Abstract

Objective: Tobacco use in Indonesia was among the highest in the globe. Moreover, its prevalence constantly increased among children and adolescents. Therefore, nurses need to identify an innovative way to prevent these age groups from tobacco use. This study aimed to propose the use of Oxygen Adventure Game (GENTURE) as a preventive measure to reduce the incidence of lung cancer by lowering tobacco use.

Methods: Literature review was performed using textbooks, electronic databases and websites published in 2006-2016. The search terms of “lung cancer”, “gaming”, “tobacco use”, and “disease prevention” were entered to obtain the relevant articles.

Results: The articles reviewed the roles of nurses included as educators, facilitators, consultants, advocates, and coordinators of services in health promotion and disease prevention. The articles also presented health promotion for smoking prevention and cessation to reduce the burden of lung cancer. The articles, furthermore, indicated games as one of the suggested approaches used in health promotion. A game application called GENTURE is proposed targeting children and adolescents to prevent them from smoking behaviors. The game application allowed the users to experience the journey of oxygen passing through the lungs exposed by cigarette smokes.

Conclusion: Health promotion of smoking cessation and prevention targeting children and adolescents require the use of innovative approaches. This study suggested the use of GENTURE, a game application, to educate children and adolescents about the dangers of tobacco use to their lung health.

Keywords: Smoking; Lung; Cancer; Health; Games.

Introduction

Tobacco use has been the major contributor of cancer worldwide. It was responsible for more than 20 percent of deaths due to cancer and about 70 percent of deaths due to lung cancer in particular. Another study indicated that 90 percent of bronchogenic carcinoma occurred among the active smokers.

In Indonesia, tobacco use is commonplace, not only among adults but also children and adolescents. The prevalence of smokers reached nearly half of the total smokers in the ASEAN countries (46.12%), placing Indonesia as the first tobacco consumer in the ASEAN. Ministry of health reported that smokers aged above 10 years were 29.2 percent, whereas the smokers aged over 15 years old were 34.7 percent. Surprisingly, about 1.9 percent of children aged 5-9 years started smoking. Apparently, Indonesia is at the higher risk of cancer burdens.

The high tobacco use among children and adolescents in Indonesia requires a great attention. Therefore, nurses as the frontliners of healthcare services need to identify the most effective way to promote the health of these age groups and prevent them from being exposed to tobacco use.

The implementation of health promotion and disease prevention programs could be the key for nurses to cut down, and even to cut off the number of smokers among children and adolescents in Indonesia. These programs could be designed to increase the knowledge and abilities of children and adolescents to maintain well-being and prevent them from tobacco use. Nonetheless, nurses need to find the innovative approaches since the programs are targeting children and adolescents.

Oxygen Adventure Games (GENTURE) is a game application that could be a tool for preventing the users from smoking. This tool would give the users experience...
Methods

Literature review was conducted to propose the use of Oxygen Adventure Game (GENTURE) as a preventive measure to reduce the incidence of lung cancer by lowering tobacco use. A search strategy included textbooks, electronic databases and websites published in between 2006 and 2016, in Bahasa Indonesia or English. For electronic databases and websites, the search terms “lung cancer”, “gaming”, “tobacco use”, and “disease prevention” were entered. We assessed the title and abstracts for inclusion, then read the full texts to confirm inclusion.

Results and Discussion

Roles of Nurses in Health Promotion and Disease Prevention

Some reviews presented the use of health promotion to motivate individuals and community to engage in various programs, including 1) health education, 2) screenings, 3) habits and lifestyle modification, and 4) environmental control programs. Health education is given to promote healthy habits and lifestyle that might improve the quality of life. Meanwhile, in the screening stage, individuals would be assessed for risk factors and early signs and symptoms. Then, the next stage would be the encouragement and empowerment for changes into the expected habits and lifestyle. Last, the modification of environment, or, environmental control could be performed to support and enable individuals and community in maintaining healthy habits and lifestyle.

Disease prevention is another term discussed in the reviews. Disease prevention encompasses all stages of primary, secondary and tertiary prevention. Primary prevention refers to the activities aimed at avoiding the onset of particular health problems. Secondary prevention is associated with actions to detecting, slowing and/ or stopping the progress of health problems. Whilst, tertiary prevention refers to activities aimed at avoiding the consequences of complication and progression of established health problems.

Nurses play central roles in health promotion and disease prevention; educators, facilitators, consultants, advocates, and coordinators of services. As educators, nurses promote and even become the role model of healthy behaviors. As facilitators, nurses perform a set of community nursing process in health promotion. Nurses also play a role as consultants by assisting clients in making decision concerning healthy lifestyle. As advocates, nurses help clients in change process and enable them to create a healthy atmosphere. Last, as the coordinators, nurses guide clients in determining the solutions of health problems they experienced.

Health promotion for smoking prevention and cessation

Some articles stated that health promotion for smoking prevention and cessation is essential to lowering the burden of lung cancer. However, delivery of health promotion requires innovative approaches and methods, especially when the messages to deliver targeting school aged-children and adolescents.

The articles further indicated games as one of the suggested approaches used in health promotion. The messages conveyed in the games might include all information concerning the consequences of tobacco use for health and a call to change and/ or modify lifestyle. To deliver the information, nurses need to use the appropriate media.

Children and adolescents are more likely to try new things. In addition, they are greatly influenced by their social environment. Consequently, they are at higher risks of being exposed to cigarettes, alcohol, and addictive substances.

According to Erikson (1963, in Tatata, 2009), school aged children are apt to experience conflicts during their industry versus inferiority stage. At this stage, children begin to develop skills, and confidence as well as accomplish complex tasks. If their attainment is not supported or underappreciated, children might feel the sense of inferiority. Thus, creative solutions emphasizing on social supports greatly affect their development achievement within this stage.

Erikson also identified that adolescents might struggle during their identity versus role confusion stage. They tend to explore the ideal values and beliefs, and look for the ideal personal identity. When there are no guidance and assistance, adolescents could be plunged into risk behaviors as a response to identity crisis.

Children and adolescents initiating tobacco use will be at greater risks of health problems due to early exposure of toxic and carcinogenic substances. These substances then may clog and accumulate in the respiratory tract, contributing to the development of lung cancer.

Understanding developmental stage will be helpful for nurses to interact with and involve children and adolescents in games. Games along with interactive media could be the alternative method of health promotion targeting school aged children and adolescents.

In the light of the above considerations, we proposed a game called GENTURE (Oxygen Adventure Game) as a method of health promotion for smoking reduction and
cessation, aiming at preventing the risks of lung cancer amongst children and adolescents.

**GENTURE As an Education Platform**

GENTURE, or Oxygen Adventure Game, is a mobile application which can be downloaded at Playstore. This game application help the user experience a journey as oxygen that moves through the bronchii and goes down to the alveoli. GENTURE itself is described as a bubble that has 3 lives. It may lose its life when it touches the plaque or carcinogenic cells. When the lives are all gone, the game is then over. The game will depict the dangers of smoking by presenting the parameter of toxic substances that blocks the journey of the oxygen at each level. It will also have a time parameter that will limit the journey.

GENTURE comprises 3 main levels; easy, advanced, and difficult levels. Each level is then divided again into 5 sublevels. The level and rewards increase as the difficulty increases. During the easy level, lungs get initial exposure to cigarette smoke. The journey then becomes harder with the formation of plaque on bronchial branches. The oxygen needs to choose the safest way to reach alveoli. At the advance level, plaques continue to grow and block almost half of the ways. The lungs are filled with toxic substances damaging cells. The oxygen needs to move faster before the time is up.

The last level is the hardest. During this level, the carcinogenic cells are evolving, and alveoli ducts are damaged. The oxygen needs to be more even careful while passing through the damaging and blocking paths.

**Conclusions**

The number of tobacco use among children and adolescents is growing and continue to evolve. The exposure of toxic substances from smoking at early age will lead to the onset of lung cancer. Thus, it is important to design the effective health promotion for smoking reduction and cessation targeting the children and adolescents. GENTURE (Oxygen Adventure Game) is the alternative health promotion using game application to let the user experience the journey of the oxygen.
passing through the damaged lung cells exposed with cigarettes smoke. GENTURE was expected to raise the awareness of children and adolescents about the dangers of smoking to their health. We recommended the development of GENTURE as the interactive media for health promotion aiming at reducing the tobacco use among children and adolescents.

References


