



EFFECTIVENESS OF FEAR AROUSAL MESSAGE IN  
SMOKING CESSATION PROGRAM AMONG  
CARDIOVASCULAR DISEASE PATIENTS

BY

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A thesis submitted in fulfillment of the requirement for  
the degree of Master in Nursing Science

Kulliyyah of Nursing  
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MAY 2018

## ABSTRACT

As literatures show the importance of video integrated Protection Motivation Theory in improving smoking cessation, but there were limited study focusing on the video intervention in cessation program in Malaysia. Thus, this research sought to develop and evaluate the effectiveness of fear arousal message in smoking cessation program among cardiovascular disease patients by using a real-life patient testimonial. A total of 65 adult smokers (31 in the control group and 34 in the intervention group) from a cardiac unit in a non-profit government hospital in Malaysia completed the cessation program. A testimonial video was specially developed by the researcher for this intervention study. Elements of fear arousal message and self-efficacy were integrated into the video. A set of questionnaire consisted of socio-demographic status, smoking history, Patient's stages of behavioural changes based on the Transtheoretical Model Questionnaire, and Patient's Motivation to Quit Smoking Questionnaire were used in the study. The primary measure in the study was the smoking status of the participants at a 3-month follow-up. The intervention group shows a significant improvement of motivation level from only 6.5% of the participants in the group were very strongly motivated at baseline to 54.8% at follow-up, with  $p=0.001$ . Overall, the total numbers of final quit rates in the intervention group were higher, where 41.9% of the participants in the group have quitted smoking at the twelve-week follow-up as compared to only 20.6% quit rate in the control group at the final follow-up. The smokers were tested with the piCo smokerlyzer for their breath carbon monoxide level and quitters were further biochemically verified using cotinine amylase test at the final follow-up. These results demonstrate the effectiveness of the intervention at least in the short-term study. Thus it is hoped that this new smoking cessation program will be a great benefit for future tobacco control program in our country. In addition, this new intervention can be integrated into the government policy and nursing practice to improve the cessation outcome especially for cardiac smokers in Malaysia.

## خلاصة البحث

تظهر الأدبيات أهمية نظرية الحماية المحفزة المدعومة بالفيديوهات في تحسين الإقلاع عن التدخين، ولكن الدراسات المتعلقة بها في ماليزيا لا زالت محدودة. ولذلك سعى هذا البحث إلى تطوير وتقييم فعالية الرسائل المثيرة للخوف في برامج الإقلاع عن التدخين بين مرضى أمراض القلب والأوعية الدموية بدمج الشهادات الشخصية للمرضى. أكمل 65 مدخنا بالغاً (31 في المجموعة الضابطة و 34 في مجموعة التدخل) برنامج الإقلاع عن التدخين من وحدة أمراض القلب في مستشفى حكومي غير ربحي في ماليزيا. قام الباحث بأعداد فيديو لشهادات شخصية خاص لهذه الدراسة التدخلية. تم دمج عناصر مثيرة للخوف وعناصر لتقوية فعالية الذات في رسائل الفيديو. استعملت في الدراسة مجموعة من الاستبيانات تضمنت الحالة الاجتماعية الديموغرافية، وتاريخ التدخين، ومراحل التغيير السلوكي للمريض المعتمد على نموذج استبيان العبر-نظري، واستبيان محفز الإقلاع عن التدخين. كان المعيار الأساسي في الدراسة هو حالة التدخين للمشاركين في متابعات مدتها 3 أشهر. أظهرت مجموعة التدخل تحسناً ملحوظاً في مستوى التحفيز حيث أظهر 6.5% فقط من المشاركين تحفيزاً قوياً من نقطة الأساس إلى 54.8% في وقت المتابعة، على . كان العدد الإجمالي بشكل عام للمعدلات النهائية للإقلاع عن التدخين أعلى في مجموعة  $p=0.001$  التدخل، حيث أفلح 41.9% من المشاركين في المجموعة عن التدخين خلال المتابعات التي دامت لمدة اثني عشر أسبوعاً من المتابعة مقابل 20.6% فقط من نسبة الإقلاع عن التدخين في المجموعة الضابطة في للكشف عن مستوى أحادي أكسيد الكربون في  $ppCo$  المتابعة النهائية. تم فحص المدخنين بجهاز أنفاسهم بالنفخ، أما المقلعين عن التدخين فقد تم فحصهم بيوكيميائياً باختبار الكوتينين في اللعاب في المتابعة النهائية. أثبتت هذه النتائج فعالية التدخل في المدى القصير على الأقل. وبالتالي فإنه من المأمول أن يكون لهذا البرنامج الجديد للإقلاع عن التدخين فائدة كبيرة لبرامج مكافحة التدخين في البلاد مستقبلاً. وبالإضافة إلى ذلك فإنه بالإمكان دمج هذا التدخل الجديد في سياسة الحكومة وممارسات التمريض لتحسين نتائج الإقلاع عن التدخين وخاصة للمدخنين المصابين بأمراض القلب في ماليزيا.

## APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master in Nursing Science

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## DECLARATION

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## ACKNOWLEDGEMENTS

In the name of Allah, whose Grace and Mercies have been with me and provide me the opportunity and strength to complete this thesis. His Mercies and Blessing on me have made it possible for me to withstand it all.

I would like to express my gratitude and appreciation to my thesis supervisor Asst. Prof. Dr. Mohd Said B. Nurumal and both of my co-supervisors; Assoc. Prof Dr. Mohamad Haniki B. Nik Mohamed, and Asst. Prof. Dr. Norny Syafinaz Bt. Ab. Rahman, whose unwavering support, motivation and academic guidance have facilitated the successful completion of my thesis.

I am also grateful to the Ministry of Higher Education Malaysia and the International Islamic University Malaysia for granting me the scholarship. Thank you to the Kulliyyah of Nursing for providing constant support throughout the study period. I would also like to express my sincere thanks to the staffs from Cardiac Unit of Hospital Tengku Ampuan Afzan for their cooperation during my data collection process. I could not have completed this work without your help.

A thank you to all of the cardiac participants, who were very cooperative in spending their precious time and providing valuable input that was essential to this thesis.

I would also like to express my deepest gratitude to my family; my mother, Puan Zaitun Binti Abdul, my father, Azmi Bin Osman, my children; Puteri Airis Husna, Puteri Aisya Hana, Muhammad Zaim Al Hassan, and my siblings; Along, Abang, Alin, Alip. I am very thankful to all of you for the prayers, understanding and encouragement during my struggles in completing this thesis. I am very lucky to have all of you in my life.

Finally, a special note of appreciation to my caring, loving and supportive friends, “Sahabat Jannah”; Aja, Akma, Atim, Aini, Ain, Rif, Kak Mid, and Kak Siti. I love you all very much. Special thanks to Br. Syed Mohd Syahmi for his contribution in completing this thesis.

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## **LIST OF ABBREVIATIONS**

FAMOS Program	Fear Arousal Message in Smoking Cessation Program
CVD	Cardiovascular Disease
WHO	World Health Organization
NHMS	National Health and Morbidity Survey
PMT	Protection Motivation Theory
NGOs	Non-governmental Organizations
NRT	Nicotine Replacement Therapy

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

This chapter sets out the background of problems related to the current smoking issues and cardiovascular diseases in Malaysia. Fear appealing have been discussed as one of the techniques used to aid in smoking cessation. The current background situation in Malaysia presented in this chapter directed the development of the research questions, which then further lead to the initiation of this study.

### **1.2 BACKGROUND OF THE STUDY**

One person dies every six seconds from a tobacco related disease (Word Health Organization, 2015). In Malaysia, smoking kills 20,000 Malaysians yearly and attributes to 35% of inpatient hospital deaths in the country (Ministry of Health Malaysia, 2015). The effects of smoking are severe not just among daily-basis smokers. Occasional smokers and second hand smokers are also exposed to the same chemicals and exposed to the same negative smoking related health effects (The Surgeons General Report, 2007). Increase in smoking cessation can significantly improve one's life expectancy by lowering risk of cardiac diseases, lung diseases, cancer, and other smoking related diseases. Although the benefits of cessation are most prominent among the adolescents, cessation at any age can immediately improve one's health condition (The Surgeons General Report, 2007).

Smoking is said to be a strong and consistent risk factor contributing to cardiovascular disease (CVD). It is well known that CVD related death is not only the primary mortality cause worldwide, but also continues to increase in the low and middle income countries like Malaysia. CVD contributes to 36% of total death in Malaysia in the previous year (WHO, 2014). Smoking takes up 16.49% of the National Health Expenditure in Malaysia (Syed Muhamed Al-Junid, 2007). According to Institute for Public Health (IPH) (2015) in Report of the National Health and Morbidity Survey, the projected cost of treatment for tobacco related diseases especially heart diseases will heavily affect Malaysia's economic status in the near future. Therefore, it is very crucial to manage the issues related to tobacco use to prevent such complications.

Although there are a number of studies done on smoking cessation among smokers with CVD, the study topic is still scarce in Malaysian context. Patients diagnosed with smoking related diseases such as CVD require a lot of attention in regards of smoking cessation counselling, as they will not get the full benefit of their treatments while continuing their smoking behaviour (Doyle et al., 2014). Thus it is very important to focus on smoking cessation programs among this specific population.

There are various strategies in smoking cessation counselling techniques, including fear arousal message technique that has been applied in smoking cessation programs globally. Fear appeal has been used widely in the Western countries in attempts to change attitude and behaviour on a wide variety of topics, including cigarette smoking. The word fear has vast meaning throughout various field of studies. According to Merriam-Webster: Dictionary and Thesaurus, "fear" is an unpleasant, often strong emotion caused by anticipation or awareness of danger and accompanied by increased autonomic activity (Merriam Webster Medical Dictionary Incorporated, 2015). Fear can also be understood when an individual avoids doing something because

one is afraid of the consequences, and in this study context, avoiding smoking to prevent worsening of health conditions (Oxford University Press, 2015).

Fear arousal message or fear appealing is one of the components from Protection Motivation Theory (PMT) developed by Rogers (1975). The theory was then revised to relate threat appraisal and the coping appraisal (Maddux & Rogers, 1983). Fear is a strong emotion that is useful in persuading people to change, but fear alone might not be enough for the attitude change, without the coping appraisal. Further explanation regarding PMT as the theoretical framework will be discussed in the literature review section.

Visual information is fundamental for communication especially in the developing world of information and technology. Lots of information can be conveyed in the form of video recording. Video is a very useful tool in influencing human perception (Pasquali, 2007). There are a number of past studies that used videos as a tool for communicating and changing human perception and behaviour (Farrelly et al., 2012; Gallopel-Morvan et al., 2011; Halkjelsvik et al., 2013).

Most anti-smoking advertisements currently are using “visceral negative” or “personal testimonial” integrated characteristics as the key elements in order to change the smokers’ behaviour. “Visceral negative” in the smoking advertisement context refers to the messages that may elicit repulse reaction or may also make the audience move to tears after viewing such messages. Meanwhile, “personal testimonial” refers to advertisements that portray real life experience of a patient with tobacco related diseases. These kind of messages have shown to give a strong impact in changing smokers behaviour (Davis et al., 2011; Durkin, Biener, & Wakefield, 2009; Hammond, 2011; Wakefield et al., 2013).



### **1.3 PROBLEM STATEMENT**

In Malaysia, fear arousal message has been applied in tobacco control programs since few years back with the application of cigarette pack warnings, television advertisements, and posters that show negative effects of smoking towards active smokers as well as passive smokers. Despite the efforts to stop people from smoking, the number of smoking related diseases in Malaysia continues to rise (Institute for Public Health, 2015) and this might be due to the lack of coping appraisal in the fear appealing programs as proposed by PMT. On top of that, although there are fear appeals everywhere, especially in cigarette pack warnings, posters, and television ads, but there are rarely in the form of real patients' personal testimonial that broadcasted locally. Therefore, there is a need to tailor a video testimonial to illicit fear among the CVD smokers to promote smoking cessation in our country.

While there are few studies using video integrated PMT in dealing with various kind of disease managements in the other countries, there has been no similar studies done in Malaysia especially in smoking cessation program specific for CVD patients. Thus it is important to investigate the effectiveness of this technique that may have the potential to be applied as a module intervention program in local Malaysian setting, where the culture is different from the Western countries because it is dominated by the Malay Muslims with other major races, Chinese and Indians.

To date, little attention has been given to the effects of fear perception and self-efficacy on quit-smoking motivation level and stages of behavioural change. In addition, it is not known whether the changes in motivation level and stages of behavioural change actually improve cessation outcome, especially among Malaysian smokers. Therefore, our study aimed to evaluate the effectiveness of fear arousal message on quit smoking motivation level and stages of behavioural change, and finally smoking cessation outcome at a three months follow up among CVD patients in Malaysia.

Smoking-related CVDs contribute to a huge sum of economical and physiological burden to our country. This issue has to be tackled wisely to bring down the increasing number of the incidence. Effective measures have to be developed to ease our national burden. Although many efforts have been done by the government and the nongovernment organizations (NGOs) such as posters and pictorial warnings on the tobacco packs, they seemed to have no significant impacts on smokers' attitude. Hence the development of a new fear arousal message video was hoped to be able to convey the warning messages successfully, thus giving a significant impact on smokers' attitude to quit smoking, and in turn leads to a positive development of smoking cessation plans in our country.

## **1.4 RESEARCH OBJECTIVES**

### **1.4.1 General Objective**

The general objective of this study is to develop, implement, and evaluate the effectiveness of fear arousal message video based on the changes of quit smoking motivation level, stage of behavioural changes, and smoking status among CVD smokers at 4-week and 12-week follow up.

### **1.4.2 Specific Objectives**

The specific objectives for this study are:

1. To develop a video testimonial containing fear arousal message for smoking cessation program among CVD smokers.
2. To evaluate the effectiveness of the video containing fear arousal message in smoking cessation (FAMOS) program on participants' level of quit smoking motivation, stages of behavioural change and smoking status at 4-week and 12-week follow-up.

## **1.5 RESEARCH QUESTIONS**

The research questions of the study include the following:

1. Is the video testimonial containing fear arousal message valid for smoking cessation program among CVD smokers?
2. Does the intervention of video containing fear arousal message effectively improve a CVD smoker's level of quit smoking motivation, stages of behavioural change, and smoking status from the intervention and the control group at 4-week and 12-week follow-up?

## **1.6 HYPOTHESES**

HA1 The intervention group will have significant improvement in their quit smoking motivation level and stages of behavioural change as compared to the control group.

HA2 The intervention group will have significant improvement in their smoking status at the final appointment as compared to the control group.

## **1.7 OPERATIONAL DEFINITION**

*Cardiovascular Diseases:* CVDs are a group of disorders of the heart and the heart vessels including coronary heart disease (CHD), ischemic heart disease (IHD), cerebrovascular disease, peripheral arterial disease, rheumatic heart disease, congenital heart disease, and stroke (WHO, 2015). CVD patients for the study will be including patients with stable IHD, CHD and Coronary Artery Disease (CAD) regardless of having undergone bypass surgery or not.

*Success in smoking cessation:* The endpoint of the study was short term success in smoking cessation (no versus yes). Four-week quit smoking rates are the measurement of stop smoking success as set out in Operating Framework for the National Health Service in England (Department of Health/NHS, 2012). A participant is considered to have successfully quit smoking if CO concentration at the last observation was  $\leq 6$  parts per million (ppm)(Middleton & Morice, 2000). A cotinine amylase test (NicAlert strip test) will be done for further verification of the result. A cut off value of 1 point which is equivalent to 10-25 ng/mL of cotinine concentration was used to ascertain smoking status (Kim, 2016).

*Fear Arousal Message:* Fear arousal message is also known as fear or threat appeal or scare tactic. The message can be in the form of pictorials, statistics, wordings, or videos to warn and persuade people into desired behaviours by eliciting their fear. In this study, participants will be shown an approximately five-minute personal testimonial video (developed by the researcher) by former smokers on what smoking did to their own lives.

## **1.8 SIGNIFICANCE OF THE STUDY**

This study will help to find out the effectiveness of fear arousal message in smoking cessation (FAMOS) program for further development of tobacco control programs in our country. On top of that, this study is also in line with Malaysian Government Health Policies which are to Prevent and Reduce Disease Burden and Enhance Healthcare Delivery System by using conventional method of tobacco control and reducing medical expenses by preventing the worsening of health conditions. The findings of the research will enable us to explore the compatibility of the applied cessation techniques in regards to the local culture and wisdom of our community. This new knowledge gained will be important in the development of new, effective smoking cessation module and thus aid in the development of our health sector.

The development of this new program is anticipated to enormously aid in the delivery of quit smoking counselling that can be delivered by trained nurses not only in CVD unit but also in other specialized unit such as respiratory and cancer units. This will lead the health care provider towards a new greater direction.

## **1.9 THE STRUCTURE OF THE THESIS**

This thesis was divided into six chapters. A brief introduction to the chapters are as follow:

### **Chapter 1**

This chapter described the background of the study and the problem statement of the study. Apart from that, the study objectives, research questions, and the significance of the study were also presented in this chapter.

### **Chapter 2**

This chapter presents the literature review process of the study. The results of the literature review were discussed in this chapter.

### **Chapter 3**

The methods used to conduct the study were discussed in this chapter. The study process including research design, development of the video testimonial, the intervention study, the study setting, sampling plan, sample size calculation, instrumentation, data collection procedure, and statistical analyses used were thoroughly explained in this chapter. Apart from that, this chapter also discussed in detail regarding the ethical consideration, privacy and confidentiality, and conflict of interest that may arise from the study.

### **Chapter 4**

This chapter presented the results of the study according to the research questions. The results were presented in paragraph and also summarized in the table.

## **Chapter 5**

The results of the study were discussed in this chapter. The discussions were done in relation to the research questions and research hypotheses. Apart from that, the results of the need assessment done for the development of the testimonial video also were discussed in this chapter.

## **Chapter 6**

This chapter pointed out the strengths and limitations of the study, recommendations for future studies, and concluded the whole study.

### **1.10 CONCLUSION**

This chapter has presented and discussed the background of the study. As smoking population continues to grow larger every day, it will affect not only our country's health status but also economic status. We are in need of an effective cessation program that will reduce the health and economic burden locally and globally. Thus it is crucial to find an effective cessation method especially to a certain target group population namely the CVD population as the disease is one of the increasing smoking related disease with limited attention given. The current study is essential to develop and evaluate a new cessation program material containing fear arousal message to be implemented for this target population.