

Ferry Efendi^{1,2} / Fitriana Nur Aidah³ / Eka Mishbahatul M. Has³ / Linlin Lindayani⁴ /
Sonia Reisenhofer²

Determinants of smoking behavior among young males in rural Indonesia

¹ Faculty of Nursing, Universitas Airlangga, Jl. Mulyorejo Kampus C Unair, Surabaya 60115, Indonesia, Phone: +62-315913257,

Handphone: +6281331533805, E-mail: ferry-e@fkip.unair.ac.id

² School of Nursing and Midwifery, La Trobe University, Melbourne, Victoria, Australia, E-mail: ferry-e@fkip.unair.ac.id

³ Faculty of Nursing, Universitas Airlangga, Jl. Mulyorejo Kampus C Unair, Surabaya, Indonesia

⁴ Sekolah Tinggi Ilmu Keperawatan PPNI Jawa Barat, Bandung, Indonesia

Abstract:

Introduction: A high prevalence of tobacco smoking has been reported among adolescents and young adults, especially men, in lower-middle-income countries such Indonesia. Understanding the extent and determinants of smoking within this population, particularly those living in rural areas where smoking rates are anecdotally higher than in city areas, is essential to inform development of targeted smoking prevention and reduction programs. This study analyzes the prevalence and determinants of smoking behavior among young men in rural Indonesia.

Methods: Secondary data analysis of the 2012 Indonesia Demographic and Health Survey: Adolescent Reproductive Health (IDHS ARH) were used. Data from 4811 rural males (15–24 years of age) were selected through two-stage stratified cluster sampling techniques. The chi-square (χ^2) test and binary logistic regression were used to determine significant factors associated with tobacco smoking.

Results: More than half of this population in rural Indonesia were smokers. Significant factors associated with smoking were: age 20–24 years (odds ratio (OR) 2.8, 95% confidence interval (CI) 2.4–3.2), working status (OR = 2.24, 95% CI: 1.95–2.57), low education level (OR = 1.93, 95% CI: 1.52–2.45), access to magazines (OR = 0.78, 95% CI: 0.68–0.89) and access to the radio (OR = 1.28, 95% CI: 1.12–1.48) at least once a week.

Conclusions: A significant proportion of adolescents and young men in rural Indonesia smoke tobacco. Exposure to media with likely cigarette advertising (radio and magazines) and access to money via employment in the context of lower socio-economic and education levels elevate the risk of smoking. While Indonesian government campaigns targeting smoking are in place, further work is required to decrease smoking rates and prevent a future smoking-related health crisis for rural Indonesia's young men.

Keywords: Indonesia, rural, smoking, young men

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Introduction

Of Indonesia's 264 million people, approximately 61.4 million are tobacco smokers, the majority of these are males over 15 years of age where 67% are tobacco smokers or users [1]. The negative health impacts associated with smoking are well known and they include premature death due to heart disease, lung disease, stroke, cancer and diabetes [2].

In Indonesia, tobacco smoking is the direct cause of more than 225,000 deaths per year and the indirect cause of hundreds of thousands more. Tobacco smoking is a crucial indicator in the World Health Organization's (WHO) sustainable development goals (SDGs) [1]. Given the high prevalence of male smoking in Indonesia, the WHO's targeted reduction goal of 30% in the prevalence of smoking by 2025 will be challenging to achieve [1].

Indonesia is ranked as the fifth largest tobacco producing country in the world and concomitantly had the highest prevalence of smokers in the Southeast Asia region in 2015 [3]. In Indonesia, the average of smoking commencement is between 15 and 19 years of age, and males are 9 times more likely to smoke than females [3], [4]. Smoking among young people, young men predominantly (15–24 years old) is 15% higher than in other age groups [3]. The higher rate of young men smoking is not surprising given young people aged between 15 and 17 years of age reportedly have a higher likelihood of engaging in risky health behaviors that include smoking

Ferry Efendi is the corresponding author.

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in addition to illicit drugs and alcohol use [5], [6], [7], [8]. Smoking is also associated with social norms and masculinity for men, especially in rural areas of Indonesia [9]. Smoking is often seen as a fundamental part of life for Indonesian men, especially those in rural communities where men gather in coffee-smoking shops to socialize with their friends and use freely provided WiFi to access the Internet.

In response to the high rates of smoking and smoking-related death and disability, the Indonesian government has developed a coordinated strategy to control the consumption of tobacco products through public policies. These include restrictions and prohibitions on direct and indirect advertising of smoking, increasing taxes and tobacco prices, promoting public areas free of smoking and displaying health messages on product packaging [9]. Despite the presence of these regulations, their implementation and effectiveness has not been optimum and the prevalence of smoking among young people continues to increase in Indonesia [3].

Although several studies have been conducted in South and Southeast Asia, Africa and America to identify factors associated with smoking behavior, few studies have focused on smoking among young males living in rural areas [10], [11], [12], [13]. At present, there is also limited research around factors associated with smoking among young people in Indonesia. Previous studies conducted in Nepal and Ghana found that younger age, gender, marital status, low education, low social-economic status, living in a rural area and poor access to information have been significantly associated with increased smoking levels [11], [12], [13].

Understanding factors associated with smoking behaviors is important to identify the key populations at high risk and to inform government policy and design of appropriate smoking cessation programs. Within this context, this study identified factors associated with smoking among young males (15–24 years of age) living in rural Indonesia.

Methods

Study design

This quantitative study used secondary data from the 2012 Indonesia – Demographic and Health Survey 2012: Adolescent Reproductive Health (DHS ARH). The 2012 DHS ARH was carried out by Statistics Indonesia (Badan Pusat Statistik) in collaboration with the Indonesian National Population and Family Planning Board and the Ministry of Health in Indonesia.

Instrument

The questionnaire used in this study was the 2012 IDHS ARH specific for youth. The 2012 DHS ARH report captures data on never-married men and women aged 15–24 years of age. This instrument collects demographic characteristics including age, working status, highest level of education, economic status (expressed in terms of quintiles of individuals in the population, five groups of break points divided into lowest, second, middle, fourth and highest.) The tool also provides data on participants' knowledge of human reproduction and use of family planning, self-reported use of tobacco and drugs, alcohol consumption and experiences in dating and sexual relationships.

Sample

The population in our study were young men aged 15–24 years old, who were unmarried and lived in rural areas of Indonesia (n = 4811) identified via two-stage stratified cluster sampling [14].

Data analysis

We used descriptive analysis to describe respondents' demographic data and smoking behavior. Initially, chi-square (χ^2) tests were used to compare characteristics of smoking and non-smoking respondents. Following this, factors associated with smoking status were identified via binary logistic regression. IBM SPSS version 22.0 for Windows 10 (IBM Corp, Armonk, NY, USA) was used for data management and statistical analysis.

Ethical approval

Ethical approval for this study was obtained from the National Health Research and Development agency in Indonesia and the Inner City Fund (ICF) International [15].

Results

A total of 4811 young males were included in data analysis. The majority were aged 15–19 years old (67%), having completed education to junior high school level (57%) and 69% were working. Most had the lowest level (36%) economic status among them 54.6% were smokers. Half (53%) had access to media via magazines and slightly less than half had access to radio (62%) or television (96%) at least once per week (Table 1).

Table 1: Demographic comparison between being a smoker and a non-smoker in male adolescents in rural area Indonesia (n = 4811).

Variable	Total	Smoking status		χ^2		
		No (n, %)	Yes (n, %)			
Age, years						
15–19	3222 (67%)	1876	58.2	1346	41.8	369.885 ^a
20–24	1589 (33%)	457	28.8	1132	71.2	
Working status						
Yes	3326 (69%)	1336	40.2	1990	59.8	298.964 ^a
No	1485 (31%)	997	67.1	488	32.9	
Education level						
Not at all	301 (6%)	99	32.9	202	67.1	192.073 ^a
Elementary school	516 (11%)	148	28.7	368	71.3	
Junior high school	2730 (57%)	1539	56.4	1191	43.6	
Senior high school	1264 (26%)	547	43.3	717	56.7	
Economic status						
Lowest	1763 (36%)	801	45.4	962	54.6	30.454 ^a
Lower-middle	1287 (27%)	586	45.5	701	54.5	
Medium	911 (19%)	491	53.9	420	46.1	
Upper middle	526 (11%)	280	53.2	246	46.8	
Highest	324 (7%)	175	54.0	149	46.0	
Access to magazines						
No	2268 (47%)	1062	46.8	1206	53.2	4.777 ^b
Once a week	2543 (53%)	1271	50.0	1272	50.0	
Access to radio						
No	1815 (38%)	920	50.7	895	49.3	5.625 ^b
Once a week	2996 (62%)	1413	47.2	1583	52.8	
Access to television						
No	183 (4%)	86	47	97	53	0.171
Once a week	4628 (96%)	2247	48.5	2381	41.5	

^ap < 0.001; ^bp < 0.05; ^cp < 0.01.

The (χ^2) test showed that age, working status, educational level, economic status, access to radio, access to magazines having a significant association with smoking behavior (p < 0.05).

Binary logistic regression identified five significant factors that were positively associated with smoking status. These were age 20–24 years (odds ratio (OR) = 2.83, 95% confidence interval (CI): 2.45–3.23), working (OR = 2.24, 95% CI: 1.95–2.57), highest education level from elementary school (OR = 1.93, 95% CI: 1.52–2.45)

and, access to magazines (OR = 0.78, 95% CI: 0.68–0.89) or radio (OR = 1.28, 95% CI: 1.12–1.48) at least once a week (Table 2).

Table 2: Factors associated with smoking status among male adolescent in rural area of Indonesia (n = 4811).

Variable	OR	95% CI for Exp (B)	
		Lower	Upper
Age, years			
15–19	1	1	1
20–24	2.832 ^a	2.447	3.277
Working status			
Yes	2.240 ^a	1.953	2.570
No	1	1	1
Education level			
Not at all	1.518 ^b	1.139	2.023
Elementary school	1.929 ^a	1.517	2.453
Junior high school	0.943	0.807	1.103
Senior high school	1	1	1
Economic status			
Lowest	1.052	0.811	1.365
Lower middle	1.136	0.837	1.479
Medium	0.813	0.619	1.069
Upper middle	0.908	0.674	1.223
Highest	1	1	1
Access to magazines			
No	1	1	1
Once a week	0.779 ^a	0.679	0.892
Access to radio			
No	1	1	1
Once a week	1.286 ^a	1.122	1.475

^ap < 0.001; ^bp < 0.01.

Discussion

This study demonstrated a high prevalence of smoking (41.8%) among young males aged 15–19 years old in rural areas of Indonesia. The proportion of smoking is higher in young men aged 20–24 (71.2%) years old than adolescents aged 15–19 years old (41.8%). The results of this study align with previous research in Nepal that also found that age has a relationship with smoking behavior and prevalence was increased in young males as the age increased [12]. In Indonesia, young men often gather with their peers in smoking-coffee houses. The relationship between an increase in smoking with an increase in age maybe in part be related to the alignment of the young man to social norms around behaviors associated with masculinity [8].

A lower education level was significantly associated with smoking status. Participants who ceased education after elementary school had a 1.93 times higher risk of smoking compared to those with a higher education. A previous study conducted in India also suggested that higher levels of education are associated with lowered smoking rates [16]. Similarly, a study conducted in nine South and Southeast Asian Countries also found that the majority of people who smoked had low education levels [17]. The ability to understand the impact of smoking on health may be diminished in populations of individuals with lower levels of education. Individuals with lower levels of education may also have had less exposure to health education campaigns or associated literature. Improving health literacy about the negative effects of smoking for young men in rural areas of Indonesia is needed.

Around 36% of the participants in our study were at the lowest economic status levels however, economic status is not significantly associated with smoking status in this analysis. This may be in contrast to studies conducted in Jordan, Syria, Lebanon and Palestine that reported lower socio-economic status was associated with smoking behavior, and higher income countries tend to have lower prevalence of smokers [18]. The difference may be in part due to the separate focus on economic status within this analysis, rather than socio-economic status combined. There may be other factors in another country, such as access to media and health education as well as stronger laws governing cigarette advertising, sales and taxation that may also account for decreased smoking rates in these countries.

Young males who were employed were 2.24 times more likely to smoke than those who were unemployed, with employment status having a significant relationship to smoking behavior in young males in rural Indonesia. Previous studies suggest that people who are employed tend to have more disposable income and this may increase their ability to buy cigarettes or tobacco [16], [19]. In addition, employed young males in Indonesia may be away from parental supervision and be more likely to gather with their peers. This may enhance the opportunities and likelihood to smoke. Creating policies that prevent smoking in working or public areas, such as are in place in Australia, may aid in reducing opportunities and peer pressure for smoking among young males in rural Indonesia. Raising tobacco taxes may also reduce the ability for people to buy cigarettes [20].

Access to media via magazines and radio at least once a week was significantly associated with higher smoking rates. Access to television also led to higher rates of smoking but this was not significant in binary logistic regression. A previous Ghanian study also reported that those listening to the radio at least once a week were 1.1 times more likely to smoke than those who have never listened to the radio [13]. Given that cigarette companies in Indonesia use mass media to overtly promote their products the relationship between exposure to mass media and smoking rates is not surprising [21]. In this context, the government, via laws, policy and mass media may have an important role to play in conveying health information to adolescents and also limiting advertising and covert positive smoking messages. A government policy to ban overt and covert tobacco advertisement in various media should be considered, not only in Indonesia but globally.

This analysis has shown that young rural Indonesia men, of lower educational levels, exposed to media (and cigarette advertising), with a disposable income from employment are more likely to smoke. While the Indonesian government has already put into place, regulations to limit smoking and access to cigarettes, current smoking rates among young men would suggest these are not working effectively. In order to prevent the long-term health consequences associated with cigarette smoking, a dedicated smoking cessation program for this population needs to be developed. Findings from this study, suggest that the removal of cigarette advertising and replacement advertising highlighting the health risks as well as targeting young males with other positive forms of (smoking free) masculinity may be beneficial. For example, providing men with opportunities for male socialization away from smoking (i.e. making coffee houses with free WiFi smoking free) may also decrease smoking rates in this population. More research on how to decrease desirability of smoking and thus smoking rates in lower and middle income countries is urgently required in order to prevent the significant adverse health outcomes.

This research has some limitations. Due to the nature of cross-sectional surveys, the researchers are able to identify associations but not causal effects. Additionally, smoking behavior was self-reported and this may result in over or underestimation of smoking prevalence as smoking is closely associated with social acceptability. Our study was based on secondary data analysis of the 2012 DHS ARH survey that may not be able to explore other factors potentially related to smoking behaviors such as psychological issues and the influence of peer-smoking.

Conclusions

In conclusion, this study identified a high prevalence of smoking among young males in rural areas of Indonesia. At highest risk were those aged 20–24 years, who had ceased education after elementary school, were working, and had access to mass media via magazines and radio at least once a week. Our study underscores the need for a comprehensive smoking cessation program targeted to young males living in rural areas of Indonesia and in similar areas of the world. Targeting boys and young men living in rural areas will require extra effort to overcome geographical and resource barriers. Further research is required to examine effective methods for decreasing the desirability and rates of smoking in local, national and international contexts

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