A QUASI EXPERIMENTAL STUDY ON PEER-BASED TOBACCO INTERVENTION TO PREVENT SMOKING INITIATION AMONG NON-SMOKING SECONDARY-SCHOOL GOING MALE ADOLESCENTS.

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ABSTRACT

Background: A multitude of studies revealed that smoking is a behaviour learned and initiated during adolescence. Therefore, reducing the smoking initiation among adolescents has been recognised as one of the long term measures to reduce smoking-related health problems. The aim of this study is to investigate the effectiveness of a peer-based intervention in preventing smoking initiation among school-going male adolescents.

Materials and Methods: This study use a quasi-experimental study design and involve school-going adolescents from selected secondary schools in the state of Negeri Sembilan. A total of 760 non-smoking adolescents per group will be recruited into the study based on a 50% of difference in the rate of smoking initiation between the control and intervention group.The outcome variable iss incidence rate of smoking initiation. Both intervention and control groups will receive health education materials on smoking, but for the intervention group, a peer-based intervention which also involve students who are elected by their peers, is introduced. Descriptive statistics will be used to illustrate the characteristics of respondents, Chi Square analysis will be perform to analyse differences in the incidence of smoking initiation at the end of the study. Statistical inferences were made using two-sided hypotheses and at alpha level of 0.05.

Expected outcome: This study will be able to determine the effectiveness of the peer-based intervention, which can then be expanded and integrated with others interventional programmes in reducing the incidence rate of smoking initiation school-going adolescents in Malaysia.

Keywords: peer-based intervention, non-smoking adolescents, quasi-experimental. smoking initiation.

1.0 Introduction

In the past four decades, smoking-related diseases have been identified as the major cause of death with 20,000 deaths reported each year (IPH, 2015)-. In the context of burden of disease, these diseases have contributed to approximately one-third of Disability-Adjusted Life Year (DALY) and one-fifth of Years of Life Lost' (YLL) (IPH 2011). The high burden and cost of treatment of diseases related to smoking habits have prompted Malaysian government to halve the rate of smoking prevalence as compared to the current prevalence through the Ministry of Health in order to ensure the diseases associated with smoking habit are no longer a public health problem by the year 2020 (MOH 2003; Al Junid 2007; MOH 2015)

Various programs have been implemented to achieve goal set including healthy lifestyle campaigns(MOH 2003). Since 1990s, the introduction of legislative measures such as banning smoking in public places, prohibition of individual less than 18 years old from purchasing tobacco products and raising the price of cigarettes on a regular basis have been undertaken to reduce the prevalence of smoking among Malaysians (Government of Malaysia 2015). The National Health and Morbidity Survey (NHMS) since 1996-2015 (IPH 1998, IPH 2008, Lim et al. 2018)   as well as the Global Youth Tobacco Surveillance Study in 2003 , and Global School Health Survey 2012 show a slight decrease in prevalence of smoking in Malaysia among the adult population and adolescents (Manimaran 2003, IPH 2012). However, this decline is not remarkable in view of the time and resource invested earlier on.

Countless epidemiological studies indicated that smoking habits are learned and practice is initiated during the adolescence years (Jackson 1998; Lim et al., 2017). Individuals who did not start this practice during their teen years are highly unlikely to initiate this practice during adulthood (Breaslau and Peterson , 1997; Abdolahinia et al., 2012) Cultivating an early start of smoking habit enhances higher possibility of an individual to be exposed to diseases related to smoking habits (Huxley et al., 2012) . Hence, reducing the uptake of smoking habits among teenagers has been identified as one of the key measures to decrease the prevalence of smoking in the long run basis (MOH 2015) Multiple factors have been identified to be associated with smoking initiation among adolescents. One of the most prominent predictor is peer smoking (Kobus 2003; Liu et al., 2017;Kimimura 2018,) . These findings are consistent with the cognitive development of youth, in which the formation of abstract thinking and the search for self-identity lead them to refer to their peer as a reference point. All peer behaviors will be followed due to the similarity that exists between them and their partners , including smoking habits (Santrock 2015; Gardner and Steinberg 2005). Therefore, a robust and aggressive peer-based intervention programme is necessary to reduce the uptake of smoking habits among adolescents.

The Diffusion Theory (Rogers 2003) describes an idea or practice of peer would spread through effortlessly as they are popular or respected among those in the community. Kelly and his colleagues have demonstrated significant decrement of the prevalence of unsafe sex behavior among homosexual men in intervention group after advised by their popular peer groups to practice safe sex compared with the control group (Kelly et al.,1997) . The Cochraine Review of 76 randomised controlled trials studies on smoking habits among teenagers revealed that interventions that emphasize the provision of information is less effective in reducing smoking uptake (Thomas 2002). In contrary, the intervention based on social approach through peer or family is more effective in reducing initiation of smoking among teenagers, particularly with the implementation of the method of peer-based intervention in the informal rather than formal

methods presented by peer or teacher. For instance, the peer-based tobacco intervention programme, the A Stop smoking in school programme (ASSIST) program implemented in 52 secondary schools in Britain has effectively reduced smoking initiation among students in the intervention schools compared with control schools (Campbell et al., 2008).

Schooling is a compulsory activity carried out by the youth in Malaysia since Malaysian education policy requires every citizen to receive education for 11 years. This policy offers the opportunity for the introduction of peer-based tobacco intervention program in school since it can be carried out over a long period of time and the students are also easily reached.

2.0 Objective

2.1 General objective

To evaluate the effectiveness of peer based intervention program in selected secondary schools male adolescent in Negeri Sembilan.

2.2 Specific objectives

1. To determine the incidence of smoking amongst aged 13-14 years at baseline for both intervention and control schools

2. To determine the incidence of smoking amongst secondary school male adolescents aged 13-14 years post-intervention for both intervention and control schools

3.0 Material and Methods

3.1 Design

Quasi experimental study for 2 years

3.2 Sample size calculation

Sample size will be able to detect 50% of different rate of smoking initiation between the control and intervention group, based on the incidence rate of smoking initiation of 7.0% among from one students in Negeri Sembilan state (based on GSHS study 2012), alpha 0.05, power of study at 80%. 633 samples are needed for each group. Based on 20% of non-respond, total sample needed for each group are 760.

The calculation of sample size as below

$$n = \frac{P_1(1-P_1) + P_2(1-P_2)}{(P_1-P_2)^2} \times (1.96 + 0.84)^2$$

Where $P_1 = 0.07$ and $P_2 = 0.035$

$$n = \frac{0.07\,(1-0.07) + 0.035\,(1-0.035)}{(0.07-0.035)^2} \times (2.8)^2$$

$$= \frac{0.0651 + 0.033775}{0.001225} \times 7.84$$

$$= 80.71 \times 7.84$$

$$= 633 \text{ per group}$$

To cater for 20% of non-respond

$$= 633 \times 1.2$$

$$= 760 \text{ per group.}$$

3.3   Selection and randomisation of schools

One hundred seventeen in Negeri Sembilan state will stratified by enrollment of student (namely Grade A, B and C). School will be selected randomly based on Proportionate Probability sampling. Selected school will be approached by study team members via both official letters and telephone for recruitment into the study. Interested schools' top management personnel will then be visited individually by the study team for detailed briefing regarding the study. Consistent commitment from school will be needed throughout the study period.
Committed schools will be given a detailed memorandum of understanding (MOU) to sign before the randomisation of intervention or control arm. The randomisation of schools will be done via the generation of random numbers using epi-info.

3.4   Respondent

Form-One students aged 13 to 14 years in the selected schools with consented by parent/guardian and have no reading disability.

3.4.1: Inclusion Criteria

All Form one students with the consent from their parent

3.4.2: Exclusion Criteria

No consents from the parents/guardian.
Students with reading impairment/dyslexia.

3.5 Data collection

3.5.1 Baseline

The baseline characteristics of students in the selected schools will be obtained via two standardised questionnaires (smoking and peer) and gone through carbon monoxide (CO) analyser testing to minimise reporting bias. The smoking questionnaire is extracted from the European Health Behaviour of School-aged Children Study's questionnaire developed by the World Health Organisation (WHO). The peer questionnaire from the ASSIST programme will be adopted in the present study. Students will be asked to name their peers whom they "respected", "looked up to" and regarded as "good leaders in sports and other group activities". The nominated peers will be invited to attend a recruitment meeting at which they will be trained as peer supporters to diffuse the health promotion message. For comparative purposes, potential peer supporters in the control schools will be identified via the same mean.

3.5.2 Post-intervention

Post-intervention assessment using the same questionnaires will be conducted six months and one year after the implementation of intervention programme.

3.5.3 Data quality and assurance of confidentiality

The data collection process (pre- and post-intervention) will be undertaken by trained data collectors to maximize standardization of data collection procedures and ensure data quality. Besides, in order to maximise participation and accuracy of the data collected, the study team and data collectors will assure the confidentiality of the data collected and anonymity of students, and will not disclose it either to the school or their parents/ guardians.

3.5.4 School and parental consent

Written consent for the school's participation in the study will be given to the selected schools prior to the randomisation of intervention/ control school. Subsequently, before the commencement of baseline data collection, parental consent will be obtained by distributing standardised information letters with reply slips to the parents/ guardians of all Form-One students. Parents/guardians will be given the opportunity to contact the research team at any time regarding the study.

3.6 Intervention Programs

3.6.1 Teacher Workshops

All the teachers from the involved schools will be invited to attend a briefing session in which they can receive current facts about tobacco use, policy and will be requested to support the program and encourage students participating in activities. Tobacco use data for the cohort at their school will be presented. Duration of first workshop will be around 40-45 minutes and a teacher tobacco-use survey will be administered. For the following year, the workshop will be held no more than 10-15 minutes where the participants will be provided a schedule of program activities for the upcoming year. In the second and final year, a two-sided teacher newsletter was distributed including the data for their students, a calendar of events, and other announcements pertinent to their school.

3.6.2   Recruitment of peer supporters

A set of questionnaire will be completed by all students aged 13 – 14 years (Malaysia Form 1) to identify influential peers.

Questions asked will include "Who do you respect in form 1 at your school?", "Who are good leaders in sports or other groups activities at your school?", and "Who do you look up to in Form 1 at your school?"

To achieve a 15% critical mass of the year group participating as peer supporters, 20% of students with the most nominations will be invited to a recruitment meeting. Recruitment meeting will be held with nominees to explain the role of peer supporter, to answer questions, and to obtain their agreement to attend the training course.

Trainers will make it clear that students who smoke could only be peer supporters if they were committed trying to stop smoking.

Parental consent for training course participation will be sought by investigators.

3.6.3   Training of peer supporters

Overall the purpose of the training programme is to enable the peer supporters to engage in informal conversations with their peers about the effects of smoking and the benefits of not smoking.

A 2-day training event will be held out of school, facilitated by a team of external trainers who were experienced in youth works, led by health-promotion specialists.

The training is aimed to:

1) Provide information to young people about long term risks of smoking and the health, environmental, and economic benefits of remaining smoke-free;

2) Develop communication skills, including verbal and non-verbal, listening skills, expression of feelings and ideas, group work, team building, cooperation and negotiation, ways of giving and receiving information, and conflict resolution; and

3) Enhance students' personal development, including their confidence and self-esteem, empathy and sensitivity to others, assertiveness, decision making and prioritising skills, attitudes to risk-taking, and exploration of personal values

Methods used to achieve these aims include participatory learning activities such as role plays, student-led research, small group work and discussion and games.

3.6.4   Intervention group

Ten-week intervention period during which peer supporters will undertake informal conversations about smoking with their peers who are at risk of initiate smoking (which had been identified during the questionnaire , i.e respondents who are susceptible to smoking, having friend who smoked etc) , when travelling to and from school, during breaks, lunchtime, and after school during their free time. A record of these conversations will be logged in a simple pro-forma diary. Four follow-up school visits will be organized by trainers in order to meet with peer supporters to provide support, trouble shooting, and to monitor the peer supporters' diaries.

For school in control group, education material such as pamphlet will distributed to the students.

3.7:   Data analysis plan

Data will be analysis using SPSS Version 20, Descriptive statistic will be used to illustrate the characteristic of respondents, Chi Square analysis will be use to analysis the different of proportion of smoking initiation at the end of the study.

3.8   Acknowledgment of peer supporters' contribution

Certificate of contribution will be presented to all peer supporters and token of appreciation will only be given to those who handed in their dairies.

4.0 Discussion

The high prevalence of smoking which has significantly contributed to morbidity and pre-mature mortality among Malaysian population required proactive interventions   such as reduction of smoking initiation rate among adolescents. Intervention programmes in other countries particularly the peer-based intervention, had demonstrated an important need to empower the non-smokers with the proper skills and knowledge to avoid from initiating smoking.

Therefore, the objective of the present study is to deliver the protocol of a peer-based intervention that was conducted among non-smoking school-going male adolescents in the state of Negeri Sembilan. The effect of this peer-based intervention, will be evaluated by comparing the incidence rate of smoking initiation after a period of two years, in both intervention and control groups. It is expected that this intervention is effective in reducing the incidence of smoking initiation among adolescents. If so, this intervention programmecould be

considered by relevant stakeholders to incorporate as an integral component in an anti-smoking programme.

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Declaration

No conflict of interest is declared

Authors contribution

Author 1: Literature review and written the final version of manuscript.
Author 2: contributed to the idea for the study, and revised the manuscript.
Author 3: Design the study and revised the manuscript.
Author 4: Literature review, and revised the manuscript.
Author 5:   Study design, statistical analysis and revised the manuscript.

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