



UNIVERSITI PUTRA MALAYSIA

***EFFECT OF PEER MOTIVATION ON SMOKING BEHAVIOUR OF MALE
TRAINEES IN MALAYSIAN ALLIED HEALTH INSTITUTES***

MARZANI BIN MOHAMMAD YUSOP

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UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

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By

MARZANI BIN MOHAMMAD YUSOP

**Thesis Submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of
Philosophy**

October 2021

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

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October 2021

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Persistent motivation is essential for smokers to quit smoking. Therefore, peer motivation approach was adopted via a module in a smoking cessation program comprising 23 pages of guidance with regards to the transtheoretical model to be used in motivation sessions.

This study involved 324 male smoker trainees at selected Ministry of Health Malaysia training institution. The peer motivation module was evaluated using a single-blind cluster randomisation parallel controlled trial design with three times evaluations; at baseline, three and six months after the intervention. The questionnaire used in this study was adopted from URICA DELTA 2004. Meanwhile, the Global Adult Tobacco Survey 2011 (GATS) was utilised to further examine the intervention in terms of knowledge, attitude, motivation, carbon monoxide and the number of cigarettes in subjects after three and six months.

Results demonstrated that the intervention and control groups have significant differences in carbon monoxide (CO) levels at three and six months of evaluation data ($p = 0.001$). The mean CO levels in the intervention group showed a significant decrease at the three-month evaluation (9.14ppm, $p < 0.001$) and six-month evaluation (6.74ppm, $p < 0.001$) when compared to the baseline (10.44 ppm). Overall data on knowledge showed that the mean value for the intervention group at baseline (10.87) had significantly increased to 12.38 ($p < 0.001$) at three-month and 13.88 ($p < 0.001$) at six-month evaluation. Similarly, the mean attitude score was observed to increase in the intervention group to 10.19 ($p < 0.001$) at three months and 10.59 ($p < 0.001$) at six months. Data on motivation had reduced from 1.43 at baseline to 1.15 ($p > 0.05$) at three months and 1.08 ($p > 0.05$) at six months. Meanwhile, data on the number of cigarettes showed a 9.93 mean value in the intervention group at baseline and decreased to 6.19 ($p < 0.001$) at three months and 3.48 ($p < 0.001$) at six months.

The peer support approach effectively reduced the CO level among male smoker trainees in Allied Health Institutes, Malaysia, showing its great potential to be implemented in all training institutes. This study found that good knowledge, favourable attitudes and good motivation were key drivers of a smoker's success in quitting smoking.

Keywords: smoking cessation, peer motivation, male smokers, allied health training institutes, carbon monoxide (CO), knowledge, attitudes, motivation, number of cigarettes.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KESAN MOTIVASI RAKAN SEBAYA KE ATAS TINGKAHLAKU MEROKOK
DALAM KALANGAN PELATIH LELAKI DI INSTITUSI KESIHATAN
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Motivasi berterusan penting untuk perokok berhenti merokok. Salah satu kaedah yang paling banyak digunakan di luar negara adalah dengan menggunakan pendekatan sokongan dari rakan sebaya. Pendekatan sokongan rakan sebaya ini telah diadaptasi dalam program berhenti merokok di dalam kajian ini dan responden dipilih di kalangan pelatih lelaki yang merokok yang sedang menjalani latihan di Institusi Latihan Kementerian Kesihatan Malaysia. Modul intervensi rakan sebaya mengandungi model transteorotikal sebanyak 23 muka surat untuk digunakan sebagai rujukan dalam sesi motivasi.

Sebanyak 324 perokok lelaki yang sedang menjalani latihan telah dipilih setelah memenuhi inklusi kriteria. Modul rakan sebaya dibentuk dan diuji untuk melihat keberkesanan modul ini. Kajian ini menggunakan reka bentuk single blinded di mana pelaksanaan intervensi adalah serentak di semua lokasi kajian dan setiap penilaian di lakukan sebanyak tiga kali iaitu pada peringkat awal, tiga dan enam bulan selepas intervensi. Soal selidik yang digunakan untuk melihat tahap kesediaan perubahan tingkah laku telah diadaptasi dari soal selidik URICA DELTA 2004. Sementara itu borang soal selidik dari Global Adult Tobacco Survey 2011 (GATS) telah digunakan bagi menilai tahap pengetahuan, sikap, tahap motivasi, tahap karbon monoksida dan bilangan rokok yang dihisap dalam sehari yang juga di nilai pada peringkat awal, tiga dan enam bulan. Tahap karbon monoksida pula diukur dengan menggunakan PiCO Smokerlyzer, Bedfont Scientific Ltd, England. Data dianalisis dengan menggunakan ujian pengukuran berulang dua hala ANOVA dan penganggaran persamaan terliak.

Dapatan kajian ini menunjukkan bahawa kumpulan intervensi dan kumpulan kawalan mempunyai perbezaan yang signifikan dalam tahap karbon monoksida (CO) pada data penilaian tiga dan enam bulan ($p = 0.001$). Tahap min CO

menurun di dalam kumpulan intervensi pada penilaian garis dasar adalah 10.44ppm. Secara keseluruhan data pengetahuan menunjukkan nilai min dalam kumpulan intervensi pada nilai garis dasar (10.87) menunjukkan peningkatan kepada 12.38 ($p < 0.001$) pada penilaian pada bulan ke tiga dan 13.88 ($p < 0.001$) pada bula ke enam penilaian. Begitu juga nilai mean skor sikap meningkat di dalam kumpulan intervensi iaitu 10.19 ($p < 0.001$) pada bulan ketiga dan 10.59 ($p < 0.001$) pada bulan ke enam. Data motivasi menunjukkan penurunan dari 1.43 pada nilai dasar ke 1.15 ($p > 0.05$) pada bulan ketiga dan 1.08 ($p > 0.05$) pada bulan ke enam. Data bagi bilangan rokok menunjukkan nilai min 9.93 di dalam kumpulan intervensi pada nilai dasar dan menunjukkan penurunan 6.19 ($p < 0.001$) pada bulan ke tiga dan 3.48 ($p < 0.001$) pada bulan ke enam.

Pendekatan sokongan dari rakan sebaya yang berterusan lebih efektif dalam mengurangkan tahap CO di kalangan perokok lelaki pelatih di Kementerian Kesihatan Malaysia dan berpotensi untuk dilaksanakan di semua institusi latihan Kementerian Kesihatan Malaysia. Kajian ini mendapati dengan peningkatan tahap pengetahuan, perubahan sikap yang lebih baik dan mengekalkan tahap motivasi merupakan faktor utama kepada perokok untuk berhenti merokok.

Kata kunci: program berhenti merokok, motivasi rakan sebaya, perokok lelaki, institusi latihan kesihatan, karbon monoksida (CO), pengetahuan, sikap, motivasi, bilangan rokok.

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LIST OF ABBREVIATIONS

CAC	Coronary Artery Calcification
CDC	Centers of Disease Control and Prevention CI Confidence Interval
CO	Carbon Monoxide
COPD	Chronic Obstruction Pulmonary Disease CVD Cardiovascular Disease
DALYs	Disability Adjusted Life Years ETS Environmental Tobacco Smoke GATS Global Adult Tobacco Survey GEE Generalised EstimationEquation
GLM	Generalised Linear Model
HBM	Health Belief Model.
IHD	Ischemic Heart Disease
ILKKMSAS	Institut Latihan Kementerian Kesihatan MalaysiaIPH Institut of Public Health
MOH	Ministry of Health
NHMS	National Health Morbidity Survey
NRT	NicotineReplacement Therapy
NTCP	National Tobacco Control Programme
OD	Odds Ratio
PIS	Participant Information Sheet
PPM	Parts Per Million
SD	Standard Deviation
TPB	Theory behavioural theory
TTM	Transtheoretical Model
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Study Background

Smoking among Malaysians is not a new phenomenon. It has been a habit among all folks of life for centuries. However, the government began to conduct smoking-control activities since the 1970s. The National Health and Morbidity Survey (NHMS) in 2015 showed that the number of smokers in Malaysia had increased from 4.75 million in 2011 to almost 5 million in 2015, while the price of cigarettes had increased by 30%. The similar survey reported that in 2015, 22.8% (4,991,458) Malaysians were active smokers, in which 4.8 million were men and the remaining 143,566 were women (Institute for Public Health (IPH), 2015).

The increasing trend of smoking among Malaysians has significantly increased non-communicable diseases as compared to the previous year in 2010. Most smokers are unaware or ignore the illnesses that they have. Tobacco is one of the factors that cause premature death and a number of diseases which involved six billion people worldwide. About 600,000 of these deaths involved non-smokers who were exposed to cigarette smoke, namely second-hand cigarette smoke. About 80% of one billion smokers were from low and middle-income countries.

Since 2007 there has been massive development in smoking prevention because the government and private sectors have introduced and established 194 quit smoking clinics which served smokers who wanted to get professional help to quit smoking. There are many governments operated quit smoking clinics and they are directly regulated by the Ministry of Health (MOH) Malaysia. The clinic provides counselling and pharmacotherapy treatments based on the Clinical Practice Guidelines (2003). The quit smoking clinic is implemented throughout Malaysia and its achievement varies based on several factors, such as drug availability (i.e. nicotine replacement therapy), as well as motivation of staff who handle the quit smoking clinic (Hum et al., 2016).

In the Eleventh Malaysia Plan tabled in May 2015, the government stated to continue improving the quality of people's healthcare in Malaysia by targeting the construction of more health facilities such as hospitals and community health clinics. The wellness program should also continue to improve the quality of healthcare services, including smoking cessation clinics. Therefore, this study is in line with the Eleventh Malaysia Plan. This also aligns with the Ministry of Health Malaysia's vision and mission to ensure that the people live in a healthier environment and protect people from exposure to cigarette smoke. This agrees with the Non-Smoking Area Act under regulation 11(1) of the Tobacco Products Control Regulations 2004.

The National Health and Morbidity Survey in 2015 showed that 52.3% of smoking adults had tried to quit smoking. One out of 10 smokers was treated in a quit smoking clinic, among which three-quarters of these smokers are still not ready to quit (Humet Al., 2016). MOH aims to reduce the number of smokers to 15% by 2025 and less than 5% by 2045, which is in line with the target of making the country smoke-free. In 2016 MOH provided 535 quit smoking clinics at government clinics, hospitals (45) and various agencies (145), including Universiti Sains Malaysia, (Institute for Public Health (IPH), 2015).

Most smokers have the desire to stop smoking but it is difficult for them if they did not have support and were unaware of relevant programme, such as the quit smoking clinic (CDC, 2014). The intervention approach used in smoking cessation clinics is by using counselling methods as well as nicotine replacement therapy (NRT) to reduce nicotine addiction among smokers (Kapella-Mshigeni & Campbell-Heider, 2015).

A convention on tobacco control framework, which was launched by the World Health Organisation (WHO), has been working to combat and control the pandemic of smoking around the globe by implementing a programme that is subjected to MPOWER (O'Leary et al., 2020). This strategy monitors tobacco use and prevention policies which protect people from tobacco smoke, offers help to quit tobacco, warns about the danger of tobacco, enforces bans on tobacco advertising promotion and sponsorship and raises taxes on tobacco which is the main activity undertaken to achieve the objective of tobacco control (Institute for Public Health (IPH), 2015).

Peer support is widely used in mental health services. It is also one of the methods and strategies used in many treatments for chronic diseases, such as diabetes, addiction and psychological treatments that provide a more positive behavioral change (Elizabeth et al., 2017). There was a study which involved peer support to increase confidence in psychological aspects of controlling blood sugar content (Deng et al., 2016), blood pressure (Su et al., 2014), cholesterol, body mass index (BMI) (South et al., 2014) and depression (Behler et al., 2017).

The advantages of peer support are they act as role models to their friends and help them in the recovery process. Ford et al. (2013) implemented various promotions of peer support through social networks as it was more indicative of changing behaviour, such as smokers to quit smoking. Gierisch et al. (2012) found that a peer support programme was an essential determinant of smoking cessation in populations with high smoking prevalence.

Peer support programme come in many forms which include virtual groups, peer-run or operated services, peer advocates, peer specialists, and peer counsellor. Traditionally peer support programme were used to treat mental illness but academicians and practitioners have raised the value of peer support to treat chronic conditions, substance addiction and other health promotion behaviors.

Peer support aims to increase skills, self-efficacy and provides support for maintaining their abstinence as they have more credibility than health care staff since they have similar life experience (Tracy et al., 2016).

The role of peer support in smoking cessation is to motivate and encourage their smoking partners. Peer supports who are former smokers provide an advantage as they have more credibility as compared to the healthcare staff (Gussy & Gartner, 2013). In this study, peer approaches were used as an intervention in guiding their friends who smoke to stop smoking. Peer motivation intention has received limited attention in smoking cessation interventions. It serves as a primary motive to investigate the peer motivation intervention in smoking cessation among Malaysians.

1.2 Problem Statement

Smoking has proven to cause a major burden in a country's health system. In Malaysia a total of three billion is allocated for the treatment of major illnesses due to smoking, such as chronic obstructive pulmonary disease (COPD), ischemic heart disease (IHD) and lung cancer (Institute for Public Health (IPH), 2015). As a result of these diseases, as many as 5.6 million years of life (YLLs) was lost (Prince et al. 2015). In the modern world era, smoking has been identified as a major problem in the public health world by 2020.

If this persists and is not treated properly, the smoking problem might cause a big problem in the healthcare system. Now that our hands are a bit tight with the challenges of the Covid-19 outbreak since 2020, if smoking among health care workers to be reduced for a healthier workforce. To curb this issue, various interventions and methods have been used to help smokers in quitting. However, existing interventions and methods are still not effective to help smokers quit (Joshi et al., 2010). Hence, this study was conducted to revisit and improve interventions and methods by introducing a peer motivation module to ensure that smokers can successfully quit or at least reduce their smoking habits.

1.3 Significance of the study

This study introduces peer motivation intervention to reduce smoking and carbon monoxide levels among male smokers in MOH health trainees. This study is more significant than other studies in view that peer motivation intention has received limited attention in smoking cessation intervention programmes. While existing bodies such as relevant institutions and policy-makers are well versed in establishing quit smoking clinics and counselling sessions, peer motivation intervention programme could bring a significant impact as it can help to improve knowledge, attitudes and motivation score among respondents.

In Malaysia a programme known as the National Tobacco Control Programme (NTCP) is designed to reduce the number of smokers, smokers among adolescents, increase smokers who have successfully quit smoking, reduce smoking in public and at work. The programme is also designed to reduce illness as a result of exposure to cigarette smoke to ensure a healthier and more secure livelihood.

The quit smoking clinic is aimed to provide knowledge and skills for smokers to quit smoking motivate and do rehab programme. However, quit smoking clinics do not have programme such as the use of peers as motivators and to guide them to quit smoking (Abidin et al., 2016). Another study which was conducted at a health clinic in Sepang found that men aged 20-29 years old were the highest group and failed to stop smoking due to lack of motivation and no support from friends and family (Humet al., 2016). Arising from these studies, it is time to venture into peer motivation intervention as peers usually shared common interest within themselves as compared to family. Family are relatively close, but they tend to have barrier among themselves especially due to rivalry siblings. Therefore, peers have high chance of influence to oneself as compared to family in general and this has become a steer to this study eventually.

1.4 Research Question

What are the effects of peer motivation intervention on smoking behaviour to reduce carbon monoxide level among male smokers in Allied Health Trainee at the Ministry of Health Malaysia Training Institutes?

1.5 General Objective

To develop and implement the peer motivation intervention module, and to assess the effect of this module on the smoking behaviour to reduce carbon monoxide level among male smokers, trainees in allied health institutes, Malaysia.

1.6 Specific Objectives

- i. To validate a peer motivation intervention module for the purpose of reducing carbon monoxide (CO) level among male trainee who are smokers.
- ii. To determine and compare the socio-demographic characteristics of control and intervention group at baseline.

- iii. To compare the carbon monoxide level, knowledge, attitudes, motivation and number of cigarette within the control and intervention group from baseline to three and six months.
- iv. To compare the carbon monoxide level, knowledge, attitudes, motivation and number of cigarette between the control and intervention group from baseline to three and six months.
- v. To compare the carbon monoxide (CO) level as main outcome and knowledge, attitudes, motivation and number of cigarette between the control and intervention group at baseline, three and six months after controlling for other covariates.

1.7 Research Hypothesis

This research holds onto the hypothesis that the peer motivation module can successfully reduce carbon monoxide levels through smoking cessation in the targeted group of respondents. As such, three hypotheses were developed as follows:

Hypothesis 1

There is a significant difference in carbon monoxide level, knowledge, attitudes, motivation and number of cigarettes, within the control and intervention group from baseline, to three months and six months after intervention.

Hypothesis 2

There is a significant difference in carbon monoxide level, knowledge, attitudes, motivation and number of cigarettes, between the control and intervention group from baseline, to three months and six months after intervention.

Hypothesis 3

There is a significant difference in carbon monoxide (CO) level between the control and intervention group from baseline, to three months and six months after intervention after controlling for other covariates family influence, friends influence and environmental influences.

Definition of Terms Peer motivation

1.8 Definition of Terms

1.8.1 Peer motivation

Hamid (2016) defined peers as “groups of children or teenagers who are from the same age group”. This peer group plays a significant role in social activity with significant implications on individual behaviour. The peer serves as an informal agency which provides an experience which cannot be obtained from families and schools. Peers play an important role in motivating their friends who smoke to stop smoking.

1.8.2 Carbon Monoxide (CO) Level

In performing carbon monoxide measurements among adult smokers, the exhaled CO is measured by using a carbon monoxide analyser which is very helpful in ascertaining the amount of carbon monoxide levels in the smokers' lungs. It becomes an indicator to see nicotine dependence (Hum et al., 2016).

1.8.3 Smoking Cessation Programme

Smoking cessation is an intervention programme which is used to help smokers to reduce smoking addiction and stop smoking. The intervention approach which will be implemented in this programme is to use peers as friends who will motivate their friends who smoke to stop smoking (Williams, 2011).

1.9 Allied Health Trainee

The health trainees refer to individuals who were offered a three-year programme under the MOH training. These individuals were selected through the SPA8 application system (CLJ, 2015). All male trainees who smoke and are interested in quitting smoking will only be selected to participate in this study (Clauses, 2015). Therefore, respondents who are undergoing allied health science training, which consist of medical assistant, nursing, pharmacy, health inspector, radiographer, physiotherapist and medical lab technologies were chosen.

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