

# EFFECTS OF A SCHOOL-BASED SUBSTANCE USE PREVENTION PROGRAM ON STUDENTS IN MALAYSIA

HJ Renee Tan <sup>1,2</sup>, Anne Yee <sup>3,6</sup>, Ahmad Hatim Sulaiman <sup>3</sup>, Mas Ayu Said <sup>4,5,6</sup>, Mahmoud Danaee <sup>7</sup>, Ahai Chang Lua <sup>8</sup>

<sup>1</sup> Department of Psychiatry and Mental Health, Hospital Kajang, 4, Jalan Semenyih, Bandar Kajang, 43000, Selangor

<sup>2</sup> Department of Psychiatry, Hospital Melaka, Jalan Mufti Haji Khalil, 75400, Melaka.

<sup>3</sup> Department of Psychological Medicine, Faculty of Medicine, University of Malaya

<sup>4</sup> Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

<sup>5</sup> The Julius Centre, University of Malaya, Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

<sup>6</sup> University of Malaya Center for Addiction Sciences (UMCAS), Faculty of Medicine, University of Malaya, Kuala Lumpur, Selangor

<sup>7</sup> Academic Enhancement and Leadership Development Centre (ADeC). The University of Malaya, Kuala Lumpur, Malaysia

<sup>8</sup> Center for Drug Analysis, Tzu Chi University, Hualien, Taiwan

## Correspondance:

Renee Tan Huey Jing

Psychiatrist

Department Of Psychiatry And Mental Health

Hospital Kajang

4, Jalan Semenyih, Bandar Kajang, 43000, Selangor

Email: hueyjingtang@gmail.com

## Abstract

**Background:** The rise in substance-use-related problems among Malaysian adolescents called for a study to assess the efficacy of an anti-drug educational program to improve the -knowledge, attitude-and perception (KAP) of Malaysian students regarding substance use.

**Methods:** This study involved 573 students from four Malaysian Chinese schools in Malacca. Each student filled out a Likert-scale mandarin translated questionnaire (KAP-C) on substance use ( Pre-test). Following an educational program on substance use, the KAP-C questionnaire was given again to the students, immediately following the program (PT 1), and after a month (PT 2) and two months (PT3) of the programme.

**Results:** The students showed improvement in knowledge of the types of substance use in PT 1 ( $p < 0.001$ ), PT 2 ( $p < 0.001$ ) and PT 3 ( $p < 0.001$ ). The study also showed persistent changes in their attitude towards drug treatment strategies at two months following the program ( $p < 0.05$ ). Changes were also noted in their attitudes towards harm reduction strategies. Perceptions towards the substance-related problems changed following the module ( $p = 0.001$ ), and remained even after two months ( $p < 0.001$ ).

**Conclusion:** This module effectively changed the KAP of students on substance use.

**Keywords** Anti-Drug Education, Knowledge, Attitudes and Perceptions of Substance Use ( KAP)

## Introduction

Problems related to substance use have become alarming as they are increasingly common among adolescents (1, 2). Research showed there were about 2.2 million adolescents between 12 to 17 years old who used illicit drugs in the United States in 2015 (2). The situation on substance use among adolescents was similar in Malaysia. The National Anti-Drug Agency (AADK) reported that

adolescents as young as 13 years old were found to use illicit drugs (3-5). The prevalence study did not capture youths who were actively abusing substance but were not caught by law enforcement officers. As a consequence, development of preventive measures for substance use among youth in the country are much needed.

Globally, extensive research on the efficacy of school-based preventive programs for substance use have been

conducted in Europe and the United States (6-9). Programs that enhanced social skills and programs which focused on substance abuse aetiology, prevention theory and best practices were found to be effective in reducing substance use among adolescents (7, 10).

In Malaysia, compulsory classroom-based antidrug education has been delivered in schools via various programs such as Tunas, INTIM camp (*Kem Kecermelangan Intelek Murid*) and PIP (*Program Intervensi Pelajar*) (11). Despite having these drug-education programmes, data have continued to show a steady increase in the number of adolescents involved in substance abuse over the years (3, 5). This increase suggested that these drug education programmes have failed to reduce or prevent substance use. A study in Malaysia evaluating perceived effectiveness of existing drug education programmes based on students' feedback found that the students felt the programmes were uninformative, dull and boring (4). The result of this survey further supported the need for a revised drug education programme.

The drug education programme conducted in secondary schools is delivered in Malay. There are different mediums of instruction in the educational institutions in Malaysia. In Chinese-medium schools, the students are taught in Malay and Chinese. However, many students in these schools use Mandarin as their first language. Therefore, the existing drug education programme, which is only available in Malay, is difficult for this group of students to comprehend.

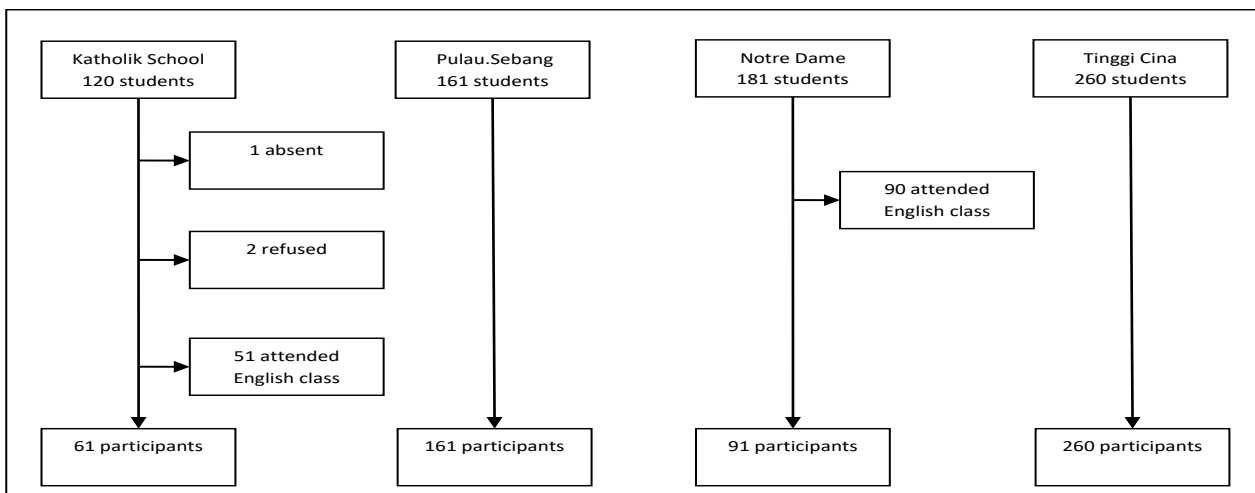
The module in the study was adapted from an anti-drug educational module from the Tzu Chi University in Taiwan. This module adopted an approach different from the existing drug education modules in Malaysia, with 90 minutes of a film, and with 20 minutes of an interactive presentation. The module also touched on drug refusing social skills.

The objective of this study was to examine the efficacy of a school-based antidrug module applied to 16-year-old students in Chinese-medium schools in Malacca, a southern state in Malaysia.

**Methodology**

**Study Design**

This study was a prospective study of three-month duration. The study aimed to include all 16-year-old students from all six Chinese-medium schools in the state of Malacca, in the southern region of Peninsular Malaysia. Malacca has a population of about 910000 (12). Two schools refused to participate. There was a total of 579 participants from the four participating schools (see Figure 1). Ethical approval from the Medical Ethics Committee of the University of Malaya Medical Center (Reference Number 1017.34) was obtained. Permission was also granted from the Ministry of Education (reference letter KP(BPPDP)603/5/JLD.14(133)). Consent was obtained from parents of all the participating students.



**Figure 1:** Sample selection

**Research instrument**

The original version of the KAP Scale was used in a nationwide survey in Ireland. It was chosen because it was comprehensive, and validated, with statistically significant outcomes (13). Permission to translate and use the questionnaire was obtained from the author. This questionnaire was translated into Mandarin and was validated in a local setting. The KAP-C exhibited satisfactory internal consistency, with a Cronbach's alpha

coefficient of .624 (14). The KAP-C consisted of 38 self-rated questions that were grouped into three domains: drug-related knowledge, attitudes, and perceptions of substance-related issues. Perception was defined as the understanding and interpretation of students on substance-related issues (15). Attitude referred to the enduring evaluation of students towards an object, issues or others in general, and towards substance abusers and substance-related issues in particular (15).

The attitude domain evaluated in the questionnaire was further divided into several aspects: toward drug addicts, toward drug misuse, toward drug prevention, toward drug treatment, toward harm reduction and finally, toward legislation and policy intervention. The perception domain included perceptions on the extent of illicit drug-related problems, perceptions of illicit drug-use among youth and perceptions of danger and harm associated with illicit drug-use. Each question in the questionnaire had a seven-point response scale. The scale ranged from *strongly disagree* (1), *moderately disagree* (2), *slightly disagree* (3), and *don't know* (4), to *slightly agree* (5), *moderately agree* (6) and *strongly agree* (7). The participants were required to choose a response that reflected the degree of agreement with the statement on each item.

### Data collection procedure

The module started with a Pre-test using the KAP-C. Following that was a 60 min film entitled *The Addict* featuring the life story of a drug addict named Rui Fang. The film highlighted his emotional turmoil, regrets and remorse while he was in prison and his determination to overcome his challenges by quitting substance use. In the end, Rui Fang was able to stop substance use and engage in community work.

The film was followed by an interactive PowerPoint slide presentation that provided information on the extent of the substance-related problems globally, information and pictures on the different types of illicit substances, as well as drug refusing skills. The long-term effect of substance use on the brain was illustrated by comparing PET scans of a brain of a healthy adult and a substance abuser. Also, indications and types of harm-reduction strategies were also explained to the students. The presentation also included advice on practical ways to refuse invitations to use substances. Three post-tests were done using the KAP-C on the same group of students. The first post-test was done at the end of the presentation (PT 1) followed by second post-test after one month (PT 2) and the third post-test after two months (PT 3).

### Data analysis

The data were entered into SPSS version 22 for data analysis (16). According to results of a normality test, six outliers were removed to maintain a normal distribution for research variables. Therefore, this study had a total of 573 participants. The data were analysed according to the three categories of knowledge, attitude and perception. The post-test mean scores of the research variables (PT 1, PT 2 and PT 3) for all research variables were compared with the mean score at Pre-test. A one-way repeated measures ANOVA (general linear model) was used to evaluate the significance of changes in mean scores of research variables over the time followed by using Bonferroni test for means comparison (Pre-test, PT 1, PT 2, PT 3). Any change in the mean score for each section of the questionnaire, with statistical significance at 5%, was considered a change in knowledge, attitude and perception, respectively. A

Cohen's *d* value of  $\leq 0.2$  indicated a small effect size while a Cohen's *d* value of 0.3 to 0.5 indicated a medium effect size. A Cohen's *d* value of  $\geq 0.8$  showed a large effect size.

## Results

### Demographic

52.4% (n = 300) of the participants were male, and 47.6% (n = 273) were female as shown in Table 1. 9.8% of parents or guardians were between 30 to 39 years old while 57.2% were between 40 to 49 years old and 30% were between 50 to 59 years old. Additionally, 2.5 % of the parents or guardians were between 60 to 69 years old, and 0.5% was above 70 years old. The mean age for the head of household was 47.2, and the median age was 46. Among these students' parents or guardians, 85.9% were married while 13.7% were separated, divorced, unmarried or widowed. The summary of baseline demographic data is presented in Table 1.

**Table 1:** Demographic characteristics of participants

Characteristics	Number	Percent
Gender		
Female	273	47.6%
Male	300	52.4%
Age of Parents		
30-39	56	9.8
40-49	328	57.2
50-59	172	30.0
60-69	14	2.5
>70	3	0.5
Marital Status of parents		
Married		
Separated	492	85.9
Living Together	34	5.9
Widow / widower	17	3
Divorced	18	3.1
Not married	2	0.3
	10	1.7
Parent Education		
University	37	6.5
Diploma	14	2.4
Lower Secondary	165	28.8
Upper Secondary	276	48.2
Primary	55	9.6
Vocational	11	1.9
Other	15	2.6
No of Siblings		
0	67	11.7
1	168	29.3
2	189	33.0
3	108	18.8
4-8	41	7.1

Accommodation		
Flat	46	8
Apartment	33	5.8
Terrace	405	70.7
Semi-D	33	5.8
Bungalow	21	3.7
Other	35	6.1
Household Ownership		
Own	490	85.5
Rent	83	14.5

147.859,  $p < 0.001$ ,  $d = 1.1$ ). The Cohen’s  $d$  value indicated a large effect size. The Bonferroni post hoc test showed that students’ knowledge on common illicit drugs were significantly increased following the drug education module (Table 2, Table 3).

**Attitude**

Repeated measures ANOVA showed the differences among these four tests (Pre-test, PT 1, PT 2 and PT 3) were statistically significant in attitudes toward drug prevention strategies ( $F(3, 1716) = 5.661$ ,  $p = 0.001$ ,  $d = 0.20$ ), attitudes toward drug treatment strategies ( $F(2.9, 1672.9) = 4.715$ ,  $p = 0.03$ ,  $d = 0.18$ ) and attitudes toward harm reduction strategies ( $F(2.9, 1674.8) = 179.167$ ,  $p < 0.001$ ,  $d = 1.2$ ) (Table 2, Table 3). Attitude towards drug treatment strategies and drug prevention strategies were significant only in PT 2 and PT 3.

**Knowledge of substance abuse**

The results of the repeated measures ANOVA showed that the differences among these four tests (Pre-test, PT 1, PT 2 and PT 3) were statistically significant ( $F(2.8, 1604.3) =$

**Table 2:** Pairwise comparison of Knowledge, Attitude and Perception on substance abuse with pretest

		(I) Time	(J) Time	Mean Difference (I-J)	SE	P Value	
Knowledge		Pretest		-1.585	0.094	<0.001	
		Pretest	PT 2	-1.579	0.102	<0.001	
		Pretest	PT 3	-1.960	0.094	<0.001	
Attitude	drug addicts	Pretest	PT 1	-0.084	0.047	0.446	
		Pretest	PT 2	0.043	0.045	1	
		Pretest	PT 3	0.004	0.047	1	
	drug misuse	Pretest	PT 1	0.047	0.061	1	
		Pretest	PT 2	0.091	0.06	0.773	
		Pretest	PT 3	0.091	0.061	0.812	
	drug prevention strategies	Pretest	PT 1	0.133	0.062	0.198	
		Pretest	PT 2	0.254	0.061	<0.001	
		Pretest	PT 3	0.188	0.063	0.019	
	drug treatment strategies	Pretest	PT 1	-0.175	0.081	0.19	
		Pretest	PT 2	-0.240	0.077	0.012	
		Pretest	PT 3	-0.248	0.077	0.008	
	harm reduction strategies	Pretest	PT 1	-1.312	0.074	<0.001	
		Pretest	PT 2	-1.527	0.073	<0.001	
		Pretest	PT 3	-1.538	0.074	<0.001	
	legislation and policy intervention	Pretest	PT 1	0.156	0.062	0.073	
		Pretest	PT 2	0.092	0.063	0.867	
		Pretest	PT 3	0.086	0.06	0.934	
	Perception	Extend of Illicit Drugs Related Problems	Pretest	PT 1	-0.134	0.036	0.001
			Pretest	PT 2	-0.215	0.035	<0.001
			Pretest	PT 3	-0.236	0.037	<0.001
		Illicit Drugs Use among Youth	Pretest	PT 1	0.002	0.057	1
			Pretest	PT 2	0.047	0.056	1
			Pretest	PT 3	0.021	0.055	1
Danger & Harm of Illicit Drug Use		Pretest	PT 1	-0.047	0.042	1	
		Pretest	PT 2	-0.025	0.042	1	
		Pretest	PT 3	-0.03	0.041	1	

\* $p < 0.05$ , \*\* $p < 0.01$ , PT1= post test immediately after the educational module, PT2= post test after 1 month of the educational module, PT3= post test after 2 month of the educational module

**Table 3:** Pairwise comparison of Knowledge, Attitude and Perception on substance abuse

		(I) Time	(J) Time	Mean Difference (I-J)	SE	P Value	
Knowledge		Pretest	PT 1	-1.585	0.094	<0.001	
		PT 1	PT 2	0.005	0.108	1	
		PT 2	PT 3	-0.380	0.116	0.007	
Attitude	drug addicts	Pretest	PT 1	-0.084	0.047	0.446	
		PT 1	PT 2	0.126	0.047	0.048	
		PT 2	PT 3	-0.039	0.049	1	
	drug misuse	Pretest	PT 1	0.047	0.061	1	
		PT 1	PT 2	0.044	0.062	1	
		PT 2	PT 3	0.001	0.06	1	
	drug prevention strategies	Pretest	PT 1	0.133	0.062	0.198	
		PT 1	PT 2	0.121	0.067	0.428	
		PT 2	PT 3	-0.066	0.064	1	
	drug treatment strategies	Pretest	PT 1	-0.175	0.081	0.19	
		PT 1	PT 2	-0.065	0.074	1	
		PT 2	PT 3	-0.008	0.067	1	
	harm reduction strategies	Pretest	PT 1	-1.312	0.074	<0.001	
		PT 1	PT 2	-0.216	0.081	0.049	
		PT 2	PT 3	-0.01	0.08	1	
	legislation and policy intervention	Pretest	PT 1	0.156	0.062	0.073	
		PT 1	PT 2	-0.065	0.059	1	
		PT 2	PT 3	-0.006	0.062	1	
	Perception	Extend of Illicit Drugs Related Problems	Pretest	PT 1	-0.134	0.036	0.001
			PT 1	PT 2	-0.082	0.037	0.159
			PT 2	PT 3	-0.021	0.038	1
		Illicit Drugs Use among Youth	Pretest	PT 1	0.002	0.057	1
			PT 1	PT 2	0.045	0.056	1
			PT 2	PT 3	-0.026	0.058	1
Danger & Harm of Illicit Drug Use		Pretest	PT 1	-0.047	0.042	1	
		PT 1	PT 2	0.022	0.039	1	
		PT 2	PT 3	-0.005	0.04	1	

\* $p < 0.05$ , \*\* $p < 0.01$ , PT1= post test immediately after the educational module, PT2= post test after 1 month of the educational module, PT3= post test after 2 month of the educational module

### Perception

Repeated measures ANOVA showed the differences among these four test (Pre-test, PT 1, PT 2 and PT 3) were statistically significant only for the perceived extent of illicit drug-related problems ( $F(2.9, 1689.9) = 16.650$ ,  $p < 0.001$ ,  $d = 0.4$ ) (Table 2, Table 3).

### Discussion

This was a pioneer study to examine the efficacy of a modified educational module. The study showed that this module was able to improve the student's knowledge and attitude on drug-treatment strategies, harm-reduction strategies as well as perceptions of the extent of substance-related problems.

Following their exposure to the revised educational module, the students showed significant improvement in the awareness of common illicit substance, as demonstrated

by the nearly 1.5 times increase in mean knowledge ( $p < 0.001$ ) in PT 1. Their awareness of common illicit drugs further increased three months after the study ( $p < 0.001$ ). Therefore, the modified educational module was effective in increasing the students' knowledge regarding common illicit drugs. Interactive group activities allowed knowledge sharing and strategic learning (17). This was possibly explained through the concept of herd behaviour as proposed by Raafat, Chater and Frith which involved the transmission of thoughts or behaviour and knowledge sharing through interactions between individuals in a group (18). The initial session acted as a kick-start for subsequent discussion among students following the session. Further sessions created more opportunities for more discussion and exchange of knowledge and opinions on the topic.

The study showed that the students generally started out with negative attitudes toward drug addicts and substance abuse. Changes in attitudes toward drug addicts

and substance abuse were not statistically significant throughout the study. This was in line with findings from the previous literature on society's stereotypical views and prejudices against drug addicts (13). Their negative attitudes toward drug addicts might have been conceptualized through years of conditioning by negative images of drug addicts portrayed in the news, films and other social media. The existing school-based addiction program, which stressed the negative behaviours of drug addiction further reinforced their negative views. This had implications for future addiction programmes to gear towards providing accurate information on the effects of substance use without reinforcing the negative prejudices among students toward substance abusers.

The majority of the participants were somewhat agreeable toward strategies for preventing drug use, despite a slight decline in the mean score over time. Also, the students showed significant improvement in attitude toward treatment strategies for addiction one and two months after the module. One possible explanation for this was that with time, further opportunities for students to communicate and exchange opinions and thoughts facilitated the attitude change (18).

Initially, about one-fifth of the students were ambivalent about the use of harm-reduction strategies, as many of the students were not aware of the indication and types of strategies available for harm-reduction. However, their attitude became more favourable toward the use of such strategies one and two months following exposure to the module. As this might have been due to the new information provided to the students, it was, therefore, easier to bring about a change in attitude without the influence of pre-existing prejudices on this issue. The students were also found to have favourable attitudes toward legislation and policy interventions at baseline, and it did not change following the module.

The students were initially ambivalent over the perceived extent of substance use-related problems in the country. However, more students agreed that substance use and related offences were serious concerns in society following the anti-drug programme. This was because information on the severity of the problem was disseminated in the module, which increased their awareness of the existing situation regarding substance abuse. However, a majority of the students were uncertain whether substance use was a problem among the youth. This was similarly reflected in the study in Ireland. The study in Ireland found that younger participants were less likely to acknowledge the dangerous effects of substance use (19). The reason for this was because participants' perception of the extent of drug-use among youths were based on their personal experience. A majority of the participants reported not having earlier personal knowledge of anyone who had used the drug, which might have contributed to their impression that drug problems were not common among the youths. This was an important finding since this perception might

lead to students minimizing the prevalence of the problem among the youths and thus making them less cautious in avoiding external influences on them to use drugs. Revision of the existing drug education program should be tailored towards correcting this misperception.

Regarding the students' perceptions of the harmful effects of substance use, the students had perceived substance use as harmful and resulted in addiction, even before they went through the module. They continued to hold such perceptions after the module. Therefore, the module was effective in maintaining the correct perceptions among students regarding the harm and danger associated with substance use. This finding was similar to of previous studies indicating that students with high levels of prior knowledge and correct attitudes were able to maintain them after the program (20).

### **Limitations and recommendations**

There were several limitations in this study. One limitation was the short duration of the study, which might not be sufficient to assess the sustainability of the change in each of the examined domains. Also, the self-reported questionnaire used might result in a bias as it largely depended on the level of honesty of the participants in reporting their responses. Some of the participants might have had an unconscious tendency to give socially acceptable responses to be accepted by their peers and gain approval from their teachers.

Subsequent studies may focus on more comprehensive assessments of the students' knowledge of substance use. This could include assessing the retention of important knowledge among students on other aspects of substance use, such as effects on health, social relationship and school performances, and its relationship to change in attitudes and perceptions.

This study was on a single group intervention, without a control group to provide a definitive conclusion on the value of the module. There were other limitations such as the presence of confounding factors of the students' own experiences as well as the influence of parental education and background. Lastly, although the students' knowledge, attitude and perception toward substance use changed during the study duration, a correlation with changes in behaviour and future practices could not be assumed. Subsequent outcome studies should be done on these students to assess the efficacy of this program in preventing future substance use.

### **Conclusion**

In conclusion, the findings of this study indicated that this module changed the knowledge, attitude and perception of students on drug-related issues. The findings suggested that further modification of the module would be needed to address its existing limitations.

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