# FACTORS RELATED TO ABILITY OF STUDENTS TRAINED BY YOUNG FDA PROJECT AT PRIMARY AND SECONDARY SCHOOLS IN BANGKOK METROPOLITAN, THAILAND

**YUHO TABATA**

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF**
**THE REQUIREMENTS FOR THE DEGREE OF**
**MASTER OF PRIMARY HEALTH CARE MANAGEMENT**
**FACULTY OF GRADUATE STUDIES**
**MAHIDOL UNIVERSITY**
**2010**

Thesis
entitled

# FACTORS RELATED TO ABILITY OF STUDENTS TRAINED BY YOUNG FDA PROJECT AT PRIMARY AND SECONDARY SCHOOLS IN BANGKOK METROPOLITAN, THAILAND


田端優保

Ms. Yuho Tabata
Candidate

N. Hongkrailert

Asst. Prof. (Honorable) Nate Hongkrailert, Ph.D.
Major advisor

J. Sillabutra

Lect. Jutatip Sillabutra, Ph.D.
Co-advisor

B. Mahaisavariya

Prof. Banchong Mahaisavariya, M.D.
Dean
Faculty of Graduate Studies
Mahidol University

Supattra Srivanichakorn

Ms. Supattra Srivanichakorn, M.D., M.P.H. (Health Development), Dip. Thai Board of Preventive Medicine (Epidemiology)
Program Director
Master of Primary Health Care Management
ASEAN Institute for Health Development
Mahidol University

Thesis
entitled

# FACTORS RELATED TO ABILITY OF STUDENTS TRAINED BY YOUNG FDA PROJECT AT PRIMARY AND SECONDARY SCHOOLS IN BANGKOK METROPOLITAN, THAILAND

was submitted to the Faculty of Graduate Studies, Mahidol University
for the degree of Master of Primary Health Care Management
on
March 30, 2010

田 端 優 保

Ms. Yuho Tabata
Candidate

Asst. Prof. Panee Sitakalin,
Dr.P.H.
Chair

Lect. Jutatip Sillabutra,
Ph.D.
Member

Asst. Prof. (Honorable) Nate Hongkrailert,
Ph.D.
Member

Prof. Banchong Mahaisavariya,
M.D.
Dean
Faculty of Graduate Studies
Mahidol University

Ms. Supattra Srivanichakorn,
M.D., M.P.H. (Health Development),
Dip. Thai Board of Preventive Medicine
(Epidemiology)
Director
ASEAN Institute for Health Development
Mahidol University

# ACKNOWLEDGEMENTS

This thesis would not be possible without the support of many people.

Firstly, I would like to express my deep appreciation to my major adviser, Asst. Prof. Dr. Nate Hongkrailert, for his honest guidance and deep understanding through this research. He gave me lots of valuable opportunities and encouragement.

Also, I am very grateful to my co-adviser Dr. Jutatip Sillabutra for her great deal of support. I would like to appreciate to external thesis committee member, Asst. Prof. Panee Sitakalin for her valuable comments and encouragement.

I sincerely would like to extend the appreciation for the support received from Mr. Nirat Tiasuwan, director of Public and Consumer Affairs Division and Ms. Patcharavadee Sriboonruang Dissemination Technical Officer, Food and Drug Administration, Ministry of Public Health, Thailand; Mr. Nopporn Rakwong, my collogue. Without their help I could not conduct on this research of young FDA Inspector club. I also appreciate to meet a lot of students and teachers who were working on young FDA club. I will never forget the liveliness of their expression.

I would like to give my thanks to my friends Dr. Ho Dac Chien, Dr Cao Thanh Tu from Vietnam, and Yuka Iino from Japan for their innumerable helps. I also will never forget great hospitality of staffs and brave dogs in ASEAN house.

Finally I would like to express thanks to my family and special friend Mrs. Mai Onodera for support and encouragement during I stay in Thailand.

Yuho Tabata

FACTORS RELATED TO ABILITY OF STUDENTS TRAINED
BY YOUNG FDA PROJECT AT PRIMARY AND SECONDARY SCHOOLS IN BANGKOK METROPOLITAN, THAILAND

YUHO TABATA 5238095 ADPM/M

M.P.H.M

THESIS ADVISORY COMMITTEE: NATE HONGKRAILERT, Ph.D., JUTATIP SILLABUTRA, Ph.D.

ABSTRACT

A cross-sectional descriptive study was conducted to study the factors related to the ability of students participating in young FDA (Food and Drug Administration) projects at primary and secondary schools in Bangkok, Thailand. This study was conducted with 214 students aged 10 to 19 to describe the factors related to their ability and the predisposing factors, enabling factors, and reinforcing factors. Data were collected from January to February, 2010.

43.57% of the respondents were found to have high ability in relation to themselves. More than 90% had good purchasing habits and considered safety, cleanliness, and health. More than half of the respondents had good knowledge and about 90% of the respondents had high perception. More respondents had low self-efficacy. With regard to self-management, 85.89% of the respondents had high self-reliance, 92.53% had high cooperation, and 69.29% had high participation. Regarding intrinsic motivation, most respondents (94.19%) had high motivation. Most respondents thought that resources were sufficient and readily available. Nearly half of the respondents had high social support and a majority of the respondents had moderate levels of support.

The ability of students had significant associations with age; grade; duration of working with the young FDA club; self-efficacy; participation; time to work; exercise; access to office supplies, multimedia and the FDA homepage; chances to have extra curricular contacts; and social support, especially from teachers, colleagues, and family ($p$-value$<0.05$). Especially high social support and long experience working with the young FDA club had a big impact on improving their ability.

Social support had a dramatic and significant association with the ability of students in relation to others and other organizations. It increased their ability, especially with regard someone close to students like colleagues, teachers, and family. Teachers, therefore, should not only support them directly but also should encourage students help each other and involve families joining the young FDA activities.

KEY WORDS: ABILITY/ YOUNG FDA/ YOUNG FDA PROJECT/ STUDENT/ PRIMARY AND SECONDARY SCHOOL

141 pages

# CONTENTS

# CONTENTS (cont.)

# LIST OF TABLES

# LIST OF TABLES (cont.)

# LIST OF TABLES (cont.)

# LIST OF TABLES (cont.)

# LIST OF FIGURES

# LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| BMA | : | The Bangkok Metropolitan Administration |
| FDA | : | The Thai Food and Drug Administration |
| GDP | : | The Gross Domestic Product |
| HEP | : | Health Education and Health Promotion Unit |
| HPR | : | Division of Health Promotion, Education and Communications |
| IDF | : | The International Diabetes Federation |
| MOE | : | The Ministry of Education |
| MOPH | : | The Ministry of Public Health |
| PHO | : | The provincial health office |
| VHVs | : | Village Health Volunteers |
| WHO | : | The World Health Organization |
| Young FDA project | : | The Young FDA Inspector Project |

# CHAPTER I
# INTRODUCTION

## 1. Rationale and justification of the research

Public health priorities are now moving from infectious to non-communicable diseases. The World Health Organization (WHO) predicts that fewer people will be killed by infectious diseases globally, and by 2030 three-quarters of all deaths in the world will be caused by non-communicable or chronic diseases like heart disease and cancers. These diseases are due to people's risky behaviors and life styles, which lead to overweight, hypertension and other non-communicable diseases (1).

This developing trend results from less physical activity and unhealthy food consumption. These days the fast changes in life styles and rapid economic growth, even in developing countries, make people change and adopts western or foreign cultures (2).

The Gross Domestic Product (GDP) of Thailand has increased rapidly from US$85,345 million in 1990 to US$142,953 million in 2003. The living standard has increased accordingly also. This has resulted in high incomes for Thai people and has resulted in increased materialism and consumerism. At the same time, the family type is also changing from extended family to nuclear family (2).

Previously, Thai food was home prepared, but now people tend more often and to eat out and consume cooked food from food-shops, hawkers and fast food restaurants. These foods, however, are often high in calories, low in nutritional value, and high in sugar or cholesterol. The sugar intake per Thai person increased from 12.7 kilograms/ person in1983 to 29.1 kilograms/ person in 2001. And the

findings of the 2nd General Health Check of 1997 showed that the 4.7 percent of the population of Bangkok had cholesterol levels of up to 300mg/dL (2). In 2006, WHO defined the current diagnostic criteria for diabetes as fasting plasma glucose ≥ 126mg/dL or 2–h plasma glucose≥ 200mg/dL (3).

According to WHO and The International Diabetes Federation (IDF) report, in 2005, more than 220 million people worldwide were estimated to have diabetes, including 1.54 million people in Thailand, in 2000. In addition, diabetes type 2 is more common and accounts for approximately 90 percent of all diabetes cases worldwide (4). Diabetes type 2 results from the human body's ineffective use of insulin and causes obesity in children (5).

About 22 million obese people are under 5 years old and 17 million of them live in developing countries. Furthermore, 10 percent of students aged between 5 -17 years old in the world are obese. In Thailand, the prevalence of obesity among schoolchildren aged 6-12 years, (as diagnosed by when for height exceeds 27 percent), rose from 12.2% in 1991 to 15.6% in 1993 (6).

Today, many risk factors of health are associated with children. Education, therefore, plays an important role in the promotion of health and prevention of disease. School health education has been developed to promote good health behavior and to prevent diseases in children.

In Thailand there were 10.06 million students enrolled in primary and secondary schools in 2008 (7). So school is considered to be a very important arena for health education of children and adolescents. Many adult habits are also established during the years of growing up. For these reasons, it is important to try to prevent health damaging behavior during school years (8, 9).

Writing over 20 years ago, Hopson and Scally (1981) (10) believed that self-empowerment should be a prime objective for schools. Shortly after this, the Ottawa Charter (WHO, 1986) (11) , defined health promotion as the process of

enabling people to have increased control over their own health in order to improve it. The Ottawa Charter also established the backdrop for empowerment to become the catchword and philosophical tenet of health promotion (1).

One of the recent health promotion achievements in Thailand has been the “Empowerment for Health” program of the Thai Food and Drug Administration (FDA). “Empowerment for Health” encourages people to participate in promoting healthy food and drug consumption for their own health.

The FDA is a department of the Ministry of Public Health. It is one of a group of departments working on an integrated program in order to achieve greater efficiency and effectiveness (12). One project, the Young FDA Inspector Project (young FDA project), intended for students in secondary schools commenced in 2002. Initially a pilot project, young FDA clubs were established in several schools in Bangkok by the FDA’s Public and Consumer Affairs unit, in collaboration with the Ministry of Education (MOE), the Bangkok Metropolitan Administration (BMA), other units of the Ministry of Public Health (MOPH) and the provincial health office (PHO). By 2009, the project covered 10,256 schools throughout Thailand.

The young FDA project has facilitated empowering students for healthy and safe food and drug consumption. The purpose is to instill in young people knowledge of how to protect themselves, their families, and communities through healthy and safe product consumption. The main activities of the students under the young FDA project are checking food contamination and chemicals, and the ingredient labeling of foods. According their study, the students encourage other students and communities to improve their food and drug consumption habits. Most activities are managed by students belonging to young FDA club.

Therefore, this research focuses on the factors related to the ability of students developed by the health education (young FDA project) in primary, secondary and high schools. It targets some groups of students at primary, secondary

and high schools in Bangkok who received participating health education through the young FDA project in Thailand.

## 1.2 Research question

What are the factors related to ability of trained students by young FDA project in Bangkok?

## 1.3 Research objective

### 1.3.1 General objective

To study the factors related to the ability of students trained by the young FDA project in Bangkok, Thailand.

### 1.3.2 Specific objective

1) To describe factors related to the ability of students trained by the young FDA project.

2) To describe the independent variables including predisposing factors, enabling factors and reinforcing factors.

3) To identify the associations between independent variables and the ability of students trained by young FDA project.

## 1.4 Conceptual framework

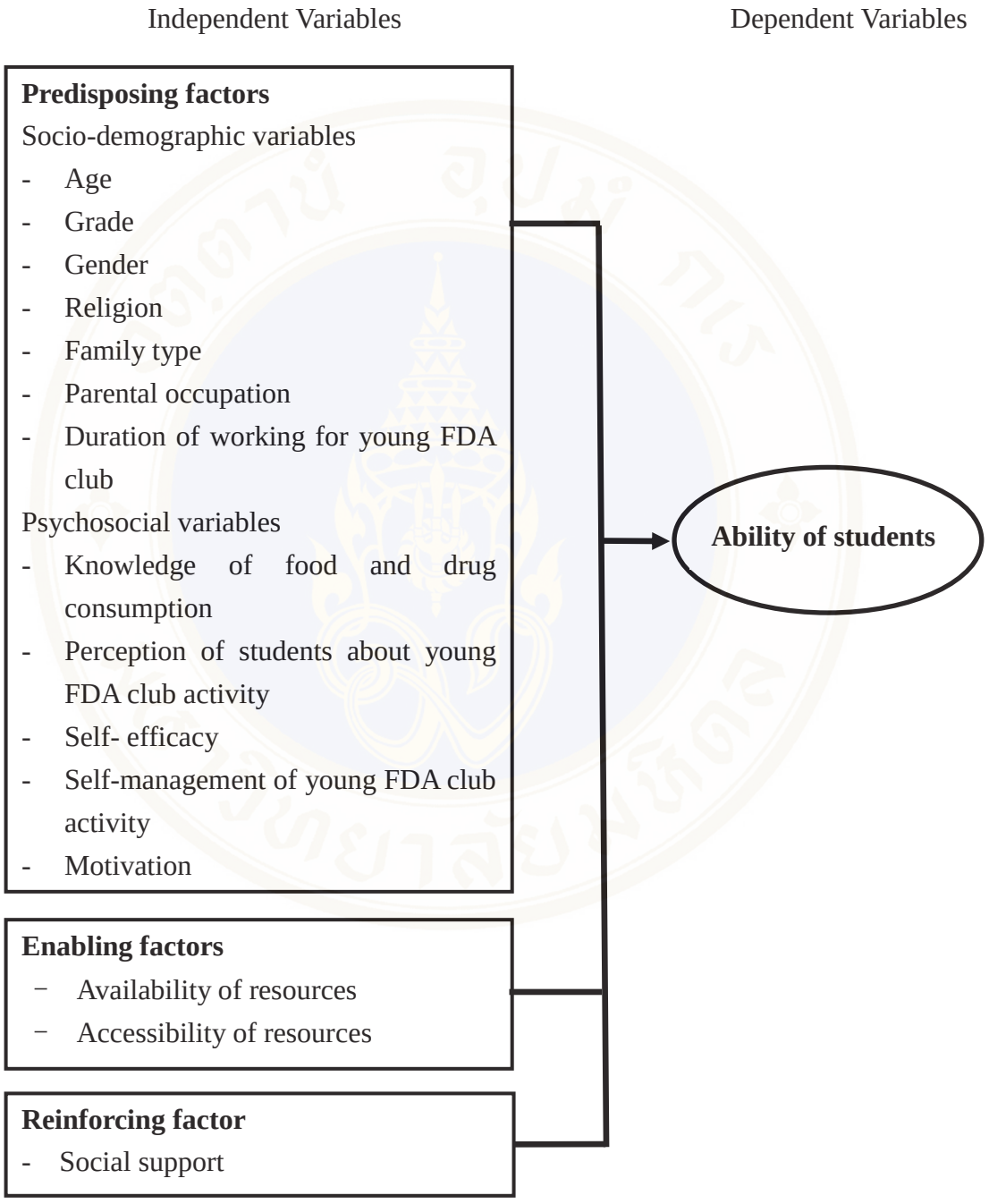



**Figure 1.1** Conceptual framework (Based on PRECEDE-PROCEED model and Health Belief model)

## 1.5 Operational definition

### 1.5.1 Dependent variable

**Ability of students:** Ability of students refers to student's behavior as leader for other students and for society, and behavior as right consumer of food and drug. The degree of attainment followed the objectives on the young FDA project as follows:

1) Ability of students in relation to themselves:
   - The positive actions and attitude regarding the young FDA club activity
   - The independent safe behaviors of food and drug consumption
2) Ability of students in relation to others and other organization:
   - The positive attitude of young FDA club with self-believes and self-assurances including their performance in the club activity

Based on the mean totalled score, the ability was divided into high and low. The high ability in relation to themselves means that the respondents action to club activities, and that they also can avoid risk behavior for health concerning food and drug. The respondents who had high ability in relation to themselves also means that they have enough self-confidence as good leader and good consumer, like as: they think having good skill, to like teach good things, and to like select good things for themselves.

The high ability in relation to others or other organization shows that the respondents' positive attitude towards club activity. The respondents who had high ability in relation to others and other organization also means that they believed to success improving other's food and drug consumption behavior by the club activity.

**1.5.2 Independent variables**

**1.5.2.1 Predisposing factors: Socio-demographic variables**

**Age:** refers to respondents in this research aged 10 to 19.

**Grade:** refers to respondents in this research from $4^{th}$ to $12^{th}$ grade in elementary and secondary schools.

**Gender:** refers to respondents male or female in this research.

**Religion:** refers to respondents in this research belonging to a religion, namely: Buddhism, Christianity, Islam or other religion.

**Family type:** refers to respondents in this research living with father, mother, sister/ brother, grand mother/ father or others.

**Parental occupation:** refers to respondents in this research by parents whose occupation is service, business, farmer, laborer, government employee, house worker, and others.

**Duration of working for young FDA club:** refers to the length of time during which respondents in this research have been working for the young FDA club.

**1.5.2.2 Predisposing factors: Psychosocial variables**

**Knowledge of food and drug consumption:** refers to respondent's knowledge and understanding about food and drug safety and healthy food consumption.

**Perception of students about young FDA club activity:** refers to a respondent's awareness or understanding about the young FDA club activities in terms of satisfaction, benefit and difficulty a reflection of learning, and

the atmosphere as reflection of acting environment.

**Self-efficacy:** refers to a respondent's trust or confidence that they can achieve behaviors and challenges by maintaining high motivation, careful thinking and positive self esteem.

**Self-management of young FDA club activity:** refers to a respondent's activities based on the self-reliance, and the kinds of experiences during the young FDA club activity from three aspects as follow:

- **club activity** refers to frequency and efficiency of club activity management through meetings, contamination tests and campaigns;

- **cooperation** refers to respondent's view or posture about working together with colleges in harmony.

- **participation;** refers to a respondent's frequency of participating in roles through meetings, contamination tests and campaigns inside and outside the school.

**Motivation:** refers to activation and cues for respondents working as young FDA club members, which is categorized as follows:

- **Intrinsic motivation** refers to the motivation of respondents in terms of personal fulfillment arising from their emotion and inherent curiosity, morality, ideals, competition, cooperation and recognition.

- **Extrinsic motivation** refers to the motivation of respondents on terms of external rewards or stimuli, money and coercion.

**1.5.2.3 Enabling factors**

**Availability of resources:** refers to readiness of resources available to students to utilize for young FDA club activities, consisting of working time and office supplies.

- **working time:** refers to sufficiency of time to study or prepare for young FDA club activities during school time.

- **office supplies:** refers to the range of office materials

available for preparing campaigns, exhibition and contest.

**Accessibility of resources:** refers to the ease for getting appropriate and enough study materials including media, test kids and extra information, and for establishing networks.

**1.5.2.4 Reinforcing factors**

**Social support:** refers to assistance and encouragement to respondents to work. The support comes from facilitators and from friends or family. Facilitators might be teacher in school or other schools, health person in a health office, pharmacists in labs or colleagues, who facilitate respondent's effective and efficient activity, and may be of three types as follows:

**- material support:** refers to helping people by giving materials or opportunities what student wants.

**- informational support:** refers to helping people by having students solve the problems or get new information through facilitation, providing advice, suggestions, following up and diplomacy.

**- emotional support:** refers to helping for students through providing encouragement.

## 1.6 Limitation of the research

The independent variables related to ability of students might not be complete due to inexplicit definition of finding the relationship between the ability of students and the young FDA project.

# CHAPTER II
# LITERATURE REVIEW

This chapter is divided into six parts corresponding to the research objectives.

2.1 Trends of food and drug consumption
2.2 Health education
2.3 Empowerment for health
2.4 Young FDA Inspector project
2.5 Theoretical models
2.6 Related research

## 2.1 Trends of food and drug consumption

### 2.1.1 Food consumption in Thailand

The Thailand GDP has increased near six times during the 20 years from 1986(GDP/ capita: 21,528 Baht) to 2006 (GDP/ capita: 124,997 Baht). At the same time, the food and drug consumption of Thai people also has changed with lifestyle (13).

Companies now spend more money for advertisements to urge people to consume (see Figure 2.1). They use TV commercials, radio, displays or the internet. People are now exposed to many kinds of media. These days the numbers of internet users have increased. About 14,226 per 100,000 in Thailand and 27,962 per 100,000 in Bangkok used internet in 2006. The numbers are higher in Bangkok and municipal areas than in other areas (13).

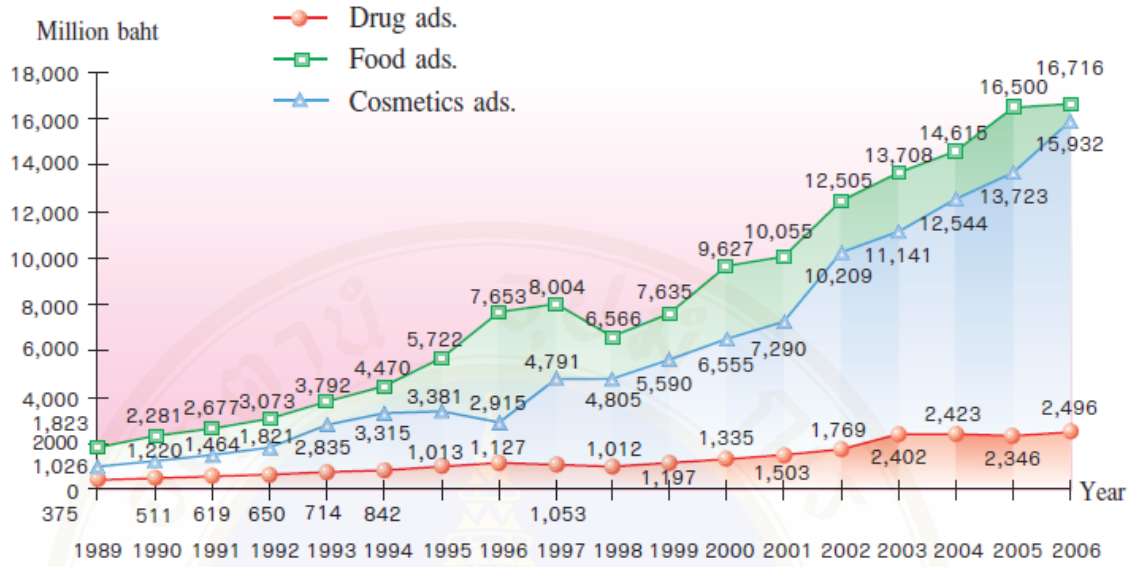



**Figure 2.1** Billings in food, drug and cosmetic advertisements, 1989 to 2006

**Source: Thailand health profile 2005-2007 (13)**

In a similar fashion, the food consumption behavior is also different between people in urban and in rural areas. Residents in urban areas tend to consume more meat and fat than residents in rural areas. Moreover, people in urban areas eat less vegetables and fruit. Rapidly-modernized lifestyles and rushing lifestyles have pushed them to consume ready-to-cook semi-cooked foods, which contain a lot of oil or meat rather than vegetables. 50 percent of Bangkok resident's food is ready-to-eat or pre-cooked food while such foods comprise 20 percent of rural resident's food (13).

Teenagers also prefer western foods to local or Thai traditional food. The National Statistic Office surveyed the types of food consumed by people aged 6 years and over, and found that 98.9 percent of all respondents consumed fruit and vegetables, meat and meat products: 97.4 percent, high-fat food: 86.3 percent, processed foods: 83.2 percent, carbonated or sweetened drinks: 71.7 percent, snacks: 49.0 percent, fast food: 15.3 percent, and dietary supplements: 10.1 percent in 2005

(13). However, the amounts of fruit and vegetables taken consumed daily people aged 15 to 29, both male and female, was lower than the recommended daily requirement levels for health promotion and prevention (400-800g per day), i.e. 285g/day for males and 300g/day for females in 2004 (13).

**Table 2.1** Consumption in food selection by people aged 15 years and older, 2001

| Consideration | Percent | | |
|---|---|---|---|
| | Males | Females | Total |
| Cleanliness | 38.6 | 41.9 | 40.3 |
| Deliciousness | 27.3 | 22.2 | 24.8 |
| Nutritional values | 18.7 | 21.0 | 19.9 |
| Prices | 9.2 | 9.3 | 9.3 |
| Edibility | 4.8 | 4.4 | 4.6 |
| Modernity | 0.2 | 0.2 | 0.2 |
| Others | 0.8 | 0.7 | 0.7 |

**Source: Thailand health profile 2001-2004 (14)**

Focusing on the consideration of food selection by people aged 15 years and over, in 2001 40.3 percent of total respondents joined this survey chose food for cleanness, deliciousness 24.8 percent, nutritional values 19.9 percent, prices 9.3 percent, edibility 4.6 percent, modernity 0.2 percent and others 0.7 percent. And there were several differences between males and females as set out in Table 2.1 (14).

On the other hand, 38.7 percent of respondents among the residents in Bangkok eat as wish and food that was not essential to health. Thus people in Bangkok, both males and females had the highest prevalence of overweight and obesity. Especially it has been rising that the snack and sweetened food consumption on children under 5 and primary school children. They spent near 45 percent of there money for snacks and toys in 2003 as Table 2.2 (13) (14).

**Table 2.2** Spending on snacks of primary schoolchildren in 2003

| Spending group | Amount (bath/day) | Percent | Value (million bath/yr) |
|---|---|---|---|
| 1. Snacks and toys | 13 | 44.9 | 142,357 |
| 2. Food, tuition and bus fare | 7 | 24.1 | 76,625 |
| 3. Savings | 7 | 24.1 | 76,625 |
| 4. Future spending | 2 | 6.9 | 21,943 |
| Total | 29 | 100.0 | 317,550 |

**Source: Thailand health profile 2001-2004(14)**

Another survey of children and youth conducted in 2003 revealed the comparison of snack groups best selling and most favored by children as Table 2.3. According to that survey, 62.2 percent of the respondents answered that the best selling item was crispy flour snacks which was as the most favored item for 31.4 percent of respondents (14).

**Table 2.3** Comparison of snack groups best selling and most favored, 2003

| Snack group | Best selling item | Most favored item |
|---|---|---|
| Crispy flour | 62.2 | 31.4 |
| Candies | 7.9 | 4.2 |
| Soft bread | 7.6 | 13.9 |
| Drinks | 5.9 | 12.3 |
| Bean | 5.0 | 2.0 |
| Protein-containing | 3.4 | 2.8 |
| Jelly | 1.7 | 2.6 |
| Chocolates | 1.7 | 1.5 |
| Chewing gums | 0.5 | 0.6 |
| Fruit | - | 7.2 |
| Thai sweets | - | 16.7 |
| Others | 4.1 | 4.8 |

**Source: Thailand health profile 2001-2004 (14)**

In another survey in 2006on sweetened food consumption by children less than 5 years, 61.7 percent of the respondents preferred high-sugar snacks and drinks. It showed that the average sugar intake was 40.4 g/day, which is higher than

the suitable sugar consumption level (not exceeding 24 g/day) (13).

### 2.1.2 Drug consumption in Thailand

Drug consumption of Thai people accounted approximately 42.8 percent of the all of national health expenditure in 2005. And the proportion of expenditure on drugs was higher than other developed countries, compared with follows: Japan and France; 18.9 percent, Canada; 17.7 percent, England; 16.3 percent and Australia; 12.8 percent in 2005 (14).

As focus on the people patterns of drug consumption, Thai people did two-third of drug consumption according to the decision or advice of professionals, such as doctors, pharmacists and other health personnel. However, some people did as suggested by relatives, friends or advertisements (13).

And some study shows about improper drug using especially antibiotics. According to a study of antibiotics used for child respiratory infectious, 38 percent of patients had taken that by themselves before going to the hospital. Other study also showed antibiotics use before visiting a doctor or health person, especially for curing respiratory and gastrointestinal tract disease (14).

The 2001 provincial health status survey revealed that the nearly 20 percent of family members with minor illness would cure to buy drugs for self-treatment from grocery and drug stores, and about 33.6 percent did not always not all read drug package labeling (13). Thus leads to patient irrational use or over-use of drugs, and most of the cases people use drugs unnecessarily or inadequately. As the food consumption, it is also advertising influence information from various media including newspaper, radio, television and magazines as Figure 2.1 showing.

### 2.1.3 Food safety in Thailand

Recently food consumption has changed from eating home- cooked food to eating pre-cooked, semi-cooked or ready-to-eat food. However the much of such

foods are unhygienic or in an unsanitary conditions.

Trends in mortality rate and incidence of diarrhea have also changed in children under 5 year as follows, the mortality rate 4.59 (per 100,000 people) in 1987 changed into 0.62 in 2006, the incidence 4,285 (per 100,000 people) in 1987 changed into 10,476 in 2006. The mortality rate of all of people was 1.22 (per 100,000 people) in 1987 and changed into 0.22 in 2006, the incidence of all people 1,207 (per 100,000 people) in 1987 to 1,988 in 2006. The medical environment was developed more from 20 years ago, so the mortality rate was decreased against both of age groups however the incidence has been increased (13).

In 2005, a Department of Health survey of 1,035 pre-cooked foods from food-stalls and supermarkets in 15 provinces revealed that 44.2 percent of the foods were contaminated with higher levels of bacteria than permitted level (13).

Moreover, chemicals are used in food prepared in with increasing frequency. Some toxic chemicals residues are also found in fresh foods such as vegetables, fruit, meat and fish over the maximum permitted revel. High level meat-reddening and insecticide are found in meats and agricultural products as Table 2.4 (13).

The incidence of food poisoning is also increased from 4.35 per 100,000 people in 1976 to 216.26 per 100,000 people in 2006 due to unsafe and unhygienic food consumption. With a high level of accumulated toxic chemicals in the body, the risk of cancer, mutation and infant deformity will be increased (13).

**Table 2.4** Monitoring of chemical safety in fresh fruit and vegetables, 2004-2006

| Type | Chemical tested for | No. of samples tested | Results | Agency responsible | Year of study |
|---|---|---|---|---|---|
| 1)Vegetables in Bangkok | Insecticides | 903 | 74 samples (8.2%) exceeding MPL | FDA | 2005 |
| 2)Vegetables and fruits of vendors | Pesticides, borax, anti-fungal, whitening agent synthetic coloring agents | 2,048 | 677 samples (33.1%) with residues, 40 samples (5.9%) exceeding MPL | National Brain Bank Institute | 2005 |
| 3)Imported vegetables and fruits | Pesticides | 1,746 | 376 samples (21.5%) with residues (2.9%) exceeding MPL | DOA | 2004-2006 |
| 4)Twelve vegetables and fruits for export | Pesticides | 79,343 | 18,407 samples (23.2%) with residues, 737 samples (4.0%) exceeding MPL | DOA | 2003-2006 |

**Source: Thailand health profile 2005-2007 (13)**

**Note:** MPL= maximum permissible level

## 2.2 Health education

### 2.2.1 Health education

School is considered to be a very important arena for health education for children and adolescents. Health education is often related to behaviors such as smoking, drug usage, sexual acts and the consumption of alcohol. This concentration seems to be based on the more general impression that adolescence is important in determining the future health of the individual, and that many adult habits are established during the years of growing up. So it is better to try to prevent health-

damaging behavior at an early age than to be forced later to attempt to modify an already established habit. (1) WHO also agreed that “an effective school health program can be one of the most cost effective investments a nation can make to simultaneously improve education and health” (15).

WHO’s School Health Initiative, launched in 1995, was guided by the Ottawa Charter for Health Promotion (1986); the; Jakarta Declaration of the Fourth International Conference on Health Promotion(1997); and the WHO's Expert committee Recommendation on Comprehensive School Health Education and Promotion (1995). It seeks to mobilize and strengthen health promotion and education activities at the local, national, regional and global levels. The initiative is designed to improve health through schools for students, school personnel, families and other members of the community. And it defined that a health promoting school is “one of strengthens, and its capacity as a healthy setting for living, learning and working” (15). The initiative focused not only on physical health or prevention of infectious diseases but also on decision making or conduction towards policy, and service as follows:

Caring for oneself and others;

- Making healthy decisions and taking control over life's circumstances;
- Creating conditions that are conducive to health (through policies, services, physical / social conditions);
- Building capacities for peace, shelter, education, food, income, a stable ecosystem, equity, social justice, sustainable development;
- Preventing leading causes of death, disease and disability: helminthes, tobacco use, HIV/AIDS/STDs, sedentary lifestyle, drugs and alcohol, violence and injuries, unhealthy nutrition;
- Influencing health-related behaviors: knowledge, beliefs, skills, attitudes, values, support;

According to the WHOs: Division of Health Promotion, Education and Communications (HPR) and Health Education and Health Promotion Unit (HEP),

health education is concerned not only with the communication of information with fostering motivation, but also skills and confidence (self-efficacy) necessary to take action to improve health'. The means that the communication of information about the underlying social, economic and environmental conditions impacting on health, as well as individual risk factors and risk behaviors, and use of the health care system are concerned. Thus, health education may link to the communication of information, and development of skills which demonstrates the political feasibility and organizational possibilities of various forms of action to address social, economic and environmental determinants of health. In the past, health education was used as a term to encompass a wider range of actions including social mobilization and advocacy. These methods are now encompassed in the term health promotion, and a more narrow definition of health education is proposed here to emphasize the distinction. The health education also means to improve the health of school personnel, families, and community members as well as students, and working with community leaders to help them understand how the community contributes to health and education (16).

### 2.2.2 Health education and policy trend in Thailand

Considering the transition of health education with the National Health Development Plan in Thailand, from 1977 several health education actions have been launched. In the fourth National Health Development Plan, this led the adoption of the "Primary Health Care" approach which supported communities and the people. At that time, a health education campaign was launched to improve the nutritional status which targeted to protein deficiency, calorie deficiency, anemia and iodine deficiency of Vitamin A, of children aged under 5 years and students aged 5 to 14 years from 1977 to 1981. After that, from 1984 to 1989, the National Path Finder Survey worked for dental care (17), (18).

In 1986, the strategies and programs in health promotion were set up as Healthy Cities Project with a new concept of "Health Promotion" under the Ottawa Charter in the year. In the schools, helminthes infection and anemia prevention were operated from 1991 to 2001 (18).

The ninth National Health Development Plan (2001-2006) aimed at well-being and entire health system development through the people participation process. Some of the objectives were intended to foster proactive health promotion, consumer protection, food safety and security, and to build up people's capability in health promotion and in health system management. Strategies were intended to expedite proactive health promotion and strength the health of civil society (18). At that time, the young FDA project was launched (2002- ). In August 2005, the Global Conference on Health Promotion adopted the Bangkok Charter on Health Promotion. One of its target's was civil society, and it reached out to the achievement of health. It adopted principal that "well organized and empowered communities are highly effective in determining their own health, and are capable of making governments and the private sector accountable for the health consequences of their policies and practices", and the importance of sustainability.

The 10th Plan followed the 9th Plan's vision of a "people centered approach and the Philosophy of Sufficiency Economy". Furthermore, Thailand, it has "Health Promoting Schools" and the "Child Care Center" programs, and it is aiming to recognize good practice models like as "learning by doing" which actively involves students with their own health including environment around their schools (17) (18).

**2.2.3 Health education models**

Nowadays, health education in schools encompasses a multiplicity of specific methods, models and directions. The numbers of health educations have been coded into various perspectives and approaches in schools. However it can be categorized into two main parts. The first is the strategy for change (top-down or bottom-up) and it also means characters the way of health education. The second is the contextual framework (narrow or wide) explained the practice. By combining these two determinations, the number of models of health education in schools can be reduced to four main types as shown Figure 2.2.

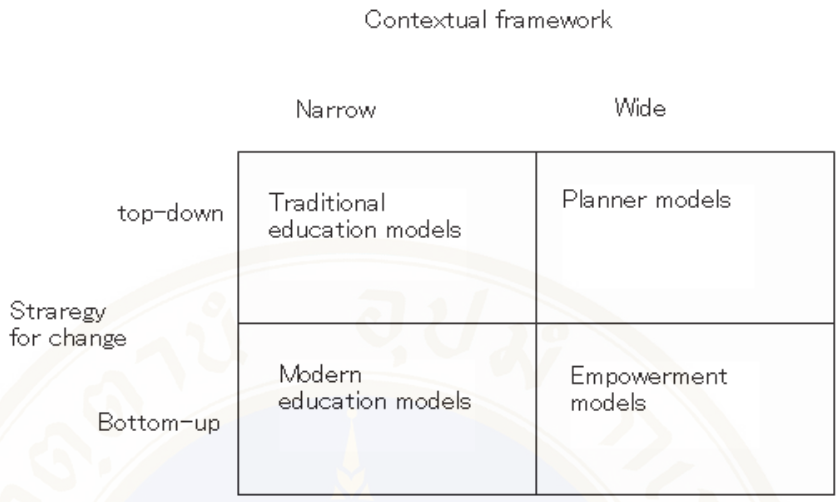



**Figure 2.2** Models for health education in schools-typology

**Source: Health education in school (19)**

The ‘bottom-up’ strategy, more associated with concepts of society empowerment, begins with issues of concern to particular groups or individuals, and regards some improvement in their overall power or capacity as the important health outcome. The ‘top-down, more associated with disease prevention efforts, begins by seeking to involve particular groups or individuals in issues and activities largely defined by health agencies, and regards improvement in particular behaviors as the important health outcome. Grater detail and comparison are shown in Table.2.5 (19).

**Table 2.5** The four kinds of health education models

| | Traditional Education | Modern education | Planner | Empowerment |
|---|---|---|---|---|
| **Strategy of change** | Top-down | Bottom-up | Top-down | Bottom-up |
| **Contextual framework** | Narrow | Narrow | Wide | Wide |
| **Applied in** | In classroom | In classroom | School, community/society | School, local environment |
| **Based on** | Direct diffusion of knowledge | Strongly behaviorally, socio-psychologically | | Empowerment, children are seen as partners |
| **Student's activities** | Mostly passive recipients | - Active participants<br>- Practical exercise | Participation, but students are run | Participants orientation |
| **Models / Purpose** | Individualiz-ation and concentratio n on health related behavior/ To change attitude | Individual concentration and group focusing / To encourage emotional development and create social competence to provide the skills need to meet concrete situation | To act improving the school environment and improving links with family and the wider community/ To link to the surrounding community and teachers and other schools | Children are regarded as being capable of representing themselves, making decisions concerning their health and participating in health care work |

**Source: Health education in school (19)**

## 2.3 Empowerment for health

### 2.3.1 Empowerment and health

Empowerment is generally defined as a social action process to enhance the abilities of self-control or to determine the future of individuals, as well as communities and societies (Downie et al. 1991). According to Gibson's concept (1991), empowerment is a technique for developing one's abilities to develop self-determination, autonomy, competence and relatedness, and these feelings will reduce the sense of being a burden, incompetent and uselessness (64). The empowerment program which was defined by Gibson in1995 composed of four steps: discovering reality, critical reflection, taking charge and holding on. A similar concept was used for the definition of engaged learning which is mainly composed four

categories named environment (relationship and rapport), experience (patterns and learning style), motivation (what is in it for me?), and meaning (connection and mental framework) (see figure 2.3).

Health is associated with quality of life for the individual, and with wealth in society. (6) Health is also commonly considered to be resource that supports productivity in organizations. According to an action theoretical approach to health (7), health promotion involves processes and possibly also structures aimed at strengthening the ability of the individual to act, and to promote contextual conditions for action.

A central feature of action-oriented health theories is empowerment, which is essential in health promotion. According to WHO, empowerment aims to mobilize vulnerable individuals and groups by strengthening their basic life skills and enhancing the influence on underlying social and economic condition (6). WHO defines empowerment as a process thorough which people gain greater control over decisions and actions affecting their health. (11)

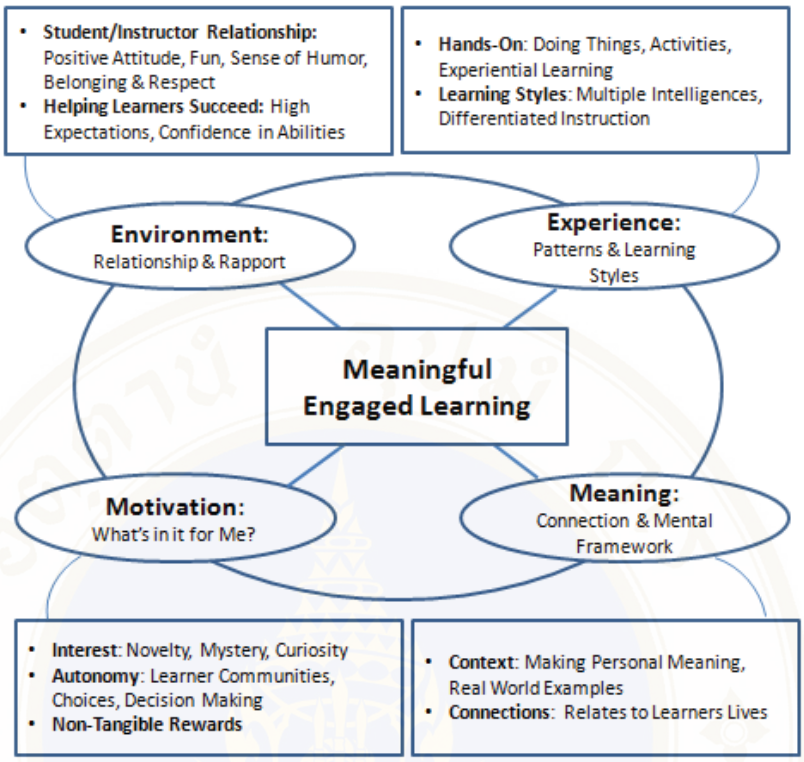



**Figure 2.3** Meaningful Engaged Learning model

**Source: Meaningful Engaged learning (20)**

Empowerment can be said to be a process in societies, cultures, psychologies or policies, and it is also things that individuals and social groups become to express their needs, to present their concerns, to devise strategies for involvement in decision-making, and to achieve political, social and cultural action to meet those needs. Through such a process, people may find a correspondence between their goals in life and try to achieve them, and a relationship between their efforts and life outcomes. Health promotion is not only actions which strengthen of basic life skills and capacities of individuals, but also standing up to any conditions which impact upon health on underlying social and economic, and physical environments (21).

There are two kinds of empowerment for the individual and community. Individual empowerment refers mainly the individuals' ability to make decisions and control their lives. The Ottawa Charter defined community actions for health with

community empowerment as the situation that people and organizations in the community obtained to get the power, to enable them start to manage social support, and to work against risk factors health: that means the control and management of their health by themselves (21).

### 2.3.2 Participation learning

Participation learning is often used in empowering programs, and it is an interactive learning style (rather than an) one way transfers of knowledge from teachers to students. It stimulates students to participate in the learning process and aims to students social participation. It also aims to motivate students to facilitate themselves utilize with social issues which exist now or in the future with deep understanding, and to improve their attitudes towards participating in solving those issues (22).

Originally, Paulo Freire (1921-1997) used participation leaning for literacy education of the rural poor. Dramas, encounter, and group work were a teacher of this style of education. Now participation learning is used not only health education, but also development education, environment education, local development, art, and psychology. The role-play and simulation are often used to involve the participants in study (22).

The participation method is used not only for schools, but also in a wide range of other settings. The last Participatory Rural Appraisal (PRA) in 1970 was opened up for rural survey with community participation. Robert Chambers who contributed to theorization and popularization of PRA explained that the PRA is the one approach or way to empower community resident through sharing their knowledge of life and talents, analyzing an issue to overcome problems, making action plans, and assessing by monitoring. Participatory Leaning and Action (PLA) is similar to PRA but more advanced. It is a process by which community residents find the issues and solve them by themselves. Those methods have been modified and adjusted to their different types of situation (22).

## 2.4 Young FDA Inspector project

The FDA is a department of the Ministry of Public Health. It is one of a group of departments working on an integrated program in order to achieve greater efficiency and effectiveness (12). One project, the Young FDA Inspector Project (young FDA project), was intended for students in secondary schools and commenced in 2002. Initially a pilot project, young FDA clubs were established in several schools in Bangkok by the FDA's Public and Consumer Affairs Unit, in collaboration with the MOE, the BMA, other units of the MOPH, and the PHO. By 2009, the project covered 10,256 schools throughout Thailand with at least 30 students from all grades forming a committee in each school.

The purpose of the project is to instill in young people knowledge about how they can protect themselves, their families, and communities in health product consumption, by encouraging parents, vendors, and as well as whole of communities to take action to make necessary changes. This is done by the young people learning from real life and by disseminating knowledge and skills to their classmates and families.

The project emphasizes activities that contribute to beneficial consumer behavior for students who take part in them, e.g. reading of labels and nutritional data before buying and consuming products. The project encourages consumption for health, for example, consuming vegetables and fruit rather than carbonated soft drinks, or food enriched with fat and sodium. Furthermore, the project includes activities which can develop their ability to develop solutions towards behavior problems relating to health and environment in schools.

There are four main features of young FDA club activities: "regular meetings", "inspecting the food and drug situation", and "awareness campaigns", and "participating in contest". Normally, regular meetings are held to make annual activity plans by self-management ways with student facilitators. Inspectors the food and drug situation is a monitoring exercise which includes checking chemical

adulteration in food sold in school canteens and by food vendors in front of the schools using test-kits. They also use test kits to check the contamination of bacteria coli on the utensils and hands of food sellers. The results of these tests are used to improve the hygiene and safety of food being sold in schools. The chemicals tested are formalin, salicylic acid, borax, and sodium hydrosulfite. They also check the labels of food products, cosmetics, and drugs sold in the school and the shops nearby. By doing this activity the Young FDA members have to study the content of the knowledge first to make them competent to give that knowledge to others.

From the results of these inspections, they step up awareness campaigns using schools intercommunication systems, exhibitions, posters, handouts, brochures, and by giving knowledge to other students after finishing the national anthem in the morning. Some schools will conduct activities in communities by holding parades to promote and campaign for the safe consumption of healthy products. Other activities include placing posters on public boards, and giving knowledge through the community broadcasting systems and local radio. They also help their families to buy only products certified by the FDA. Some schools liaise with other schools to form networks. Some schools visit primary schools or kindergartens to give knowledge about safe consumption of food using role-plays, music, food testing demonstrations, and presentations.

Thai FDA supports test-kits, printing materials, manuals, and membership badges to the participating schools. The FDA also opens a competition each year to select competent schools from all over the country. This activity might be an opportunity for Young FDA participants to exchange best practice ideas make new friends, and gain more experience. On 3rd, September, 2009, the young FDA contest was held and schools from 7 provinces achieved strong performances. The schools from; Phang-Nga province, Pathum Thani province, Maha Sarakhoam province, Satun province, Chai Nat province, Ubon Ratchathani province and Sing Buri province participated the final contest in Bangkok.

To make the project sustainable, FDA has invited teachers who are advisers of Young FDA clubs in the schools that win the competition in each region, participating in the seminar for developing Young FDA teachers' network. The FDA invited them to a seminar and workshop twice a year to deliver new information and brainstorm to enhance the Young FDA activities in schools. These teachers play an important role in supporting and encouraging Young FDA activities.

The evaluations each year show that the Young FDA project has succeeded in:

- the cooperation between; schools, students, schools and communities, schools and students' families, government agencies
- improving students in terms of consuming behavior, attitudes of social responsibility, and team working
- improving school canteens regarding the hygiene, the safety of food sold, and the food handling
- Transferring of knowledge to students, families, and communities

The success of the Young FDA Inspector project came from outer factors with the consumer protection policy, financial support, and the cooperation between the agencies concerned. And more inner factors with the support of school directors, good relationships between students and teachers, an understanding of the Young FDA activities, the participation and team working of Young FDA members, the planning and following up by teachers, and the cooperation from food sellers, are also important.

## 2.5 Theoretical models

### 2.5.1 PRECEDS- PROCEED model

A useful framework for planning and implementing health education and health promotion programs is the PRECEDES-PROCEED model designed by Lawrence Green and Marshall Kreuter Underlying this model is the principle that the most enduring health behavior change is voluntary in nature. This principle is particularly important when a systematic planning approach is used that involves people who actively participate in decisions about the behavior change.

As shown in Figure 2.4 below, the first five phases of the PRECEDES-PROCEED model are assessments, while the four remaining ones are implement and evaluative. This model provides the foundation upon which implementation and evaluation activities can be conducted. It is also useful for examining both short- and long-term results of the program.

PRECEDS stands for Predisposing, Reinforcing and Enabling constructs in education and evaluation, which is meant to outline a diagnostic planning process. PROCEED stands for policy, regulatory, and organizational constructs in education and environment development, which is meant to guide the implementation and evaluation of programs planned according to the PRECEDS process. Therefore, PRECEDES and PROCEED function in a continuous cycle.

PRECEDES-PROCEED has nine phases, the first five of which are diagnostic: (1) social diagnosis of the self-determined needs, wants, resources, and barriers to them in the target community; (2) epidemiological diagnosis of the health problems; (3) behavioral and environmental diagnosis of the specific behaviors and environmental factors for the program to address; (4) educational and organizational diagnosis of the predisposing, enabling, and reinforcing conditions which immediately affect behavior; and (5) administrative and policy diagnosis of the resources needed and available in the organization, as well as the barriers and supports available in the organization and community

The second four are implementation and evaluation: (6) implementation for the health promotion; (7) process evaluation to determine the extent to which the program was implemented according to protocol; (8) impact evaluation to assess change in predisposing, reinforcing and enabling factors, as well as in the behavioral and environmental factors; and (9) outcome evaluation to determine the effect of the program on health and quality- of- life indicators.

Figure 2.4 shows the overall process of the PRECEDS and PROCEED model. This PROCEEDS process can regarded as students through the health education. Therefore, to determine the factors related to the ability of students, the PRECEDES-PROCEED model is used in this research (23).

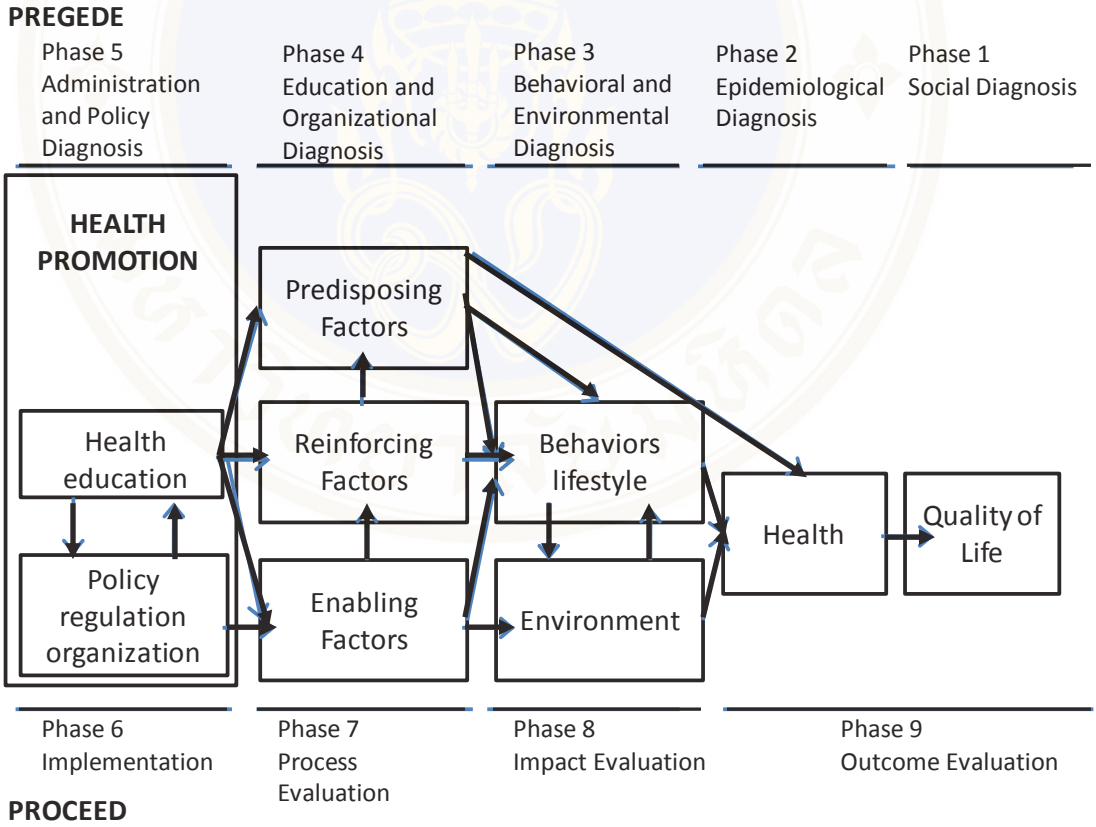



**Figure 2.4** PRECEDES-PROCEED model

**Source: Green and Kreuter (23)**

### 2.5.2 Health Belief Model

The Health Belief Model was developed by social psychologists in the U.S. Public Health Service in the 1950s to explain the widespread failure of people to participate in programs to prevent and detect disease. This model tried to explain and predict a given health behavior from certain patterns of belief about the recommended health behavior and the health problems that the behavior was intended to prevent or control (24, 25)

The Health Belief Model assumes the following four conditions to explain and predict health behavior:

1) A person believes that his or her health is at risk.

2) The person perceives the 'potential seriousness' of the condition in terms of pain, discomfort, time lost from work, economic difficulties or other negative outcomes.

3) The person believes that benefits stemming from the recommended behavior outweigh the costs and inconvenience, and that they are indeed possible and within his or her grasp.

4) The person receives a 'cue to action' or precipitating force that makes the person feels the need to take action.

The Health Belief Model has six components as follows;

1) Perceived susceptibility is defined as one's subjective belief concerning the risk of contracting a health condition. It is applied to define the population at risk or the risk levels, to personalize risk based on person's characteristics or behavior, or to make perceived susceptibility more consistent with an individual's actual risk.

2) Perceived severity refers to one's subjective belief concerning the seriousness of contracting an illness or leaving it untreated, including evaluations of both medical and clinical consequences and possible social consequences. It is applied to specify consequences of the risk and the conditions.

3) Perceived benefit is defined as one's subjective belief of the effectiveness of the various available and advised actions for reducing the risk or

seriousness of disease impact. It is applied to define action to take in how, where, and when, and clarify the positive effects to be expected.

4) Perceived barriers refer to one's subjective belief concerning potential negative aspects of the advised action. It is applies to identify and reduce perceived barriers through reassurance, correction of misinformation, incentives and assistance.

5) Cues to action are the events which activate one's advised actions. It is applied to provide how-to information, to promote awareness, and to employ reminder systems.

6) Self-efficacy is the conviction that one can successfully execute the behavior required to produce the outcomes. It is applied to provide training and guidance in performing the advised action, to use progressive goal setting, to give verbal reinforcement, to demonstrate desired behaviors and to reduce anxiety. It is a separate construct added to the original Health Belief Model.

In conclusion, the conceptual framework is constructed based on PRECEDES- PROCEED Model. Especially it was based on phase 7: to process evaluation and phase 8: to impact evaluation, and the dependent variables: the ability of students in relation to themselves considered "behavior and life style", and the ability in relation to others considered "environment". In its framework, perception on independent variables is also considered based on Health Belief Model. With regard to perception, a part of Health Belief Model is applied.

## 2.6 Related research

### 2.6.1 Ability of students

Students dictionary (26) defined the ability as: 'the quality or state of being able: power to do something', 'competence in doing', or 'learned skill'. And the ability meant the capacity for doing or achieving something or having from birth the power to do a thing especially well. Robert H Burries (27) defined high ability students as those

who perform, or have potential to perform, at a high level of academic and/or logical accomplishment when compared to other students of the same age, experience, and environment.

Concerning to ability for maintain their health, according to PRECEDES- PROCEED Model designed by Lawrence Green and Marshall Kreuter Underlying (23), health is based on behaviors in lifestyle and environment.

There were no related studies about the young FDA project written in English, however, these factors would lead the high ability of students trained by young FDA project.

**2.6.2 Predisposing factors**

**2.6.2.1 Socio-demographic factors**

**Age**

The studies of Elpidoforos S. (28) and Koh-ei Minagawa (29) identified a significant association between age group and adolescent's smoking behavior (p-value<0.0001). Shanthy A. (30) showed a significant association between age group and fast food consumption (p-value<0.0001, Odds Ratio=1.07 (continuous variables from 4 to 19 years old)). Clea A. (34) introduced that one intervention research by the Institute of Medicine in U.S. and Micahel D. (31) suggested the relationship between student's sense of s school connectedness and health risk-behavior, for exam alcohol or cigarette use, emotional distressed, and student's well-being. The study showed a significant association between age group and school connectedness (p-value<0.001, coefficient= -0.043).

On the other hand, Kaori Saito (32) showed no significant association between age group and performance of peer educators among high school students.

**Grade**

The studies of Alison L. (33) identified a significant

association between grade and school misbehavior and poor performance among 8th to 12th grade in secondary school (p-value< 0.001, coefficient= 0.04). On the other hand, Kaori Saito (32) showed no significant association between grade and performance of peer educators among high school students.

**Gender**

Shanthy A. (30) showed a significant association between gender and fast food consumption (p-value=0.049, Odds Ratio=1.21 (Male)). Clea A. (34) showed a significant association between gender and school connectedness (p-value<0.001, coefficient= -0.93 (Female)).

By contrast, Elpidoforos S. (28) identified no significant association between gender and adolescent's smoking behavior. Kaori Saito (32) and Bayliab K (35) showed no significant association between gender and performance of peer educators among high school students, and performance of VHVs.

**Religion**

Diane R. (36) showed a significant association between denominational affiliations and physical health on people aged 18 to 91 years (p-value=0.01). Peter S. (31) showed a significant association between denominational affiliations and cigarette use, and alcohol use (p-value<0.001).

By contrast, Diane R. (36) identified no significant association between religiosity and physical health. Kaori Saito (32) showed no significant association between religion and performance of peer educators among high school students.

**Family type**

Koh-ei Minagawa (29) identified a significant association between single parent family and cigarette use (p-value< 0.05). Michael D. (31) showed a significant association between parents-family connectedness and cigarette use, and alcohol use on adolescents aged 7 to 12 years (p-value<0.001). James M.

(34) showed a significant association between two-parent family and school connectedness (p-value<0.05).

Brian R. (37) found that parental involvement was important to a children's overall behavior in school, motivation to learn. The study showed a significant association between single-parent and parental involvement in school.

**Parental occupation**

Candace E. (38) showed a significant association between father's occupation and self-rated health (p-value<0.001), fruits intake (p-value<0.001), and beer drinking (p-value<0.001) on students aged 11, 13 and, 15 years. There were some studies about household income which is related with occupation. Shanthy A. (30) showed a significant association between household income and fast food consumption (p-value=0.01, Odds Ratio=1.54). Hanne T (39) identified a significant association between household income and choice of organically produced food (p-value=0.02, coefficient=0.50). Joseph R. (28) showed a significant association between household income and smoking (p-value P<0.05, Odds Ratio=1.30) Brian R. (37) showed a significant association between household income and parental involvement in school.

On the other hand, Nguyen T (17) showed no significant association between income and obese status on grade 7 to 12 students. Bayliab K (35) showed no significant association between family income and performance of VHVs.

**Duration of working for young FDA club**

Kaori Saito (32) showed a significant association between duration of working as peer educator and performance of peer educators among high school students (p-value= 0.006). Jennifer A. (40) showed a significant association between duration of participation on club activity and school belonging (p-value<0.05)

**2.6.2.2 Predisposing factors: psychosocial factors**

**Knowledge**

Edward E. (41) found significant associations between knowledge and diet behavior, and measurement serum cholesterol and triglyceride levels after health education in school (p-value<0.01). Bayliab K (35) showed a significant association between knowledge and performance of VHVs (p-value= 0.035).

On the other hands, Nguyen T (17) showed no significant association between nutrition knowledge and obese status on grade 7 to 12 students. Brit I. (42) showed no significant association between knowledge and usual purchase of healthy food choice in school with 3$^{rd}$ to 5$^{th}$ grade students. Kaori Saito (32) showed no significant association between knowledge and performance of peer educators among high school students.

**Perception**

There ware several previous researches about self-perception and student's behaviors. Koh-ei Minagawa (43) showed a significant association between self-perception and smoking on secondary school girls (p-value<0.0001). Bettina Piko (44) showed a significant association between self-perceived and psychological well-being (p-value<0.001). Mention about student's activity on health promotion, Paul S., et al. (45) revealed a significant association between self-perception and attack for activity (p-value<0.001), and Kaori Saito (32) showed a significant association between perception towards peer education and performance of peer educators among high school students (p-value<0.001). And more Bayliab K (35) showed a significant association between perception on VHVs and performance of VHVs (p-value= 0.036).

On the other hand, Paul S., et al. (45) revealed no significant association between self-perception and better dietary habits.

**Self-efficacy**

Cheryl L. (46) identified a significant association between self-efficacy and alcohol use on alcohol use prevention program by early adolescents (p-value<0.05). Albert B. (47) showed a significant association between self-efficacy and prosocial behaviors of students in elementary and junior high school (p-value<0.0001).

On the other hands, Brit I (42) revealed no significant association between self-efficacy and usual purchase of healthy food choice on school-based diabetes prevention at 3rd to 5th grades. Kaori Saito (32) showed no significant association between self-efficacy and performance of peer educators among high school students.

**Self-management**

Donald S. (48) showed a significant association between student' behavior management and health promoting approach (: personal skill building, school community relations, participation in school planning, and development) and access to health service, on students aged 8, 10, and 12 years (p-value<0.001). Edward E. (41) revealed a significant association between self-reported behavior and measurement serum cholesterol and triglyceride levels after health education in school (p-value<0.01).

Focus on the details of self-management, it was categorized into three groups named: self-reliance, cooperation, and participation. Brown D. (49) found a significant association between self-reliance and drug use, self-reliance and academic achievement on 15 to 19 years old adolescents. Lenard Springer (50) reported meta-analysis about group learning with 5 articles published from 1987 to 1995. The study showed significant associations between cooperation and achievement, cooperation and psychological health, and cooperation and inter group attitude. Robert P. (51) showed significant association between participating in the health program and fat saving, and fruits and vegetable serving (p-value<0.01) on 4th grade students. Clea A. (34) identified a significant association between participation

in extracurricular and school connectedness (p-value<0.05).

**Motivation**

J.H.F. Meyer, et al. (52) showed a significant association that extrinsic motivation linked with poor performance.

On the other hand, Steven R. (53) revealed no significant association between motivation and student's success. As the same result, Emillio F., et al. (54) showed no significant association between intrinsic motivation and task orientation, or intrinsic motivation and behavior change.

**2.6.3 Enabling factors**

**2.6.3.1 Availability of resources**

David C., et al. (55) showed no significant association between school resources and student's test scores. The study also introduced similar previous research which was revealed "There appears to be no strong or systematic relationship between school expenditures and student performance" by Haun (1986). Michael K., et al. also showed no significant association between sources on classroom and grade point on students.

Focus on time, Kaori Saito (32) showed a significant association between time and performance of peer educators among high school students (p-value=0.028). On the other hand, Simon H., et al. (56) showed no significant association between problem solving and completion time on students.

About the exercise, Berry D., et al. (57) showed a significant association between practice and ability to control the system on the people aged 19 to 35 years. Kaori Saito (32) also showed a significant association between training and performance of peer educators among high school students. On the other hand, Simon H., et al. (56) showed no significant association between problem solving and lesson on the students.

Looking at the material, Spronger L., et al. (58) found the significant association that supplying enough material lead positive effect to students on small group work. Kaori Saito (32) showed no significant association between material and performance of peer educators among high school students.

**2.6.3.2 Accessibility of resources**

Kaori Saito (32) showed significant association between accessibility of material and performance of peer educators among high school students. Ibrahim M., et al. (59) also found a significant association between accessibility of computer use and attitude to use computer on undergraduate business students.

**2.6.4 Reinforcing factor**

Some study about a performance, Kaori Saito (32) about performance of peer educators among high school students and Bayliab K (35) about performance of VHVs, showed significant association with overall social support as well as each informational, instrumental, and emotional support (p-value<0.001).

Michael D., et al. (31) found a significant association between parental expectations and cigarette use on adolescents aged 7 to 12 years (p-value<0.01). Helen M. (64) identified significant associations between student's engagement and social support from school, classroom, and parental involvement at primary schools (p-value≤0.001). Lorraine S., et al. (60) revealed significant associations between exercise behavior changing and social support from family on female, and social support from friends on male among college students aged 17 to 24 years old (p-value< 0.001 each).

# CHAPTER III
# RESEARCH METHODOLOGY

This study was conducted to ascertain the factors related to the ability of students trained by young FDA project. Students who were participating in the young FDA project were interviewed to determine what factors affected their ability. For this study, it was suitable and appropriate to use cross-sectional design.

## 3.1 Research design

This is a cross-sectional descriptive study.

## 3.2 Study Area

Primary and secondary schools in Bangkok metropolitan, Thailand.

There were 434 schools from kindergarten to primary, secondary and college in 2004. And 285,140 students were in primary and secondary schools in 2004 (61).

## 3.3 Study population

The target population of this study was students who were in grade 4-12 and participating in the young FDA project. About 30 students were participated to young FDA club in each school.

## 3.4 Sample size estimation

Based on the following formula developed by Cochran (5), the sample size was calculated as follows;

$$n = \frac{Z^2_{2/\alpha}\, p(1-p)}{E^2}$$

$$n = \frac{(1.96)^2(0.50)(0.50)}{(0.07)^2} = 196$$

Where:
- n = sample size
- Z = standard normal score set at 1.96, corresponding 95percent confidence interval (α=0.05)
- p = as there are no data presently available from previous studies, it is assumed at 0.50 (50percent)
- E = degree of accuracy desired setting at 0.07 (7percent)

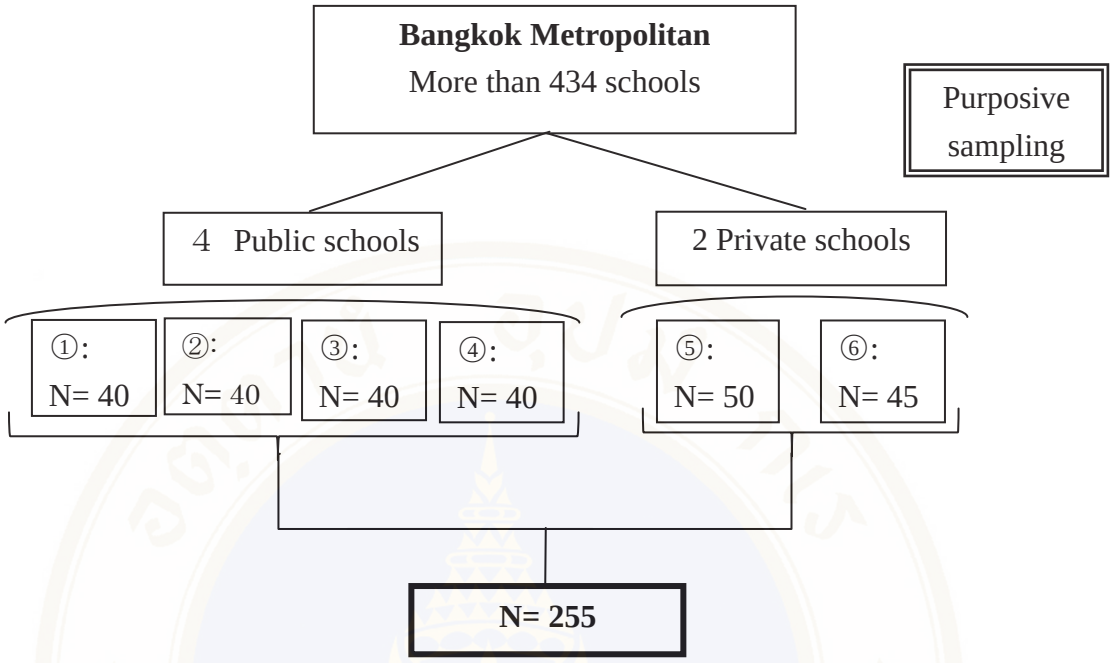
To prevent information loss from incomplete data or withdrawal of participants from this study, the sample size was increased by 30 percent. Therefore, the final sample size in this study was 255.

## 3.5 Sampling technique

The respondents were selected by purposive sampling.

There were 434 schools from kindergarten to primary, secondary and college in 2004.

Students were selected from 4 public schools and 2 private schools in Bangkok metropolitan by purposive sampling. All students who joined the young FDA project in the 6 target schools were targeted to collect data.




①,②,⑤: Primary and secondary schools, ③,④,⑥: Secondary schools

## 3.6 Instruments used for data collection

A self-administered questionnaire was used for data collection. The questionnaire was constructed based on the conceptual framework. It was translated from English to Thai to enable Thai respondents to answer the questions by themselves, and was divided into five parts, namely: socio-demographic variables and psychosocial variables as parts of predisposing factors, enabling factors, reinforcing factors as independent variables, and the ability of students as the dependent variables.

**Part 1 Predisposing factors: Socio-demographic variables**

This part contained 8 questions about age, grade, gender, religion, family type, parental occupation and duration of working for the FDA project.

**Age** was categorized into 3 groups for statistical analysis; 1) 10 to 12 years old, 2) 13 to 15 years old or 3) 16 to 19 years old.

**Grade** was categorized into 3 groups; 1) $4^{th}$ to $6^{th}$ grades, 2) $7^{th}$ to $9^{th}$ grades, 3) $10^{th}$ to $12^{th}$ grades.

**Gender** was categorized into 2 groups; 1) male or 2) female.

**Religion** was categorized into 2 groups; 1) Buddhism and 2) others.

**Family type of students** was categorized into 2 groups; 1) single parent home and no parents home, and 2) other.

**Parental occupation** was categorized into 2 groups; 1) skilled occupation: business, government employee, engineer, and teacher and 2) unskilled employee: service, farmer, labor, employee, vender, and no occupation.

**Duration of working for young FDA club** was categorized into 3 groups; 1) less than and equals 11 months, and 2) 12 to 24 months, and 3) more than and equals 25 months.

**Part 2 Predisposing factors: psychosocial variables**

This part contained questions about knowledge of the FDA, student perceptions FDA club activity, self-efficacy, self-management of FDA club activity, and motivation. The details are as follows:

**2-1 Knowledge of food and drug consumption**

This part contained 6 multiple choice questions about knowledge leading to healthy and safe consumption. A right answer was given 1 point, and a wrong answer or an invalid answer was given 0. The maximum total score was 6 and the minimum total score was 0. After summing up the total score, knowledge was classified into three groups according to Benjamin Bloom's scale as follows:

- Good knowledge > 80percent of total score
- Moderate knowledge 60percent to 80percent of total scores

- Poor knowledge < 60percent of total score

**2-2 Perception of students about FDA club activity**

This part contained 5 questions about perceived satisfaction and benefit, difficulty and about the atmosphere of FDA club activity. These questions were answered on a Likert scale with agree, neutral and disagree and scores were given as follows;

For the positive statements (Q. 16. 20):

- Agree = 3 points
- Neutral = 2 points
- Disagree = 1 point

For the negative statements (Q. 17, 18, 19);

- Agree = 1 point
- Neutral = 2 points
- Disagree = 3 points

The maximum total score was 15 and the minimum total score was 5. After calculating the total score, student perception about FDA club activity was classified in to 2 groups by Yate levels as follows:

- High perception = 11 – 15 points
- Low perception = 5 – 10 points

**2-3 Self-efficacy**

This part contained 4 questions about self-efficacy and confidence in conducting young FDA projects. These questions were answered on a Likert scale with agree, neutral and disagree and scores were given as follows:

For the positive statements (Q. 21, 24):

- Agree = 3 points
- Neutral = 2 points
- Disagree = 1 point

For the negative statements (Q. 22, 23);

- Agree = 1 point
- Neutral = 2 points

- Disagree = 3 points

The maximum total score was 12 and the minimum total score was 4. After calculating the total score, student confidence was classified into 2 groups according to Best's Rating Criteria as follows:

-High confidence = 9-12 points

- Low confidence = 4-8 points

**2-4 Self-management of the FDA club activity**

This part contained 18 questions about self-management of the FDA club activity. They were divided into 3 parts as follows: in club activity: 5 questions; cooperation: 4 questions; and participation: 8 questions. The questions for each activity were required to be answered by specific number and Yes or No. The questions for cooperation were answered on a Likert scale with agree, neutral and disagree. The questions for participation were answered on a Likert scale with many, moderate and few or no, and scores were given as follows:

About the club activity part, a self-reliance answers were given score 1 and the others were given score 0. The maximum total score of the part was 5 and the minimum score was 0. After calculating the total score for self-reliance, students were classified into 2 groups by Best's Rating Criteria as follows;

-High self-reliance = 4 – 5 points

- Low self-reliance = 0 - 3 points

About the cooperation, scores were given as follows;.

For the positive statements (Q. 30, 32, 33):

- Agree = 3 points
- Neutral = 2 points
- Disagree = 1 point

For the negative statements (Q. 31);

- Agree = 1 point
- Neutral = 2 points
- Disagree = 3 points

The maximum total score was 12 and the minimum total score was 4. After

calculating the total score for cooperation, students were classified into 2 groups by Best's Rating Criteria as follows;

-High cooperation = 9-12 points

- Low cooperation = 4-8 points

With regard to participation, scores were given as follows:

- Many = 3 points
- Moderate = 2 points
- A few or no = 1 point

After calculating the total score for participation, students were classified into 2 groups by Best's Rating Criteria as follows;

-High participation = 17-24 points

- Low participation = 8-16 points

**2-5 Motivation**

Motivation was divided into intrinsic (a, d, e and g) and extrinsic (b, c, f and h) motivation in order to find whether the respondents were motivated more by one than the other. The questions were answered by Yes or No. Answered yes was given point, and answered no was given 0. The maximum total score of intrinsic and extrinsic motivation was 4 points each and the minimum total score was 0 each. After calculating the total score for intrinsic and extrinsic motivation, they were compared.

**Part 3 Enabling factors**

This part contained questions about availability of resources and accessibility of resources.

**3-1 Availability of resources**

This part contained 4 questions about study materials, working time and office supplies available to the respondents.

**3-2 Accessibility of resources**

This part contained 5 questions about each respondent's ease of access for getting appropriate studies material or extra information.

**Part 4 Reinforcing factors**

This part consisted of 18 questions about material, informational and emotional support. In this part, respondents were asked about support from teachers, health personnel in health offices, pharmacists, colleagues, family and others. These questions were answered on a Likert scale with a lot, moderate, a few and never, and scores were given as follows:

- A lot = 3 points
- Moderate = 2 points
- A few = 1 point
- Never = 0 point

The maximum total score was 54 and the minimum total score was 0.After calculating the total score, support was classified into 3 groups by Best's Rating Criteria as follows:

-High support = 37 – 54 points
- Moderate support = 19 – 36 points
- Poor support = 0- 18 points

**Part 5 Ability of students**

In this part the ability of the respondents was measured in 2 ways. In the first part respondents were asked themselves about behavioral and attitude of food and drug consumption and activities. And the second part, they were asked the effectiveness of their activities for others.

The first part contained 14 questions which were answered yes or no. A positive answer was given 1 point and a negative answer was given 0. The second part contained 6 questions answered on a Likert scale: strongly agree, agree, neutral or disagree, and points were given as follows.

- Strongly agree = 3 points
- Agree = 2 points
- Neutral = 1 point
- Disagree = 0 point

The maximum total score was 32 and the minimum total score was 0.After calculating the total score, ability was classified into 2 groups by using mean as follows:

- High ability $>$ mean
- Low ability $\leq$ mean

## 3.7 Pre-testing of the questionnaire

Prior to data collection, the questionnaire was trialed with 30 students in the Young FDA club at Bang Yi Khan Songkhro School in Bang Yi Khan, Bang Plad, Bangkok, and tested for reliability and validity regarding knowledge, perceptions, and self- efficacy.

The knowledge part of the questionnaire was pre-tested by Kuder Richardson 20 (KR-20) and the perception and self-efficacy parts of the questionnaire by Cronbach's Alpha. The number of each result was found as follows: KR20 = 0.47 for knowledge part and Cronbach's Alpha = 0.51 for perception part, 0.52 for self-efficacy part. After the knowledge part was rewritten, and a question was deleted from each perception and self-efficacy part, the second pre-test was conducted at the same schools. The number of each result was found as follows: KR20 = 0.51 for knowledge part and Cronbach's Alpha = 0.51 for perception part, 0.53 for self- efficacy part. Based on the results, three questions were deleted from knowledge part.

## 3.8 Data collection procedure

After receiving approval for the research from the Mahidol University Ethics Committee (COA. No. MU-IRB 2009/ 319.1512), the data collection was launched and followed the following 6 steps:

1) AIHD sent a formal letter to the directors of the target secondary schools asking permission to collect data in their schools, and requesting that they recommend a school coordinator to support communication with the respective schools and students.

2) After getting permission to collect data from the school directors, the major advisor contacted the school coordinators as principal coordinators in each school, and explained the purposes and process of this study, including the description of students under young FDA project, and the protection of their rights. The principal coordinators confirmed the exact number of the students in each school.

3) Each school coordinator was asked to contact the students participating in the young FDA project, and to set a time which would not affect their study time to meet the researcher, coordinator and the students. The researcher and coordinator went to meet the students at the agreed times. The coordinator explained the purposes and process of this study, and how the regal and ethical rights of all students would be protected.

4) If the students involved in the young FDA project were willing to participate in the study, the coordinators distributed the participation information sheet, consent form, and questionnaire to them. The students were asked to give the participation information sheet and consent form to their guardians for permission to participate in this research. The guardians were asked to sign these two forms, if they permitted their children to participate in this study.

5) After getting the permission from their guardians, the students involved in the young FDA project signed their names to the consent forms and then answered the questionnaire. The time to complete this questionnaire was about 10 to 15 minutes.

6) Three boxes were provided by the researcher, and these boxes were put in front of the administration room in each school. Students belonging to the young

FDA project were asked to return the participation information sheet, consent form, and questionnaire to researcher in the separate boxes.

## 3.9 Data analysis procedure and statistics used

After collecting the data by the self-administered questionnaire, it was coded and entered into the Epidata program, and then analyzed using the Minitab program.

**Univariate analysis;** Descriptive Statistics were used to calculate frequency, percentage, mean, median and standard deviation of all the variables.

**Bivariate analysis;** Inferential statistics were used to describe the associations between the independent and dependent variables at significant level 0.05, by Chi-square test.

# CHAPTER IV
# RESULTS

This cross-sectional descriptive study aimed to ascertain the factors related to the ability of students participating in the young FDA project as facilitators in Bangkok, Thailand. The target students were 10 to 19 years and worked in the young FDA club. They were selected by purposive sampling from three public and three private schools. 255 students were collected thorough self-administered questionnaire from 21 January to second February, 2010. However, 15 questionnaires were not completed. The results are presented under headings as follows:

**1. Analysis of descriptive statistics**

The frequency and percentage of dependent variables, and independent variables: predisposing factors, enabling factors, and reinforcing factors were analyzed

**2. Analysis of associations between the dependent variables and, independent variables:** predisposing factors, enabling factors, and reinforcing factors analyzed by using Chi-square test and Fisher's exact test.

## 4.1 Frequency and percentage of independent and dependent variables

### 4.1.1 Socio-demographic characteristics

Table 4.1 shows the frequency and percentage of the socio-demographic variables. The mean age of the students was 15.57 years. Nearly one-half of the respondents (44.40%) were in the grade 10 to grade 12 at high school. The others were distributed almost equally in the grade four to grade six (27.39%), and in the grade seven to grade nine (28.21%).

About two-thirds of the respondents (66.39%) were female and 33.61 percent of them were male. The majority of respondents (92.53%) were Buddhist, 6.64 percent were Christian, and 0.83 percent were Muslim.

More than four-fifths of the respondents lived with fathers (81.74%) and with mothers (89.21%) in their families. One-quarter of the respondents (20.75%) had single parent or no parent (See Table 48 in APPENDIX B) With regard to fathers' and mothers' occupations, the largest group was unskilled (59.75% and 68.05%, respectively).

One-quarter of the respondents (40.25%) had experience working on the young FDA club for less than 12 months. 33.61 percent of them had worked for between 12 and 24 months, and only 26.14 percent had worked over 24 months.

**Table 4.1** Frequency and percentage by socio-demographic characteristics

| Socio-demographic variables | N (n= 241) | percent |
|---|---|---|
| **Age** (Years) | | |
| 10-12 | 61 | 25.31 |
| 13-15 | 79 | 32.78 |
| 16-19 | 101 | 41.91 |
| Mean= 14.57, SD= 2.56, Min= 10.00, Max= 19.00 | | |
| **Grade** | | |
| $4^{th}$- $6^{th}$ | 66 | 27.39 |
| $7^{th}$ - $9^{th}$ | 68 | 28.21 |
| $10^{th}$ - $12^{th}$ | 107 | 44.40 |
| **Gender** | | |
| Male | 80 | 33.61 |
| Female | 161 | 66.39 |

**Table 4.1** Frequency and percentage by socio-demographic characteristics (cont.)

| Socio-demographic variables | N (n= 241) | percent |
|---|---|---|
| **Religion** | | |
| Buddhism | 223 | 92.53 |
| Christianity | 16 | 6.64 |
| Islam | 2 | 0.83 |
| **Family type** | | |
| Father | 197 | 81.74 |
| Mother | 215 | 89.21 |
| Sister/Brother | 176 | 73.03 |
| Grand mother/ father | 67 | 27.08 |
| Relatives | 35 | 0.16 |
| **Parental occupation** | | |
| **Father's occupation** | | |
| Skilled occupation | 97 | 40.25 |
| Unskilled occupation | 144 | 59.75 |
| **Mother's occupation** | | |
| Skilled occupation | 77 | 31.95 |
| Unskilled occupation | 137 | 68.05 |
| **Duration of working for young FDA club** | | |
| < 12 months | 97 | 40.25 |
| 12 months – 24 months | 81 | 33.61 |
| >24 months | 63 | 26.14 |

* Multiple answer

### 4.1.2 Ability of students

Table 4.2 shows the frequency and percentage by level of ability of students, which was answered in relation to themselves. According to the total score of 14 questions, the respondents were divided into high and low ability using the mean score. Overall, 43.57 percent of respondents had high ability and 56.43 percent low

ability. The mean score was 11.04 out of a possible maximum score of 14; the standard deviation was 1.95. Minimum and maximum scores were 5 and 14, respectively.

**Table 4.2** Frequency and percentage of the level of ability of students in relation to themselves

| Level of ability of students | N (n = 241) | percent |
|---|---|---|
| High ability | 105 | 43.57 |
| Low ability | 136 | 56.43 |
| Mean=11.04 , SD=1.95 , Min=5 , Max=14 | | |

Score: Low: < mean, High: ≥ mean

Table 4.3 shows the frequency and percentage by level of ability of students in relation to others and other organizations. According to the total score of six questions, the respondents were divided into high and low ability using the mean score. Overall, 51.45 percent of the respondents had high ability and 48.55 percent low ability. The mean score was 14.07 out of a total score of 18; the standard deviation was 2.80. Minimum and maximum scores were 4 and 18, respectively.

**Table 4.3** Frequency and percentage of the level of ability of students in relation to others and other organization

| Level of ability of students | N (n = 241) | percent |
|---|---|---|
| High ability | 124 | 51.45 |
| Low ability | 117 | 48.55 |
| Mean=14.07 , SD=2.80 , Min=4 , Max=18 | | |

Score: Low: < mean, High: ≥ mean

Considering the statements of the ability in relation to themselves, more than 90 percent of respondents were good consumers who bought goods (foods, cosmetic, or drugs) based on safety and cleanliness, and health, (96.27% and 94.19% respectively). Only 14.11 percent of the respondents followed friends to buy goods. On the other hand, nearly half of the respondents bought goods based on taste or appearance (46.06%) and advertisements (45.64%). In addition, 9.13 percent of the respondents followed signs authorized by Food and Drug Administration (Table 4.4).

**Table 4.4** Percentage of ability of students in relation to themselves

| **Ability of students (n=241)** | **Yes (%)** |
|---|---|
| Students have good knowledge of food and drug consumption | 83.40 |
| Students have good skill for contamination checking test | 63.07 |
| Students like to teach good things for other students | 94.19 |
| Students like to select good things for themselves | 84.65 |
| Students buy goods: foods, cosmetics or drugs, based on | |
| – Cheap price | 19.50 |
| – Package design | 22.82 |
| – Advertisement | 45.64 |
| – Following friends | 14.11 |
| – Taste (food) and cute ( cosmetic) | 46.06 |
| – Healthy | 94.19 |
| – Safety and cleanness | 96.27 |
| – Authorized by Food and Drug administration | 9.13 |
| – Fresh | 0.83 |
| – Quality | 0.83 |
| – Expensive | 0.41 |
| Students have breakfast everyday | 69.71 |
| Students have dinner with someone | 85.06 |
| Students have favorite food | 78.01 |

Concerning the statements of ability of students in relation to others and other organizations, about improving others' food and drug consumption behavior by young FDA club activity, more than 95 percent of the respondents felt they had been succeed changing the behavior in three groups: other students, FDA club members, and teachers (97.44%, 96.68 %, and 95.85% respectively). On the other hand, relatively few respondents felt they had succeeded changing the community market (68.88%) (Table 4.5).

**Table 4.5** Percentage of ability of students in relation to others and other organizations

| **Ability of students (n=241)** | **Agree (%)** | **Neutral (%)** | **Disagree (%)** |
|---|---|---|---|
| The thing that success to change after young FDA club activity | | | |
| other students | 97.44 | 3.73 | 0.38 |
| teachers | 95.85 | 3.73 | 0.41 |
| cafeteria and shop in school | 86.31 | 12.03 | 1.66 |
| market in community | 68.88 | 26.14 | 4.98 |
| their family | 91.29 | 7.88 | 0.83 |
| FDA club member | 96.68 | 3.32 | 0.00 |

**4.1.3 Predisposing factors: Knowledge of food and drug consumption**

Table 4.6 shows the frequency and percentage of the respondents by level of knowledge of food and drug consumption. The score from seven questions was totalled and the knowledge levels were categorized into three groups as good, moderate, or poor based on Benjamin Bloom. More than half of the respondents (51.87%) had good knowledge. Moderate and poor knowledge were almost equally distributed (24.90% and 23.23%, respectively). The mean total score was 5.27 out of 7; standard deviation was 1.12. Minimum and maximum scores were 1 and 7, respectively.

**Table 4.6** Frequency and percentage by level of knowledge of food and drug consumption

| Level of knowledge of food and drug consumption | N (n=241) | percent |
|---|---|---|
| Good | 125 | 51.87 |
| Moderate | 60 | 24.90 |
| Poor | 56 | 23.23 |
| Mean=5.27, SD=1.12, Min=1.00, Max= 7.00 | | |

Score: Poor < 60%, Moderate: 60% to 80%, Good: > 80%

Table 4.7 shows the percentage of the respondents by correct answers by each question about knowledge. The questions about knowledge contained three parts, namely: food safety, drug safety, and healthy food consumption. The average of correct answers concerned drug safety (87.56%) and healthy food consumption (81.74%). Unlike trend with others, the percentage of correct answers in each question about food safety was different. Food safety was answered lower than others (67.43%).

Nearly all of the respondents knew about drug safety and that people should buy approved drugs (96.72%), and the quantity is important in taking drugs (78.84%). Based on healthy food consumption, 81.74 percent of the respondents knew that vegetables and fruit help improve the immunity system. According to the knowledge on food safety, the largest number of respondents knew that cancer can be caused by using oil to fry many times (95.85%). By contrast, the number of respondents who had knowledge about the cause of diarrhea by eating raw food was the lowest number of correct answers (24.90%).

**Table 4.7** Frequency and percentage by correct answer of questions about knowledge of food and drug consumption

| Knowledge of food and drug consumption (n= 241) | Correct answer N | percent |
|---|---|---|
| **Food safety** | | |
| Borax is to keep food freshness | 161 | 66.80 |
| Bean sprout exposed food addictive | 198 | 82.16 |
| Cancer will happen because of using oil to fry many times | 231 | 95.85 |
| Eating raw food can be cause of diarrhea | 60 | 24.90 |
| **Drug safety** | | |
| Quantity is important to take drugs | 190 | 78.84 |
| Should buy approved drugs | 232 | 96.27 |
| **Healthy food consumption** | | |
| Vegetables and fruit help increasing immunity system | 197 | 81.74 |

### 4.1.4 Predisposing factors: perception of students about FDA club activity

Table 4.8 shows the frequency and percentage of the respondents by level of perception of students about FDA club activity. The score from five questions was totalled and the perception levels were categorized into tow groups as high or low based on Best criteria. About 90 percent of respondents (90.87%) had high perception. The mean total score was 12.17; the standard deviation was 1.64. Minimum and maximum scores were 9 and 15, respectively.

**Table 4.8** Frequency and percentage by level of perception of students about FDA club activity

| Level of perception of students about FDA club activity | N (n=241) | percent |
|---|---|---|
| High | 219 | 90.87 |
| Low | 22 | 9.13 |
| Mean= 12.71, SD= 1.64, Min= 9.00, Max= 15.00 | | |

Score: Low = 5 - 10, High = 11-15

Table 4.9 shows the percentage of the respondents by each statement about their perception of FDA club activity. The respondents had low perception with regard to all three statements. 95.02 percent believed that the club members got good knowledge through the activity. 78.84 percent of the respondents could express the ideas or opinions for other members easily. For negative perceptions, 43.15 percent of the respondents answered that adults do not like to listen to members' suggestions, and other students do not understand the campaign (41.08%).

**Table 4.9** Percentage of each statement about perception of students about young FDA club activity

| Perceptions of students about young FDA club (n=241) | Agree (%) | Neu-tral (%) | Dis-agree (%) | Mean | SD | Com-ment |
|---|---|---|---|---|---|---|
| The club members get the good knowledge through the activity | 95.02 | 4.56 | 0.41 | 2.95 | 0.24 | High |
| The members cannot improve their ability through the activity | 9.13 | 27.08 | 63.07 | 1.46 | 0.66 | Low |
| Adults do not like to listen member's suggestion | 16.18 | 40.66 | 43.15 | 1.73 | 0.72 | Low |

**Table 4.9** Percentage of each statement about perception of students about young FDA club activity (cont.)

| Perceptions of students about young FDA club (n=241) | Agree (%) | Neu-tral (%) | Dis-agree (%) | Mean | SD | Comm-ent |
|---|---|---|---|---|---|---|
| Other students do not understand campaign | 20.75 | 38.17 | 41.08 | 1.80 | 0.76 | Low |
| The members can say ideas or opinions for other members easily | 78.84 | 17.01 | 4.15 | 2.75 | 0.52 | High |

Score: Low= 1to 2.00, High: 2.01 to 3

**4.1.5 Predisposing factors: self-efficacy**

Table 4.10 shows the frequency and percentage of respondents by level of self-efficacy. The scores from four questions were totalled and the self-efficacy levels were categorized into two groups as high or low based on Best criteria. The proportion of the respondents who had high self-efficacy was grater than those who had low self-efficacy. The mean total score was 8.57; the standard deviation was 1.45. Minimum and maximum scores were 6 and 12, respectively.

**Table 4.10** Frequency and percentage by level of self-efficacy

| Level of self-efficacy | N (n=241) | percent |
|---|---|---|
| High | 108 | 44.81 |
| Low | 133 | 55.19 |
| Mean= 8.57, SD= 1.45, Min= 6.00, Max=12.00 | | |

Score: Low = 4-8, High = 9-12

Table 4.11 shows the percentage distribution of the respondents by each questions of self-efficacy. Based on the mean of each question, respondents had high

self-efficacy on half of the statements. In addition, more than 40 percent of the respondents answered neutral. Concerning the details, 49.38 percent of the respondents felt that their friends were proud of them at the highest self-efficacy. For the negative statement, a similar percentage of the respondents disagreed with “I feel pain from others”.

**Table 4.11** Percentage of each statement about self-efficacy

| Self-efficacy (n=241) | Agree (%) | Neu-tral (%) | Dis-agree (%) | Mean | SD | Comment |
|---|---|---|---|---|---|---|
| I am important member in the club | 37.76 | 53.94 | 8.30 | 2.30 | 0.61 | High |
| I am afraid of failure | 17.84 | 44.40 | 37.76 | 1.80 | 0.72 | Low |
| I feel pain from others | 9.54 | 41.08 | 49.38 | 1.60 | 0.66 | Low |
| My friends are proud of me | 49.38 | 48.55 | 2.07 | 2.47 | 0.54 | High |

Score: Low= 1to 2.00, High: 2.01 to 3

#### 4.1.6 Predisposing factors: self-management of young FDA club activity

Table 4.12 shows the frequency and percentage of respondents by level of self-management of young FDA club activity. There were three parts: self-reliance in management of the club activity, cooperation, and participation. The scores of each category were totalled and the levels were categorized into two groups as high or low. Considering to self-reliance, 85.89 percent of the respondents had high self-reliance and the mean total score was 4.43; standard deviation was 0.91. Minimum and maximum scores were 1 and 5, respectively. About cooperation, 92.53 percent of the respondents had high cooperation and the mean total score was10.53; standard deviation was 1.21. Minimum and maximum scores were 7 and 12, respectively. Concerning participation, 69.29 percent of the respondents had high cooperation and the mean total score was 18.2; standard deviation was 3.41. Minimum and maximum scores were 10 and 24, respectively.

**Table 4.12** Frequency and percentage by level of self-management on the FDA club activity

| Level of self-management | N (n=241) | percent |
|---|---|---|
| **Self-reliance** | | |
| High | 207 | 85.89 |
| Low | 34 | 14.11 |
| Mean=4.43, SD= 0.91, Min= 1, Max= 5 | | |
| **Cooperation** | | |
| High | 223 | 92.53 |
| Low | 18 | 7.47 |
| Mean=10.53, SD=1.21, Min=7, Max=12 | | |
| **Participation** | | |
| High | 167 | 69.29 |
| Low | 74 | 30.71 |
| Mean=18.2, SD=3.41, Min=10, Max=24 | | |

Score of self-reliance: Low = 0-3, High =4-5

Score of cooperation: Low = 4-8, High =9-12

Score of participation: Low =8-16, High =17-24

Table 4.13 shows the frequency and percentage of the respondents about self-reliance answer by each statement of self-reliance on management of the club activity. More than 70 percent of the respondents built the activities of self-reliance. Especially, on the level of self-reliance on meeting part was very high. Almost all respondents (97.10%) agreed that facilitators facilitated each meeting. Moreover, 90.87 percent of the respondents thought that they were good at making plans, and 86.72 percent made sure about sharing action plans and objectives before each meeting. In addition, 88.80 percent of the respondents did evaluations after campaigns.

**Table 4.13** Frequency and percentage of self-management on the self-reliance part

| Self reliance on management of the club activity (n= 241) | Answered 'yes' | percent |
|---|---|---|
| **Meeting** | | |
| Sharing action plan and objective before meeting each time | 209 | 86.72 |
| Good at making activity plans | 219 | 90.87 |
| Somebody work as facilitator at the meeting. | 234 | 97.10 |
| **Contamination test** | | |
| I act to prepare new test kids by myself | 171 | 70.95 |
| **Campaign** | | |
| Doing evaluation after the campaign | 214 | 88.80 |

Table 4.14 shows the percentage of the respondents by each statement of cooperation regarding FDA club activity. Based on the mean of each question, the respondents got high level of cooperation. More than 80 percent of respondents thought that club members had good ability (87.14%) and that colleagues helped them (82.16%). On the other hand, only 64.32 percent of the respondents thought that they could listen to colleagues talking, even angry colleagues, and 42.74 percent felt that they could change themselves.

**Table 4.14** Percentage of self-management on the cooperation on FDA club activity

| Statement about cooperation (n=241) | Agree (%) | Neu-tral (%) | Dis-agree (%) | Mean | SD | Comme-nt |
|---|---|---|---|---|---|---|
| Colleagues help me | 82.16 | 14.52 | 3.32 | 2.79 | 0.48 | High |
| I do not like change myself | 12.03 | 45.23 | 42.74 | 1.69 | 0.68 | Low |

**Table 4.14** Percentage of self-management on the cooperation on FDA club activity (cont.)

| Statement about cooperation (n=241) | Agree (%) | Neu-tral (%) | Dis-agree (%) | Mean | SD | Comme-nt |
|---|---|---|---|---|---|---|
| Club members have good ability | 87.14 | 12.03 | 0.83 | 2.86 | 0.37 | High |
| I can listen to colleague talking, even they are angry | 64.32 | 28.22 | 7.47 | 2.57 | 0.63 | High |

Score: Low= 1to 2.00, High: 2.01 to 3

Table 4.15 shows the percentage of the respondents by each statement about participation of FDA club activity. Based on the mean of each question, one statement got low participation of eight statements and almost respondents answered 'moderate'. In details, 81.74 percent of the respondents got new perspectives many times. 47.13 percent of the respondents participated in club activity a lot, and less than 41.08 percent of the respondents helped a lot for meetings as facilitators. On the other hand, more than 35 percent of the respondents said something in front of the all students few or no times (35.27 %), and rounded up the result to test few or no times (38.17%).

**Table 4.15** Percentage of self-management on the participation on FDA club activity

| Statement about participation (n=241) | Many (%) | Mode-rate (%) | Few/ no (%) | Mean | SD | Comm-ent |
|---|---|---|---|---|---|---|
| Participation of club activity | 47.13 | 46.89 | 4.98 | 2.43 | 0.59 | High |
| Getting new perspective | 81.74 | 16.18 | 2.07 | 2.80 | 0.45 | High |
| Helping meeting as facilitator | 41.08 | 55.60 | 3.32 | 2.38 | 0.55 | High |
| Checking contamination test with test kids | 42.32 | 42.74 | 14.94 | 2.27 | 0.71 | High |

**Table 4.15** Percentage of self-management on the participation on FDA club activity (cont.)

| Statement about participation (n=241) | Many (%) | Mode -rate (%) | Few/ no (%) | Mean | SD | Comme -nt |
|---|---|---|---|---|---|---|
| Rounding up the result of test | 15.77 | 46.06 | 38.17 | 1.78 | 0.70 | Low |
| Saying something in front of the all students | 19.50 | 45.23 | 35.27 | 1.24 | 0.73 | Low |
| Creating poster or advertisement | 31.12 | 41.08 | 27.80 | 2.03 | 0.77 | High |
| Suggestion to adult | 38.59 | 49.38 | 12.03 | 2.27 | 0.66 | High |

Score: Low= 1to 2.00, High: 2.01 to 3

### 4.1.7 Predisposing factors: motivation

Table 4.16 shows the frequency and percentage of respondents by level of motivation: intrinsic motivation and extrinsic motivation. The scores of each part were totalled and were categorized into two groups as high or low.

Regarding intrinsic motivation, almost all respondents (94.19%) had high motivation. The mean total score was 3.76; standard deviation was 0.61. Minimum and maximum scores were 0 and 4, respectively. Subsequently, about extrinsic motivation, less than half of the respondents (43.98%) had high levels. The mean was 2.47 out of 4; standard deviation was 1.08. Minimum and maximum scores were 0 and 4.

**Table 4.16** Frequency and percentage of levels of intrinsic motivation and extrinsic motivation by categories

| Level of motivation | N (n=241) | percent |
|---|---|---|
| **Intrinsic motivation** | | |
| High | 227 | 94.19 |
| Low | 14 | 5.81 |
| Mean= 3.76, SD= 0.61, Min= 0.00, Max=4.00 | | |
| **Extrinsic motivation** | | |
| High | 106 | 43.98 |
| Low | 35 | 56.02 |
| Mean= 2.47, SD= 1.08, Min= 0.00, Max=4.00 | | |

Score: Low = 0-2, High = 3-4

Table 4.17 shows the percentage of the respondents who answered 'yes' by each statement of motivation. In the detail of intrinsic motivation part, more than 90 percent of the respondents answered that all of statements motivated them: big smile (97.93%) at the highest, respect (94.19%), praise (92.53%), and clap (91.70%). In the detail of extrinsic motivation part, on the other hand, only good marks motivated more than four-fifth of respondents (83.82%). For the other statement, the fewer respondents were motivated by field trip (63.07%), present (44.40%), and money (32.37%) at the lowest of all motivation statements.

**Table 4.17** Frequency and percentage of answer 'yes' on the motivation

| Motivation (n= 241) | Answered 'yes' | percent |
|---|---|---|
| **Intrinsic motivation** | | |
| Handclaps | 221 | 91.70 |
| Big smile | 236 | 97.93 |
| Praise | 223 | 92.53 |
| Respect | 227 | 94.19 |

**Table 4.17** Frequency and percentage of answer ‘yes’ on the motivation (cont.)

| Motivation (n= 241) | Answered ‘yes’ | percent |
|---|---|---|
| **Extrinsic motivation** | | |
| Good marks | 202 | 83.82 |
| Money | 78 | 32.37 |
| Present | 107 | 44.40 |
| Field trip | 152 | 63.07 |

#### 4.1.8 Enabling factors: availability of resources

Table 4.18 shows the frequency and percentage of the respondents by availability of four resources. The result showed that all statements were answered by more than 75 percent of the respondents. Office supply (82.57%) was the highest, followed by time to study about FDA knowledge in school (78.42%).

**Table 4.18** Frequency and percentage of availability of resources

| Availability of resources (n= 241) | Answered ‘Enough’ | percent |
|---|---|---|
| Time to study about FDA knowledge in school | 189 | 78.42 |
| Time to prepare contest or campaign in school | 184 | 76.53 |
| Exercise for experiment to check contamination | 156 | 77.18 |
| Office supply for contest or campaign | 199 | 82.57 |

#### 4.1.9 Enabling factors: accessibility of resources

Table 4.19 shows the frequency and percentage of the respondents by accessibility of resources. Most of the respondents (89.21%) replied that it was easy to get resources to study knowledge/skill. At the next, 71.37 percent of the respondents could contact outside of schools easily.

**Table 4.19** Frequency and percentage of accessibility of resources

| Availability of resources (n= 241) | N | percent |
|---|---|---|
| **Getting resources to study knowledge/ skill** | | |
| Easy | 215 | 89.21 |
| **Getting new information which I am interesting** | | |
| Easy | 150 | 62.24 |
| **To contact with out side of schools** | | |
| Easy | 172 | 71.37 |

In terms of ways in which they often get information, most respondents used to get information from the internet (85.89%), or story books (78.01%) Some respondents found it easy to get information from the FDA home page and multimedia (22.82 percent and 28.22 percent respectively) (See Table 4.20).

**Table 4.20** Frequency and percentage of accessibility of resources which often use

| Availability of resources (n= 241) | Answered 'yes' | percent |
|---|---|---|
| **Often use to get information by** | | |
| **Internet** | 207 | 85.89 |
| **FDA home page** | 55 | 22.82 |
| **Leaf let** | 120 | 49.79 |
| **Fact sheet** | 92 | 38.71 |
| **Story book** | 188 | 78.01 |
| **Television** | 164 | 68.05 |
| **Multimedia** | 68 | 28.22 |
| **Radio** | 4 | 1.66 |

**Table 4.20** Frequency and percentage of accessibility of resources which often use (cont.)

| Availability of resources (n= 241) | Answered 'yes' | percent |
|---|---|---|
| **Radio** | 4 | 1.66 |
| **Telephone** | 3 | 1.24 |
| **News paper** | 1 | 0.41 |

Regarding difficulties in obtaining information, some respondents had difficulty with the FDA homepage (50.62%), multimedia (38.59%), and fact sheets (30.71%) (See Table 4.21).

**Table 4.21** Frequency and percentage of accessibility of resources which difficult to use

| Availability of resources (n= 241) | Answered 'yes' | percent |
|---|---|---|
| **Difficult to get the information by** | | |
| **Internet** | 16 | 6.64 |
| **FDA home page** | 122 | 50.62 |
| **Leaf let** | 46 | 19.09 |
| **Fact sheet** | 74 | 30.71 |
| **Story book** | 16 | 6.64 |
| **Television** | 36 | 14.94 |
| **Multimedia** | 93 | 38.59 |
| **Radio** | 2 | 0.83 |

**4.1.10 Reinforcing factor**

Table 4.22 shows the frequency and percentage of the respondents by level of social support. There were three parts as material, informational, and emotional support. The scores of the three parts were totalled and the social support levels

categorized into three groups as high, moderate, and low. About half of the respondents (45.23%) had high social support and majority of them (52.70%) had moderate level. Low social support was minority of the respondents (2.07%). The mean was 35.74; standard deviation was 7.38. Minimum and maximum scores were 15 and 54, respectively.

**Table 4.22** Frequency and percentage by level of social support

| Level of social support | N (n=241) | percent |
|---|---|---|
| High | 109 | 45.23 |
| Moderate | 127 | 52.70 |
| Low | 5 | 2.07 |
| Mean= 35.74, SD= 7.38, Min= 15.00, Max=54.00 | | |

Score: Low = 0-18, Moderate support= 19-36, High = 37-54

In addition, according to the types of social support, the result showed the same trend of each supports. More than 80 percent of the respondents received moderate support in all parts mental (84.58%), informational (86.72%), and emotional (87.14%), respectively (Table 4.23.)

**Table 4.23** Frequency and percentage of levels of social support by categories of social support

| Level of social support | N (n=241) | percent |
|---|---|---|
| **Material support** | | |
| High (16-24) | 18 | 7.47 |
| Moderate (8-15) | 206 | 85.48 |
| Low (0-7) | 17 | 7.05 |
| Mean= 11.73, SD= 2.83, Min= 3.00, Max=18.00 | | |

**Table 4.23** Frequency and percentage of levels of social support by categories of social support (cont.)

| Level of social support | N (n=241) | percent |
|---|---|---|
| **Informational support** | | |
| High (16-24) | 15 | 6.22 |
| Moderate (8-15) | 209 | 86.72 |
| Low (0-7) | 17 | 7.05 |
| Mean= 11.95, SD= 2.68, Min= 3.00, Max=18.00 | | |
| **Emotional support** | | |
| High (16-24) | 16 | 6.64 |
| Moderate (8-15) | 210 | 87.14 |
| Low (0-7) | 15 | 6.22 |
| Mean= 12.07, SD= 3.00, Min= 2.00, Max=18.00 | | |

Table 4.24 shows the frequency and percentage of respondents by social support categories by source of support, namely: teachers, health personnel in health offices, pharmacists, colleagues, families, and relatives/community. A majority of the respondents (76.76%) got high support from teachers. More than half of the respondents (58.09%) got high support from families. Half of the respondents received moderate support from health personnel (56.02%), pharmacists (55.60%), and colleagues (47.72%). However, more than 80 percent of the respondents (85.06%) had low support from relatives/ communities.

**Table 4.24** Frequency and percentage of levels of social support by categories of sources

| Level of social support | N (n=241) | percent |
|---|---|---|
| **Teachers** | | |
| High (8-12) | 185 | 76.76 |
| Moderate (4-7) | 50 | 20.75 |
| Low (0-3) | 6 | 2.49 |
| Mean= 8.06, SD= 1.52, Min= 0.00, Max=9.00 | | |
| **Health personal in health office** | | |
| High (8-12) | 84 | 34.85 |
| Moderate (4-7) | 135 | 56.02 |
| Low (0-3) | 22 | 9.13 |
| Mean= 6.51, SD= 2.00, Min= 0.00, Max=9.00 | | |
| **Pharmacist** | | |
| High (8-12) | 48 | 19.92 |
| Moderate (4-7) | 134 | 55.60 |
| Low (0-3) | 59 | 24.48 |
| Mean= 5.47, SD= 2.43, Min= 0.00, Max=9.00 | | |
| **Colleagues** | | |
| High (8-12) | 113 | 46.89 |
| Moderate (4-7) | 115 | 47.72 |
| Low (0-3) | 13 | 5.39 |
| Mean= 7.02, SD= 1.92, Min= 0.00, Max=9.00 | | |
| **Family** | | |
| High (8-12) | 140 | 58.09 |
| Moderate (4-7) | 92 | 38.17 |
| Low (0-3) | 9 | 3.73 |
| Mean= 7.49, SD= 1.73, Min= 0.00, Max=9.00 | | |

**Table 4.24** Frequency and percentage of levels of social support by categories of sources (cont.)

| Level of social support | N (n=241) | percent |
|---|---|---|
| **Relatives /community** | | |
| High (8-12) | 17 | 7.05 |
| Moderate (4-7) | 19 | 7.88 |
| Low (0-3) | 205 | 85.06 |
| Mean= 1.19, SD= 2.66, Min= 0.00, Max=9.00 | | |

Table 4.25 shows the frequency and percentage of the respondents by each question about social support. Overall, more than 70 percent of the respondents got a lot of supports from teachers. On the other hand, 85.06 percent of the respondents got a little or no support from relatives/ their communities and more than a quarter the respondents got moderate and low support from pharmacists.

In detail, most of the respondents got high material support from teachers (73.03%), high informational support from teachers (85.50%), and emotional support from families (80.08%). Comparing the three categories of the average, most of the respondents got emotional support, and the next, informational support and material support.

**Table 4.25** Percentage of social support

| Questions about social support (n=241) | A lot (%) | Moderate (%) | A few (%) | Never (%) |
|---|---|---|---|---|
| **Material support** | | | | |
| Teachers | 73.03 | 22.82 | 2.07 | 2.07 |
| Health personal in health office | 35.27 | 51.04 | 10.37 | 3.32 |
| Pharmacists | 18.67 | 19.38 | 21.16 | 10.79 |

**Table 4.25** Percentage of social support (cont.)

| Questions about social support (n=241) | A lot (%) | Moderate (%) | A few (%) | Never (%) |
|---|---|---|---|---|
| **Material support** | | | | |
| Colleagues | 46.89 | 41.08 | 8.71 | 3.32 |
| Family | 55.60 | 34.44 | 4.98 | 4.98 |
| Relatives /community | 9.96 | 4.56 | 0.41 | 85.06 |
| **Informational support** | | | | |
| Teachers | 80.50 | 15.77 | 2.07 | 1.66 |
| Health personal in health office | 53.94 | 34.85 | 8.30 | 2.90 |
| Pharmacists | 27.80 | 46.89 | 16.18 | 9.13 |
| Colleagues | 34.85 | 47.72 | 10.79 | 6.64 |
| Family | 52.28 | 36.51 | 6.22 | 4.98 |
| Relatives/ community | 7.88 | 7.47 | 0.83 | 83.82 |
| **Emotional support** | | | | |
| Teachers | 72.61 | 21.58 | 3.32 | 2.49 |
| Health personal in health office | 30.71 | 43.57 | 13.69 | 12.03 |
| Pharmacists | 26.97 | 40.25 | 16.60 | 16.18 |
| Colleagues | 69.71 | 23.65 | 3.32 | 3.32 |
| Family | 80.08 | 15.35 | 1.24 | 3.32 |
| Relatives/ community | 8.71 | 5.81 | 2.07 | 83.04 |

## 4.2 Association between the independent variables and the dependent variables: ability of students in relation to themselves

### 4.2.1 Association between predisposing factors: socio-demographics factors and ability of students in relation to themselves

Table 4.26 shows the Chi-square analysis of the socio-demographics and the ability of students in relation to themselves. It was found that there were significant associations identified between age (p-value= 0.007) and grade (p-value= 0.004), and the ability of students in relation to themselves: the respondents who were younger had higher ability than those who were older.

**Table 4.26** Association between socio-demographic and ability of students in relation to themselves

| Socio demographic variables | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Age** (Years) | | | | | 9.95 | 0.007* |
| 10-12 | 35 | 57.38 | 26 | 42.62 | | |
| 13-15 | 37 | 46.84 | 42 | 53.16 | | |
| 16-19 | 33 | 32.67 | 68 | 67.33 | | |
| **Grade** | | | | | 11.01 | 0.004* |
| $4^{th}$ - $6^{th}$ | 36 | 54.55 | 30 | 45.45 | | |
| $7^{th}$ – $9^{th}$ | 35 | 51.47 | 33 | 48.53 | | |
| $10^{th}$ – $12^{th}$ | 34 | 31.78 | 73 | 68.22 | | |
| **Gender** | | | | | 0.002 | 0.968 |
| Male | 35 | 43.75 | 45 | 56.25 | | |
| Female | 70 | 43.33 | 91 | 56.52 | | |

**Table 4.26** Association between socio-demographic and ability of students in relation to themselves (cont.)

| Socio demographic variables | High ability N (n=105) | ercent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Religion** | | | | | 1.206 | 0.272 |
| Buddhism | 99 | 45.59 | 123 | 55.41 | | |
| Others | 6 | 31.58 | 13 | 68.42 | | |
| **Family type** | | | | | 0.152 | 0.697 |
| Single parent/ no parent | 23 | 46.00 | 27 | 54.00 | | |
| Others | 82 | 42.93 | 109 | 57.07 | | |
| **Parental occupation (Father)** | | | | | 2.78 | 0.096 |
| Skilled employee | 15 | 32.61 | 31 | 67.39 | | |
| Unskilled employee | 90 | 46.15 | 105 | 53.85 | | |
| **(Mother)** | | | | | 0.064 | 0.800 |
| Skilled employee | 12 | 41.38 | 17 | 58.62 | | |
| Unskilled employee | 93 | 43.87 | 119 | 56.13 | | |
| **Duration of working for young FDA club** | | | | | 1.113 | 0.573 |
| < 12 months | 40 | 41.24 | 57 | 58.76 | | |
| 12 months– 24 months | 34 | 41.98 | 47 | 58.02 | | |
| > 24 months | 31 | 49.21 | 32 | 50.79 | | |

***** Significant at p-value< 0.01

### 4.2.2 Association between predisposing factors: knowledge of food and drug consumption and ability of students in relation to themselves

The association between knowledge of food and drug consumption and ability of students in relation to themselves is presented in Table 4.27. All of percentages of each level were about 50 percent at both of high and low ability. It was

found that there was no statistically significant association (p-value= 0.616).

**Table 4.27** Association between level of knowledge of food and drug consumption and ability of students in relation to themselves

| Levels knowledge of food and drug consumption | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Knowledge** | | | | | 0.970 | 0.616 |
| Good | 51 | 40.80 | 74 | 59.20 | | |
| Moderate | 29 | 48.33 | 31 | 51.67 | | |
| Poor | 25 | 44.64 | 31 | 55.36 | | |

### 4.2.3 Association between predisposing factors: perception of students about FDA club and ability of students in relation to themselves

The association between the perception of students about the FDA club and ability of students in relation to themselves is presented in Table 4.28. It was found that there was no statistically significant association (p-value=0.106).

**Table 4.28** Association between level of perception of students about FDA club and ability of students in relation to themselves

| Levels of perception of students about FDA club activity | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Perception** | | | | | 2.615 | 0.106 |
| High | 99 | 45.21 | 120 | 54.79 | | |
| Low | 6 | 27.27 | 16 | 72.73 | | |

### 4.2.4 Association between predisposing factors: self-efficacy and ability of students in relation to themselves

The association between self-efficacy and ability of students in relation to themselves is presented in Table 4.29. Overall the higher self-efficacy, the higher the ability. Significant association was identified between self-efficacy and the ability of students in relation to themselves (p-value= 0.004).

**Table 4.29** Association between level of self-efficacy and ability of students in relation to themselves

| Levels of self-efficacy | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Self-efficacy** | | | | | 8.176 | 0.004* |
| High | 58 | 53.70 | 50 | 46.03 | | |
| Low | 47 | 35.34 | 86 | 64.66 | | |

***** Significant at p-value< 0.01

### 4.2.5 Association between predisposing factors: self-management of young FDA club activity and ability of students in relation to themselves

The result in Table 4.30 shows the association between levels of self-management and ability of students in relation to themselves by categories with self-reliance, cooperation, and participation. It was found that there were no statistically significant associations between the ability and self-reliance, cooperation, and participation (p-value=0.155 p-value= 0.363, p-value=0.232, respectively).

**Table 4.30** Association between level categories of self-management and ability of students in relation to themselves

| Levels of self-management of young FDA club activity | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Self-reliance** | | | | | 2.025 | 0.155 |
| High | 94 | 45.41 | 113 | 54.59 | | |
| Low | 11 | 32.35 | 23 | 67.65 | | |
| **Cooperation** | | | | | 0.829 | 0.363 |
| High | 99 | 44.39 | 124 | 55.61 | | |
| Low | 6 | 33.33 | 12 | 66.67 | | |
| **Participation** | | | | | 1.426 | 0.232 |
| High | 77 | 46.11 | 90 | 53.89 | | |
| Low | 28 | 37.84 | 46 | 62.16 | | |

### 4.2.6 Association between predisposing factors: motivation and ability of students in relation to themselves

The result in Table 4.31 about extrinsic motivation shows that 31.13 percent of the high extrinsic motivation group had low ability and 53.33 percent of the low extrinsic motivation group had high ability. Those who had low levels of the extrinsic motivation had higher ability than who had high level. There was a significant association identified between extrinsic motivation and the ability of students in relation to themselves (p-value= 0.001). However, there was no significant association between intrinsic motivation and the ability.

**Table 4.31** Association between level of intrinsic and extrinsic motivation and ability of students in relation to themselves

| Levels of motivation | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Intrinsic motivation** | | | | | 0.250 | 0.617 |
| High | 98 | 43.17 | 129 | 58.83 | | |
| Low | 7 | 50.00 | 7 | 50.00 | | |
| **Extrinsic motivation** | | | | | 11.904 | 0.001* |
| High | 33 | 31.13 | 73 | 68.87 | | |
| Low | 72 | 53.33 | 63 | 46.67 | | |

***** Significant at p-value< 0.01

### 4.2.7 Association between enabling factors: availability of resources and ability of students in relation to themselves

Table 4.32 shows a association between availability of resources and ability of students in relation to themselves. There were four items out only: time to prepare contests or campaigns in schools had a significant association with ability (p-value= 0.003). The result shows time to prepare contests or campaigns in school. Overall, the respondents who thought that they had enough time had higher ability. However, there were no significant associations between other three items and ability.

**Table 4.32** Association between availability of resources and ability of students in relation to themselves

| Availability of resources | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Time to study about FDA knowledge in school** | | | | | 2.162 | 0.141 |
| Enough | 87 | 46.03 | 102 | 53.97 | | |
| Not enough | 18 | 34.62 | 34 | 65.38 | | |
| **Time to prepare contest or campaign in school** | | | | | 9.038 | 0.003* |
| Enough | 90 | 48.91 | 94 | 51.09 | | |
| Not enough | 15 | 26.32 | 42 | 73.68 | | |
| **Exercise for experiment to check contamination** | | | | | 2.360 | 0.124 |
| Enough | 86 | 46.24 | 100 | 53.76 | | |
| Not enough | 19 | 34.55 | 36 | 65.45 | | |
| **Office supply for contest or campaign** | | | | | 2.167 | 0.141 |
| Enough | 91 | 45.73 | 108 | 54.27 | | |
| Not enough | 14 | 33.33 | 28 | 66.67 | | |

***** Significant at p-value< 0.01

### 4.2.8 Association between enabling factors: accessibility of resources and ability of students in relation to themselves

The result in Table 4.33 presents the association between accessibility of resources and ability of students. There were 17 items and but only “difficulty in getting information from multimedia” had a significant association with ability (p-value=0.024). There were no significant associations between the other items and ability.

**Table 4.33** Association between accessibility of resources and ability of students in relation to themselves

| Availability of resources | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Getting resources to study knowledge or skill** | | | | | 3.284 | 0.070 |
| Easy | 98 | 45.58 | 117 | 54.42 | | |
| Not easy | 7 | 26.92 | 19 | 73.08 | | |
| **Getting new information which I am interesting** | | | | | 0.030 | 0.862 |
| Difficult | 39 | 42.86 | 52 | 57.14 | | |
| Not difficult | 66 | 44.00 | 84 | 56.00 | | |
| **To contact with out side of schools** | | | | | 1.363 | 0.243 |
| Easy | 79 | 45.93 | 93 | 54.07 | | |
| Not easy | 26 | 37.68 | 43 | 62.32 | | |
| **Often use to get information by** | | | | | | |
| **Internet** | | | | | 3.227 | 0.072 |
| Yes | 95 | 45.89 | 112 | 54.11 | | |
| no | 10 | 37.68 | 24 | 70.59 | | |
| **FDA home page** | | | | | 0.884 | 0.347 |
| Yes | 27 | 49.09 | 28 | 50.91 | | |
| No | 78 | 41.49 | 108 | 58.06 | | |
| **Leaf let** | | | | | 0.005 | 0.942 |
| Yes | 52 | 43.33 | 68 | 56.67 | | |
| No | 53 | 43.80 | 68 | 56.20 | | |
| **Fact sheet** | | | | | 0.608 | 0.435 |
| Yes | 43 | 46.74 | 49 | 53.26 | | |
| No | 62 | 41.61 | 87 | 58.39 | | |
| **Story book** | | | | | 3.650 | 0.056 |
| Yes | 88 | 46.81 | 100 | 53.19 | | |
| No | 17 | 32.08 | 36 | 67.92 | | |

**Table 4.33** Association between accessibility of resources and ability of students in relation to themselves (cont.)

| Availability of resources | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Often use to get information by** | | | | | | |
| **Television** | | | | | 0.023 | 0.879 |
| Yes | 72 | 43.90 | 92 | 56.10 | | |
| No | 33 | 42.86 | 44 | 57.14 | | |
| **Multimedia** | | | | | 0.033 | 0.856 |
| Yes | 29 | 42.65 | 39 | 57.35 | | |
| No | 76 | 43.93 | 97 | 56.07 | | |
| **Difficult to get the information by** | | | | | | |
| **Internet** | | | | | 0.000 | 0.988 |
| Yes | 7 | 43.75 | 9 | 56.25 | | |
| no | 98 | 43.56 | 127 | 56.44 | | |
| **FDA home page** | | | | | 0.230 | 0.631 |
| Yes | 55 | 45.08 | 67 | 54.92 | | |
| No | 50 | 42.02 | 69 | 57.98 | | |
| **Leaf let** | | | | | 0.100 | 0.751 |
| Yes | 21 | 45.65 | 25 | 54.35 | | |
| No | 84 | 43.08 | 111 | 56.92 | | |
| **Fact sheet** | | | | | 2.178 | 0.140 |
| Yes | 27 | 36.49 | 47 | 63.51 | | |
| No | 78 | 46.71 | 89 | 53.29 | | |
| **Story book** | | | | | 1.058 | 0.304 |
| Yes | 5 | 31.25 | 11 | 68.75 | | |
| No | 100 | 44.44 | 125 | 55.56 | | |

**Table 4.33** Association between accessibility of resources and ability of students in relation to themselves (cont.)

| Availability of resources | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Difficult to get the information by** | | | | | | |
| **Television** | | | | | 0.377 | 0.539 |
| Yes | 14 | 38.89 | 22 | 61.11 | | |
| No | 91 | 44.39 | 114 | 55.61 | | |
| **Multimedia** | | | | | 5.123 | 0.024* |
| Yes | 49 | 52.69 | 44 | 47.31 | | |
| No | 56 | 37.84 | 92 | 62.16 | | |

***** Significant at p-value<0.05

### 4.2.9 Association between predisposing factors: reinforcing factors and ability of students in relation to themselves

The association between social support and ability of students in relation to themselves is presented in Table 4.34. It was found that there were no statistically significant associations (p-value=0.150).

**Table 4.34** Association between level of social support and ability of students in relation to themselves

| Levels of social support | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| Social support | | | | | - | 0.150* |
| High | 53 | 48.62 | 56 | 51.38 | | |
| Moderate/ Low | 52 | 57.51 | 80 | 74.79 | | |

* Fisher's exact test was used for calculating

Table 4.35 shows the association between ability of students and each category of social support namely: material support, informational support, and emotional support. No category of support had a significant association with students' ability (p-value= 0.423, p-value=0.952, and p-value=0.221, respectively).

**Table 4.35** Association between level of categories of social support and ability of students in relation to themselves

| Levels of social support | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Material support** | | | | | 1.719 | 0.423 |
| High | 9 | 50.00 | 9 | 50.00 | | |
| Moderate | 91 | 44.17 | 115 | 55.83 | | |
| Low | 5 | 29.41 | 12 | 70.59 | | |
| **Informational support** | | | | | 0.098 | 0.952 |
| High | 7 | 46.67 | 8 | 53.33 | | |
| Moderate | 91 | 43.54 | 118 | 56.46 | | |
| Low | 7 | 41.18 | 10 | 58.82 | | |
| **Emotional support** | | | | | 3.015 | 0.221 |
| High | 10 | 62.50 | 6 | 37.50 | | |
| Moderate | 90 | 42.86 | 120 | 57.14 | | |
| Low | 5 | 33.33 | 10 | 66.67 | | |

Table 4.36 shows the association between ability of students and each source of social support namely: teachers, health personal in health office, colleagues, family and relatives/community. Only family support had a significant association with ability of students in relation to themselves (p-value=0.031). Overall, the higher the level of support, the higher the ability.

**Table 4.36** Association between level of categories of source and ability of students in relation to themselves

| Levels of social support | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Social support** | | | | | | |
| **Teachers** | | | | | 2.758 | 0.252 |
| High | 86 | 46.49 | 99 | 53.51 | | |
| Moderate | 17 | 34.00 | 33 | 66.00 | | |
| Low | 2 | 33.33 | 4 | 66.67 | | |
| **Health personnel in health office** | | | | | 4.526 | 0.104 |
| High | 44 | 52.38 | 40 | 47.62 | | |
| Moderate | 51 | 37.78 | 84 | 62.22 | | |
| Low | 10 | 45.45 | 12 | 54.55 | | |
| **Pharmacists** | | | | | 0.281 | 0.869 |
| High | 21 | 43.75 | 27 | 56.25 | | |
| Moderate | 60 | 44.78 | 74 | 55.22 | | |
| Low | 24 | 40.68 | 35 | 59.32 | | |
| **Colleagues** | | | | | 0.293 | 0.864 |
| High | 51 | 45.13 | 62 | 54.87 | | |
| Moderate | 19 | 42.61 | 66 | 57.39 | | |
| Low | 5 | 38.46 | 8 | 61.54 | | |
| **Family** | | | | | 6.938 | 0.031* |
| High | 71 | 50.71 | 69 | 49.29 | | |
| Moderate | 31 | 33.70 | 61 | 66.30 | | |
| Low | 3 | 33.33 | 6 | 66.67 | | |

**Table 4.36** Association between level of categories of source and ability of students in relation to themselves (cont.)

| Levels of social support | High ability N (n=105) | percent | Low ability N (n=136) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Relatives and community** | | | | | 2.094 | 0.351 |
| High | 6 | 35.29 | 11 | 64.71 | | |
| Moderate | 11 | 57.89 | 8 | 42.11 | | |
| Low | 88 | 42.93 | 117 | 57.07 | | |

***** Significant at p-value<0.05

## 4.3 Association between the independent variables and the dependent variables: ability of students in relation to others

### 4.3.1 Association between predisposing factors: socio-demographics factors and ability of students in relation to others.

Table 4.37 shows the association between socio-demographics and the ability of students in relation to others and other organizations. It was found that significant associations were identified between age (p-value=0.025) and grade (p-value= 0.004), and duration of working (p-value= 0.001), respectively, and ability of students in relation to others. Overall, the respondents who were younger had higher ability than those who were older. The respondents who had longer experience had higher ability.

**Table 4.37** Association between socio-demographic and ability of students in relation to others

| Socio demographic variables | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Age** (Years) | | | | | 7.407 | 0.025* |
| 10-12 | 40 | 65.57 | 21 | 34.43 | | |
| 13-15 | 40 | 50.63 | 39 | 49.37 | | |
| 16-19 | 47 | 43.56 | 57 | 56.44 | | |
| **Grade** | | | | | 11.234 | 0.004** |
| $4^{th}$ - $6^{th}$ | 45 | 68.18 | 21 | 31.82 | | |
| $7^{th}$ – $9^{th}$ | 34 | 50.00 | 34 | 50.00 | | |
| $10^{th}$ – $12^{th}$ | 45 | 42.06 | 62 | 57.94 | | |
| **Gender** | | | | | 1.104 | 0.293 |
| Male | 45 | 56.25 | 35 | 43.75 | | |
| Female | 79 | 49.07 | 82 | 50.93 | | |

**Table 4.37** Association between socio-demographic and ability of students in relation to others (cont.)

| Socio demographic variables | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Religion** | | | | | 0.138 | 0.711 |
| Buddhism | 115 | 51.08 | 107 | 48.20 | | |
| Others | 9 | 47.37 | 10 | 52.63 | | |
| **Family type** | | | | | 3.310 | 0.069 |
| Single parent/ no parent | 20 | 40.00 | 30 | 60.00 | | |
| Others | 104 | 54.45 | 87 | 45.55 | | |
| **Parental occupation (Father)** | | | | | 3.058 | 0.080 |
| Skilled employee | 29 | 63.04 | 17 | 36.93 | | |
| Unskilled employee | 95 | 48.72 | 100 | 51.28 | | |
| **(Mother)** | | | | | 0.183 | 0.669 |
| Skilled employee | 16 | 55.17 | 13 | 44.83 | | |
| Unskilled employee | 108 | 50.49 | 104 | 49.06 | | |
| **Duration of working for young FDA club** | | | | | 13.709 | <0.001*** |
| < 12 months | 44 | 45.36 | 53 | 54.64 | | |
| 12 months – 24 months | 35 | 43.21 | 46 | 56.79 | | |
| > 24 months | 45 | 71.43 | 18 | 28.57 | | |

***** Significant at p-value<0.05

** Significant at p-value<0.01

******* Significant at p-value<0.001

### 4.3.2 Association between predisposing factors: knowledge of food and drug consumption and ability of students in relation to others

The association between knowledge of food and drug consumption and ability of students in relation to others and other organizations is presented in Table 4.38. The poorer the knowledge, the higher the ability. A significant association was identified between knowledge and the ability of students in relation to others and other organizations (p-value= 0.044).

**Table 4.38** Association between level of knowledge of food and drug consumption and ability of students in relation to others

| Levels knowledge of food and drug consumption | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Knowledge** | | | | | 6.246 | 0.044* |
| Good | 59 | 47.20 | 66 | 52.80 | | |
| Moderate | 28 | 46.67 | 32 | 53.33 | | |
| Poor | 37 | 66.07 | 19 | 33.93 | | |

***** Significant at p-value<0.05

### 4.3.3 Association between predisposing factors: perception of students about FDA club and ability of students in relation to others

The association between perception of students about the FDA club and ability of students in relation to others and other organizations is presented in Table 4.39. It was found that there was no statistically significant association (p-value=0.299).

**Table 4.39** Association between level of perception of students about FDA club and ability of students in relation to others

| Levels of perception of students about FDA club activity | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Perception** | | | | | 1.077 | 0.299 |
| High | 115 | 52.51 | 104 | 47.49 | | |
| Low | 9 | 40.91 | 13 | 59.09 | | |

### 4.3.4 Association between predisposing factors: self-efficacy and ability of students in relation to others

Table 4.40 shows that 59.26 percent of the respondents who had high self-efficacy had high ability in relation to others and other organizations. Those having high levels of self-efficacy had higher ability than those having low levels. A significant association was identified between self-efficacy and the ability of students in relation to others and other organizations (p-value=0.029)

**Table 4.40** Association between level of self-efficacy and ability of students in relation to others

| Levels of self-efficacy | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Self-efficacy** | | | | | 4.775 | 0.029* |
| High | 64 | 59.26 | 44 | 40.74 | | |
| Low | 60 | 45.11 | 73 | 54.89 | | |

***** Significant at p-value<0.05

### 4.3.5 Association between predisposing factors: self-management of young FDA club activity and ability of students in relation to others

Table 4.41 shows the association between levels of self-management and ability of students in relation to others and other organizations by categories with self-reliance, cooperation, and participation. It was found that there was a statistically significant association between the ability in relation to others and other organizations and participation (p-value=0.001). Overall the higher the participation, the higher the ability.

**Table 4.41** Association between level categories of self-management of and ability of students in relation to others

| Levels of self-management of young FDA club activity | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Self-reliance** | | | | | 0.311 | 0.577 |
| High | 105 | 50.72 | 102 | 49.28 | | |
| Low | 19 | 55.88 | 15 | 44.12 | | |
| **Cooperation** | | | | | 0.382 | 0.536 |
| High | 116 | 52.02 | 107 | 47.98 | | |
| Low | 8 | 44.44 | 10 | 55.56 | | |
| **Participation** | | | | | 11.383 | 0.001* |
| High | 98 | 58.68 | 69 | 41.32 | | |
| Low | 26 | 35.14 | 48 | 64.86 | | |

***** Significant at p-value<0.01

### 4.3.6 Association between predisposing factors: motivation and ability of students in relation to others

The association between motivations and ability of students in relation to others and other organizations is presented in Table 4.42. There were no statistically

significant associations between intrinsic or extrinsic motivation, and the ability of students in relation to others and other organizations (p-value=0.661 and p-value=0.889, respectively).

**Table 4.42** Association between level of intrinsic and extrinsic motivation and ability of students in relation to others

| Levels of motivation | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Intrinsic motivation** | | | | | 0.193 | 0.661 |
| High | 116 | 51.10 | 111 | 48.90 | | |
| Low | 8 | 57.14 | 6 | 42.86 | | |
| **Extrinsic motivation** | | | | | 0.020 | 0.889 |
| High | 54 | 50.94 | 52 | 49.06 | | |
| Low | 70 | 51.85 | 65 | 48.15 | | |

### 4.3.7 Association between enabling factors: availability of resources and ability of students in relation to others

Table 4.43 shows the association between availability of resources and ability of students in relation to others and other organizations. There were four items and two of them, “exercise for experiment to check contamination” and “office supply for contests or campaigns” had significant associations with ability (p-value= 0.001). Overall, the respondents who received enough exercise and office supplies had higher ability. There were no significant associations between either of the other two items and the ability.

**Table 4.43** Association between availability of resources and ability of students in relation to others

| Availability of resources | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Time to study about FDA knowledge in school** | | | | | 0.745 | 0.388 |
| Enough | 100 | 52.91 | 89 | 47.09 | | |
| Not enough | 24 | 46.15 | 28 | 53.85 | | |
| **Time to prepare contest or campaign in school** | | | | | 3.683 | 0.055 |
| Enough | 101 | 54.89 | 83 | 45.11 | | |
| Not enough | 23 | 40.35 | 34 | 59.65 | | |
| **Exercise for experiment to check contamination** | | | | | 12.040 | 0.001* |
| Enough | 107 | 57.53 | 79 | 42.47 | | |
| Not enough | 17 | 30.91 | 38 | 69.09 | | |
| **Office supply for contest or campaign** | | | | | 10.661 | 0.001* |
| Enough | 112 | 56.28 | 87 | 43.72 | | |
| Not enough | 12 | 28.57 | 30 | 71.43 | | |

***** Significant at p-value<0.01

### 4.3.8 Association between enabling factors: accessibility of resources and ability of students in relation to others

Table 4.44 shows the association between accessibility of resources and ability of students in relation to others and other organizations. There were 17 items and 2 of them were found to have a significant associations with ability (p-value= <0.001, and p-value=0.040). The respondents who found it easy to contact outside or to get information from the FDA homepage had higher ability. There were no significant associations between any of the other items and the ability.

**Table 4.44** Association between accessibility of resources and ability of students in relation to others

| Availability of resources | High performance N (n=124) | percent | Low performance N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Getting resources to study knowledge or skill** | | | | | 0.976 | 0.323 |
| Easy | 113 | 52.56 | 102 | 47.44 | | |
| Not easy | 11 | 42.31 | 15 | 57.69 | | |
| **Getting new information which I am interesting** | | | | | 0.714 | 0..398 |
| Difficult | 50 | 54.95 | 41 | 45.05 | | |
| Not difficult | 74 | 49.33 | 76 | 50.67 | | |
| **To contact with out side of schools** | | | | | 12.707 | <0.001** |
| Easy | 101 | 58.72 | 71 | 41.28 | | |
| Not easy | 23 | 33.33 | 46 | 66.67 | | |
| **Often use to get information by** | | | | | | |
| **Internet** | | | | | 2.768 | 0.096 |
| Yes | 111 | 53.62 | 96 | 46.38 | | |
| no | 13 | 38.24 | 21 | 61.76 | | |
| **FDA home page** | | | | | 4.235 | 0.040* |
| Yes | 35 | 63.64 | 20 | 36.36 | | |
| No | 89 | 47.85 | 97 | 52.15 | | |
| **Leaf let** | | | | | 0.705 | 0.401 |
| Yes | 65 | 54.17 | 55 | 45.83 | | |
| No | 59 | 48.76 | 62 | 51.24 | | |
| **Fact sheet** | | | | | 1.531 | 0.216 |
| Yes | 52 | 56.52 | 40 | 43.48 | | |
| No | 72 | 48.32 | 77 | 51.68 | | |

**Table 4.44** Association between accessibility of resources and ability of students in relation to others (cont.)

| Availability of resources | High performance N (n=124) | percent | Low performance N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Often use to get information by** | | | | | | |
| **Story book** | | | | | 1.035 | 0.309 |
| Yes | 100 | 53.19 | 88 | 46.81 | | |
| No | 24 | 45.28 | 29 | 54.72 | | |
| **Television** | | | | | 0.524 | 0.469 |
| Yes | 87 | 53.05 | 77 | 46.95 | | |
| No | 37 | 48.05 | 40 | 51.95 | | |
| **Multimedia** | | | | | 0.324 | 0.569 |
| Yes | 33 | 48.53 | 35 | 51.47 | | |
| No | 91 | 52.60 | 82 | 47.40 | | |
| **Difficult to get the information by** | | | | | | |
| **Internet** | | | | | 2.053 | 0.152 |
| Yes | 11 | 68.75 | 5 | 31.25 | | |
| no | 113 | 50.22 | 112 | 49.78 | | |
| **FDA home page** | | | | | 0.511 | 0.475 |
| Yes | 60 | 49.18 | 62 | 50.82 | | |
| No | 64 | 53.78 | 55 | 46.22 | | |
| **Leaf let** | | | | | 2.018 | 0.155 |
| Yes | 28 | 60.87 | 18 | 39.13 | | |
| No | 96 | 49.23 | 99 | 50.77 | | |
| **Fact sheet** | | | | | 1.296 | 0.255 |
| Yes | 34 | 45.95 | 40 | 54.05 | | |
| No | 90 | 53.89 | 77 | 46.11 | | |

**Table 4.44** Association between accessibility of resources and ability of students in relation to others (cont.)

| Availability of resources | High performance N (n=124) | percent | Low performance N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Difficult to get the information by** | | | | | | |
| **Story book** | | | | | .407 | 0.523 |
| Yes | 7 | 43.75 | 9 | 56.25 | | |
| No | 117 | 52.00 | 108 | 48.00 | | |
| **Television** | | | | | .832 | 0.362 |
| Yes | 16 | 44.44 | 20 | 55.56 | | |
| No | 108 | 52.68 | 97 | 47.32 | | |
| **Multimedia** | | | | | 4.655 | 0.031* |
| Yes | 56 | 60.22 | 37 | 39.78 | | |
| No | 68 | 45.95 | 80 | 54.05 | | |

***** Significant at p-value<0.05

****** Significant at p-value<0.001

### 4.3.9 Association between predisposing factors: reinforcing factors and ability of students in relation to others

Table 4.45 shows that 66.97 percent of all high social support groups and only 20.00 percent of low support groups had high performance. Overall the higher social support groups had higher ability. There was a significant association identified between social support and the ability of students in relation to others and other organizations (p-value<0.001).

**Table 4.45** Association between level of social support and ability of students in relation to others

| Levels of social support | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Social support** | | | | | 19.913 | <0.001* |
| High | 73 | 66.97 | 36 | 33.03 | | |
| Moderate | 50 | 39.37 | 77 | 60.63 | | |
| Low | 1 | 20.00 | 4 | 80.00 | | |

***** Significant at p-value<0.001

Table 4.46 shows the association between ability of students and each category of social support namely: material support, informational support, and emotional support. All categories of support had significant associations with ability of students in relation to others and other organizations (p-value=0.004, p-value=0.004, and p-value=0.009, respectively). The respondents who had high support had higher ability.

**Table 4.46** Association between level of categories of social support and ability of students in relation to others

| Levels of social support | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Material support** | | | | | 11.302 | 0.004* |
| High | 16 | 88.89 | 2 | 11.11 | | |
| Moderate | 101 | 49.03 | 105 | 50.97 | | |
| Low | 7 | 41.18 | 10 | 58.85 | | |

**Table 4.46** Association between level of categories of social support and ability of students in relation to others (cont.)

| Levels of social support | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Informational support** | | | | | 11.251 | 0.004* |
| High | 14 | 93.33 | 1 | 6.67 | | |
| Moderate | 102 | 48.80 | 107 | 51.20 | | |
| Low | 8 | 47.06 | 9 | 52.94 | | |
| **Emotional support** | | | | | 9.424 | 0.009* |
| High | 14 | 87.50 | 2 | 12.50 | | |
| Moderate | 104 | 49.52 | 106 | 50.48 | | |
| Low | 6 | 40.00 | 9 | 60.00 | | |

***** Significant at p-value<0.01

Table 4.47 shows the association between ability of students in relation to others and other organizations and each source of social support namely: teachers, health personal in health office, colleagues, family and relatives/community. Significant associations between each source of support were identified with ability of students in relation to themselves: teachers (p-value=<0.001), health personnel (p-value=0.006), pharmacists (p-value=0.001), colleagues (p-value=<0.001), family (p-value=<0.001), and relatives and community (p-value=0.029). In each care, those with higher levels of support had higher ability.

**Table 4.47** Association between level of categories of source and ability of students in relation to others

| Levels of social support | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Social support** | | | | | 16.543 | <0.001*** |
| **Teachers** | | | | | | |
| High | 107 | 57.84 | 78 | 42.16 | | |
| Moderate | 13 | 26.00 | 37 | 74.00 | | |
| Low | 4 | 66.67 | 2 | 33.33 | | |
| **Health personnel in health office** | | | | | 10.247 | 0.006** |
| High | 55 | 65.48 | 29 | 34.52 | | |
| Moderate | 60 | 44.44 | 75 | 55.56 | | |
| Low | 9 | 40.91 | 13 | 59.09 | | |
| **Pharmacists** | | | | | 14.128 | 0.001** |
| High | 36 | 75.00 | 12 | 25.00 | | |
| Moderate | 64 | 47.76 | 70 | 52.24 | | |
| Low | 24 | 40.68 | 35 | 59.32 | | |
| **Colleagues** | | | | | 20.298 | <0.001*** |
| High | 75 | 66.37 | 38 | 33.63 | | |
| Moderate | 46 | 40.00 | 69 | 60.00 | | |
| Low | 3 | 23.08 | 10 | 76.92 | | |
| **Family** | | | | | 22.486 | <0.001*** |
| High | 90 | 64.29 | 50 | 35.71 | | |
| Moderate | 30 | 32.61 | 62 | 67.39 | | |
| Low | 4 | 44.44 | 5 | 55.56 | | |

**Table 4.47** Association between level of categories of source and ability of students in relation to others (cont.)

| Levels of social support | High ability N (n=124) | percent | Low ability N (n=117) | percent | $\chi^2$ | p-value |
|---|---|---|---|---|---|---|
| **Relatives and community** | | | | | 7.095 | 0.029* |
| High | 14 | 82.35 | 3 | 17.65 | | |
| Moderate | 10 | 52.63 | 9 | 47.37 | | |
| Low | 100 | 48.78 | 105 | 51.22 | | |

***** Significant at p-value<0.05

****** Significant at p-value<0.01

******* Significant at p-value<0.001

# CHAPTER V
# DISCUSSION

This study was conducted to assess the ability of students participating in the young FDA project at primary and secondary schools in Bangkok. This study was conducted with 214 students aged 10 to 19 years to describe the related factors, and tested the association between their ability and predisposing factors, enabling factors, and reinforcing factors. This chapter discusses the research findings.

## 5.1 Ability of students

Ability of students was studied from two aspects, namely ability of students in relation to themselves and ability of students in relation to others. Mainly, the ability in relation to themselves meant that a student's independent behavior as a leader in the school and an appropriate food and drug consumer to avoid risk by themselves, like as empowerment for health. The ability in relation to others meant that student's positive attitude toward to club activity including their performance.

### 5.1.1 Ability of students in relation to themselves

The finding of ability of students in relation to themselves was that 43.57 percent of the respondents had high ability and 56.43 percent of the respondents had low ability as young FDA project. Students were asked about ability through their actions and attitudes regarding club activity, and their independent safe behaviors of food and drug consumption. Considering the actions and orientations for the club activity, 94.19 percent of the respondents liked to teach good things to others. A slightly lower percentage (83.40%) of the respondents thought that they had good knowledge about food and drug consumption. On the other hand, only 63.07 percent of the respondents were satisfied with their skill for checking contamination. This

study revealed a significant association between the respondents' time for contamination testing and the skill for contamination checking test (p-value<0.001). And the respondents those who participated the contamination testing many times were satisfied with their skill. The reasons might be that students often avoid using chemicals or science, or they are reluctant to touch those topics. So the low percent of checking contamination skill might be caused of not enough time to touch that, or they might not be familiar with that.

With regard to safe food and drug consumption, most respondents bought goods (foods, cosmetics, or drugs) based on safety and cleanness, and health (96.27% and 94.19%, respectively). On the other hand, 46.06 percent and 45.64 percent of the respondents, respectively, bought based on the taste of food or cuteness of cosmetics, and advertisements. This study revealed a significant association between the respondents' self-efficacy and buying goods based on advertisements (p-value=0.031). Although there was no significant association between self-efficacy and buying goods based on the taste of food or cuteness of cosmetics, the respondents who had high self-efficacy did not buy based on advertisements, or taste or cuteness. So the self-efficacy might cause of those things.

However, there is no relevant previous study focusing on ability of students trained by young FDA club, so the result can not be compared.

**5.1.2 Ability of students in relation to others**

The finding of ability of students in relation to others and other organizations was that 51.45 percent of the respondents had high ability and 48.55 percent of the respondents had low ability as young FDA project. In this part, students were asked about ability through the attitude of young FDA club with self-belief and self-confidence about club activity. More than 90 percent of the respondents thought that they could successfully change and improve the food and drug consumption behavior of four target groups by young FDA club activity. The percentages of four targets were other students (97.44%), FDA club members (96.68%), teachers (95.85%), and their families (91.29%). On the other hand, only 68.88 percent of the respondents

thought that they could successfully to change the market in the community. The distance between the respondents and targets might cause this result. The distance between each of them and peers is closer. There were significant associations between this outcome of teachers and social support from teachers, and outcome of families and social support from families (p-value=0.005 and p-value=0.001, respectively). So it might be concluded that the sense of affinity affected this result.

However, there is no relevant previous study focusing on ability of students trained by the young FDA club, so the result could not be compared.

## 5.2 Predisposing factors: socio-demographic factors

### 5.2.1 Age

This study was conducted in primary and secondary schools, so the respondents' ages ranged from 10 to 19 years old.

The result reveled significant associations between age and the ability of students in relation to themselves, and others (p-value=0.007 and p-value=0.025, respectively). Regarding the association with the ability of students in relation to themselves, the percentage of the respondents, who had high ability, decreased as age increased: 57.38 percent, 46.84 percent, and 32.67 percent of each aged groups 10 to 12, 13 to 15, and 16 to 19, respectively. The result of the association with the ability of students in relation to others shows a trend in common with former result as: 65.57 percent, 50.63 percent, and 43.56 percent of each aged groups 10 to 12, 13 to 15, and 16 to 19, respectively.

There are three previous studies about the association between age and risk behavior. Elpidoforos S. (28) and Koh-ei Minagawa (29) identified a significant association between age group and adolescents' smoking behavior. In the study, older adolescents aged smoked more. While Shanthy A. (30) showed a significant association between age group and fast food consumption, and the older respondents

had a higher fast food consumption. In the present study, the respondents were asked about their favorite food, and the result shown in appendix B also revealed that older respondents preferred to eat more protein and oil. It was similar to the study by Shanthy A. (30).

Clea A. (34) showed a significant association between age group and school connectedness which explored the association between health risk-behavior and students' well-being; the older respondents had low school connectedness. The conclusions of these studies are very similar to the results of this research.

### 5.2.2 Grade

This study was conducted in primary and secondary schools, so the range of respondents' grades was from $4^{th}$ to $12^{th}$ grade.

The result reveled significant associations between grade and the ability of students in relation to themselves, and others (p-value=0.004 and 0.004, respectively). Regarding association with the ability of students in relation to themselves, the percentage of the respondents who had high ability decreased as the grade got higher: 54.55 percent, 51.47 percent, and 31.78 percent for the $4^{th}$ to $6^{th}$, $7^{th}$ to $9^{th}$, and $10^{th}$ to $12^{th}$grade groups respectively. The result of the association with the ability of students in relation to others shows a similar trend: 68.18 percent, 50.00 percent, and 42.06 percent for the $4^{th}$ to $6^{th}$, $7^{th}$ to $9^{th}$, and $10^{th}$ to $12^{th}$grade groups respectively.

Grade was almost analogized to age. However, Alison L. (33) identified a significant association between grade and school misbehavior and poor performance: as the respondents' grade rose, their misbehavior increased and performance declined. The tendency of the research was shown quiet similar with this research. Therefore, it is meaningful to conduct a closer examination of grade and ability of students

### 5.2.3 Gender

This research was conducted with female (66.39% of the respondents) and male (33.61% of the respondents) students. There was no significant association

between gender and the ability of students in relation to themselves, or others.

However, Shanthy A. (30) showed a significant association between gender and fast food consumption and that study showed that males aged 4 to 19 years consumed more fast food than females. Clea A. (34) also showed a significant association between gender and school connectedness, which revealed that male adolescents had higher school connectedness than female adolescents. Therefore, gender did not have impact on ability of students.

Consistent with the present study, Elpidoforos S. (28) identified no significant association between gender and adolescents' smoking behavior. Kaori Saito (32) and Bayliab K (35) found no significant association between gender and performance of peer educators among high school students, and performance of Village Health Volunteers (VHVs) respectively. In conclusion, there might be an association between unhealthy food consumption and gender, however, the respondents in the present study were focused on health promotion and might have had greater awareness of health implications which might explain the result.

**5.2.4 Religion**

92.12 percent of the respondents were Buddhist and only 7.88 percent belonged to other religions. 45.59 percent of the Buddhists and 31.58 percent of the others had high ability in relation to themselves and, 51.08 percent of the Buddhists and 47.37 percent of the others had high ability in relation to others. There was no significant association between religion and abilities in either case.

Diane R. (36) showed a significant association between denominational affiliations and physical health on people aged 18 to 91 years. Peter S. (31) showed a significant association between denominational affiliations and cigarette use, and alcohol use. Both studies revealed that stronger denominational affiliations facilitated health and avoided risk behaviors.

Similar to this study, Diane R. (36) identified no significant association

between strength of religious faith and physical health. Kaori Saito (32) found no significant association between different religions and performance of peer educators among high school students. From the findings of this research, it is likely that religion has no impact on the ability of students.

**5.2.5 Family type**

In this research, 79.25 percent of the respondents lived with both parents, and 20.75 percent lived with single or no parents. There was no significant association between family type and the ability of students in relation to themselves, or others.

Other research has also considered the relationship between family type and student behavior. Koh-ei Minagawa (29) identified a significant association between single parent families and cigarette use. Michael D. (31) showed a significant association between parent connectedness and cigarette use, and alcohol use by adolescents. James M. (34) showed a significant association between two-parent families and school connectedness. Brian R. (37) found that parental involvement was important to children's overall behavior in school and motivation to learn. Parental involvement, therefore, might be one factor determining a student's positive actions and attitude to activity in schools. The study showed a significant association between single-parent and parental involvement.

In this research, the percentages of family support with single parent and with both parents were quite similar: 56.00 percent of the respondents who lived with single or no parent got high social support, and 58.64 percent of the respondents who lived with both parents got high social support, and the percentage of the respondents got moderate support were also similar (40.00% and 37.70%, respectively). So there was no significant difference in social support from any family types. In conclusion, family type may be irrelevant to the ability of students, if they get enough social support.

**5.2.6 Parental occupation**

59.75 percent of the respondents' fathers and 68.05 percent of the

respondents' mothers had unskilled occupations. There was no significant association between parental occupation and the ability of students in relation to themselves, or others.

Candace E. (38) showed a significant association between father's occupation and self-rated health, fruits intake, and beer drinking by students aged 11, 13 and, 15 years old. Based on occupation, the average income is decided. Focusing on income, Shanthy A. (30) showed a significant association between household income and fast food consumption and that fast food consumption by children from high income households was higher than that of children from low income households. Hanne T (39) identified a significant association between household income and choice of organically produced food. Elpidoforos S. (28) showed a significant association between household income and smoking, and her study revealed the respondents whose household incomes were low smoked more. Brian R. (37) showed a significant association between household income and parental involvement in school and the study showed that the respondents whose household incomes were low had low parental involvement in school.

On the other hand, Nguyen T (17) showed no significant association between income and obesity in grade 7 to 12 students. Bayliab K (35) showed no significant association between family income and performance of VHVs. Parental occupation might have an association with student behavior, however, both of high and low incomes have been shown to be associated with unhealthy behavior. In conclusion, in this study, parental occupation had no impact on the ability of students, although it should to continue to be studied

**5.2.7 Duration of working for young FDA club**

In this research, 45.36 percent of those who had worked less than one year with the young FDA club had higher ability of students in relation to others. Nearly 45 percent of those who had experienced to work 1year to 2 years had high the ability. Much more 71.43 percent of those who had experienced to work over 2 years had high the ability. A significant association was found between duration of working for the

young FDA club and the ability of students in relation to others. There was no significant association with ability of students in relation to themselves.

Similar to this research, Kaori Saito (32) showed a significant association between duration of working as a peer educator and performance of peer educators among high school students, and the study identified that the longer peer educators worked, the better their performance. Jennifer A. (40) showed a significant association between duration of participation in club activity and school belongingness. However, there is no relevant research about the duration of working and individual health behavior.

In conclusion, the duration of working might have impacted on the positive attitude and self-confidence in the club activity. The duration work might have no association with individual health behavior.

## 5.3 Predisposing factors: psychosocial factors

### 5.3.1 Knowledge of food and drug consumption

A majority of the respondents (51.87%) had good knowledge of food and drug consumption; similarly 24.90 percent and 23.24 percent respectively had moderate or poor knowledge. Considering the association, 66.07 percent of those respondents who got poor knowledge had high ability in relation to others and 47.20 percent of those respondents who got high knowledge had the high ability. There was a significant association between knowledge and ability of students in relation to others. However, there was no significant association between knowledge and ability of students in relation to themselves.

This result is consistent with some previous studies about knowledge and diet behavior, and measurement serum cholesterol, and triglyceride levels after health education in school, and the performance of VHVs, in which Edward E. (41) and Bayliab K (35) found significant associations.

On the other hand, Nguyen T (17) found no significant association between nutrition knowledge and obesity in grade 7 to 12 students. Brit I. (42) and Kaori Saito (32) found no significant association between knowledge and usual purchase of healthy food choice in school, or the performance of peer educators among high school students.

About the detail of three categories of knowledge question, average of correct answers concerned drug safety (87.56%) and healthy food consumption (81.74%). Unlike trends with others, the percentage of correct answers for each question about food safety varied: food safety was answered lower than others (67.43%). Nearly all of the respondents knew about drug safety and that people should buy approved drugs (96.72%), and about food safety, that using oil to fry many times can cause cancer (95.85%). By contrast, fewest respondents knew about the cause of diarrhea by eating raw food (24.90%). In conclusion, the knowledge had an impact on the ability of students. It might be because the students trained had enough knowledge about right consumption to promote for others. However, why there was no significant association between knowledge and the individual behavior is that they had not enough knowledge to change the behavior about risks and ways to avoid risk.

**5.3.2 Perception of students about young FDA club activity**

This research identified that the majority of the respondents had high perceptions about the young FDA club (90.87%). From the opinion of teachers, about 80 percent of the teachers supported students' perceptions. However, there was no significant association ability of students in relation to themselves or others.

Koh-ei Minagawa (43) showed a significant association between self-perception and smoking by secondary school girls. Bettina Piko (44) showed a significant association between self-perception and psychological well-being. Paul S et al. (45) revealed a significant association between self-perception and action for activity, and Kaori Saito (32) showed a significant association between perception towards peer education and performance of peer educators among high school students.

Bayliab K (35) also found a significant association between perception of VHVs and performance.

Consistent with this research, Paul S et al. (45) revealed no significant association between self-perception and better dietary habits. Similarly, Kaori Saito (32) and Bayliab K (35) found no significant association with breakdown of perception. This may be because there was not enough distribution on high and low perception with the number of Crobach Alpha: 0.51 at the pre-test. The previous study by Kaori Saito (32) had a similar problem with her breakdown of perception, which showed that nearly 85 percent of the respondents got high perception about benefits and low perception about barriers, and there were no significant associations between performance of peer educators and either benefits or barriers.

**5.3.3 Self- efficacy**

44.81 percent of the respondents got high self-efficacy. 53.75 percent of them had high ability in relation to themselves, while 64.66 percent with low self-efficacy had low ability. In a similar fashion, 59.26 percent of them had high ability in relation to others, while 54.89 percent with low self-efficacy had low ability. There were significant associations between self-efficacy and ability of students in relation to themselves and others.

Cheryl L. (46) also identified a significant association between selfefficacy and alcohol use in relation to an alcohol use prevention program by early adolescents. Albert B. (47) found a significant association between self-efficacy and prosocial behaviors of students in elementary and junior high school.

However, other previous studies revealed no significant association between self-efficacy either on food choice in relation to a school-based diabetes prevention program (42), or on the performance of peer educators (32).

Focus on the each statement, the respondents got low self-efficacy on three

of five statements. In addition, more than 40 percent of the respondents answered neutral. 49.38 percent of the respondents felt that my friends are proud of me at the highest self-efficacy. For the negative statement, same number of 49.38 percent of the respondents disagreed with I feel pain from others. It might conclude that higher self-efficacy of project had impact for higher ability of students.

**5.3.4 Self-management of young FDA club activity**

The result showed that 58.68 percent of the respondents who got high participation in FDA club activity had high ability in relation to others, while 64.48 percent of the respondents who got low participation had low ability. There was a significant association between participation and ability of students in relation to others. However, there were no significant associations between other self-management statements and the ability of student.

Previous study about self-management by Donald S. (48) showed a significant association that much student' behavior management promoted success of the health promotion, and student's self-management improved their access to health service. Edward E. (41) revealed a significant association that self-reported behaviors through health education decreased measurement serum cholesterol and triglyceride levels in school.

Focus on three groups named: self-reliance, cooperation, and participation, in contrast with this research, Brown D. (49) found a significant association that self-reliance reduced drug use, and self-reliance motivated academic achievement on adolescents. Lenard Springer (50) reported meta-analysis about group learning with 5 articles published from 1987 to 1995. The study showed significant associations between cooperation and achievement, cooperation and psychological health, and cooperation and inter group attitude. Similar to this research, Robert P. (51) showed significant association between participation in a health program and fat saving, and the participation and fruits and vegetable serving on students. Clea A. (34) identified a significant association that more participation in extracurricular increased student's school connectedness, which was explored having the association with health risk-

behavior and with student's well-being.

Concerning each statement, in the self-reliance part, more than 85 percent of the respondents worked for meeting and campaign through self-reliance. Especially 97.10 percent of the respondents said that there was facilitator in the meeting. Only for contamination test, the percentage was lower little a bit 70 percent of the respondents worked through self-reliance. In the cooperation part, three of four statements got high cooperation. About the participation part, majority of the respondents participated moderate. They had many times only about getting new perspective (81.74%). On the other hand, especially such as "saying something in front of the all students" and "checking contamination test with test kids" was low participation like that only less than 20 percent of the respondents had many times.

In conclusion, self-management might encourage the ability of students through the activities. However, in this study, the habituating might cause to decrease the percentage of ability of students. In this study, when the respondents worked long time, their level of self-management: self-reliance, cooperation, and participation were also lower (p-value<0.001, p-value=0.008, p-value<0.001, respectively). To explain about that, previous study by Martha Y., et al. (62) might be able to show, which concluded as, "a practice undoubtedly contributes to the habituation of unhealthy dietary behavior" on their research about school food environment on $7^{th}$ grade.

**5.3.5 Motivation**

From the result, most respondents (94.19%) got high intrinsic motivation and 43.98 percent of the respondents got high extrinsic motivation. 53.33 percent of the respondents who got low extrinsic motivation had high ability in relation to themselves, while 31.13 percent of the respondents those who got high extrinsic motivation had low ability. There was a significant association between extrinsic motivation and ability of students in relation to themselves, but no significant associations between the ability of students in relation to others and intrinsic motivation.

Similar to the result of this research, J.H.F. Meyer et al. (52) showed a

significant association between extrinsic motivation and poor performance. The research concluded because extrinsic motivation was associated with surface approach and was linked to lack of success. Steven R. (53) revealed no significant association between motivation and student success. Emillio F., et al. (54) showed no significant association between intrinsic motivation and task orientation, or intrinsic motivation and behavior change. In addition, Jack G. (63) identified that extrinsic motivation linked with individual success like career success. It might be concluded that high extrinsic motivation impacted on the poor ability of students.

## 5.4 Enabling factors

### 5.4.1 Availability of resources

There was a significant association between time and the ability of students in relation to themselves. And there were significant associations between the ability in relation to others and exercise, and material. It might that the time for study knowledge affect individual attitude, and exercise with colleagues and enough material help to prepare activity more easily.

There were several studies relevant to this research about time. Kaori Saito (32) showed a significant association between time and performance of peer educators among high school students. However, Simon H et al. (56) showed no significant association between problem solving and completion time by students.

Similarly, Berry D et al. (57) showed a significant association between practice and ability to control the system on the people aged 19 to 35 years. Kaori Saito (32) also showed a significant association between training and performance of peer educators among high school students. On the other hand, Simon H., et al. (56) showed no significant association between problem solving and lesson on the students.

Looking at the material, Spronger L., et al. (58) found the significant association that supplying enough material lead positive effect to students on small

group work. Kaori Saito (32) showed no significant association between material and performance of peer educators among high school students.

On the other hand, David C., et al. (55) showed no significant association between school resources and student test scores. The study also introduced similar previous research which was revealed “There appears to be no strong or systematic relationship between school expenditures and student performance” by Haun (1986). Michael K., et al. also showed no significant association between sources on classroom and grade point on students.

### 5.4.2 Accessibility of resources

Among 17 categories, there was a significant association between difficulty of access to multimedia and the ability of students in relation to themselves. And there were significant associations between the ability in relation to others and accessibility with outside of school, and accessibility of FDA homepage. The students were difficult to access multimedia got high ability in relation to themselves. And the students were easy to access with outside of school and FDA homepage got high ability in relation to others. It might be caused that student who is easy to access multimedia, exposed many kinds of information. So it might effect to individual behavior. Considering to the good effect of accessibility with outside of school and FDA homepage, when students contact with outside and right information, they might be encouraged to attack problem or work for others.

The result was similar to the findings of this study Kaori Saito (32) showed significant association between accessibility of material and performance of peer educators among high school students. Ibrahim M., et al. (59) also found a significant association between accessibility to computer use and attitude to using computers in undergraduate business students.

## 5.5 Reinforcing factor

The result shows that 45.23 percent of the respondents got high social support and minority of the respondents (2.07%) got low social support. 66.97 percent of the respondents who got high social support had high ability in relation to others, while, 39.37 percent who got moderate social support, and 20.00 percent of those who got low social support had high the ability. There was a significant association between social support and the ability of students in relation to others, but no significant association in relation to themselves.

Each category of social support had a significant association with the ability of students in relation to others. The respondents who got high informational support had the highest percentage of high ability compared with other categories. In addition, there was no significant association between any category of social support and ability in relation to themselves.

Each source of social support (i.e. teachers, health personnel in health offices, pharmacists, colleagues, families, and relatives and community) had significant associations with the ability of student in relation to others.

There were quite similar previous studies about performance. Kaori Saito (32) about performance of peer educators among high school students and Bayliab K (35) about performance of VHVs, showed significant association with overall social support as well as each informational, instrumental, and emotional support. In addition, Helen M. (64) identified significant associations between student engagement and social support from school, classroom, and parental involvement at primary schools.

And more about the individual behavior related with health, especially it is quite similar research to Lorraine S., et al. (60) revealed significant associations between exercise behavior changing and social support from family on female, and social support from friends on male among college students aged 17 to 24 years old. Michael D., et al. (31) found a significant association between parental expectations and cigarette use on adolescents aged seven to 12 years.

# CHAPTER VI
# CONCLUSION AND RECOMENDATION

## 6.1 Conclusion

This cross-sectional descriptive study aimed to study the ability of students participating in the young FDA club as facilitators and the related factors at primary and secondary schools in Bangkok, Thailand. The research described the ability of students who were trained young FDA club, and described the independent variables including predisposing factors, enabling factors, and reinforcing factors, and identified the relationships between the independent variables and the ability of students.

The target students were 10 to 19 years old and worked in the young FDA club. They were selected by purposive sampling from 3 public and 3 private schools in Bangkok. 214 completed self-administered questionnaires were collected from 21 January to 2nd February, 2010. Descriptive statistics and Chi-square test and Fisher's exact test were applied to describe the all of variables, and to identify the association between the independent and dependent variables at significant level was 0.05. The Precedes-Proceed Model and Health belief Model were applied.

### 6.1.1 Ability of students

The finding of ability of students in relation to themselves was that 43.57 percent had high ability and 56.43 percent had low ability as young FDA project facilitators. 51.45 percent of the respondents had high ability and 48.55 percent of the respondents had low ability in relation to others. Considering the ability in relation to themselves: 96.72 percent of the respondents bought foods, drugs, or cosmetics based on safety and cleanness. 94.19 percent of the respondents liked to teach good things to other students. With regard to the ability in relation to others and other organizations, a majority of the respondents agreed that their activities were successful in changing the

behavior of others.

**6.1.2 Predisposing factors: socio-demographic factors**

The statistical analysis found that there were two significant associations between the ability of students in relation to themselves and age, and grade. There were three significant associations between the ability of students in relation to others and age, grade, and duration of working. The students' ages ranged from 10 to 19 years old with a mean age of 14.57 years.44.40 percent of them belonged to grades 10 to 12. More than half of them (66.39%) were female and majority of them (92.12%) were Buddhist. Nearly four-fifths of the respondents (79.25%) lived with both parents and majority of their fathers' and mothers' occupations were unskilled.

**6.1.3 Predisposing factors: psychosocial factors**

Slightly over half of the respondents (51.87%) had good knowledge and 23.24 percent had poor knowledge and there was significant association with the ability in relation to others. Of the three categories of knowledge, average of correct answers concerned drug safety (87.56%) and healthy food consumption (81.74%). Unlike trend with others, the percentage of correct answers in each question about food safety was answered lower than others (67.43%).

Focus on perception of students about FDA club activity, this research identified that the majority of the respondents had high perceptions (90.87%) but there was no significant association with student ability in relation to themselves or others.

From the result 44.81 percent of the respondents got high self-efficacy and there were significant associations between self-efficacy and ability of students both in relation to themselves and others. Higher self-efficacy resulted in higher student ability.

Concerning self-management, the result shows a significant association between participation and ability of students in relation to others. In addition, there were no significant associations between others in self-management and the ability of

students. Most of the respondents (92.59%) had high cooperation, and 85.89 percent of the respondents got high self-reliance, and 69.29 percent of them got high participation.

With regard to motivation, most respondents (94.19%) had high intrinsic motivation and 43.98 percent of the respondents had high extrinsic motivation. There was a significant association between extrinsic motivation and ability of students in relation to themselves. The extrinsic motivated them into low ability. However, there were no significant associations between intrinsic motivation and the ability of student.

**6.1.4 Enabling factors**

Looking at availability of resources, there was an significant association between availability of "time to prepare contests or campaigns in schools" and ability of students in relation to themselves. About with the ability of students in relation to others, "exercise for experiment to check contamination" and "office supply for contests or campaigns" had significant associations. Overall, the respondents who thought that they had enough time, exercise, or office supply had higher ability.

Considering accessibility of resources, there was a significant association between difficulty in getting information from multimedia and the ability of students in relation to themselves, and the respondents those who thought difficulty to access multimedia had higher ability. Furthermore, there were significant associations between the ability in relation to others and accessibility with outside school, and accessibility of FDA homepage and the respondents who found it easy to contact outside or to get information from the FDA homepage had higher ability

**6.1.5 Reinforcing factor**

The result shows that 45.23 percent of the respondents got high social support and a minority of the respondents (2.07%) got low social support. There was a significant association between social support and the ability of students in relation to others but there was no significant association between social support and ability in

relation to themselves.

Each category of social support (i.e. material, informational, and emotional support) had a significant association with the ability of students in relation to others. The respondents who got high informational support had the highest percentage of high ability compared with the other categories.

Each category of social support (teachers, health personnel in health offices, pharmacists, colleagues, families, and relatives and community) had significant associations with the ability of students in relation to others, while colleagues and the ability in relation to themselves. In addition, support from health personnel, pharmacists, and relatives/ communities were less than from others.

## 6.2 Recommendations

### 6.2.1 Recommendations for implementation

#### 6.2.1.1 Recommendation for teachers

Teachers can improve the ability of students through by supporting students and their families.

Firstly, the result shows the grade, age had significant association with the ability of students. The ability decreased as age and grade increased. Therefore, to avoid decreased the ability, it is recommended giving them the encouragement which concerning to their physical and mental changes or, appropriate jobs or challenge to fit their growth

Secondly, based on the research about knowledge, there was a significant association between knowledge and the ability of students in relation to others. However, knowledge was not significantly associated with the ability in relation to themselves. Therefore, providing them with integrated study should be recommended to motivate them to act from many directions in order to strong

impression. For example, it can be integrated with other subjects like with science, home craft, physical education, or social studies.

Thirdly, this study showed that high self-efficacy affects high ability. So students should be encouraged to believe in their own success to get high ability to attain objectives.

Fourthly, the percentage of students' participation for contamination check test, and saying something in front of other students were lower than other activities. Therefore, it is recommended to give those exercises or opportunity more in order to make them be familiar with those things.

Fifthly, the result shows the extrinsic motivation move ability towards low revels. From the teachers' opinion, only about 30 % of the teachers supported the students' motivation a lot. However, it should be recommended to motivate them with intrinsic ways.

Finally, the reinforcement not only from teachers but also from families was most significantly association with ability. Therefore, this support for students is highly recommended. Teachers are also recommended to work at improving parental support. It is recommended to work or, have activities with parents.

#### 6.2.1.2 Recommendation for FDA, Schools, Provincial Health Offices and Pharmacists

FDA, schools provincial health office and pharmacists can help for the students who were trained by young FDA project, and the teachers who had responsibility of the project, to improve the ability of students.

Firstly, based on the findings of this study about availability and accessibility of resources, material and information which was especially gotten from FDA homepage, had good effect on ability of students. More over, from the

teachers' opinion, they also needed new information. Furthermore, in aspect of material and information, almost teachers depended on FDA, schools, or provincial health office. Thus, the sufficient material support and informational support should to provide to students and teachers, especially by young FDA homepage.

Secondly support for the students, according to the result of accessibility of resources and self-management part, "contacting outside of the school" and "participation" significantly associated with the ability. Therefore it is recommended to orchestrate some other schools or other organizations, and to give them opportunities of participation learning with others.

Finally support for the teachers, from the teachers' opinion, they needed more training, and their overload of work. Therefore, it is recommended to train them during the time on school holidays. From the result about students, it might be useful training which is not only about knowledge but also the participation leaning way.

**6.2.1.3 Recommendation for the students who were working for young FDA club**

The students can work for other students, teachers, schools, or FDA.

Firstly, the result of the ability of students showed that their ability in relation to themselves was lower than the ability in relation to others. So the students are recommended to improve their individual ability. Especially, when they work as leaders, they must need to show others good behavior by themselves. And the students' right behaviors make other people to support them.

Secondly, emotional support from colleagues affected and improved the ability of the students. And more, the teachers' opinion revealed, a majority of teachers' emotional support was from students. So the students are recommended to support other members and teachers to support their emotion

### 6.2.2 Recommendation for further research

Firstly, this research targeted students and teachers who were working for the young FDA project. However, the students' abilities were sensitive around the environment, especially the family situation. So, further studies are recommended to focus on the students and families at the same time.

Secondly, younger students often care to answer the questions without protest. Or, when the students were not motivated to answer enough, they were easy to answer with unintended skips. To avoid these things, before giving them a questionnaire and documents, the researcher should make them relax and motivated, or should give them advice to check the questionnaire carefully after completion.

Finally, there were no previous studies to conduct with the ability of students on young FDA project. So this questionnaire was developed only from the objective of young FDA project by FDA Thailand. Further study should consult with advanced questions based on this research and should improve knowledge question based on what FDA had provided already.

# REFERENCES


1. Hagquist C., et al. Health education in schools – from information to empowerment models. Health promotion international 1997;12(3)
2. Laverack G., et al. A planning framework for community empowerment goals within health promotion. Health policy and planning 2000;15(3):255-62
3. Occupational Outlook Handbook, 2008-09 Edition. 125 years Breau of labor statistic. United States Department of Labor. [Online] Available from: http://www.bls.gov/oco/ocos063.htm [Accessed 2009 Sep20]
4. Israel GD. Determining sample size. [Online] Available form : http://edis.ifas.ufl.edu/PD006 [Accessed 2009 Sep20]
5. WHO, Type 2 diabetes [ Online ] Available from: http://www.who.int/mediacentre/factsheets/fs312/en/index.html [Accessed 2009 Nov 20]
6. World Health Organization. Health promotion glossary. Geneva:WHO,1998
7. Nordenfelt, L. On the nature of health. Dordrecht Kluwer Academic Publishers;1987
8. Arneson H, Ekberg K. Evaluation of empowerment processes in a workplace health promotion intervention based on learning in Sweden. Health Promotion International. 2005;20C4):351-9
9. Facilitation Wikipedia [Online] Available form : http://en.wikipedia.org/wiki/Facilitation [Accessed 2009 Sep 20]
10. Hopson B, Scally M. Life skills Teaching. [Sod.: McGraw Hill.;1981.
11. Stiddard L, Scriven A. Empowering schools; translating health promotion principles into practice, Emerald Full Text. 2003;103(2):110-18
12. Thai FDA, organization structure [ Online ] Available from: http://www.fda.moph.go.th/eng/about/structure.stm [Accessed 2009 Nov 20]
13. Bureau of Policy and Strategy, Ministry of Public Health, Thailand. Thailand

health profile 2005-2007. [ Online ] Available from: http://www.moph.go.th/ops/health_50/2548_2550e.html [Accessed 2010 Jan 22]

14.Bureau of Policy and Strategy, Ministry of Public Health, Thailand. Thailand health profile 2001-2004. [ Online ] Available from: http://www.moph.go.th/ops/health_48/index_eng.htm [Accessed 2010 Jan 22]

15.WHO, School and youth health [ Online ] Available from: http://www.who.int/school_youth_health/en/ [Accessed 2010 Mar 10]

16.WHO, Bangkok charter for Health Promotion in a Globalized World [ Online ] Available from: http://www.who.int/healthpromotion/conferences/6gchp/hpr_050829_%20BCHP.pdf [Accessed 2010 Mar 10]

17.Nguyen T. Obesity and related factors among students grad 7-12 in Phuttha Monthon District, Nakhon Pathom Province, Thailand [ M.P.H.M Thesis in Primary Health Care Management]. Nakhonpathom: Faculty of Graduate Studies, Mahidol University; 2008

18.Health policy in Thailand 2009. (2009) Bureau of Policy and Strategy, Ministry of Public Health, Thailand.

19.Hangquist C. and Starrin B. Health education in schools-from information to empowerment models, HEALTH PROMOTION INTERNATIONAL. 1997;12(3)

20.Meaningful engaged learning [ Online ] Available from: http://www.gc-solutions.net/blog/?p=48 [Accessed 2010 Mar 10]

21.WHO Geneva (1998) Health Promotion Glossary [ Online ] Available from: http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf [Accessed 2010 Mar 10]

22.Participation leaning on Wikipedia [ Online ] Available from: http://ja.wikipedia.org/wiki/%E5%8F%82%E5%8A%A0%E5%9E%8B%E5%AD%A6%E7%BF%92 [Accessed 2010 Mar 10]

23.The PRECEDE/PROCEED Model [ Online ] Available from: http://www.nyc.gov/html/doh/html/cmha/evaluation_plan.html [Accessed

2010 April 7]

24. Phathum thani province on Wikipedia [ Online ] Available from: http://ja.wikipedia.org/wiki/%E3%83%91%E3%83%88%E3%82%A5%E3%83%A0%E3%82%BF%E3%83%BC%E3%83%8B%E3%83%BC%E7%9C%8C [ Accessed 2009 Oct 28]

25. Bangkok on Wikipedia [ Online ] Available from: http://en.wikipedia.org/wiki/Bangkok [ Accessed 2009 Oct 28]

26. Students Dictionary [ Online ] Available from: http://www.wordcentral.com/cgi-bin/student?ability [Accessed 2010 April 7]

27. Burris Services for High Ability Students [ Online ] Available from: http://www.bsu.edu/burris/media/pdf/haplan08.pdf [Accessed 2010 April 7]

28. Soteriades ES., et al. Parent's socioeconomic states, adolescent's disposable income, and adolescent's smoking status in Massachusetts, American Journal of Public Health. 2003; 93(7)

29. Bruno Challier (2000) Associations of family environment and individual factors with tobacco, alcohol and illicit drug use in adolescents, European Journal of Epidemiology 16

30. Bowman SA., et al. Effects of Fast-Food Consumption on Energy Intake and Diet Quality Among Children in a National Household Survey, PEDIATRICS. 2004;113(1)

31. Rensnick MD., et al. Protecting adolescents from harm findings from the national longitudinal study on adolescent health, The Journal of the American Medical Association. 1997;278(10)

32. Saito K. Performance of peer educators on HIV/AIDS prevention among high school students in Bangkok metropolitan, Thailand [ M.P.H.M Thesis in Primary Health Care Management]. Nakhonpathom: Faculty of Graduate Studies, Mahidol University; 2009

33. Bryant AL., et al. Understanding the Links Among School Misbehavior, Academic Achievement, and Cigarette Use: A National Panel Study of Adolescents. Prevention Science. 2000;1(2)

34. McNeely CA., et al. Promoting school connectedness: Evidence from the national

longitudinal study of adolescent health, Journal of school health. 2002; 72(4)

35.Ketsophaphone B. Performance of village health volunteers on people sector health system in Namphong district Khonkaen province, Thailand [ M.P.H.M Thesis in Primary Health Care Management]. Nakhonpathom: Faculty of Graduate Studies, Mahidol University; 2005

36.Brown DR., et al. Religious involvement and health status among African American males, Journal of the national medical association. 1994;86(11)

37.Flay BR. Positive Youth Development Requires Comprehensive Health Promotion Programs. Am J Health Behav. 2002;26(6)

38.Currie CE., et al. Indicators of socioeconomic status for adolescents: the WHO health behavior in school-aged children survey. Health Education Research. 1997;12(3)

39.Torjusen H., et al. Food system orientation and quality perception among consumer and producers of organic food in Hedmark country, Norway, Food Quality Preference. 2001;12

40.Jennifer A., et al. Extracurricular involvement and adolescent adjustment impact of duration, number of activities, and breadth of participation, Applied Developmental Science. 2006;10(3)

41.Edward E. The Contribution of School Health Education to Community Health Promotion: What Can We Reasonably Expect? AJPH. 1981;71(12)

42.Brit I., et al. A Pilot School-Based Healthy Eating and Physical Activity Intervention Improves Diet, Food Knowledge, and Self-Efficacy for Native Canadian Children, [ Online ] Available from: http://jn.nutrition.org/cgi/reprint/135/10/2392 [Accessed 2010 Jan 22]

43.Minagawa K., et al. Smoking and self-perception in secondary school students, Tobacco control;2

44.Bettina Piko, Health –related predictors of self-perceived health in a student population: The importance of physical activity. Journal of Community Health. 25(2)

45. Health Promotion in Minority Adolescents: A Healthy People 2000 Pilot Study [ Online ] Available from:

http://journals.lww.com/jcrjournal/Abstract/1995/01000/Health_Promotion_in_Minority_Adolescents__A.8.aspx [Accessed 2010 Mar 10]

46. Cheryl L., et al. Project Northland: Outcomes of a Communitywide Alcohol Use Prevention Program during Early Adolescence. American Journal of Public Health. 1996;86(7)

47. Bandura A Perceived self-efficacy in cognitive development and functioning, Educational Psychologist. 1993;28(2)

48. Donald S. Promoting and Building Resilience in Primary School Communities: Evidence from a Comprehensive 'Health Promoting School' Approach International Journal of Mental Health Promotion. 6

49. Brown B. (1993) Parenting practices and peer group affiliation in adolescence, [ Online ] Available from: http://www.jstor.org/pss/1131263 [Accessed 2010 Mar 10]

50. Springer J Effects of Small-Group Learning on Undergraduates in Science, Mathematics, Engineering, and Technology: A Meta-Analysis, Review of Educational Research. 1999;69(1)

51. Robert P., et al. Bienestar: A diabetes risk-factor prevention program, Journal of School Health. 1998;68(2)

52. J.H.F Meyer et al. (1990) Individual study orchestrations and their association with learning outcome, Higher Education 20:

53. Steven R. et al. The Influence of Learning Style Preferences on Student Success in Online versus Face-to-Face Environments [ Online ] Available from: http://edwebsfiles.ed.uiuc.edu/HRE/Online/research/Learning_Styles.doc [Accessed 2010 Mar 10]

54. Emillio F., et al. Predictors of intrinsic motivation among adolescent tudents in physical education, Research Quarterly for Exercise and Sport. 2000;71(3)

55. Card D., et al. School Resources and Student Outcomes: An Overview of the Literature and New Evidence from North and South Carolina, [ Online ] Available from: http://www.jstor.org/stable/2138553 [Accessed 2010 Mar 10]

56. Hooper S., et al. The Effects of Cooperative Learning and Learner Control on

High- and Average-Ability Students, ETR&D. 2006;40(2)

57. Berry, D., et al. (1984) On the relationship between task performance and associated verbalizable knowledge. [ Online ] Available from: http://psycnet.apa.org/?fa=main.doiLanding&uid=1985-11248-001 [Accessed 2010 Mar 10]

58. Springer L., et al. Measuring the success of small-group leaning in college-level SMET teaching: A Meata-analysis [ Online ] Available from: http://wcer.wisc.edu/archive/Cl1/CL/resource/scismet.pdf [Accessed 2010 Mar 10]

59. Ibrahim M., et al. Effects of User Characteristics on Computer Attitudes among Undergraduate Business Students [ Online ] Available from: http://faculty.kfupm.edu.sa/MISAC/imjabri/pub/JEUC1.pdf [Accessed 2010 Mar 10]

60. Lorraine S., et al. Characteristics of Exercise Behavior among College Students: Application of Social Cognitive Theory to Predicting Stage of Change [ Online ] Available from: http://edwebsfiles.ed.uiuc.edu/HRE/Online/research/Learning_Styles.doc [Accessed 2010 Mar 10]

61. Bangkok metropolitan administration [ Online ] Available from: http://203.155.220.238/en/resident-education.php [Accessed 2010 Mar 10]

62. Martha Y., et al. The association of the school food environment with dietary behaviors of young adolescents, American Journal of Public Health. 2003;93(7)

63. Hunt C., et al. Undergraduate business internships and career success: Are they related? Journal of Marketing Education. 2000;22(1)

64. Marks HM. Student Engagement in Instructional Activity: Patterns in the Elementary, Middle, and High School Years. American Educational Research Journal. 2000;37(1)

65. Dherisa S. The effects of an empowerment program on intrinsic motivation of persons with disabilities [M.N.S Thesis in psychiatric- mental health nursing]. Nakhonpathom: Faculty of Graduate Studies, Mahidol University; 2006

# APPENDICES

# APPENDIX A
# QUESTIONNAIRE

## FACTORS RELATED TO ABILITY OF STUDENTS TRAINED BY YOUNG FDA PROJECT AT PRIMARY AND SECONDARY SCHOOLS IN BANGKOK METROPOLITAN, THAILAND

**Date of response: ___/___/ 2010**

**Name of your school: _____ secondary school**

**The objective of this study:**

This study is to be consideration about the factors elated to ability of students trained by young FDA project at primary and secondary schools in Bangkok metropolitan, Thailand. Your answer will help to develop the young FDA project and the other health promotions for students in the future.

**Instruction for the responses:**

This questionnaire is served for the research for MPHM thesis purpose only. Your information will be let confidential and will not let other people know and not even any teachers who are teaching you. If you feel uneasiness or uncomfortable due to some questions, you have right not to answer anytime without prior notice.

I appreciate your kind cooperation.

Thank you very much.

Yuho Tabata
Master of Primary Health Care Management
ASEAN Institute for Health Development
Mahidol University

# QUESTIONNAIRE

## Part 1: Predisposing factors: Socio-demographic variables

Please read the following question carefully and answer questions from the top to down step by step. Please don't skip any questions. Please appropriate numbers for No.1 and put the mark (☑) in the appropriate box □ to answer the question for multiple choice.

1. Age ____ years old
2. Grade
   □1. 7th grade □2. 8thgrade □3. 9thgrade
3. Gender
   □1. Male □2. Female
4. What is your religion?
   □1. Buddhism □2. Christianity □3. Islam
   □4. Others (please specify_____ )
5. Who are in your family members? ( Can answer more than one)
   □1. Father □2. Mother □3. Sister/ Brother □4. Grand mother/ father
   □5. Others (please specify_____ )
6. What is your father's occupation?
   □1. Service □2. Business □3. Farmer □4. Labor
   □5. Government employee □6. Others (please specify_____ )
7. What is your mother's occupation?
   □1. Service □2. Business □3. Farmer □4. Labor □5. Government employee
   □6. house wife □7. Others (please specify_____ )
8. How long have you been a member of FDA club?
   □1. Less than 1 year
   □2. 1year to less than 2 years
   □3. 2years to less than 3 years
   □4. More than 3 years

## Part 2: Predisposing factors: Psychosocial variables

### 2-1 Knowledge of food and drug consumption

Please put the mark ( ☑ ) in the appropriate box □ to answer the questions:
Please select the right information to fill in the blank from multiple choices.

9. Borax is one of chemical harmful for body. Why people use that?
   □ 1. to make food beautiful □ 2. to make food colorful
   □ 3. to keep food freshness □ 4. to keep food cool
10. Which food exposed food addictive?
    □ 1. spinach □ 2. bean sprout □ 3. apple □ 4. papaya
11. When people use same oil to cook fried chicken many times, what disease will happen?
    □ 1. stomach ache □ 2. head ache □ 3. diabetes □ 4. cancer
12. Which is not useful to avoid diarrhea?
    □ 1. washing hands □ 2.oral hygiene □ 3. eating raw food
    □ 4. eating cooked food

13. What is the caution to take medicine?
□ 1. appropriate quantity □ 2. appropriate smell □ 3. appropriate color
□ 4. appropriate taste
14. Which medicine we should buy?
□ 1. popular medicine □ 2. cheap medicine □ 3. unapproved medicine
□ 4. approved medicine
15. What effectiveness vegetables and fruit have?
□ 1. for strength bone □ 2. for strength muscle
□ 3. for immunity system □ 4. for keeping body warm

## 2-2 Perception of students about FDA club activity

Please check (☑ ) in the appropriate box to mark in the column which you agree.

| Statement | Agree | Neutral | Disagree |
|---|---|---|---|
| I think that _____. | | | |
| 16. through young FDA club we got the good knowledge | | | |
| 17. we cannot improve our ability by young FDA club activity | | | |
| 18. adults do not like to listen our suggestion | | | |
| 19. other students are not understand our campaign | | | |
| 20. we can say idea or opinion for members easily | | | |

## 2-3 Self-efficacy

Please mark (☑ ) in the column you agree.

| Statements | Agree | Neutral | Dis-agree |
|---|---|---|---|
| 21. I'm an important member in the young FDA club. | | | |
| 22. I am afraid of failure. | | | |
| 23. I feel pain from others | | | |
| 24. My friends are proud of me | | | |

## 2-4 Self management on the FDA club activity

Please put the mark (☑ )in the appropriate box □ to answer the questions:

## Self-reliance of the club activity

**1. Meeting**

25. We share action plan and objective before start to meeting at the each time.
□ 1.Yes □ 2. No
26. We are good at make activity plan.
□ 1.Yes □ 2. No
27. Somebody work as facilitator at meeting.
□ 1.Yes □ 2. No

**2. Contamination test**

28. Whom do you ask to get new or replacing test kids?
□1. From teacher
□2. From friends
□3. From leader
□4. No experience
□5. Others (please specify_____ )

**3. Campaign**

29. After campaign do you have meeting to evaluate the campaign?

□ 1.Yes □ 2. No

## cooperation

Please check (☑ ) in the appropriate box to mark in the column which you agree.

| Statement | Agree | Neutral | Disagree |
|---|---|---|---|
| 30. Colleague help me | | | |
| 31. I don not like to change myself | | | |
| 32. My friends who is working together have wonderful ability | | | |
| 33. I can listen to colleague talking, even they are angry with me | | | |

## Participation

Please check (☑) in the appropriate box to mark in the column which you agree.

| | many | moderate | few / no |
|---|---|---|---|
| 34. I participate FDA club activities | | | |
| How much do you have experience as below? | | | |
| 35. Meeting: getting new perspective | | | |
| 36. Meeting: helping meeting as facilitator | | | |
| 37. Contamination test: checking contamination with test kids | | | |
| 38. Contamination test: round up the result of test | | | |
| 39. Campaign for other students: saying something in front of the all students | | | |
| 40. Campaign for other students: creating poster or advertisement | | | |
| 41. Campaign for community: suggestion to adults | | | |

## 2-4 Motivation

Please put the mark (☑) in the box to answer the question.

42. What do you like to receive when you done the project successful? ( Can answer ‘ yes ‘ more than one)

a. Handclaps □ Yes □ No

b. Good marks □ Yes □ No

c. Money □ Yes □ No

| | | | |
|---|---|---|---|
| d. | Big smile | □ Yes | □ No |
| e. | Praise | □ Yes | □ No |
| f.. | Present | □ Yes | □ No |
| g. | Respects | □ Yes | □ No |
| h. | Field trip | □ Yes | □ No |
| i. | others (please specify_____ ) | □ Yes | □ No |

## Part 3: Enabling factors

Please put the mark (☑) in the box to answer the question.

### 3-1 Availability of resources

43. Is there enough time to study about FDA in school?
    □ 1.Yes □ 2. No
44. Can you spend enough time to prepare contest or campaign in the school?
    □ 1.Yes □ 2. No
45. Is there enough exercise for experiment to check contamination?
    □ 1.Yes □ 2. No
46. Are you satisfied with office supplies (color pens or papers etc) to prepare contest or campaign effectively?
    □ 1.Yes □ 2. No

### 3-2 Accessibility of resources

47. Can you easily get resources to study knowledge or skill for young FDA activity?
    □ 1.Yes □ 2. No
48. Is it difficult to find information which you are interesting for activity?
    □ 1.Yes □ 2. No
49. Is it easy to contact with out side of school (example: FDA members in another schools, community or health office)?
    □ 1.Yes □ 2. No

Which way you often use to get information? ( Can answer more than one)

50. □ .Internet
51. □. FDA Home page
52. □. Leaf let
53. □. Fact sheet
54. □. Story book
55. □. Television
56. □. Multimedia

Which ways are difficult to get information? ( Can answer more than one)

57. □ .Internet
58. □. FDA Home page
59. □. Leaf let
60. □. Fact sheet
61. □. Story book
62. □. Television
63. □. Multimedia

## Part 4: Reinforcing factor

**Social support**

Please check (☑ ) in the appropriate box to mark in the column which you agree.

| Statement | A lot | Mod -erate | A few | Never |
|---|---|---|---|---|
| **Material support** | | | | |
| Have you ever gotten study materials or opportunities from _____? | | | | |
| 64. teachers | | | | |
| 65. health personal in health office | | | | |
| 66. pharmacist | | | | |
| 67. colleagues | | | | |
| 68. family | | | | |
| 69. Others (please specify_____ ) | | | | |
| **Informational support** | | | | |
| Have you ever gotten advice, suggestion or extra information from _____? | | | | |
| 70. teachers | | | | |
| 71. health personal in health office | | | | |
| 72. pharmacist | | | | |
| 73. colleagues | | | | |
| 74. family | | | | |
| 75. Others (please specify_____ ) | | | | |
| **Emotional support** | | | | |
| Have you ever gotten encouragement from _____? | | | | |
| 76. teachers | | | | |
| 77. health personal in health office | | | | |
| 78. pharmacist | | | | |
| 79. colleagues | | | | |
| 80. family | | | | |
| 81. Others (please specify_____ ) | | | | |

## Part 5: Ability of students

Please put the mark (☑ )in the appropriate box □ to answer the question.

### 1. about yourself

82. Do you have good knowledge of food and drug safety consumption?
□ 1.Yes □ 2. No

83. Do you have good skill for checking test with test kids?
□ 1.Yes □ 2. No

84. Do you like to teach good things for other students?
□ 1.Yes □ 2. No

85. Do you like to select good things for yourself?
□ 1.Yes □ 2. No

When you choose some food or cosmetic, do you care about things as below? (Can answer yes more than one)

86. The cheapest one □ Yes □ No
87. Design package □ Yes □ No
88. Commercial on TV or magazine □ Yes □ No

89. Follow friend □ Yes □ No
90. Taste good (food) or very cute (cosmetic) □ Yes □ No
91. Healthy □ Yes □ No
92. Safety □ Yes □ No
93. Others (please specify_____ ) □ Yes □ No

94. Do you have breakfast almost everyday?
□ 1.Yes □ 2. No

95. Who eat dinner with you normally? (Can answer yes more than one.)
□1. Father □2. Mother □3. Sister/ Brother □4. Grand mother/ father
□5. Others (please specify_____ )

96. What is your favorite food?

## 2. about others

Please check (☑) in the appropriate box to mark in the column which you agree.

| Statement | Strongly agree | Agree | Neutral | Disagree |
|---|---|---|---|---|
| We success to change _____better than before through young FDA activities. | | | | |
| 97. other students | | | | |
| 98. teachers | | | | |
| 99. cafeteria or shop in school | | | | |
| 100. shop or community or market in | | | | |
| 101. my family | | | | |
| 102. ourselves | | | | |

# APPENDIX B

**Table 4.48** Frequency and percentage by socio-demographic characteristics of family type

| Socio-demographic variables | N (n= 241) | percent |
|---|---|---|
| **Family type** | | |
| Single parent/ no parents | 50 | 20.75 |
| Others | 191 | 79.25 |

**Table 4.49** Frequency and percentage by correct answer of questions about knowledge of food and drug consumption

| Knowledge of food and drug consumption (n= 241) | Average correct answer percent |
|---|---|
| **Food safety** | 67.34 |
| **Drug safety** | 87.56 |
| **Healthy food consumption** | 81.74 |

# APPENDIX C
# THE RESULT OF FAVORITE FOOD OF STUDENTS IN DETAILS

The respondents were asked with ‘what is your favorite food’ in the questionnaire about themselves in the part of Ability of students. The result is shown as follows:

Q. 96. What is your favorite food?

Majority of the respondents (35%) answered that favorite food was carbohydrate group, which was mainly chosen by students at secondary school. In the details, most of them liked fried rice (13.95%), and noodle with soup was selected as the second (8.72%) in this group.

And the next 29 percent of the respondents answered that protein and fat group were favorite, which was mainly chosen by high school students. Considering to details, most of them chose spicy and sour with herb soup: Tom Yam soup, (5.81%) and next, mainly they liked fried meat, fried seafood, fried egg, and curry (5.23%, 4.07%, 4.07%, and 4.07%, respectively).

Slightly less than protein and fat group, 23 percent of the respondents selected Vitamin and mineral enriched food, which was mainly chosen by students at s primary school. Looking at the details, majority of the respondents (12.79%) chose fried vegetable, and 6.98 percent of the respondents chose salad or spicy salad in this group. Here also, the respondents prefer to eat this food with oil.

Finally, a minority of the respondents (13%) answered non-specific name of foods or some articles of tastes. The most food of the respondents was

Japanese foods (5.23%), Thai foods and Thai north east traditional foods (3.49%). Paying attention of the style, a few of respondents answered ‘foods cooked by mother’ and ‘eating food with family’ (1.16% and 0.58%, respectively)

In conclusion, the older respondents prefer to eat oil more than younger respondents. Furthermore, the most favorite food of the respondents was to eat foods cooked with oil. Almost all of the respondents prefer to eat Thai food styles and the details are presented in table C1.

**Table C1** Frequency and percentage of student's favorite foods

| Student's favorite foods | N | (%) |
|---|---|---|
| Fried rice | 24 | 13.95 |
| Chicken rice | 7 | 4.07 |
| Rice gruel | 1 | 0.58 |
| Rice with fried meat or fish | 6 | 3.49 |
| White rice | 1 | 0.58 |
| Noodle with soup | 15 | 8.72 |
| Curry nodule | 3 | 1.74 |
| Fried nodule | 7 | 4.07 |
| Fried vegetable | 22 | 12.79 |
| Salad, Spicy salad | 12 | 6.98 |
| Boiled vegetable with fish paste | 3 | 1.74 |
| Fruits | 2 | 1.16 |
| Fried meat | 9 | 5.23 |
| Fried seafood | 7 | 4.07 |
| Fried egg | 7 | 4.07 |
| Boiled meat | 3 | 1.74 |
| Boiled seafood | 3 | 1.74 |
| Boiled egg | 1 | 0.58 |
| Fish | 2 | 1.16 |
| Egg | 1 | 0.58 |
| Curry | 7 | 4.07 |
| Spicy and sour with herb soup | 10 | 5.81 |
| Thai food and Thai North east traditional food | 6 | 3.49 |
| Japanese food | 9 | 5.23 |
| Foods cooked by mother | 2 | 1.16 |
| Food eating with family | 1 | 0.58 |
| Ice cream | 2 | 1.16 |
| Cake | 1 | 0.58 |
| Pop corn | 1 | 0.58 |

# BIOGRAPHY

| | |
|---|---|
| **NAME** | Ms. Yuho Tabata |
| **DATE OF BIRTH** | September 28, 1982 |
| **PLACE OF BIRTH** | Saitama, Japan |
| **INSTITITION ATTENDED** | Applied Chemistry department<br>College of Engineering<br>Shibaura Institute of Technology, Tokyo, Japan<br>2002-2006<br>Bachelor of Engineering<br><br>ASEAN Institute for Health Development<br>Mahidol university, Thailand, 2009-2010<br>Master of Primary Health Care Management |