

## Short message service reminder as a smoking-prevention media for junior high school students in Pematangsiantar City

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### Abstract

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**Purpose:** This study was aimed to analyze the influence of short message service reminders on knowledge of junior high school students who smoked.

**Method:** The study used quasi-experimental design with pretest and posttest. The population was all junior high school students who smoked, and 85 of them were used as the samples. The data were analyzed by using the Wilcoxon statistics test. **Results:** Short message service reminder increased the knowledge scores of junior high school students who smoked from 1.48 to 2.36 and it was statistically significant ( $p\text{-value}=0.0001$ ). **Conclusion:** Head masters should provide continuous and sustained short message service reminders in their health promotion programs in their school institutions.

**Keywords:** SMS reminder; smoking; students; high school; health promotion

## INTRODUCTION

In Indonesia, study shows concern has been raised about the problem of smoking among school children [1–3]. Based on the results of a public opinion survey in the realization of smoke-free areas conducted in December 2017 in Pematangsiantar, almost 40% of the people in Pematangsiantar City were smokers, consisting of 64.7% males and 8.9% females. Data from Pematangsiantar City Education Office in 2018, there were 17,751 junior high school students (8,958 males and 8,793 females), who are vulnerable in risky behavior including to start smoking at their age [4,5].

Pematangsiantar has a high number of smokers and the first largest recipient of *Dana Bagi Hasil Cukai Hasil Tembakau (DBH CHT)* for districts or cities as seen from tobacco excise tax indicators because of the existence of cigarette factories; so that efforts to prevent smoking behavior for adolescents as producers' marketing targets are needed [6,7].

Cigarettes with education in the form of short message reminders as a medium for disseminating health information. Short message reminders received through cell phones are considered as an educational exposure that can direct to the target of always holding mobile phones and the latest media technology that is rife circulating.

## METHOD

This study used a quasi experimental pretest-posttest design. Pretest measured the initial conditions before the intervention, followed by providing short message service (SMS) reminder intervention (Table 1), and finally did a posttest to determine the state of the dependent variable after the intervention had been given. The difference between pretest and posttest is the result of treatment [12].

**Table 1. Contents of the short message service reminder and the delivery time**

Day	Time	Message
1	13.00	Cigarettes are processed tobacco and other chemicals
	21.00	Cigarettes include: cigars, clove, shisha, and cangklong/pipe
2	13.00	Cigar: pure tobacco in sheet form resembling a cigarette
	21.00	Clove/cigarette filter: tobacco and other additives rolled/rolled with paper
3	13.00	Shisa: tobacco mixed with fruit/spice aroma/flavor is smoked with a special instrument
	21.00	Cangklong/pipe: tobacco that is inserted into the pipe
4	13.00	Active smokers are people who smoke cigarettes directly
	21.00	People around smokers and inhaling cigarette smoke are called passive smokers
5	13.00	Passive smokers have as much risk of health problems as active smokers
	21.00	There are 3 most dangerous substances in a cigarette
6	13.00	1.CO (carbon monoxide): a poisonous gas reduces oxygen levels in the blood
	21.00	2. Tar: substances that cause cancer and other diseases
7	13.00	3. Nicotine: substances that cause addiction
	21.00	Health problems from smoking: hair loss, wrinkled skin
8	13.00	Dental caries, cataracts, sperm damage, hearing loss
	21.00	Cigarette smoke can damage your health, let's stay away
9	13.00	As a result of cigarette smoke: heart disease, cancer, vascular disease, etc.
	21.00	Teenagers are the main target of the cigarette industry
10	13.00	Once entangled it will be difficult to break away from smoking
	21.00	Want to know how to avoid smoking?
11	13.00	1. Avoid hanging out with friends who are smoking
	21.00	2. Rest assured, that smoking is not the only means of association
12	13.00	3. Don't be ashamed to say that we are not smokers
	21.00	4. Look for more information about the dangers of smoking
13	13.00	5. Avoid cigarette sponsors, advertisements, posters, free cigarettes
	21.00	6. Do other positive things, like: sports, reading or other healthy hobbies
14	13.00	Smoking is heavy, avoid it
	21.00	Be a teenager who lives healthy without cigarettes

The study involved students in Pematangsiantar City in 2019. The intervention was given to respondents for 14 days with a schedule every morning at 13.00 and every night at 21.00. This is in accordance with the concept of sleeper effect put forward by Brigham in Azwar [13] that people still remember the contents of the message delivered within 10-14 days after the message was delivered. Respondents were given intervention by giving short message reminders up to twice per day for 14 days.

The population was all junior high school students in Pematangsiantar who smoked and 85 of them were taken as samples, with the criteria of being willing to become respondents and have a cellphone with an active number. The operational definitions of 'knowledge' in this study was everything that is known and understood by the respondent regarding hazardous substances in cigarettes, the effect of smoking on health, and how to avoid smoking.

Short message service reminders were used as a technique or media for conveying information in the form of short messages via cell phones or cellphones about hazardous substances in cigarettes, the effect of smoking on health and how to avoid smoking. Message contents focus on hazardous substances in cigarettes, the effect of smoking on health and how to avoid smoking as a reminder to stop smoking that is delivered to the target. Short message reminders were read and sent according to respondents. Messages delivered on the first to the ninth day contained knowledge about cigarettes, while on the tenth to fourteenth day contained the attitude to stop smoking. The SMS reminder contents are sourced from the MOH's "Healthy Living without Cigarettes" pocketbook [8].

## RESULTS

Table 2 showed that the number of cigarette consumption every day before the intervention of the majority of respondents smoked two cigarettes per day that is as much as 63.5% and after the intervention conducted the results of the study showed that the majority of respondents smoke one cigarette/day that is as much as 55.3%.

**Table 2. Respondent characteristics**

Characteristics	n	%
<b>Age (years old)</b>		
12	4	4,7
13	30	35,3
14	40	47,1
15	10	11,8
16	1	1,2
<b>Sex</b>		
Male	82	96,5
Female	3	3,5
<b>Number of Cigarettes Per Day</b>		
Before intervention:		
1	12	14,1
2	54	54
3	15	15
4	4	4
After intervention:		
0	36	42,4
1	47	55,3
2	2	2,4

Table 3 provides the bivariate analysis on whether there is an effect of a short message service reminder about the knowledge of middle school students who smoke. The results showed an increase in the average value of knowledge before and after giving short message service reminders that is 1.48 to 2.36 with a value of  $p = 0.0001$  so there is a change in knowledge to stop smoking after giving short message service

reminders to smoking students. Respondents' knowledge after giving short-message reminders did not experience a decrease in score. The highest increase occurred at 13-14 years

Table 4 shows the effect of a short message reminder on knowledge. Sixty-two respondents experienced an increase in knowledge and 23 respondents had the same knowledge after being given a short message service reminder. The Wilcoxon test value shows there was an effect of short message reminders on the knowledge to stop smoking in junior high school students.

**Table 3. Changes in pre-test and post-test knowledge based on the age**

Age	Pre-test			Post-test		
	low	moderate	high	low	moderate	high
12	2	2	0	0	3	1
13	17	13	0	0	21	9
14	23	16	1	0	22	18
15	2	8	0	0	7	3
16	1	0	0	0	1	0
<b>Total</b>	45	39	1	0	54	31

**Table 4. Effect of short message reminder on knowledge of middle school students who smoke**

Knowledge Range	n	P
Negative	2	2
Positive	17	13
Ties	23	16
<b>Total</b>	45	39

## DISCUSSIONS

This research supports the importance of information technology including smartphones and social media that are very strategic to deliver public health messages [6,9–13]. Public health messages in Indonesia as a country with an above average Human Development Index could be essential in helping stop smoking behavior. Study showed that three quarters of the smokers live in countries with a Human Development Index above the average [14].

Increased burden of smoking-related diseases deprived those who live around smokers of their rights to live healthy. The chemical content of cigarette smoke causes a decrease in bodily functions and depression and decreased intellectual function [15]. Cigarettes not only damage health but also cause poverty, poor social economy, and environmental damage. The fact is the death of half a billion people due to smoking is preventable [16]. Based on the Indonesian Demographic

Health Survey (*Riset Kesehatan Dasar*), the prevalence of smoking in 10 - 18 years old adolescents had continued to increase, which was 7.2% in 2013, 8.8% in 2016, and 9.1% in 2018 [17].

Various efforts in controlling tobacco have been done gradually, integrated through the collaboration of both government and private sectors. However, regulations and controls on tobacco consumption did not reduce the number of smokers in Indonesia. A weak government supervision system marks problems in many developing countries [18]. In Indonesia, tobacco industries asked retail shops to show shelves and advertising materials including banners, posters, stickers, and other items such as ashtrays, tables and chairs that contained cigarette logos. Cigarette retailers gain incentives in the form of free cigarettes, money, gifts in the form of goods, shopping vouchers, lottery prizes, and even sponsored social events [19].

A short message reminder to junior students to always remind them of the dangers of smoking can be an alternative health information dissemination, designed to be as attractive as possible. Students expect messages delivered continuously in short, clear, and concise sentences that they feel attached to them. Beside knowledge from knowing, which will occur after seeing, hearing, smelling, feeling, and also touching, most experience is obtained through the eyes and ears. One way to increase knowledge and awareness is to provide information such as giving short message reminders. A SMS-based study on reducing cigarette consumption in students was an approach in the health promotion support group [9]. Text reminders serve as an efficient smoking session program to consider the sizable proportion of smokers among adolescents [10].

When the research took place, students claimed that their male parents were smokers. Besides, their knowledge due to smoking was only cancer and heart disease without knowing the health problems caused by smoking. The reminder of this short message service is an alarm to add insight to students who are starting to look for identity. As beginners and information seekers, students should get reminders of the dangers of smoking itself, with a free short message service reminder. And the most important are the role of schools in making teachers as agents working to manage health promotion programs [20,21].

## CONCLUSION

Short message service reminders have a significant effect on knowledge of junior high school students who smoke in Pematangsiantar, so it is necessary for the

Headmaster to disseminate health information about the dangers of smoking continuously and sustainably as a promotive and preventive effort.

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