Statistical Analysis of Attitude and Health Behavior of Science and Technology Student, Chiang Mai University

Wiyada Tanvatanagul[1], Sukanya Ketsilp[1] and Vichai Tanvatanagul[2]

ABSTRACT

The study of attitude and health behavior of Science and Technology Students, Chiang Mai University. 1,404 undergraduate students were selected from 2,670 of them by stratified random sampling. The data were analyzed by descriptive statistics, category principal component analysis, canonical correlation, nonparametric, analysis of variance and category regression analysis.

The results of analysis by category principal component, we found that the factors which affect the attitude and health behavior were classified into two groups: Sex risk behavior and the faculty of students are the important factors in the first group. The academic year which they firstly come to be a student, the health level of students and the expenditure are the important factors in the second group. At the 0.05 level of significance, there are difference in the basic data ,attitude and the health level of students which are classified by faculty of students. The basic data, attitude and the health level are correlated at 0.832 and the risk behavior student group is affected from the very beginning which they first come to be a student, and so are income and expenditure.

Using analysis of variance at 0.05 level of significance, there are differences between health risk behavior of each faculty in Science and Technology group. Another result, using category regression, is that drinking alcohol is mostly affected to the risk behavior of smoking, sexual relationship in the past 6 months and motorcycle riding.

Key words: science, techno behavior

INTRODUCTION

Nowadays, it is found that health problems are increasing, especially problems about non-infectious disease, overweight, accidents, and strain etc. The health problems are affected on the increasing of the medical payments and public health. The seriousness of the health problems are affected by several factors. The one important factor is the health behavior factor which results in risk behavior, i.e. food consumption behavior, smoking, drinking alcohol, taking drugs etc. In this study, we are interested in the attitude and health behavior of Science and Technology students. The finding will be the most useful data in determining the policy and work design to decrease the risk behavior of the students. The objectives of this study are to survey attitude and health behavior, analyze effects of the factors on health and health behavior and analyze the risk behavior of the Science and Technology

[1] Department of Statistics, Faculty of Science, Chiang Mai University, Chiang Mai 50200, Thailand.

[2] Department of Agricultural Economics Co-operative, Faculty of Agricultural Business, Maejo University, Chiang Mai 50290, Thailand.

students, Chiang Mai University.

DEFINITION

Health attitude is the opinion on each point of issue about health.

Health behavior is a thing to bring about inside personal (call "inside behavior") and work activity (call "outside behavior") about supervise, protect, support, maintain and manage their health.

Risk health behavior is thing to bring about inside personal and risk work activity. This are 16 behaviors such as smoking, drinking alcohol, using a helmet when riding on a motorcycle, alcohol drinking before riding a motorcycle, using a safety belt in a car, drinking alcohol 1 hour before driving a car, having exercise, having sexual relationship in the past 6 months, having dental check, taking stimulants drug for relaxation, taking of stimulants drug, taking stimulants beverage, taking stimulants drug, taking health check, having an interest to study about health knowledge.

General behavior is a thing to bring about inside personal and usual work activity such as food consumption behavior, taking care of one's self and sleep diary.

Risk group is a group of student who was health risk beheavior such as smoking: smoke once in a while, oftentimes, or regularly.

Category Principal Component Analysis is analytical statistic technique to show graph of group of variables relationship to associate with component loading. The group of variables, figure can be created in several dimensions by lines, is shown in factor. If the lines in figure have an acute angle, it shown the variables have the most relationship in the same direction or have positive correlated. But if line in figure have a right angle, it's shown the variables have non relationship. And if the lines in figure were opposite direction, it's shown the factors have the most relationship in negative correlated.

Category Regression is created linear relationship between effect of independent variables on dependent variables, although dependent and independent variables are not continuous variables.

MATERIAL AND METHODS

Data are collected by using questionnaires, which dividing into 3 parts, the first part is basic data, the second is about health attitude and the third is about health behavior. In the third part, there are 2 major behaviors which are risk and general behavior of 7 student groups in the Science and Technology group ,for example ,the Faculty of Fine Arts, Science, Engineering, Agriculture, Agro-Industry, Veterinary Medicine, and Architecture. By random sampling of undergraduate students about 30% in each academic year from 7 faculties using proportion and stratified random sampling, 1,404 samples from 2,670 students in academic year 2002 are selected. Analytical health and health behavior attitude of these students are studied by using descriptive statistics, category principal component analysis, canonical correlation, category regression, non parametric statistics and analysis of variance.

RESULTS AND DISCUSSION

Using descriptive statistics, it was found that most of the students passed the entrance examination and quota of Chiang Mai University, respectively. In terms of lodgings, it was found that most of the students were in lodgings of Chiang Mai University. The students received a monthly salary at approximately 2,001-4,000 baht. Most of them get money from their guardians or loan from the Thai government. These students spend approximately 1,815 bath per month for food and the payment of lodging is about 1,271 baht. Most of the students have good health. When they are ill , they buy drugs at the drugstores and get well. The serious health problems are the problems of drinking alcohol and smoking. In terms of minor activities, it was found that most of the students cooperated in doing minor

activities such as sports and gain knowledge from the media.

Analysis of factors affecting on health attitude and health behavior of Science and Technology student group, Chiang Mai University

1. Basic factors, health attitudes and health behaviors analysis

Analytical is conducted by using Category Analysis in title of analytical Category Principal Component Analysis (CATPCA) to provide the relationship of the variables by using Cronbach's Alpha of 0.832 (Table 1 and Figure 1). The maximum level of Component loading is sex.It relates in directly opposite to risk behavior of drinking alcohol (X3.1D), drinking alcohol before riding a motorcycle (X3.4M), drinking alcohol one hour before driving a car (X3.9M), opinion about sexual relationship (X3.4S), smoking (X3.1SM), having sexual relationship in the past 6 months (X3.1S),and taking stimulants drug (X3.4MED). For academic year (X1.4.1), it relates in directly opposite to lodging (X1.7), income (X1.9), payment (SUMPAY) in term of health check (X3.3.2H), and taking sleeping potion for relaxation (X3.1MED). The student who study many years will have high income and payment, and found that they are in lodgings outside Chiang Mai University. Faculty of student (X1.3.1) relates in the same direction to taking of stimulants beverage (X3.3MED), taking stimulants drug (X3.4MED), drinking alcohol (X3.1D), smoking (X3.1SM), and having sexual relationship in past 6 months (X3.1S).

2. Analytical relation between 2 data groups

From basic data, health attitude and health behavior (from data transformed to quantity data by Category Principal Component Analysis) by using Canonical Correlation at 0.05 level of significance,it is found that each 2 sets are related. Summary of the most canonical loading and cross loading of variables in each set of this part are **basic data** such as faculty, sex, academic year and personal disease, **health attitude** such includ level of health, **general health behavior** including health check and **risk behavior** sucheas taking sleeping potion for relaxation, taking stimulants drug and drinking alcohol.

3. Analytical basic variables (sex, academic year, income and payment) affected on risk behavior of risk student group

At 0.05 level of significance by using chi-square, it is found that academic year, income and payment affect to all of risk behavior in risk group. Sex affects to all of risk behavior in risk group except using a safety belt in a car, taking sleeping potion for relaxation, taking stimulants beverage, and no-interest on studying health knowledge.

4. Relationship between trend of affecting behaviors by Category Principal Component Analysis and Category Regression

Table 1 Relationship of basic data, attitude and behavior attitude.

Dimension	Cronbach's[a] Alpha	Eigenvalue
1	0.783	4.253
2	0.695	3.112
Total	0.832	4.544

[a] Total Cronbach's Alpha is based on the total Eigenvalue

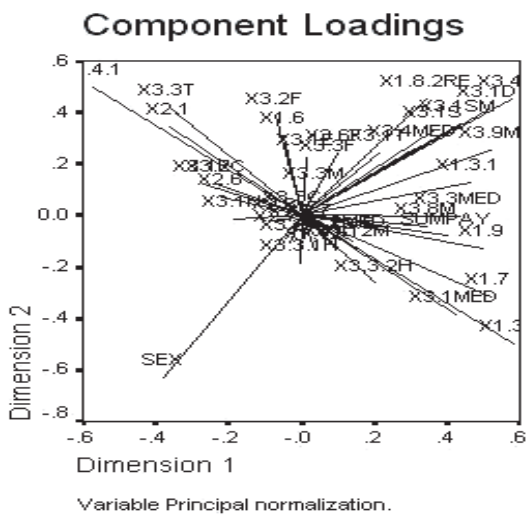

Figure 1 Component loading of basic data, attitude, and health behavior.

4.1 find the relationship of risk behaviors in terms of health and general behaviors

Category Principal Component Analysis is used to provide the correlation coefficient by using Cronbach's Alpha at 0.857. It is found that the trends affecting behaviors has 2 factors: risk and general factor. **The most effective risk factors** are drinking alcohol, drinking alcohol before riding a motorcycle, drinking alcohol 1 hour before driving a car, smoking, and having sexual relationship in the past 6 months and they are related to expensing behaviors. **The most effective general factors** are taking sleeping potion for relaxation, taking stimulants drug, and having health check. However,when analyzing risk behavior to check the trend of affecting behaviors to risk factors by using Category Principal Component Analysis,it is correlated of 0.832.

4.2 Analyzed relation of behavior affected on interested factor

Using Category Regression at 0.05 level significance,it can be concluded that :

Personal disease

From Table 2, there are relationship between the number of illness on personal disease in the same direction. The level of health has the effect on personal disease in the opposite direction. If no-student has bad health, it results in the personal disease. The 2 factors (the number of illness and level of health) affect on personal disease of (0.429+0.341=0.77) 77% by comparing relationship of all variables in Table 2 on personal disease.

From Category Regression in similarly to Table 2, it can be concluded as following :

Smoking

The most effective behaviors of drinking alcohol before riding a motorcycle, having sexual relationship on smoking are 39.60% and 22.10%, respectively.

Sexual relationship in past 6 months

The most effective behaviors of drinking alcohol before riding a motorcycle, drinking alcohol one hour before driving a car, and smoking on sexual relationship in past 6 months. The total relationship is (0.193+0.185+0.174=0.552) 55.20%.

Drinking alcohol

The most effective behaviors of drinking alcohol before riding a motorcycle, drinking alcohol is 66.50%. And the relationships in the same direction: student who like to drink alcohol beverage will drink alcohol beverage before riding a motorcycle.

Taking sleeping potion for relaxation

Level of health, health check and taking stimulants beverage are mostly related to taking sleeping potion for relaxation. The total relationship is (0.288+0.279+0.175=0.742) 74.20%.

Interesting of study in health knowledge

Location of treat or hospital, health check, and lodging are mostly related to the interent to study health knowledge. Total relationship is (0.385+0.185+0.156=0.699) 69.90%.

5. Analytical risk health behavior by comparison each faculty of student in Science and Technology group

Table 2 Variables and Its importance loading with effect to personal disease.

Variable	Standardized coefficient		F	Partial correlation	Importance
	Beta	Std.error			
Sex	.07587	0.025	8.878	0.79	0.074
Income	.09821	0.025	14.900	0.103	0.081
Level of health	-0.173	0.026	44.898	-0.176	0.341
Place of treat	.07614	0.025	8.980	0.080	0.045
Breakfast	.06541	0.026	6.570	0.068	0.031
The number of illness	0.198	0.026	58.560	0.201	0.429

at 0.05 level of significance ; $F \geq 3.84$

By using analysis of variance. It is found that students of each faculty are different in risk behaviors except taking sleeping potion for relaxation behavior. Then, testing for each risk factor on whether each group has different behavior by using Tukey's B. The results are shown in Table 3.

From Table 3, it is found that:

Faculty of Fine Arts students take the risks in term of drinking alcohol before riding a motorcycle, using a safety belt in a car, drinking alcohol one hour before driving, having exercise, having sexual relationship and having dental check. **Faculty of Agriculture** students take the risk of sleeping drug, taking sleeping potion for relaxation, taking stimulants beverage, taking stimulants drug, and using a safety belt in a car. **Faculty of Architecture** students the most take risk in smoking, drinking alcohol, using a helmet when riding a motorcycle and having interest on the study of health knowledge. **Faculty of Veterinary Medicine** student is take the risk in all risk behaviors except health check due to non-checking their health.

CONCLUSION

By using Category Principal Component Analysis and Chi – Square test, it is found that the students in Science and Technology group have the most risk behavior affected from sex, academic year, income, and payment. Risk behaviors that occur together are drinking alcohol ,drinking alcohol before riding a motorcycle, drinking alcohol 1 hour before driving, having opinion towards sexual relationship, smoking, having sexual relationship in the past 6 months, and taking stimulants drug.

From Category Regression Analysis at 0.05

Table 3 Series of the most risk behaviors by faculty (1 : the most risk).

Risk behaviors	Fine Art	Science	Engineering	Agriculture	Agro-industry	Veterinary Medicine	Architecture
1. Smoking	2	6	3	5	4	7	1
2. Drinking alcohol	2	7	3	6	4	5	1
3. Using a helmet when ride on motorcycle	3	6	5	2	4	7	1
4. Drinking alcohol before riding on a motorcycle	1	6	3	4	5	7	2
5. Using a safety belt while driving a car	1	4	6	4	5	7	3
6. Drinking alcohol before 1 hour to drive a car	1	7	3	4	5	6	2
7. Sport	1	4	6	5	2	7	3
8. Sexual relationship in past 6 months,	1	5	3	4	6	7	2
9. Dental check	1	2	5	7	3	4	6
10. Taking of stimulants drug for relaxation	3	4	2	1	5	6	7
11. Taking of stimulants drug	2	3	4	1	5	7	6
12. Taking stimulants beverage	5	7	2	1	3	6	4
13. Taking stimulants drug	3	7	2	1	5	4	6
14. Interesting of study in health knowledge	2	7	4	3	5	6	1
15. Health check	2	4	6	7	5	1	3
16. Using a safety belt in a car	2	3	6	1	5	7	4

level of significance, it is found that the most effective factors on **personal disease** is the number of illness, the most effective factors on **smoking, and sexual relationship in past 6 months** is drinking alcohol before riding a motorcycle, the most effective factors on **taking sleeping potion for relaxation** depeading on the level of health. And the most effective factors on the **interest to study about health knowledge** is place for treat.

By analytical risk behavior in health, it is found that students who study in the faculty of Fine Arts and Architecture take the risk behaviors of smoking, drinking alcohol, using a helmet when riding on a motorcycle, taking sleeping potion for relaxation, taking stimulants drug, and having sexual relationship in the past 6 months comparing to other faculties in Science and Technology group. Refer to the research, it is urgent that Chiang Mai University be aware of the behavior of smoking and drinking.

LITERATURE CITED

Meulman J. Jacqueline and Willem J. Heiser. 1999. *SPSS Categories 10.0* SPSS Inc, Chicaco, Illinois.

Norusis J. Marija. 2000. *SPSS Base 10.0 User's Guide*. SPSS Inc, Chicago, Illinois.

Norusis J. Marija. 2000. *SPSS Regression Model 10.0*, SPSS Inc, Chicago, Illinois.

Steptoe, A. and I. Wardle. 2001. "Health behavior, risk and emotional well – being in students from Eastern Europe and Western Europe Social Science & Medicine". *American Journal of Preventive Medicine*.