Determining the Effects of a School-Based Intervention Program on The Knowledge, Attitudes and Behaviors on Smoking of Junior High School Students in West Java Province, Indonesia

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Abstract- *Objective.* This study was conducted to determine the effects of a school-based intervention program on the smoking-related knowledge, attitude, self-efficacy, and practices among students aged 11 to 17 years in Indonesia.

Methods. Using quasi-experimental design, the study was conducted among 690 Indonesian adolescent students aged 11 to 17 years who are in Grades 7 and 8 in West Java Province, Indonesia and have identified themselves as either daily smoker or non-smoker. This research involved two intervention groups, and one control group.Data were collected using self-administered questionnaires and analyzed through *One Way ANOVA of Dependent Groups/Within Subjects and Independent Group/Between Subjects* using STATA 12.0.

Results. Health education intervention affected the knowledge, attitude, self-efficacy, and practice positively either in Intervention 1and2 Groups. In the Control Group, slight behavior changes were observed due to factors of school policy. Meanwhile, the knowledge, attitude, self-efficacy, and practice were found to increase linearly in Intervention 1 Group.

Conclusion. The study found that the strategies of Intervention 1 group were found to be effective for linearly improving the knowledge, attitude, and self-efficacy compared to other groups.

Keywords: school-based intervention, smoking prevention, adolescents.

I. INTRODUCTION

The Indonesian government has initiated a nationwide smoking prevention program, however, despite the efforts, data still showed that the number of adolescents who smoke has been increasing for the past 10 years. According to the 2014 Global Youth Tobacco Survey (GYTS), smoking increased dramatically between the ages of 7 and 17, from 8.2% to 38% where nearly 70% of men aged 20 and over are smoking[1].

Despite efforts to reduce smoking and smoking initiation among young Indonesians through smoking prevention programs, smoking remains to increase among the youth in the country thus the need for an enhanced intervention program[2]. This study was conducted to determine the effects of an enhanced school-based intervention program on the smoking-related knowledge, attitude, self-efficacy, and behavior among the students in West Java Province, Indonesia.

II. METHODS

This study utilized a quasi-experimental design with the following indicators: (1) the study in which the researcher had control over one or more interventions that may have influenced the responses of participants; 2) no random assignment of subjects were made; 3) pretest and a posttest were conducted.

The study design is shown in Figure 1.

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Group Test Intervention	Pre-Intervention	Program Post Intervention	Follow up
Intervention 1	E1 X	E11	E12
Intervention 2	E2 X	E21	E22
Control	O1 -	O2	O3

Figure 1. The Design of Program

Intervention on Smoking Behaviors of Junior High School Students.

The intervention program was conducted among 690 students aged 11 to 17 years who are in Grades 7 and 8 in West Java Province, Indonesia. Further, students have identified themselves as either daily smoker or non-smoker.

Ethical clearance was endorsed by the Ethical Committee of the Medical Faculty, Health Research Unit, Universitas Padjadjaran, West Java Province. Informed consent or letters of agreement were also given to participating adolescent students and were instructed to read through the letter thoroughly, to listen attentively while the study is briefly discussed, and to sign the letter if they have fully understood the details before any interview was done. Interviews were done by trained interviewer.

III. RESULTS AND DISCUSSION

Pre-Intervention Smoking-Related Knowledge, Attitude and Self-Efficacy

Before intervention, the mean and standard deviation on knowledge score among students from the Control Group obtained the lowest mean knowledge score (13.00). This score level can be interpreted as good knowledge on smoking behavior. Students from the Intervention 1 Group registered the highest mean knowledge score of 13.88, while that of the Intervention 2 Group have slightly lower mean knowledge score (13.63). However, mean knowledge scores from both Intervention 1 Group and Intervention 2 Group fall within the range of good knowledge. Before intervention, the mean score and standard deviation for the variable of attitude of the control group were greater (60.47) than those of the first intervention (51.79) and second intervention groups (52.02). This means that the control group exhibited a more positive attitude toward smoking prevention compared to the first and second intervention groups whose attitudes were categorized under the moderate level.

Likewise, students in the control group gained a slightly greater mean score (55.23) in self-efficacy than those in the first and second intervention groups (50.96 and 52.51, respectively). This shows that the control group had more positive self-efficacy than the first and second intervention groups whose self-efficacy was categorized under moderate level.

The results of ANOVA within subjects showed that the health education treatment or intervention had significant influence in terms of knowledge between pretest and posttest 2. Specifically, the increase in knowledge at posttest was higher in the Intervention 2 Group compared to the Intervention 1 Group and the Control Group. In addition, the Intervention 2 Group showed linear improvement of knowledge during pretest, posttest 1 (evaluation after one week), and posttest 2 (evaluation after three months). However, the Control Group still showed the highest scores of knowledges in the pretest, decreased level of scores in the posttest 1, and somewhat increased scores in the posttest 2. Due to the fluctuating results, it cannot be established that there is good improvement of knowledge across the three times of measurements.

Pre-Intervention Smoking-Related Attitude

Variables of practice namely the condition of both smokers and non-smokers among the study groups before the intervention phase was assessed using bivariate analysis. During pre-intervention, more smokers than non-smokers belonged to the Control Group with 94 smokers and 46 non-smokers. For the

Intervention 2 Group, there were 258 smokers and 179 nonsmokers. On the contrary, there are more non-smokers than smokers in the Intervention 1 Group with 22 and 91 students, respectively. Nearly half of the respondents from the Control and Intervention 2 Groups have the intention to quit but a big proportion of the total non-smokers signified the intention to smoke.

Before the intervention, the percentage of non-smoking students in the Intervention 1 Group was more than the Control and Intervention 2 groups, however, further analysis using Chi-Square test proved insignificant difference in the proportion of non-smokers among groups (x^2= 2.9964 with p-value of 0.224). This can be interpreted that there was no significant difference in the proportion of smoking practice between participants belonging to the Intervention and Control groups. For the first and second intervention groups, the attitude changes moved upward linearly. In contrast, the Control Group had the lowest score in terms of attitude for their first posttest, which somewhat increased in the posttest 2. The results indicate that the Control Group tended to fluctuate in attitude scores, meaning it cannot be ascertained whether behavior changes and self-efficacy took place, and it is possible that even when they happened, they were not caused by the standard intervention given in the research during the posttest.

Effects of the School-based Intervention Program in terms of Smoking-Related Knowledge, Attitude and Self-Efficacy

At pretest, the respondents in the three groups registered knowledge scores interpreted as good, while it was moderate for attitude, and in self-efficacy. The results of the posttest 1 taken one week after the intervention showed that most of the respondents were in the same level of knowledge (good), in the same level of attitude (positive), and in the same level of self-efficacy (positive). However, after 3 months, posttest 2 showed the Intervention 1 and Intervention 2 groups had the greatest number of students who were 'good' in knowledge and 'positive' in attitude. When it came to self-efficacy, both the Control Group and Intervention 1 Group registered a positive level, but the Intervention 2 Group only had a moderate level of self-efficacy.

The findings showed that the self-efficacy scores for the first intervention group were greater than those of the second group. This finding appears to be linear to behavior changes during follow-up study, where positive behaviors of the first intervention group gained a score of 79.65%, compared to the second intervention group and the control group with the scores of 66.13% and 67.85%, respectively. The Control Group's greater score, compared to that of the Intervention 2 Group may be ascertained to the "peer education" program held in the school, even though the group did not receive any treatment.

Practice on Smoking

Smoking-related practice of students differed significantly among the control and two treatment groups, especially after three months of follow up. The increase in the number of non-smokers was observed within the Control Group and Intervention 2 Group compared to the Intervention 1 Group.

Talking about school system, school can be defined as an institution in which the teaching-learning process in an education system that is acknowledged by the state takes place. School consists of students as one of its elements who aim to gain knowledge. Some studies on health education and health promotion demonstrate that the social environment and school policy have significant roles in determining behavior changes. Research results on Indonesian schools show that to realize environmentally friendly schools, several school policies are required as support.This finding is very likely to be applicable in schools in order to support the policy of cigarette-free schools through integrative reinforcement: School vision and missions, school's policy of cigarette-free school, human resources(both educators and education personnel)in the field of health[3, 5, 6].

Of the two intervention groups, and one control group, the schools with the best system of smoking prevention program were those where the Control Group and first intervention group came from. Meanwhile, the school where the second intervention group was taken from is one of the favorite schools at the level of regency. The strengths of the school system from which the first intervention and the Control Group came from, though not a prominent school, lie in the active teachers and counselors. The researcher observed that the teachers are very proactiveinconductingactivities,especiallytheadvocacies.Theirenthusiasmcould be observed from the beginning to the end of the research[4].

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The findings are at tested to by researcher in his statement that support in the form of verbal persuasion from the environment will influence smoking behavior. With verbal persuasion, adolescent students will be influenced by the suggestion that they will be able to solve problems, while experience and success are the main resources for the formation of self-efficacy and behavior.[7]

Also, researcher[8] emphasized that individuals with low confidence are at greater risk for task avoidance and decreased commitment. Since there were students who avoided tasks or were less committed to tasks associated with smoking prevention, interest in learning more about the students' self-efficacy perceptions concerning smoking prevention should be explored in order to reinforce a "no-smoking" behavior.

A related study[9,10] found that the relation between self-efficacy and intention is stronger the closer a smoker is to quitting(e.g.,intend to quit in the next month).It revealed that smoking-related self-efficacy and beliefs about the disadvantages of smoking are consistently related to intention not to continues moking, a common proximal outcome in youth smoking cessation studies. Taken together, these studies suggest that self-efficacy is positively correlated with making plans to quit, especially in the short-term.

Meanwhile, the analysis of practice variable is the reflection of various aspects, both physical and non-physical, shown in the form of responses. These responses can be passive(without action)and active(with action). Practice int his research is defined as a form of concrete action, namely, to smoke or not to smoke.

The applications of the Health Belief Model Theory in this study were:

1) Perceived severity was the probability of students maintaining their smoking behavior or changing their behavior from smoking to not smoking due to what they considered the consequences to be; and,

2) Cues to action were external events that prompted a desire to make a change in behavior through undergoing health education package on smoking prevention or implementing the school policy program on smoking prevention.

IV. CONCLUSION

Results indicated that there were changes in knowledge, attitude, self-efficacy, and practice before and after treatment. There were significant changes in the Intervention 1 Group, Intervention 2 Group and Control Group. Meanwhile, in the Control Group, the changes were not of linear trend. This study showed that adolescents in the school-based system can increase knowledge, attitude, self-efficacy, and practice on smoking prevention. Also, after the intervention, their intention to quit smoking in the future has remained the same, so there was no negative influence on future quit attempts were evoked because of reduced smoking.

It can be concluded that the use of a certain method should be suited to the desired goals in order to gain optimal results. Nonetheless, teachers are demanded to be able to select learning materials, plan, and use the learning materials appropriate for the condition and the content to be taught.

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