REPORT OF RESEARCH RESULTS

(A) Title: Effectiveness Program of Road Safety Literacy for Foreign Visitor Cyclists in a World Heritage Site of Thailand.

(B) Primary Researcher: Associate Professor Dr. Cheerawit Rattanapan
ASEAN Institute for Health Development, Mahidol University

Co-researchers: Associate Professor Dr. Orapin Laosee
ASEAN Institute for Health Development, Mahidol University

Assistant Professor Dr. Weerawat Ounsaneha
Faculty of Science and Technology,
Valaya Alongkorn Rajabhat University under the Royal Patronage

(c) Summary: The growth of tendency culture tourism in Phra Nakhon Si Ayutthaya destination affected with road traffic accidents. The cycling traffic accidents among foreign visitor in the World Heritage site should be prevented with an effective and efficient road safety program. The purpose of this study was to develop the road safety literacy program for improving hazard perception, knowledge, and awareness of critical and identification of cycling traffic accidents. The result showed that foreign visitors with positive hazard perception (AOR 1.50, 95% CI 1.13–1.98) and traffic violation while cycling (AOR 1.50, 95% CI 1.13–1.98) were significantly predicted with positive cycling behaviour among foreign visitors. The health literacy program was developed by health and social media literacy concepts including eight mins of Videoclips to increase the road safety literacy for foreign visitor cyclists in a World Heritage Site of Thailand. The result showed that participants in intervention groups reported significantly higher levels of knowledge of cycling behavior (M =3.67, 95% CI =3.14-4.19, p = 0.001), self-reported behavior of cycling behavior (M =3.14, 95% CI =2.67-3.60, p = 0.001.) and hazard perception of cycling behavior (M =2.45, 95% CI =3.27-4.34, p = 0.001) than control groups. This result finding implied that the road safety literacy intervention in this study was significantly affected with cycling behaviors among foreigner cycling visitors from a World Heritage Site of Thailand in Phra Nakhon Si Ayutthaya provinces.

(d) Aim of Research: The purpose of this study was to develop the effectiveness program to reduce the risk of accident and increase the road safety literacy for foreign visitor cyclists in a World Heritage Site of Thailand.

(e) Method of Research & Progression: The research consisted of two phases following: in the first phase of research, the survey was conducted in Phra Nakhon Si Ayutthaya province as the World Heritage site in Thailand for assessing the level of hazard perception, knowledge, and awareness of critical and identification of cycling traffic accidents. The online mode of structure questionnaire was be used for tool collection through the sampling process among 400 foreign visitors cycling in world heritage site. In the second phase of this research, quasi-experimental study was used for developing the effectiveness program of the road safety literacy program among cycling foreign visitors in World Heritage site of Thailand by the finding result from the first phase. This program was developed by health and social media literacy concepts and consisted of 1) Cycling and Hazard Perception Video Clips, 2) PowerPoint, 3) Hazard Map, and 4) Cycling Traffic Safety Handbook. The program was tested for its feasibility and to identify practical problems of the program procedures. Finally, the

effectiveness program was reduced the risk of accident and increase the road safety literacy for foreign visitor cyclists in a World Heritage Site of Thailand.

(f) Results of Research:

Participants in this research were 400 foreigner cycling recruited from a World Heritage Site of Thailand in Phra Nakhon Si Ayutthaya province. The result of foreigner cycling's characteristic showed in Table 1. Of the 400 remaining participants, 201 (50.3 %) were female and 190 (47.50%) were male with ages ranged between 18 to 39 years (71.8%). Most of foreigner cycling (30.3%) were Japanese with bachelor degree (61.50 %). The experience on the alcohol and tobacco consumptions were 38.3 % and 22.3 %, respectively. Moreover, over 15.5 % of foreigner cycling were exposed with road traffic injury in last 12 months.

Table 1. Foreigner Cycling's characteristic

Characteristic	Categories	Number, (%)
Gender	Male	190 (47.50)
	Female	201 (50.3)
	Not prefer to answer	9 (2.3)
Age	18-39	287 (71.8)
	40-85	113 (28.3)
Nationality	Japanese	41 (30.3)
	Korea	33 (28.3)
	Chinese	32 (8.0)
	American	32 (7.8)
	France	23 (5.8)
Education	Primary	5 (1.3)
	Secondary	34 (8.5)
	Bachelor	246 (61.5)
	Master	88 (22.0)
	Doctoral	20 (5.0)
	Other	7 (1.8)
Alcohol	No	247 (61.8)
	Yes	153 (38.3)
Smoking	No	311 (77.8)
	Yes	89 (22.3)
Exposed with road traffic injury in last 12 months	No	332 (83.0)
	One	62 (15.5)
	Two	32 (8.0)
	Three	1 (0.3)

Table 2 shows the association between the independent and dependent variables. The chi-square test was used to identify the variable associated with positive cycling behaviour among foreign visitors. In bivariate analysis, good cycling knowledge, positive hazard perception of cycling behaviour, traffic violation while cycling and error while cycling tended to have good positive cycling behaviour (p-value < 0.05). Statistical analysis indicated that foreign visitors with positive hazard perception (AOR 1.50, 95% CI 1.13–1.98) and traffic violation while cycling (AOR 1.50, 95% CI 1.13–1.98) were significantly predicted with positive cycling behaviour among foreign visitors (Table 3).

Table 2. Association between independent variable and positive cycling behaviour

Variable	Positive cycling behavior		CORa (95% CI)c	p-value
	Poor (%)	Good (%)		
Level of cycling knowledge				
Poor	60.7	39.3	1	
Good	52.2	47.8	1.42 (0.95-2.11)	0.084
Hazard perception of cycling behavior				
Negative	46.6	53.4	2.40	<0.001

2

Variable	Positive cycling behavior		CORa (95% CI)c	p-value
	Poor (%)	Good (%)		
			(1.40-3.15)	
Positive	64.7	35.3	1	
Traffic violation while cycling				
No	50.5	49.5	1.78	0.005
			(1.18-2.16)	
Yes	64.4	35.6	1	
Error while cycling				
No	54.0	46.0	1.47	0.085
			(0.94-2.30)	
Yes	63.5	36.5	1	

Table 3. Prediction factor of positive cycling behavior among foreign visitors

Variable	AORa (95% CI)c	p-value
Hazard perception of cycling behavior		
Negative	1.85 (1.22-2.83)	0.003
Positive	1	
Traffic violation while cycling		
No	1.66 (1.09-2.53)	0.018
Yes	1	

In the second phase of this research, experimental study was for developing the effectiveness program of the road safety literacy program among cycling foreign visitors in World Heritage site of Thailand by the finding result from the first phase. This program was developed by health and social media literacy concepts including 8 mins of Videoclips to increase the road safety literacy for foreign visitor cyclists in a World Heritage Site of Thailand. The foreigner cycling's characteristic of intervention and control groups shows in Table 4.

Table 4. Foreigner cycling's characteristic of control and intervention groups.

Characteristic	Categories	Number, (%)	
		Control Group	Intervention Group
Gender	Male	12 (40.0)	11 (36.6)
	Female	13 (43.3)	15 (50.0)
	Not prefer to answer	5 (16.7)	4 (13.7)
Age	18-39	25 (83.3)	26 (86.7)
	40-85	5 (16.7)	4 (13.3)
Nationality	Japanese	10 (33.3)	8 (26.6)
	American	13 (43.3)	14 (46.6)
	France	7 (23.4)	8 (26.6)
Education	Bachelor	25 (83.3)	24 (80.0)
	Master	5 (16.7)	6 (20.0)
Alcohol	No	18 (60.0)	17 (56.6)
	Yes	12 (40.0)	13 (43.4)
Smoking	No	15 (50.0)	16 (53.3)
	Yes	15 (50.0)	14 (47.7)
Exposed with road traffic injury in last 12 months	No	25 (83.3)	27 (90.0)
	One	3 (10.0)	2 (6.6)
	Two	2 (7.7)	1 (3.4)

Sixty foreigner cycling were invited from a World Heritage Site of Thailand in Phra Nakhon Si Ayutthaya province consisted of 30 participants of control group and 30 participants of intervention groups. Table 4 showed that 13 (40.0 %) and 15 (50.0 %) of foreigner cycling were female in control

and intervention groups, respectively. For age of participants, ages ranged between 18 to 39 years were found in control group (83.3%) and intervention group (86.7%). The nationality of foreigner cycling visitors were American with 43.3 % of control group and 46.6 % of intervention group. Concerning of education profile, most of participants were bachelor degree with 83.3 % of control group and 80.0 % of intervention group. The non-experience on the alcohol consumption were found in 60.0 % of control group and 56.6 % of intervention group. For smoking behaviour of participants, control and intervention groups were presented 50.0 % and 53.3 % of non-smokers. Non-experience with road safety within last 12 months of participants were showed in 83.3 % of control group and 90.0 % of intervention group. After that, the pre-test questionnaires were distributed and responded by participants in both group of foreigners cycling visitors. For intervention group of participants, the video clip as intervention tool of health literacy concept for increasing hazard risk of road safety for World Heritage Site of Thailand in Phra Nakhon Si Ayutthaya province was delivered with the foreigner cycling visitors. All participant were cycling in the area of World Heritage Site and then responded the same questionnaire as the post-test process after completing cycling. The result of level of cycling behaviours at pre-and post the road safety literacy after intervention operation showed in Table 5.

Table 5. Cycling behaviours at pre-and post the road safety literacy

Items	Pre-test	Post-test	p-value	MD	95% CI
Knowledge of cycling behavior	7.59±3.62	9.26±3.36	<0.001*	3.67	(3.14-4.19)
Self-reported behavior of cycling behavior	3.52±3.27	4.66±2.88	<0.001*	3.14	(2.67-3.60)
Hazard perception of cycling behavior	1.82±3.07	2.28±2.5	<0.001*	2.45	(3.27-4.34)

Table 5 shows the level of cycling behaviors at pre-and post the road safety literacy among foreigner cycling visitors from a World Heritage Site of Thailand in Phra Nakhon Si Ayutthaya provinces. Three items of cycling behaviors including knowledge of cycling behavior, self-reported behavior of cycling behavior and hazard perception of cycling behavior were explored and compared using the calculating t-test for the control and intervention groups. The result showed that participants in intervention groups reported significantly higher levels of knowledge of cycling behavior (M =3.67, 95% CI =3.14-4.19, p = 0.001), self-reported behavior of cycling behavior (M =3.14, 95% CI =2.67-3.60, p = 0.001.) and hazard perception of cycling behavior (M =2.45, 95% CI =3.27-4.34, p = 0.001) than control groups. For this finding, the road safety literacy intervention in this study was significantly affected with cycling behaviors among foreigner cycling visitors from a World Heritage Site of Thailand in Phra Nakhon Si Ayutthaya provinces.

(g) Future Areas to Take Note of, and Going Forward
- The effectiveness program of road safety literacy for foreign visitor cyclists in a World Heritage Site of Thailand should be proposed for implementing in the other areas such as Sukhothai and Kam phaeng Phet province.

(h) Means of Official Announcement of Research Results
- The government site in the area of cycling and rent shop should be cooperated for implementing this program for enhancing the awareness of road safety and reducing the accident in the group of foreign visitor cyclists.