, parents and siblings comprise important role models for children while what family do, children may imitate.

Furthermore, the results of the present study showed that parental approval in relation to indoor tobacco smoking was a stronger predictor of smoking among the children compared to mother, father, and sibling smoking status. This finding is consistent with Tucker, et al.,[17] that high parental approval of smoking among adolescents generated high risk to smoke. In relation to this factor, parents had authority to prohibit or allow smoking in the house whereas parents' attitude and practice toward smoking habit also influence the permissiveness on cigarette use.[18] High approval on indoor tobacco use might lead to a perception among children that it is an allowed action. On the other hand, a strong parental disapproval of smoking would establish a perception among never-smoking children that it was a prohibited act.[19]

Low parental control was also a strong predictor for smoking among the children (OR=13). It is common that parents are able to exert control on their children while the parental control also play a major role to determine children behaviour. However, this finding is inconsistent with Engels, *et al.*[20] where parental control had no significant effect on smoking behaviour among adolescents. A longitudinal study was used along with behaviour and psychological approaches to determine parental control towards smoking initiation whilst the present study only used behavioural control to limit children's activities assessed in a cross-sectional study design. Hence, the difference toward parental control definition may lead to a contrast result whereas this study identified parental control in general or not specific on smoking.

Blokland, *et al.*[21] found that low parental control contributed to early initiation of smoking among adolescents. Usually, parental control was commonly used as a variable in previous studies in order to determine the effectiveness of tobacco smoking intervention program among adolescents. Despite of different parents have different style of parental control depend on their culture and norms, parental control among adolescents and children might also be vary depend on age factor. Each age group might be exposed with different settings of parental control. Therefore, this may explain why different studies seem to generate different results in relation the association between parental control and smoking

among children. Different populations probably have different attitudes and practices when it comes to parental control.

Based on social cognitive theory, Bandura,*et al.*[22], smoking behaviour among children is a result of interaction of environment (family) and reinforcement (parental control and parental approval on tobacco use) that influence the individual learning and behaviour.[23] However, the parental and sibling smoking status play an important role on smoking behaviour since it generates a paradigm among kids as an allowed behaviour. In other words, outcome experience is influenced by observation and continuous exposure.

In this case, children who smoked were familiar with smoking since the social learning process occurred by observing smoking habit through family members. A young person who was exposed by an environment, where tobacco smoking was common, had higher risk to smoke as compared to those who was not exposed.[24] Since smoking behaviour can be regarded as a social learning process, parental control and parental approval on tobacco use may play as reinforcement. Another study conceptualised social learning process are determined by the inhibitory process and disinhibitory process.[24] High parental control and low parental approval on tobacco use, play a role as inhibitory process while low parental control and high parental approval on tobacco use as disinhibitory process.[24]

This study generated a concept how parents' contribution in relation to smoking among children while early smoking initiation at early age generated to regular smoking and difficult attempt to quit smoking.[9,25] These results suggest that parental control and parental approval on tobacco use play a major role to prevent the risk of smoking among children when children are engaged in the early phases of smoking trials. By having high parental control among the kids, parents can prevent their children to smoke. On the other hand, by having low parental approval on tobacco use, for instance not smoking inside the house or not offering a cigarette to guest, may avoid a perception of smoking as an allowed habit.

This study has a number of limitations in relation to case definition and methodology. Firstly, this study relied on self-reporting answers from primary school students where self-reporting bias may occur and some students were unable to answer all the questions correctly. Generally, in Indonesia smoking among children is regarded as a prohibited action. As a consequence, some children are likely not to reveal their smoking status and this would lead to an underestimation of the true prevalence of smoking. It is not known how such a bias would affect the results of the analysis in relation to predictors for smoking.

Secondly, this study did not provide causality how peer influence can generate smoking habit among children. Hence, the causal link of peer influence and children was not presented. Lastly, since the study was conducted only in two different sub-districts in Jakarta using convenience sampling, the ability to generalize the study to other elementary schools students in Jakarta or Indonesia is very limited. Consequently, this study cannot generalize the findings to all schools in Jakarta. Schools were asked voluntary to participate whereas random sampling may offer better generalisation.

Conclusion

The majority of children had family members who smoked while the proportion of children who smoked was 13.4%. Most smokers were male while the prevalence of female smokers was very low. However, parental control and approval on tobacco use were related to smoking among children, an active intervention promoting these factors would potentially also affect the probability of smoking among children. The parental control can be implemented through monitoring social activities and setting limits to avoid negative influence. It would reduce the social-environment effect on tobacco use since it is also intends to avert influence on smoking. However, parental disapproval on smoking inside their house can generate a perception of smoking as a negative act. In addition, father, mother, and sibling smoking status were also a strong predictor for children to smoke.

Recommendation

If we assume that the findings in the present study do reflect a causal link between predictors and smoking status among children – despite of the limitations mentioned in the previous section - the findings can be used to suggest some recommendations in relation to future research and future interventions with specific focus on tobacco use among young people. In relation to methodology, the causal link of peer influence towards smoking habit needs to be provided for better analysis in a future study. For instance, the causal link may form on the first tobacco use, peer pressure or intimidation, and whether looking for friends with similar experience on smoking or not. A comprehensive classification to define smoker may be done using period of time on smoking and the frequency of smoking measured as a daily, weekly, or monthly use. In addition, future research must consider parent's income to identify the socioeconomic status using parents' involvement as participants in the study. If this is not possible, it would be relevant to use secondary data (e.g. from school's database) as a valid source to assess parent's income.

In future anti-tobacco programs performed by the government or other relevant institutions, it would be

obvious to address family smoking status, parental control and approval on tobacco use since these factors appeared as strong predictors for smoking among children. However, giving information of cigarette disadvantages from health perspective to youth would not be a worth action if parents are not included. Parents' awareness towards cigarette smoking must be promoted whereas implementing parental control and less approval on cigarette use among parents who smoke will be a challenge in the future. Previous evidence indicates that family smoking status contributes to the effectiveness on anti-tobacco program while it is more effective in children with non-smoking parents group rather than smoking parents group. A promotion of a high level of parental control and promoting the idea of avoiding indoor tobacco may prevent children to engage in smoking. This study emphasizes the importance of parent's involvement to reduce risk of smoking habit among children.

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