

Outdoor Motivational Training and Discussion to Improve Adolescents' Knowledge and Attitudes towards Smoking

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Abstract

The prevalence of smoking among adolescents is relatively high and continues to increase. Providing information or knowledge about the dangers of smoking and encouragement to quit smoking is necessary. Discussion and outbound methods are expected to improve knowledge and attitudes towards smoking. This study aimed to identify the improvement in knowledge and attitudes towards smoking following discussion and outbound activities. This was a quasi-experimental study with a total of 30 subjects aged 12-25 years old recruited using the consecutive method. Subjects were requested to complete a pre-test and post-test about their knowledge of smoking as well as an attitude questionnaire after participating in a discussion and outbound (outdoor motivational training). The paired T-test or Wilcoxon test was employed in the statistical analysis (95% confidence level, $\alpha = 0.05$). A total of 11 adolescents were smokers (36.7%). The knowledge pre-test and post-test scores were 70.83 ± 13.47 and 75.21 ± 16.37 ($p=0.063$), while those for attitudes were 77.73 ± 11.26 and 78.4 ± 10.35 ($p=0.674$), respectively. To conclude, there was no improvement in the knowledge or attitudes towards smoking after the knowledge transferred through discussion and outbound.

Keywords: Outdoor motivational training, smoking, discussion, knowledge, attitudes

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Introduction

Data from Riskesdas 2013 showed that the smoking rate of the population aged 15 years and over increased between 2007 and 2013 from 34.2% in 2007 to 36.3% in 2013 (Riskesdas, 2013). A study by Efendi (2016) found an alarming level of increased smoking prevalence among adolescents (Efendi, 2016). One every five school students aged 16-19 years in Indonesia smoked (20.5%) in 2014. The age of smoking also became younger. The prevalence of smoking among children aged 10-14 years rose by more than 100% between 1995 and 2013 to 18% (Kementerian Kesehatan Republik Indonesia, 2016).

In the USA, 25% of high school students smoked in 2014 (Singh, Arrazola, Corey, Husten, Neff, Homa & King, 2016). Even the smoking prevalence among students of health-related majors, such as

medicine, dentistry, nursing, and pharmacy, was also high. The Global Health Professions Student Survey (GHPSS) conducted in 31 countries between 2005 and 2007 with a total of 80 survey locations found that in 47 locations more than 20% of students were smokers (Warren, Jones, Chauvin & Peruga, 2008).

The increased smoking prevalence unexpectedly occurs mainly in countries with low to moderate incomes such as in Indonesia (Anderson, Becher & Winkler, 2016). More than 75% of cigarette-related deaths in low- and middle-income countries are due to the high smoking prevalence considering that smoking is a risk factor for a large number of non-communicable diseases, including cardiovascular diseases, cancer, and respiratory problems (Gowshall & Taylor-Robinson, 2018). The increasing continuous smoking likely poses a two-fold risk of such diseases. Also, this effect does not only occur in smokers but also other individuals who are exposed to cigarette smoke (Onor et al., 2017). Data from the 2013 National Health and Fitness Survey in the United States (US), EU5 (Britain, France, Germany, Italy, and Spain) and China show that the impact of smoking decreases work productivity (Baker, Flores, Zou, Bruno & Harrison, 2017). One such study found that there was an association between smoking severity and poor self-reported quality of life. People who quit smoking show improved quality of life connected to the quality of health, quality of the home, philosophy of life, recreation, and finance (Piper, Kenford, Fiore & Baker, 2012). Considering these harmful effects of smoking, preventive actions are urgent to take (World Health Organisation, 2010).

The success of quitting smoking without assistance is only about 5%. This is because cigarettes contain nicotine and cause addictive effects (West, 2017). Research in Persahabatan Hospital (2013) shows that the level of addiction to smoking among senior high school students was high, reaching at 16.8% (Kementerian Kesehatan Republik Indonesia, 2016). Smoker shows that psychologically is more sensitive to negative emotions (anxiety, depression, anger, interpersonal sensitivity, hostility), and somatization compared to non-smokers. People who smoke have difficulty recognizing emotions, difficulty defining emotions, and external oriented thinking (Ünüböl & Hızlı Sayar, 2019). Smokers present lower levels of psychological well-being and mindfulness than non-smokers (Barros, Kozasa, Formagini, Pereira & Ronzani, 2015). Smoking behaviour among adolescents is also suspected to carry the risk of bad behaviours, such as consumption of alcoholic drinks, psychotropics, and narcotics, including cocaine, crack, heroin, and amphetamine, as well as free sex

(O’Cathaillet al., 2011; Harrell,Trenz, Scherer, Pacek & Latimer, 2012). The smoking prevalence among illicit drug users is extremely high and both are strongly correlated (Gentry, Craig, Holland & Notley, 2017).

Despite the efforts to support the smoking cessation program by the government through advertisements in various media as well as counselling in schools and for the public, the prevalence of smoking continues to increase and research results remain to vary. A sole lecturing activity could have a significant effect on changing the attitudes of active smokers towards the dangers of smoking, but it only reached approximately 53 (52.5%) whereas the remaining 47.5% was not affected (Rusmilawaty, 2013).

The lecture method currently tends to be ignored because adolescents are more interested in exciting and applicable approaches. Unattractive learning methods often fail to improve understanding. In contrast, the outbound method involves adolescents in the learning process and it provides an active experience as well as improves learning motivation as seen in the changes towards their learning perseverance, willingness to take up challenges, and achievement-oriented attitudes (Falah, 2015). Outdoor education leads the improvements in physical health, attitude and behaviour change, improved confidence and self-esteem; and interpersonal and social skills (Brien, et al., 2011). However, outbound studies to improve smoking-related knowledge so far have not been carried out. A study shows an increased mean (score) of knowledge about smoking when the PAKEM method (Participatory, Active, Creative, Effective, and Enjoyable) is employed for students of SMK Teknologi Industri (Industrial Technology Vocational School) in Makassar City (Rochka,Thaha & Syafar, 2015). Research using the PAKEM method is carried indoor room. The outdoor sports activities can use for the prevention of the use of psychoactive substances or addiction because it needs repeated powerful motivation and engaging in the activity (Rose, Panagiotounis, Theodorakis & Gracia, 2019). Most smokers are difficult to stop smoking because they are addicted to nicotine. Therefore, outdoor activities may be tried for education related to the improvement of knowledge and attitudes towards smoking.

This present study aims to increase the knowledge of the dangers of smoking among adolescents in Babadan and to determine whether outbound activities and discussions can improve the adolescents’ knowledge of the dangers of smoking.

Method

Research design

This study used a non-equivalent control group with pre-test-post-test design. The treatment started with a pre-test on the first day followed by a discussion and explanation about smoking. The activity on the second day was outbound ended with a post-test.

Research Subjects and Calculation of Sample Size

The subjects of the study included all adolescents in Padukuhan Babadan, Wedomartani Village, Ngemplak District, Sleman Regency, D.I. Yogyakarta who were willing to participate in this activity, aged approximately 12 years to 25 years. Of 60 adolescents, 41 were confirmed to be present, but only 30 eventually took part in this activity. The minimum sample size required was calculated using the paired numerical analysis formula $n = ((z\alpha + z\beta) S / (X1 - 2))^2$. Type I error was set at 5%, and the one-way hypothesis was $Z\alpha = 1.64$. Type II error was set at 10% with $Z\beta = 1.28$. The difference in the increased knowledge was considered significant if $t = 2$. Standard deviation was 3.5, and the N obtained was $26.11 = 27$ people (Dahlan, 2013).

Assessment of Knowledge and Attitudes towards Smoking

The pre-test and post-test consist of the same question items with the post-test conducted one day after the participants were involved in a discussion related to smoking followed by outbound. A total of 16 knowledge questions was designed in the form of multiple-choice and true or false types. The question items include knowledge of chemicals in cigarettes, the dangers of smoking, smoking-related diseases, and smoking ban regulations. The question items have been assessed by ten experts, and the mean content validity ratio (CVR) was 0.69. The attitude-related questions consist of ten items with five Likert scales of strongly agree, agree, neutral, disagree, and strongly disagree. A negative attitude towards smoking with a strongly agree answer was scored five and strongly disagree was scored one, while a positive attitude towards smoking with a strongly agree answer was given one and strongly disagree was rated five. A neutral attitude was given a score of three. The attitude question items include the dangers of smoking for yourself, family and others, self-confidence and relationships, and influence of peers, environment, and family. The attitude questions have been assessed by ten experts with 0.64 CVR.

Discussion

The discussion was carried out by dividing participants into 5 groups. Each group presented the discussion results that covered 1) government's attitudes towards cigarettes, 2) family members as the victim of cigarettes, 3) disadvantages of smoking, 4) attitudes towards smoking friends, and 5) an experiment on the dirtiness of cigarette smoke. At the end of each topic, an explanation was provided by the facilitators.

Outbound

The outbound was conducted as an outdoor activity of motivational training with games to build confidence without smoking, to support cooperative ability, to communicate the will to refuse to smoke and to care for the environment followed by reflections from the facilitators delivered at the end of the games. The outbound activity took place in Kelor Village, Turi, Sleman.

Statistical Analysis

The research analysis consisted of descriptive analysis related to the characteristics of respondents including their age, sex, school, smoking history, and history of smoking parents or relatives. An analytical test compared the scores of pre-test and post-test using a numerical scale. If the requirements were fulfilled, the paired T-test was used, and if not, the Mann-Whitney-Wilcoxon test was employed.

Research Ethics

The study started by requesting permission to the head of Babadan hamlet, providing information to the parents of Babadan adolescents, followed by asking for approval and consent to participate in the activity. The study was approved by the ethics committee of the Faculty of Medicine, Islamic University of Indonesia, with a letter No. 48/Ka.Kom.Et/70/KE/V/2018. The research subjects have been given informed consent.

Result

Subjects who participated in the study have an age range of 12-25 years old (18.2 years on average) with more male participants (70%) (Table 1). The data shows that adolescents smoked reach 11 people (36.7%), with an average consumption of 3 to 4 cigarettes per day. The history of smoking

family members was relatively high, at 67.7%; however, there was no correlation between smoking family members and the number of smoking adolescents (Table 3).

Table 1
Characteristics of Research Subjects

Characteristic	Number/Percentage n=30	Mean (\pm SD)
Age		18.2 \pm 3.84
Education		
Junior High School	8 (26.7%)	
Senior High School	9 (30%)	
Undergraduate	8 (26.7%)	
Working	5 (16.7%)	
Smoking History		
Yes	11 (36.7%)	
Once	8 (26.7%)	
Never	11 (36.7%)	
Family Smoking History		
Yes	19 (63.3%)	
None	11 (36.7%)	

Their knowledge and attitudes towards cigarettes were relatively good, at around 70 (of a total score of 100). The Kolmogorov-Smirnov statistical test results show that the knowledge data were not normally distributed, but the data of attitudes towards cigarettes were normally distributed. The knowledge of smoking was then further analysed using the Wilcoxon test, and the results indicate no increase in the knowledge after discussion and outbound. The attitudes towards smoking further analysed using the paired T-test also show no changes (Table 2). The lack of knowledge was related to the types of diseases caused by smoking, while the lack of attitudes was about the disability to reprimand or remind their smoking friends.

Table 2
Changes in Knowledge and Attitudes towards Smoking

	Pre-test	Post-test	p
Knowledge	70.83 \pm 13.47	75.21 \pm 16.37	0.063*
Attitudes	77.73 \pm 11.26	78.4 \pm 10.35	0.674**

Other data shows a correlation between educational attainment and knowledge, attitudes, and smoking behaviour. There was a correlation between knowledge and attitudes ($r = 0.587$), and attitudes correlated with smoking behaviour, but there was no correlation between knowledge and behaviour (Table 3).

Table 3
Correlation between Education and Knowledge, Attitudes, and Behaviour towards Smoking

Correlation	pscore
Education and Knowledge	0.003
Education and Attitudes	0.001
Education and Smoking Behaviour	0.014
Family History and Attitudes towards Smoking	0.417
Knowledge and Attitudes	0.000
Knowledge and Smoking Behaviour	0.257
Attitudes and Smoking Behaviour	0.000

Discussion

The prevalence of smoking among adolescents in Babadan is relatively high with 1 in 3 people smoking. This figure is not much different from the data of smokers in Indonesia. However, almost 2/3 of the adolescents participating in the outbound have smoking family members. Meanwhile, the highest smoking prevalence according to Riskedas (2013) was found in East Nusa Tenggara (55.6%)

A study of 16 members of the Blitar family racing who received education related to smoking using the Outbound Management Training method showed improved smoking-related attitudes (Darmawan, 2017). However, the results of this study indicate no changes in the knowledge or attitudes of the participants after attending the discussion and outbound. In this study, there was no increase in attitude because more participants were not smokers. Non-smoker participants have a good attitude before the intervention. Proven in this study there is a relationship between smoking attitudes and smoker or non-smoker. Non-smokers have a better knowledge of smoking hazards than smokers (Xu et al., 2016). In addition, Cochrane Systematic Review from combined the results of 21 studies (6607 participants) shows there was no evidence that exercise helped people to quit smoking (Ussher, Faulkner, Angus, Hartmann-Boyce & Taylor, 2019).

Changing the attitudes to quit smoking is a complex process because smokers are in a state of addiction, thus interrupting the motivation to cease (Efendi, 2016). A study of vocational high school students in Salatiga found that nearly 50% of the smoking students were aware of the dangers of smoking for themselves and others, but smoking has become a need that made them save their allowance to buy cigarettes rather than food since they think smoking is a motivation for togetherness, self-identity, and relaxation (Yulianto, 2015). The efforts to change attitudes can begin by providing information, initiating discussions, and counselling with suggestions that include not only one but possibly multiple sessions. This study also found a correlation between knowledge and attitudes towards smoking as well as a correlation between smoking attitudes and behaviour. Motivation and repeated encouragement to remind smokers are required, thus emphasizing the importance of their circles to help motivate, such as the circle of family, children, or parents (Roberts, Kerr & Smith, 2013). Children who get information from the media such as television plus school lessons for 1 year have better knowledge and attitudes than those who only get information from the media (Huong et al., 2016). Providing materials and access to websites for smoking-related content and then participant work in groups to make video messages about smoking effects in eight sessions over a period of 4 weeks can enhance significantly psychological empowerment levels. So, it can be empowering adolescents in smoking prevention (Park & Chang, 2020).

In this study, a group discussion and motivational training have yet to change the attitudes of Babadan adolescents towards smoking. This activity is carried out in groups instead of individually. The results of the review indicate that individual counselling (motivational interviewing) should be performed in several sessions to change the attitudes of smokers until they have the will to quit smoking although intensive counselling has not been proven more effective (Lancaster & Stead, 2017; Lindson-Hawley, Thompson, & Begh, 2015). What also hinders the effort to quit smoking is neighbourhood influences. Adolescents who socialize in a group with a smoking habit among the members have a relatively strong desire to continue smoking. A study found the correlation between smoking and the neighbourhood with reportedly high crime rates (Shareck & Ellaway, 2011). Education must be followed by all members of their group. Knowledge of smoking effects with competition participated by a group agreed not to start or to stop smoking for five months can prevent smoking among adolescents (Crone et al., 2003).

Even a social organization that helps individuals to quit smoking has not been 100% successful in making their clients quit. They manage to help 24.2% of clients quit smoking in 6 months of follow-up and 20.9% of clients have no smoking relapse in 1-year. This organization serves clients from the time they 1) think of quitting smoking, 2) plan to quit, 3) quit, to the moment they 4) persist in quitting to prevent relapses. In each session, the organization works through several stages that include 1) motivational interview to support clients and identify their problems in quitting smoking individually, 2) behavioural therapy by asking clients to reflect on their behaviour and encourage them to adopt new behaviours to replace the smoking habit, 3) addiction treatment by assisting clients to a) understand the parts of the body affected by nicotine addiction, b) recognize the routine smoking time and individuals who support smoking instead, and c) cope with emotions, such as stress, that trigger smoking (Quitline, 2013).

Smoking addiction is associated with a theory of processes, and one of which is a hand impulsive process that correlates with the weak ability to control emotions and motivation. According to the incentive-sensitization theory, the process of motivation becomes more sensitive when repeated feed or behaviour exists as it can activate the dopaminergic pathway, the mesolimbic system that increases dopamine secretion, making regular consumption trigger the reward and motivation effects. The findings of this study indicate that among active smokers the attention bias, inhibiting skills, and weak working memory correlate with greater nicotine addiction, which means that smokers find it challenging to refuse not to smoke when they are surrounded by individuals who smoke (Larsen et al., 2014). A meta-analysis identified 50 randomized controlled trials (RCTs) of school-based smoking curricula show that information-only about smoking is no effect of smoking prevention, but when it combined with personal development and social skills such as problem-solving, decision making, impart assertiveness, cognitive skills to resist interpersonal or media influences, coping strategies for stress, guidance on how to increase self-control and self-esteem are effective (Thomas, McLellan & Perera, 2015).

Even in developed countries, smokers amid illicit drug users who want to quit smoking also receive a lack of support from health care providers because not all of these providers can provide counselling and assistance services (Gentry, et al., 2017). Furthermore, if the health care providers, either doctors or nurses, are also smokers, they lack positive attitudes towards smoking cessation services (Movsisyan et al., 2012). Although there is no significant increase in knowledge and

attitudes, several participants have at least improved their knowledge and attitudes towards smoking. One of the discussion materials is about how smoking is dangerous not only for the smokers themselves but also for the people around them, which should be made into a continuous reminder; therefore, smokers will at least smoke in an isolated place, and non-smokers are aware of the danger when they are around smokers. The results of a survey in the USA also indicate a misconception among thousands of adolescents that having a family member who smokes does not endanger the family (Amrock & Weitzman, 2015).

Conclusion

The number of smoking adolescents in Babadan is relatively high, reaching 36.7%, but there is no correlation between family and smoking history. Knowledge, attitudes, and behaviour towards smoking correlate with each other. The discussions about smoking and motivational training (outbound) activities have not been able to improve the knowledge and attitudes of adolescents in Babadan towards smoking. This research still has a limitation in that it has not been able to invite all the inhabitants of Babadan hamlet to participate in the activity. The recommendation for prevention of smoking should be supported by various stakeholders, including members of a family, school, community, neighborhood, and government. Routine education for parents, the curriculum in school, or incidental education in public still needed to continue. A firm's no-smoking policy as well as continuous monitoring and evaluation remain necessary considering that the dangerous effects of smoking will also harm all stakeholders at great expense.

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References

Amrock, S. M., & Weitzman, M. (2015). Adolescents' perceptions of light and intermittent smoking in the United States. *Pediatrics*, 135(2), 246–254. <https://doi.org/10.1542/peds.2014-2502>

- Anderson, C. L., Becher, H., & Winkler, V. (2016). Tobacco control progress in low and middle income countries in comparison to high income countries. *International Journal of Environmental Research and Public Health*, 13(10), 276-291. <https://doi.org/10.3390/ijerph13101039>
- Baker, C. L., Flores, N. M., Zou, K. H., Bruno, M., & Harrison, V. J. (2017). Benefits of quitting smoking on work productivity and activity impairment in the United States, the European Union and China. *International Journal of Clinical Practice*, 71(1), 324-339. <https://doi.org/10.1111/ijcp.12900>
- Barros, V. V., Kozasa, E. H., Formagini, T. D. B., Pereira, L. H., & Ronzani, T. M. (2015). Smokers show lower levels of psychological well-being and mindfulness than non-smokers. *PLoS ONE*, 10(8), 1-8. <https://doi.org/10.1371/journal.pone.0135377>
- Brien, L. O., Burls, A., Bentsen, P., Hilmo, I., Holter, K., Haberling, D., Pirnat, J., Sarv, M., Vilbaste, K., & Mcloughlin, J. (2011). Outdoor Education , Life Long Learning and Skills Development in Woodlands and Green Spaces : The Potential Links to Health and Well-Being. In *Forests, Trees and Human Health* (pp. 343-373). Springer. <https://doi.org/10.1007/978-90-48-9806-1>
- Crone, M. R., Reijneveld, S. A., Willemsen, M. C., Van Leerdam, F. J. M., Spruijt, R. D., & Hira Sing, R. A. (2003). Prevention of smoking in adolescents with lower education: A school based intervention study. *Journal of Epidemiology and Community Health*, 57(9), 675-680. <https://doi.org/10.1136/jech.57.9.675>
- Dahlan, M. S. (2013). *Besar sampel dan cara pengambilan sampel dalam penelitian kedokteran dan kesehatan*. Salemba Medika.
- Darmawan, A. (2017). *Aplikasi pendidikan kesehatan dengan metode OMT (outbond management training) terhadap sikap dan perilaku merokok anggota club motor psfrb (putra sogok family racing Blitar)* [Sekolah Tinggi Ilmu Kesehatan Patria Husada Blitar]. <https://doi.org/10.1017/CBO9781107415324.004>
- Efendi, M. (2016). Studi multikasus: Epidemologi perilaku merokok di kalangan remaja dan implikasinya dalam pendidikan. *Edcomtech*, 1(1), 69-82.
- Falah, N. (2015). Efektivitas out bound sebagai metode pembelajaran (studi pada out bound mahasiswa jurusan BKI fakultas dakwah dan komunikasi uin Sunan Kalijaga Yogyakarta). *HISBAH: Jurnal Bimbingan Konseling Dan Dakwah Islam*, 11(1). <https://doi.org/10.14421/HISBAH.2014.%X>
- Gentry, S., Craig, J., Holland, R., & Notley, C. (2017). Smoking cessation for substance misusers: A systematic review of qualitative studies on participant and provider beliefs and perceptions.

Drug and Alcohol Dependence, 180, 178–192. <https://doi.org/10.1016/j.drugalcdep.2017.07.043>

Gowshall, M., & Taylor-Robinson, S. D. (2018). The increasing prevalence of non-communicable diseases in low-middle income countries: The view from Malawi. In *International Journal of General Medicine*, 11, 255–264. <https://doi.org/10.2147/IJGM.S157987>

Harrell, P. T., Trenez, R. C., Scherer, M., Pacek, L. R., & Latimer, W. W. (2012). Cigarette smoking, illicit drug use, and routes of administration among heroin and cocaine users. *Addictive Behaviors*, 37(5), 678–681. <https://doi.org/10.1016/j.addbeh.2012.01.011>

Huong, N. T., Kien, N. T., Giang, K. B., Minh, H. Van, Hai, P. T., Huyen, D. T., Khue, L. N., Linh, N. T., Lam, N. T., & Nga, P. T. Q. (2016). Knowledge and attitude towards tobacco smoking among 13-15 year-old school children in Viet Nam - Findings from GYTS 2014. *Asian Pacific Journal of Cancer Prevention*, 17, 37–42. <https://doi.org/10.7314/APJCP.2016.17.S1.37>

Kementrian Kesehatan Republik Indonesia. (2016). *HTTS 2016: Suarakan kebenaran, Jangan bunuh dirimu dengan candu rokok*. <http://www.depkes.go.id/article/print/16060300002/htts-2016-suarakan-kebenaran-jangan-bunuh-dirimu-dengan-candu-rokok.html>

Lancaster, T., & Stead, L. (2017). Individual behavioural counselling for smoking cessation (Review). *Cochrane Database of Systematic Review*, 3, 1–79. <https://doi.org/10.1002/14651858.CD001292.pub3>. www.cochranelibrary.com

Larsen, H., Kong, G., Becker, D., Cousijn, J., Boendermaker, W., Cavallo, D., Krishnan-Sarin, S., & Wiers, R. (2014). Implicit motivational processes underlying smoking in American and Dutch adolescents. *Frontiers in Psychiatry*, 5(May), 1–9. <https://doi.org/10.3389/fpsy.2014.00051>

Lindson-Hawley, N., Thompson, T. P., & Begh, R. (2015). Motivational interviewing for smoking cessation. *Cochrane Database of Systematic Reviews*, 2015(3), 265-281. <https://doi.org/10.1002/14651858.CD006936.pub3>

Movsisyan, N. K., Varduhi, P., Arusyak, H., Diana, P., Armen, M., & Frances, S. A. (2012). Smoking behavior, attitudes, and cessation counseling among healthcare professionals in Armenia. *BMC Public Health*, 12(1), 167-179. <https://doi.org/10.1186/1471-2458-12-1028>

O’Cathail, S. M., O’Connell, O. J., Long, N., Morgan, M., Eustace, J. A., Plant, B. J., & Hourihane, J. O. B. (2011). Association of cigarette smoking with drug use and risk taking behaviour in Irish teenagers. *Addictive Behaviors*, 36(5), 547–550. <https://doi.org/10.1016/j.addbeh.2011.01.012>

Onor, I. C. O., Stirling, D. L., Williams, S. R., Bediako, D., Borghol, A., Harris, M. B., Darensburg, T. B., Clay, S. D., Okpechi, S. C., & Sarpong, D. F. (2017). Clinical effects of cigarette smoking:

Epidemiologic impact and review of pharmacotherapy options. In *International Journal of Environmental Research and Public Health*, 14(10), 214-225. MDPI AG.
<https://doi.org/10.3390/ijerph14101147>

Park, E., & Chang, Y. P. (2020). Using digital media to empower adolescents in smoking prevention: Mixed methods study. *Journal of Medical Internet Research*, 22(3), 572-589.
<https://doi.org/10.2196/13031>

Piper, M. E., Kenford, S., Fiore, M. C., & Baker, T. B. (2012). Smoking cessation and quality of life: Changes in life satisfaction over 3 years following a quit attempt. *Annals of Behavioral Medicine*, 43(2), 262–270. <https://doi.org/10.1007/s12160-011-9329-2>

Quitline. (2013). *Quitline Service: Annual review 2012/2013*.

Riskesmas. (2013). *Riset Kesehatan Dasar RISKESDAS 2013*.

Roberts, N., Kerr, S., & Smith, S. (2013). Behavioral Interventions Associated with Smoking Cessation in the Treatment of Tobacco Use. *Health Services Insights*, 6, 79–85.
<https://doi.org/10.4137/HSI.S11092>

Rochka, M. M., Thaha, I. L. M., & Syafar, M. (2015). *The improvement of knowledge related smoking by using of PAKEM method on SMK teknologi industri students in Makassar*.

Rose, A., Panagiotounis, F., Theodorakis, Y., & Gracia, N. R. de C. (2019). *Adventure Drugs Rehabilitation (ADR). Adventure therapy program for patients in rehabilitation for substance abuse. A Handbook for Addiction Counselors (Issue September)*. Erasmus+ Programme of the European Union.

Rusmilawaty. (2013). Pengaruh penyuluhan metode ceramah tentang bahaya rokok terhadap perubahan sikap perokok aktif. *Jurnal Vokasi Kesehatan*, 2(2), 113–118.

Shareck, M., & Ellaway, A. (2011). Neighbourhood crime and smoking: The role of objective and perceived crime measures. *BMC Public Health*, 11(1), 930-946. <https://doi.org/10.1186/1471-2458-11-930>

Singh, T., Arrazola, R. A., Corey, C. G., Husten, C. G., Neff, L. J., Homa, D. M., & King, B. A. (2016). Tobacco use among middle and high school students — United States, 2011–2015. *Morbidity and Mortality Weekly Report*, 65(14), 361–367. <https://doi.org/10.15585/mmwr.mm6514a1>

Thomas, R. E., McLellan, J., & Perera, R. (2015). Effectiveness of school-based smoking prevention curricula: Systematic review and meta-analysis. *BMJ Open*, 5(3), 446-458.

<https://doi.org/10.1136/bmjopen-2014-006976>

- Ünüböl, H., & Hızlı Sayar, G. (2019). Psychological factors associated with smoking and quitting: addiction map of Turkey study. *Neuropsychiatric Disease and Treatment, Volume 15*, 1971–1982. <https://doi.org/10.2147/NDT.S204167>
- Ussher, M. H., Faulkner, G. E. J., Angus, K., Hartmann-Boyce, J., & Taylor, A. H. (2019). Exercise interventions for smoking cessation. In *Cochrane Database of Systematic Reviews, 2019* (10). John Wiley and Sons Ltd. <https://doi.org/10.1002/14651858.CD002295.pub6>
- Warren, C. W., Jones, N. R., Chauvin, J., Peruga, A., & GTSS Collaborative Group. (2008). Tobacco use and cessation counselling: cross-country. Data from the Global Health Professions Student Survey (GHPSS), 2005-7. *Tobacco Control, 17*(4), 238–247. <https://doi.org/10.1136/tc.2007.023895>
- West, R. (2017). Tobacco smoking: Health impact, prevalence, correlates and interventions. *Psychology and Health, 32*(8), 1018–1036. <https://doi.org/10.1080/08870446.2017.1325890>
- WHO. World Health Organisation. (2010). Global status report on noncommunicable diseases. In *World Health*. <https://doi.org/9789241564229>.
- Xu, X., Chen, C., Abdullah, A. S., Sharma, M., Liu, H., & Zhao, Y. (2016). Knowledge about and sources of smoking-related knowledge, and influencing factors among male urban secondary school students in Chongqing, China. *SpringerPlus, 5*(1), 165–181. <https://doi.org/10.1186/s40064-016-3589-z>
- Yulianto, E. A. (2015). Persepsi siswa SMK Kristen (TI) Salatiga tentang bahaya merokok bagi kesehatan. *Journal of Physical Education, Sport, Health and Recreation, 4*(5), 1807–1813.