Systematic Reviews

# Mobile or Web-Based Intervention for Smoking Cessation

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| Article Info | Abstract |
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| | *Introduction:* Smoking is the most preventable cause of illness and premature death worldwide. Because of the danger of smoking, smoker must try to quit smoking. The purpose of this research was to determine the effect of mobile or web-based intervention on smoking cessation program. |
| | *Methods:* This study was used systematic review with literature search using online reference databases such as ProQuest, ScienceDirect and SCOPUS. The keywords that used in this research was mobile intervention, phone intervention, apps intervention, web-based intervention, and smoking cessation. This study included randomized controlled trial studies with mobile or web-based intervention for smoking cessation program.<br>*Results:* Twenty-five RCTs showed intervention groups with mobile or web-based had better affect to stop smoking than control groups or comparison groups.<br>*Conclusion:* Smoking cessation is also influenced by the focusing of mobile or web-based intervention provided. Thus, providing information about the strengths and the effect of therapy is important. |

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## INTRODUCTION

World Health Organization (WHO) stated that tobacco kills more than 5 million people per year and is projected to kill 10 million by 2020. 70% of victims came from developing countries, especially Asia and 700 million of victims were men. WHO estimated 1.1 billion world smokers aged 15 years and over, equivalent with one third of the total world population. Indonesia is ranked 5th in cigarette consumption in the world after China, the United States, Japan and Russia [1]. Among adolescents aged 15-19 years, around 38.4% of male and 0.9% of female are smokers. That age group includes who are in the third grade junior high school (SMP), high school (high school), and the beginning of college. Generally, teenagers start to smoking to show that they are adults [2]. In addition, people start to smoking since they were young and do not know the risks of cigarettes addictive [3].

Smoking increases the risk of respiratory long term condition problem such as asthma and Chronic Obstructive Pulmonary Disease (COPD). Nicotine addiction stimulates smokers to continue smoking, even the lungs are in worst condition. The annual Quality and Outcomes Framework (QOF) smoking returns found that one of four people in long-term conditions continue to smoke. Therefore, behavioral and pharmacological treatment are needed [4].

Previous studies consistently showed discrepancy between eagerness to stop smoking and success to stop smoking. Stopping smoking is harder when the smoker is more addicted. Primary care clinicians know that smoking cessation give better outcomes, yet the consultation and therapy are not spreading evenly. It is because most of the smokers' thought that smoking cessation is difficult to achieve and time consuming. They also concern about the safety of the medicines. Only 5% of smokers who want to quit smoking access a smoking cessation service each year. Nevertheless, the drop out is still higher [5].

Increasing the number of people who using mobile phone leads development of mobile health (mHealth) interventions for smoking cessation program. Mobile phones are an important tool for smoking cessation program because they are flexible, accessible, and low cost method for delivering health promotion interventions. The mobile or web-based interventions allows delivering of information, triggers, and support whenever clients carry a mobile phone. In addition, these interventions can adjust to large populations and personalized for individual needs. The mobile and web-based interventions had shown improving in smoking cessation outcomes [6].

There were some evidences found that using mobile and web-based intervention can promote smoking cessation. A previous study found that Crush the Crave (CTC) application was feasible for delivering cessation support but not superior to a self-help guide in helping motivated young adults to quit smoking [7]. Therefore, the main purpose of this study was to determine the effect of mobile or web-based intervention on smoking cessation program.

## METHODS

### Design

The design was a systematic review. Synthesis of results was found by comparing mobile or web-based intervention and usual care for smoking cessation program.

### Search Strategy

This systematic review included randomized controlled trial articles that determining the effect of mobile or web-based intervention on smoking cessation. A literature search was conducted for studies published in databases such as Proquest, ScienceDirect, and Scopus. The keywords was developed by PICOT framework (P: Smoking people, I: mobile intervention, phone intervention, apps intervention, web-based intervention, C:-, O: smoking cessation, T: 2016-2019). The PRISMA guideline was used for searching and selection process of the studies.

### Sample

The literature search resulted 370 articles. Studies were excluded if they used another intervention. Twenty-five articles met the inclusion criteria. Each study contains mobile or web-based intervention for smoking cessation.

### Inclusion Criteria

Inclusion criteria for the literature search were: (1) studies using the Randomized Controlled Trial (RCT) design that determining the effect of mobile or web-based intervention on smoking cessation; (2) published during past 4 years (2016-2019). RCT design studies must meet the PICO criteria for participants were above 18 years old and had daily smoking. Interventions could include mobile intervention or phone intervention or apps intervention or web-based intervention. Study group at least included two groups, the intervention group and the control group. The outcome was smoking cessation measurement. All studies must be written in English.

## RESULTS

### Characteristics of Systematic Review Literature

A total of 25 studies were found from the literature search. There were 12 studies from the United States, 5 studies from China, 1 study from Thailand, 1 study from France, 1 study from Netherlands, 1 study from Australia, 1 study from Sweden, 1 study from Canada, 1 study from Spain, and 1 study from the United Kingdom. The number of participants in each study was more than 200 participants. All studies involved smokers who got mobile intervention or phone intervention or apps intervention or web-based intervention for smoking cessation. All studies were randomized control trial study with smoking cessation as the outcome using the mobile intervention or phone intervention or apps intervention or web-based intervention.

### Mobile or Web Based interventions

The 25 studies were discussed about mobile or web-based intervention for supporting smoking cessation program. There were many kind of interventions, such as mobile app, email intervention, computerized intervention, web-based

program intervention, text message intervention, WhatsApp intervention, twitter intervention or chat based intervention. All the interventions were used to increase the prevalence of smoking cessation.

Duration for the mobile or web-based intervention was 1 months (minimum) to 1 year (maximum). After the intervention, respondents had to fill out some questionnaires to measure smoking cessation. There were some studies that measuring the effect of intervention for several times, such as after 3 months, 6 months, 9 months and 12 months. There was variation frequency of the intervention was given. Most of the studies gave intervention every day, yet one study gave intervention only once a week.

### Smoking Cessation Measuring Tools

Smoking cessation was measured using questionnaire. However, the 25 studies also used other instruments to measure smoking cessation, such as Fagerström Test of Nicotine Dependence (FTND), Heaviness of Smoking Index (HSI), or CO monitor and mouth pieces (Bedfont Scientific Ltd).

### Effect of Mobile or Web Based Intervention to Smoking Cessation

Analysis result for the 25 studies related to the effect of the mobile or web-based intervention in smoking cessation.
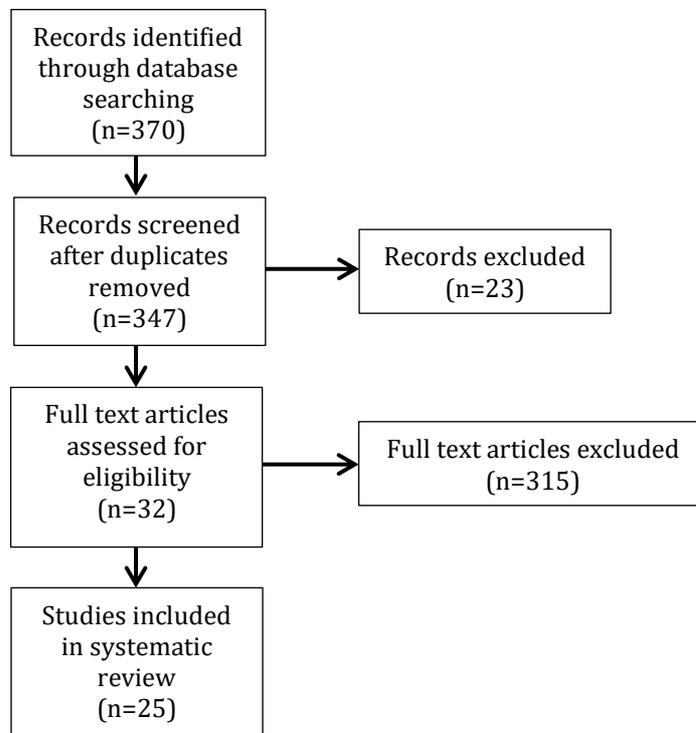


**Fig. 1.** Flow diagram of search results for smoking cessation program using the PRISMA guidelines.

## DISCUSSION

### Mobile or Web-Based Intervention

Mobile apps (e.g., WhatsApp, Facebook Messenger, and WeChat) are popular and inexpensive alternatives for interactive messaging. The population-based survey found adults who were exposed to health information from instant messaging were smoked less and more physically active comparing to those who were not exposed. It suggests that instant messaging could be a viable way for promoting preventive behaviors [8]. Web-assisted tobacco interventions have the potential access to reach millions of smokers and also low-cost intervention. They can be effective in aiding cessation, particularly comparing with self-help booklets or without any interventions [9].

### Smoking Cessation

Planning to quit smoking was not easy. Smoking cessation (also known as quitting smoking or simply quitting) is the process of discontinuing tobacco smoking. Tobacco smoke contains nicotine, which is addictive and can cause dependence. Nicotine withdrawal often makes the process of quitting difficult [10]. The strong will and determination from the smoker were the main point for quitting successfully. Others reason to stop smoking could be health, religious organization, and family factors. Health factors usually are related to illness such as hypertension, fever, cough and headache. Religious organization factors are related to prohibition of smoking in some religious organizations [11].

### Effect of Mobile or Web Based Intervention to Smoking Cessation

Changing of scores for the experimental and control groups were significantly different. It means mobile or web-based intervention was effective to increase smoking cessation. Otherwise, in the control group, there was no increasing in quality of life [12].

The effectiveness of mobile or web-based intervention also can be seen from the differences of respondents' ability to quit smoking in the intervention and the control groups. Increasing ability of smoking cessation for respondent in the intervention group was significantly higher than in the control group. It proves that mobile or web-based intervention had a positive impact on respondents' ability to improve smoking cessation ability. In addition, through this intervention, respondents could increase their personal abilities such as self-effectiveness, hardiness and resourcefulness [7].

### CONCLUSION

Mobile and web-based intervention is a new intervention for giving nursing intervention in this digitalization era. Many studies prove that mobile and web-based intervention are suitable for people in 4.0 era in smoking cessation program. Therefore, nurses must improve the use of mobile and web-based for doing intervention, particularly in smoking cessation program.

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